

January 20, 2023

Colleen Rollings, P. Eng., PMP, Chair
Halifax Water
Halifax, NS

The regular meeting of the Halifax Water Board will be held virtually on Thursday, January 26, 2023 beginning at 9:00 a.m. Visit www.halifaxwater.ca to register to attend the public portion of the meeting.

AGENDA

In Camera reports

- 1C Approval of minutes of the In-Camera meetings held on Thursday, November 24, 2022 and December 16, 2022 (5 minutes)

Motion: That the Halifax Water Board approve the In-Camera minutes of November 24, 2022 and December 16, 2022.

- 2C Business arising from minutes
a)

- 3C-I Legal Matter (5 minutes)

- 4C Legal Matter (20 minutes)

Motion: That the Halifax Water Board approve motion.

- 5C-I Personnel Matter (10 minutes)

Regular reports

1. a) Ratification of In-Camera motions (2 minutes)

Motion: That the Halifax Water Board ratify the In-Camera Motions.

- b) Approval of the order of business and approval of additions and deletions (2 minutes)

Motion: That the Halifax Water Board approve the order of business and approve additions and deletions.

2. Approval of minutes of the Regular meetings held on Thursday, November 24, 2022 (2 minutes)

Motion: That the Halifax Water Board approve the minutes of the September 22, 2022 regular meeting.

3. Business arising from minutes
a)

Financial

4.1 Operating Results for the Nine Months Ended December 31, 2022 (10 minutes)

4.2 Proposed 2023/24 Capital Budget (30 minutes)

Motion: That the Halifax Water Board approve the proposed 2023/24 capital budget at a total value of \$146,692,000 as detailed in the report dated January 16, 2023.

4.3 Proposed 2023/24 Operating Budget (30 minutes)

Motion: That the Halifax Water Board approve the attached proposed 2023/24 Operating Budget, inclusive of the proposed 2023/24 budget for unregulated activities. It is recommended the Board approve the list of 2023/24 sponsorships totaling \$33,100 as detailed in the report dated January 20, 2023.

Capital approvals

5.1 Capital Expenditures for the Nine Months Ended December 31, 2022 (5 minutes)

5.2 Jubilee Road CN Bridge Replacement

Motion: That the Halifax Water Board approve the Jubilee Road CN Bridge Replacement (Water/Wastewater) for a total project cost of \$2.67 million (including net HST).

5.3 Albro Lake Sewer Separation Project

Motion: That the Halifax Water Board approve additional funding in the amount of \$1,800,000 to complete the Albro Lakes and Wyse Road Separation Project for a revised estimated total project cost of \$9,500,000.

5.4 Quigley's Corner Pump Station – Funding Approval

Motion: That the Halifax Water Board approve the Quigley's Corner Pump Station Upgrade and Optimization project for a total project cost of \$5.8 million (including net HST).

5.5 Bedford to Burnside Transmission Main – Next Phase – Funding Approval

Motion: That the Halifax Water Board approve the Burnside to Bedford Connector Transmission Main – Remaining Phase 1 Pipe Work project at a total cost of \$5,374,000.00.

Other Business

6. Proposed 2023 Business Plan (30 minutes)

7. Meeting Dates for 2023/24 for the Halifax Water Board and Board Sub-Committees (5 minutes)

Information Reports

- 1-I Operational Performance Information Report
- 2-I Halifax Water Compliance Statement – Quarterly Certification
- 3-I Halifax Regional Municipality Master Trust Investment Performance, Third Quarter 2021
- 4-I 2022 Annual Report – Pension and Benefits Advisory Committee
- 5-I 2022/23 Cost Containment Initiatives
- 6-I 2022 Customer Survey

Heidi
Schedler

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Heidi Schedler
Secretary




**STRAIGHT from
the SOURCE**



TO: Colleen Rollings, P.Eng., PMP., Chair and Members of the Halifax Regional Water Commission Board

SUBMITTED BY: Alicia Scallion
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Date: 2023.01.20 09:06:19 -04'00'

Alicia Scallion, CPA, CA
Acting Director, Corporate Services/CFO

APPROVED:  Digitally signed by Louis de Montbrun
Date: 2023.01.20 11:58:52 -04'00'

Louis de Montbrun, CPA, CA
Acting General Manager/CEO

DATE: January 18, 2023

SUBJECT: Operating results for the 9 months ended December 31, 2022

ORIGIN

Financial Information Reporting.

DISCUSSION

Attached are the operating results for the nine (9) months ended December 31, 2022, with comparative figures for December 31, 2021.

The following discussion of the operating results reflect direct operating costs by department and allocations among water, wastewater and stormwater for common costs shared across all the services provided by Halifax Water.

Statement of Financial Position (NSUARB) – page 3 of Attachment 1

Key items to note:

- Cash and cash equivalents continue to be healthy but have decreased \$15.7M due to capital expenditures and repayment of long-term debt and will continue to decrease as payments are made.
- Accounts receivable have decreased \$2.5M from the prior year due to an accrued receivable for external funding of \$1.3M in prior year, which has since been collected, along with a lower HST rebate receivable, and improved collections.
- Trade accounts payable and accruals are \$5.3M higher than last year which is related to capital spend and process to record holdbacks on new capital projects, commenced in the spring of 2021, which amount to \$3.7M of the increase.

- Halifax Regional Municipality (HRM) payable has decreased from the prior year by \$2.4M. While payables have increased relating to the accrual for the HRM dividend/grant in lieu of taxes and an accrued debt payment, this is offset by RDC receivables accrued but not collected until early January.
- The current portion of long-term debt has decreased \$5.8M due to balloon payments required in the next twelve months.
- Deferred contributions have increased \$17.5M due to receipt of Regional Development Charges (RDCs).

The following tables are for informational purposes to supplement Attachment 1: Operating Results:

Accounts Receivable:

Customer charges and contractual					
	2022/23	2021/22			
	'000	'000	\$ Change	% Change	
Trade receivables	\$ 14,151	\$ 14,731	\$ (580)	(3.9%)	
Other receivables	2,149	4,311	(2,162)	(50.2%)	
Allowance for doubtful accounts	(3,301)	(3,508)	207	5.9%	
	\$ 13,000	\$ 15,534	\$ (2,535)	(16.3%)	

Aging of Trade Receivables (in thousands)					
	Current	31 to 60	61 to 120	120+	Grand Total
2022/23	\$ 6,749	\$ 1,502	\$ 884	\$ 5,016	\$ 14,151
2021/22	\$ 7,123	\$ 1,615	\$ 835	\$ 5,158	\$ 14,731
\$ Change	\$ (374)	\$ (113)	\$ 49	\$ (142)	\$ (580)
% Change	(5.3%)	(7.0%)	5.9%	(2.8%)	(3.9%)

Accounts Payable and Accruals:

Payables and Accruals					
	2022/23	2021/22			
	'000	'000	\$ Change	% Change	
Trade payables	\$ 7,117	\$ 5,190	\$ 1,926	37.1%	
Trade accrued payables	6,566	3,394	3,172	93.4%	
Accrued wastewater rebate	1,151	992	159	16.0%	
	\$ 14,833	\$ 9,577	\$ 5,257	54.9%	

Aging of Accounts Payable (in thousands)					
	Current	31 to 60	61 to 120	120+	Grand Total
2022/23	3,021	587	926	2,582	\$ 7,117
2021/22	\$ 3,482	\$ 634	\$ 544	\$ 530	\$ 5,190
\$ Change	\$ (461)	\$ (47)	\$ 382	\$ 2,052	\$ 1,927
% Change	(13.2%)	(7.4%)	70.3%	387.2%	37.1%

HRM Receivables and Payables				
	2022/23	2021/22		
	'000	'000	\$ Change	% Change
Receivables	\$ 1,057	\$ 344	\$ 713	207.4%
RDC	4,982	1,027	3,955	385.0%
Payables	(7,995)	(5,730)	(2,265)	39.5%
	\$ (1,956)	\$ (4,359)	\$ 2,403	(55.1%)

Statement of Earnings (NSUARB) – pages 4 through 9 of Attachment 1

Operating Revenues to Forecast

The Water, Wastewater, and Stormwater forecasts have been updated to reflect the rate increases effective December 1, 2022. Forecast changes are discussed in further detail by service below.

The table below presents consumption by customer class which is showing an increase in consumption of 1.4% on a volumetric basis compared to the prior year.

Consumption by Customer Class (m3)				
	2022/23	2021/22	m3 Change	% Change
Commercial	5,148,734	4,607,808	540,926	11.7%
Industrial	1,379,080	1,561,240	(182,160)	(11.7%)
Institutional	2,967,474	2,919,015	48,459	1.7%
Multi-residential	5,832,981	5,822,519	10,462	0.2%
Residential	9,765,477	9,843,126	(77,649)	(0.8%)
	25,093,746	24,753,708	340,038	1.4%

Water

- Water revenue forecast has increased from budget \$0.6M due to the rate increases effective December 1, 2022.
- Bulk water station actual revenues of \$0.3M are 89.94% of forecast as they tend to be higher until the fourth quarter and level out by year end. For comparative purposes, in December of 2021, revenues were 86.97% of forecast and by March 2022 only 96.06%.
- Miscellaneous revenues of \$0.2M are 70.93% of forecast as drawing review fees are low and the rebate for the corporate purchase card has not yet been received.

Wastewater

- Wastewater revenue forecast has increased from budget \$1.5M due to the rate increases effective December 1, 2022.
- Leachate and other contract revenues of \$0.3M are 71.80% of forecast as the leachate contract with HRM is trending lower than budgeted. Budget is based on the costs incurred at the facility plus a markup. Forecast was lowered slightly to reflect this change.

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- Septage tipping revenues of \$0.5M are 77.83% of forecast. There is one new septage tipper this year and higher usage from another compared to prior year, the forecast has been updated to reflect this change.
 - Airplane effluent revenues are 43.33% of forecast as the quarterly invoicing for third quarter was not accrued in December, but recorded in January. Forecast is based on airline traffic being more stable in a post COVID-19 environment. The revenue will continue to be monitored as airline traffic has increased compared to the prior year.
 - Miscellaneous revenues of \$0.2M are 72.69% of forecast as drawing review fees are low and the rebate for the corporate purchase card has not yet been received.

Stormwater

- Stormwater site generated service revenue had been forecast \$0.1M lower due to the boundary expansion not generating as much revenue as budgeted, but this was offset by the increase in revenue due to the rate increase.
- Stormwater right of way service forecast has increased from budget \$0.5M due to the rate increases effective December 1, 2022.
- Late payment and other connection fees of \$0.1M are 67.86% of forecast, but it is expected to increase once the annual invoices are issued through the fourth quarter.
- Miscellaneous revenues of \$0.1M are 70.08% of forecast as drawing review fees are low and the rebate for the corporate purchase card has not yet been received.

Operating Expenditures

Water

- Water supply and treatment expenditure has increased over prior year \$0.6M mainly due to increased chemical prices. The forecast has been adjusted to reflect the increase in costs.
- Water transmission and distribution expenditure has increased \$0.4M from the prior year mainly due to the lead service line replacement program which is relatively new. The forecast has decreased \$1.0M from budget due to various adjustments including reduction in staffing, lesser materials and supplies, and lower vehicle allocations due to reduced usage.
- Engineering and technology services expenditures are \$1.0M lower than prior year as the allocation between Water, Wastewater and Stormwater was reassessed during the 2022/23 budget process. A higher percentage of costs is allocated to Wastewater in the current year.
- Depreciation and amortization is \$0.3M higher than the prior year due to additions to utility plant in service in the prior year.
- Dividend/grant in lieu of taxes is forecasted to be \$0.3M lower as capital additions in 2021/22 ended up being less than budgeted. Dividend in 2022/23 is capped at 1% growth above the 2021/22 dividend paid to HRM.
- Debt appropriation costs are \$0.6M higher than the prior year due to higher interest rates on newly acquired and refinanced debt in addition to the principal repayments for new debt.

Wastewater

- Wastewater collection has increased over the prior year \$0.5M relating to an increase in vehicle cost allocation due to usage and materials and supplies.
- Wastewater treatment expenditures increased over the prior year \$1.2M due to an increase in biosolids treatment, tools and equipment and chemical costs.

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- Engineering and technology services expenditures are \$1.0M higher than prior year as the allocation between Water, Wastewater and Stormwater was reassessed during the 2022/23 budget process. A higher percentage of costs is allocated to Wastewater in the current year.
 - Administration services has increased over the prior year \$0.5M due mainly to an increase in salaries and benefits.
 - Depreciation and amortization is forecast \$0.5M higher due to prior year expectation that a higher proportion of assets would have been donated assets and excluded from the depreciation expense. This has also resulted in an increase in depreciation over the prior year of \$0.4M.

Stormwater

- Engineering and technology services expenditures are \$0.5M higher than prior year as the allocation between Water, Wastewater and Stormwater was reassessed during the 2022/23 budget process. A higher percentage of costs is allocated to Stormwater in the current year.

Combined Overall Expenditures

- Engineering and Technology services are \$0.5M higher than the prior year due in part to increases in salaries and benefits, training and conferences, and software licenses.
- Regulatory services, Customer services, and Corporate Services overall expenditures are comparable to prior year, but allocations between services changed from current and prior year resulting in variances when analyzing each service individually.
- Administration services expenditures are \$0.7M higher than prior year due partially to an accrual for the organizational performance award and an increase in salaries and benefits.

Non-operating Revenues to Forecast

- Interest rates are on the rise resulting in higher revenues. Revenues are allocated to each service based on the accumulated surplus/deficit. As Stormwater services is in a deficit position, it is being charged interest. The forecast has been adjusted to account for the rise in interest rates, but the expectation is the cash balance will decrease therefore the actuals year to date as a percentage of forecast are currently high.
Other revenues are slightly above forecast, 79.93%. The forecast was increased due to a one-time revenue generating wastewater treatment contract with a visiting marine vessel.

Non-operating Expenditures to Forecast

- Debt appropriation expenditures are \$0.9M higher than the prior year due to an increase in interest rates on new debt and principal repayments.
- Dividend/grant in lieu of taxes is forecast \$0.3M lower as capital additions ended up being less than budgeted for fiscal 2021/22 and dividend is capped at 1% growth.

Attachments

Attachment 1: Operating Results for December 31, 2022.

Report prepared by:

Corey Ellis

Corey Ellis, CPA, CGA
Accountant (902) 490-2796

Ian
Woodacre

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Woodacre
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Ian Woodacre, CPA, CMA
Accountant (902) 490-5242

HALIFAX WATER
UNAUDITED STATEMENT OF FINANCIAL POSITION - IFRS
DECEMBER 31, 2022 (in thousands)

December 31 (in thousands)	2022	2021	March 31 2022	From Prior Year \$ Change	% Change
Assets					
Current					
Cash and cash equivalents	\$ 53,835	\$ 69,577	\$ 65,586	\$ (15,742)	(22.6%)
Receivables					
Customers charges and contractual	13,000	15,534	15,900	(2,534)	(16.3%)
Unbilled service revenues	21,053	20,815	18,838	238	1.1%
Halifax Regional Municipality	0	0	851	0	0.0%
Inventory	2,154	2,202	2,042	(48)	(2.2%)
Prepays	1,850	2,039	2,408	(189)	(9.3%)
	91,892	110,167	105,625	(18,275)	(16.6%)
Intangible assets	19,092	19,003	20,805	89	0.5%
Capital work in progress	108,196	69,555	51,013	38,641	55.6%
Utility plant in service	1,240,796	1,243,733	1,277,360	(2,937)	(0.2%)
Total assets	1,459,976	1,442,458	1,454,803	17,518	1.2%
Regulatory deferral account	2,285	2,477	2,428	(192)	(7.8%)
Total assets and regulatory deferral account	\$ 1,462,261	\$ 1,444,935	\$ 1,457,231	\$ 17,326	1.2%
Liabilities					
Current					
Payables and accruals					
Trade	14,833	9,577	23,255	5,256	54.9%
Non-trade	4,249	4,870	5,060	(621)	(12.8%)
Interest on long term debt	1,093	1,427	2,038	(334)	(23.4%)
Halifax Regional Municipality	1,956	4,359	0	(2,403)	(55.1%)
Contractor and customer deposits	2,892	2,356	2,705	536	22.8%
Current portion of deferred contributed capital	14,614	14,580	14,614	34	0.2%
Current portion of long term debt	43,154	48,908	46,272	(5,754)	(11.8%)
Unearned revenue	2,671	2,972	80	(301)	(10.1%)
	85,462	89,049	94,024	(3,587)	(4.0%)
Deferred contributed capital	897,555	887,276	893,975	10,279	1.2%
Long term debt	175,244	175,219	177,910	25	0.0%
Employee benefit obligation	48,917	82,464	41,950	(33,547)	(40.7%)
Total liabilities	1,207,178	1,234,008	1,207,859	(26,830)	(2.2%)
Equity					
Accumulated other comprehensive loss	11,226	(29,681)	11,225	40,907	(137.8%)
Accumulated surplus	243,857	240,608	238,147	3,249	1.4%
Total equity	255,083	210,927	249,372	44,156	20.9%
Total liabilities and equity	\$ 1,462,261	\$ 1,444,935	\$ 1,457,231	\$ 17,326	1.2%

HALIFAX WATER
UNAUDITED STATEMENT OF EARNINGS AND COMPREHENSIVE EARNINGS - ALL SERVICES - IFRS
APRIL 1, 2022 - DECEMBER 31, 2022 (9 MONTHS)
ACTUAL YEAR TO DATE COMPLETE: 75.00%

	ACTUAL YEAR TO DATE		APR 1/22 MAR 31/23 BUDGET	APR 1/22 MAR 31/23 FORECAST	ACTUAL YEAR TO DATE as % of BUDGET	ACTUAL YEAR TO DATE as % of FORECAST	From Prior Year	
	THIS YEAR '000	LAST YEAR '000	'000	'000			\$ Change	% Change
Operating revenues								
Water	\$ 37,062	\$ 36,636	\$ 48,770	\$ 49,349	75.99%	75.10%	\$ 426	1.16%
Wastewater	61,938	61,474	81,607	83,138	75.90%	74.50%	464	0.75%
Stormwater	8,594	7,595	10,786	11,356	79.68%	75.68%	999	13.15%
Public fire protection	5,767	5,721	7,628	7,725	75.60%	74.65%	46	0.80%
Private fire protection	1,002	940	1,335	1,402	75.06%	71.47%	62	6.60%
Other operating revenue	2,063	1,935	2,639	2,752	78.17%	74.96%	128	6.61%
	116,426	114,301	152,765	155,722	76.21%	74.77%	2,125	1.86%
Operating expenditures								
Water supply and treatment	8,207	7,620	11,246	12,181	72.98%	67.38%	587	7.70%
Water transmission and distribution	8,462	8,054	12,441	11,473	68.02%	73.76%	408	5.07%
Wastewater collection	10,069	9,535	13,096	13,177	76.89%	76.41%	534	5.60%
Stormwater collection	3,424	3,259	5,281	5,037	64.84%	67.98%	165	5.06%
Wastewater treatment	17,097	15,870	23,395	23,568	73.08%	72.54%	1,227	7.73%
Engineering and technology services	10,717	10,227	13,941	14,025	76.87%	76.41%	490	4.79%
Regulatory services	3,377	3,198	4,866	4,532	69.40%	74.51%	179	5.60%
Customer services	3,318	3,518	4,844	4,481	68.50%	74.05%	(200)	(5.69%)
Corporate services	2,287	2,050	2,970	3,168	77.00%	72.19%	237	11.56%
Administration services	3,625	2,891	5,855	5,855	61.91%	61.91%	734	25.39%
Pension services	7,061	8,678	9,415	9,415	75.00%	75.00%	(1,617)	(18.63%)
Depreciation and amortization	37,600	36,661	48,716	48,952	77.18%	76.81%	939	2.56%
	115,244	111,561	156,066	155,864	73.84%	73.94%	3,683	3.30%
Earnings (loss) from operations before financial and other revenues and expenditures	1,182	2,740	(3,301)	(142)	(35.81%)	(832.39%)	(1,558)	(56.86%)
Financial and other revenues								
Interest	321	129	105	378	305.71%	84.92%	192	148.84%
Amortization of contributed capital	13,926	13,901	17,864	17,864	77.96%	77.96%	25	0.18%
Other	694	1,351	628	867	110.51%	80.05%	(657)	(48.63%)
	14,941	15,381	18,597	19,109	80.34%	78.19%	(440)	(2.86%)
Financial and other expenditures								
Interest on long term debt	5,213	5,334	6,668	6,779	78.18%	76.90%	(121)	(2.27%)
Amortization of debt discount	174	171	233	223	74.68%	78.03%	3	1.75%
Dividend/grant in lieu of taxes	4,893	4,970	6,803	6,524	71.92%	75.00%	(77)	(1.55%)
Other	97	167	46	141	210.87%	68.79%	(70)	(41.92%)
	10,377	10,642	13,750	13,667	75.47%	75.93%	(265)	(2.49%)
Total comprehensive earnings for the year	\$ 5,746	\$ 7,479	\$ 1,546	\$ 5,300	371.67%	108.42%	\$ (1,733)	(23.17%)

HALIFAX WATER
UNAUDITED STATEMENT OF FINANCIAL POSITION - NSUARB
DECEMBER 31, 2022 (in thousands)

December 31 (in thousands)	2022	2021	March 31 2022	From Prior Year \$ Change	% Change
Assets					
Current					
Cash and cash equivalents	\$ 53,835	\$ 69,577	\$ 65,586	\$ (15,742)	(22.6%)
Receivables					
Customer charges and contractual	13,000	15,534	15,900	(2,534)	(16.3%)
Unbilled service revenues	21,053	20,815	18,838	238	1.1%
Halifax Regional Municipality	0	0	851	0	0.0%
Inventory	2,154	2,202	2,042	(48)	(2.2%)
Prepays	1,850	2,039	2,408	(189)	(9.3%)
	91,892	110,167	105,625	(18,275)	(16.6%)
Capital work in progress	108,196	69,555	51,013	38,641	55.6%
Utility plant in service	1,297,629	1,298,145	1,334,162	(516)	0.0%
Total assets	1,497,717	1,477,867	1,490,800	19,850	1.3%
Regulatory deferral account	2,285	2,477	2,428	(192)	(7.8%)
Total assets and regulatory deferral account	\$ 1,500,002	\$ 1,480,344	\$ 1,493,228	\$ 19,658	1.3%
Liabilities					
Current					
Payables and accruals					
Trade	14,833	9,577	23,255	5,256	54.9%
Non-trade	4,249	4,870	5,060	(621)	(12.8%)
Interest on long term debt	1,093	1,427	2,038	(334)	(23.4%)
Halifax Regional Municipality	1,956	4,359	0	(2,403)	(55.1%)
Contractor and customer deposits	2,892	2,356	2,705	536	22.8%
Current portion of long term debt	43,154	48,908	46,272	(5,754)	(11.8%)
Unearned revenue	2,671	2,972	80	(301)	(10.1%)
	70,848	74,469	79,410	(3,621)	(4.9%)
Long term debt	175,244	175,219	177,910	25	0.0%
Deferred contributions	85,911	68,400	69,140	17,511	25.6%
Total liabilities	332,003	318,088	326,460	13,915	4.4%
Equity					
Accumulated capital surplus	1,129,728	1,114,045	1,125,228	15,683	1.4%
Accumulated operating surplus	29,129	35,698	35,542	(6,569)	(18.4%)
Operating surplus used to fund capital	12,380	12,380	12,380	0	0.0%
Deficiency of revenues over expenditures	(3,238)	133	(6,382)	(3,371)	(2534.6%)
Total equity	1,167,999	1,162,256	1,166,768	5,743	0.5%
Total liabilities and equity	\$ 1,500,002	\$ 1,480,344	\$ 1,493,228	\$ 19,658	1.3%

HALIFAX WATER
UNAUDITED STATEMENT OF EARNINGS - ALL SERVICES - NSUARB
APRIL 1, 2022 - DECEMBER 31, 2022 (9 MONTHS)
ACTUAL YEAR TO DATE COMPLETE: 75.00%

	ACTUAL YEAR TO DATE		APR 1/22 MAR 31/23 BUDGET	APR 1/22 MAR 31/23 FORECAST	ACTUAL YEAR TO DATE as % of BUDGET	ACTUAL YEAR TO DATE as % of FORECAST	From Prior Year		Actual to Forecast		Budget to Forecast	
	THIS YEAR '000	LAST YEAR '000	'000	'000			\$ Change	% Change	\$ Remaining	% Remaining	\$ Change	% Change
Operating revenues												
Water	\$ 37,062	\$ 36,636	\$ 48,770	\$ 49,349	75.99%	75.10%	\$ 426	1.16%	\$ (12,287)	(24.90%)	\$ 579	1.19%
Wastewater	61,938	61,474	81,607	83,138	75.90%	74.50%	464	0.75%	(21,200)	(25.50%)	1,531	1.88%
Stormwater site generated service	5,094	4,719	6,790	6,897	75.02%	73.86%	375	7.95%	(1,803)	(26.14%)	107	1.58%
Stormwater right of way service	3,500	2,876	3,996	4,459	87.59%	78.49%	624	21.70%	(959)	(21.51%)	463	11.59%
Fire protection (public and private)	6,769	6,661	8,963	9,127	75.52%	74.16%	108	1.62%	(2,358)	(25.84%)	164	1.83%
Other services and fees	1,194	1,033	1,376	1,554	86.77%	76.83%	161	15.59%	(360)	(23.17%)	178	12.94%
Late payment and other connection fees	410	382	617	555	66.45%	73.87%	28	7.33%	(145)	(26.13%)	(62)	(10.05%)
Miscellaneous	459	520	646	643	71.05%	71.38%	(61)	(11.73%)	(184)	(28.62%)	(3)	(0.46%)
	116,426	114,301	152,765	155,722	76.21%	74.77%	2,125	1.86%	(39,296)	(25.23%)	2,957	1.94%
Operating expenditures												
Water supply and treatment	8,207	7,620	11,246	12,181	72.98%	67.38%	587	7.70%	(3,974)	(32.62%)	935	8.31%
Water transmission and distribution	8,462	8,054	12,441	11,473	68.02%	73.76%	408	5.07%	(3,011)	(26.24%)	(968)	(7.78%)
Wastewater collection	10,069	9,535	13,096	13,177	76.89%	76.41%	534	5.60%	(3,108)	(23.59%)	81	0.62%
Stormwater collection	3,424	3,259	5,281	5,037	64.84%	67.98%	165	5.06%	(1,613)	(32.02%)	(244)	(4.62%)
Wastewater treatment	17,097	15,870	23,395	23,568	73.08%	72.54%	1,227	7.73%	(6,471)	(27.46%)	173	0.74%
Engineering and technology services	10,717	10,227	13,941	14,025	76.87%	76.41%	490	4.79%	(3,308)	(23.59%)	84	0.60%
Regulatory services	3,377	3,198	4,866	4,532	69.40%	74.51%	179	5.60%	(1,155)	(25.49%)	(334)	(6.86%)
Customer services	3,318	3,518	4,844	4,481	68.50%	74.05%	(200)	(5.69%)	(1,163)	(25.95%)	(363)	(7.49%)
Corporate services	2,287	2,050	2,970	3,168	77.00%	72.19%	237	11.56%	(881)	(27.81%)	198	6.67%
Administration services	3,625	2,891	5,855	5,855	61.91%	61.91%	734	25.39%	(2,230)	(38.09%)	0	0.00%
Depreciation and amortization	22,569	21,725	30,852	31,088	73.15%	72.60%	844	3.88%	(8,519)	(27.40%)	236	0.76%
	93,152	87,947	128,787	128,585	72.33%	72.44%	5,205	5.92%	(35,433)	(27.56%)	(202)	(0.16%)
Earnings from operations before financial and other revenues and expenditures	23,274	26,354	23,978	27,137	97.06%	85.76%	(3,080)	(11.69%)	(3,863)	(14.24%)	3,159	13.17%
Financial and other revenues												
Interest	321	129	105	378	305.71%	84.92%	192	148.84%	(57)	(15.08%)	273	260.00%
Other	693	452	628	867	110.35%	79.93%	241	53.32%	(174)	(20.07%)	239	38.06%
	1,014	581	733	1,245	138.34%	81.45%	433	74.53%	(231)	(18.55%)	512	69.85%
Financial and other expenditures												
Interest on long term debt	5,213	5,334	6,668	6,779	78.18%	76.90%	(121)	(2.27%)	(1,566)	(23.10%)	111	1.66%
Repayment on long term debt	17,148	16,160	21,846	21,846	78.49%	78.49%	988	6.11%	(4,698)	(21.51%)	0	0.00%
Amortization of debt discount	174	171	233	223	74.68%	78.03%	3	1.75%	(49)	(21.97%)	(10)	(4.29%)
Dividend/grant in lieu of taxes	4,893	4,970	6,803	6,524	71.92%	75.00%	(77)	(1.55%)	(1,631)	(25.00%)	(279)	(4.10%)
Other	98	167	46	141	213.04%	69.50%	(69)	(41.32%)	(43)	(30.50%)	95	206.52%
	27,526	26,802	35,596	35,513	77.33%	77.51%	724	2.70%	(7,987)	(22.49%)	(83)	(0.23%)
Earnings (loss) for the year	\$ (3,238)	\$ 133	\$ (10,885)	\$ (7,131)	29.75%	45.41%	\$ (3,371)	(2534.59%)	\$ 3,893	(54.59%)	\$ 3,754	(34.49%)

HALIFAX WATER
UNAUDITED STATEMENT OF EARNINGS - WATER - NSUARB
APRIL 1, 2022 - DECEMBER 31, 2022 (9 MONTHS)
ACTUAL YEAR TO DATE COMPLETE: 75.00%

	ACTUAL YEAR TO DATE		APR 1/22 MAR 31/23 BUDGET	APR 1/22 MAR 31/23 FORECAST	ACTUAL YEAR TO DATE as % of BUDGET	ACTUAL YEAR TO DATE as % of FORECAST	From Prior Year		Actual to Forecast		Budget to Forecast	
	THIS YEAR '000	LAST YEAR '000	'000	'000			\$ Change	% Change	\$ Remaining	% Remaining	\$ Change	% Change
Operating revenues												
Water	\$ 37,062	\$ 36,636	\$ 48,770	\$ 49,349	75.99%	75.10%	\$ 426	1.16%	\$ (12,287)	(24.90%)	\$ 579	1.19%
Public fire protection	5,767	5,721	7,628	7,725	75.60%	74.65%	46	0.80%	(1,958)	(25.35%)	97	1.27%
Private fire protection	1,002	940	1,335	1,402	75.06%	71.47%	62	6.60%	(400)	(28.53%)	67	5.02%
Bulk water stations	322	287	334	358	96.41%	89.94%	35	12.20%	(36)	(10.06%)	24	7.19%
Late payment and other connection fees	175	184	265	232	66.04%	75.43%	(9)	(4.89%)	(57)	(24.57%)	(33)	(12.45%)
Miscellaneous	205	237	296	289	69.26%	70.93%	(32)	(13.50%)	(84)	(29.07%)	(7)	(2.36%)
	44,533	44,005	58,628	59,355	75.96%	75.03%	528	1.20%	(14,822)	(24.97%)	727	1.24%
Operating expenditures												
Water supply and treatment	8,207	7,620	11,246	12,181	72.98%	67.38%	587	7.70%	(3,974)	(32.62%)	935	8.31%
Water transmission and distribution	8,462	8,054	12,441	11,473	68.02%	73.76%	408	5.07%	(3,011)	(26.24%)	(968)	(7.78%)
Engineering and technology services	3,712	4,740	4,667	4,695	79.54%	79.06%	(1,028)	(21.69%)	(983)	(20.94%)	28	0.60%
Regulatory services	1,007	897	1,465	1,345	68.74%	74.87%	110	12.26%	(338)	(25.13%)	(120)	(8.19%)
Customer services	1,640	1,840	2,470	2,285	66.40%	71.77%	(200)	(10.87%)	(645)	(28.23%)	(185)	(7.49%)
Corporate services	1,214	964	1,514	1,616	80.18%	75.12%	250	25.93%	(402)	(24.88%)	102	6.74%
Administration services	1,773	1,542	2,986	2,986	59.38%	59.38%	231	14.98%	(1,213)	(40.62%)	0	0.00%
Depreciation and amortization	8,683	8,363	12,171	11,968	71.34%	72.55%	320	3.83%	(3,285)	(27.45%)	(203)	(1.67%)
	34,698	34,020	48,960	48,549	70.87%	71.47%	678	1.99%	(13,851)	(28.53%)	(411)	(0.84%)
Earnings from operations before financial and other revenues and expenditures	9,835	9,985	9,668	10,806	101.73%	91.01%	(150)	(1.50%)	(971)	(8.99%)	1,138	11.77%
Financial and other revenues												
Interest	257	89	72	302	356.94%	85.10%	168	188.76%	(45)	(14.90%)	230	319.44%
Other	362	367	473	449	76.53%	80.62%	(5)	(1.36%)	(87)	(19.38%)	(24)	(5.07%)
	619	456	545	751	113.58%	82.42%	163	35.75%	(132)	(17.58%)	206	37.80%
Financial and other expenditures												
Interest on long term debt	1,831	1,594	2,306	2,459	79.40%	74.46%	237	14.87%	(628)	(25.54%)	153	6.63%
Repayment on long term debt	4,689	4,365	6,063	6,064	77.34%	77.33%	324	7.42%	(1,375)	(22.67%)	1	0.02%
Amortization of debt discount	66	61	84	87	78.57%	75.86%	5	8.20%	(21)	(24.14%)	3	3.57%
Dividend/grant in lieu of taxes	4,206	4,285	5,918	5,608	71.07%	75.00%	(79)	(1.84%)	(1,402)	(25.00%)	(310)	(5.24%)
Other	90	154	16	116	562.50%	77.59%	(64)	(41.56%)	(26)	(22.41%)	100	625.00%
	10,882	10,459	14,387	14,334	75.64%	75.92%	423	4.04%	(3,452)	(24.08%)	(53)	(0.37%)
Earnings (loss) for the year	\$ (428)	\$ (18)	\$ (4,174)	\$ (2,777)	10.25%	15.41%	\$ (410)	2277.78%	\$ 2,349	(84.59%)	\$ 1,397	(33.47%)

HALIFAX WATER
UNAUDITED STATEMENT OF EARNINGS - WASTEWATER - NSUARB
APRIL 1, 2022 - DECEMBER 31, 2022 (9 MONTHS)
ACTUAL YEAR TO DATE COMPLETE: 75.00%

	ACTUAL YEAR TO DATE		APR 1/22 MAR 31/23 BUDGET	APR 1/22 MAR 31/23 FORECAST	ACTUAL YEAR TO DATE as % of BUDGET	ACTUAL YEAR TO DATE as % of FORECAST	From Prior Year		Actual to Forecast		Budget to Forecast	
	THIS YEAR '000	LAST YEAR '000	'000	'000			\$ Change	% Change	\$ Remaining	% Remaining	\$ Change	% Change
Operating revenues												
Wastewater	\$ 61,938	\$ 61,474	\$ 81,607	\$ 83,138	75.90%	74.50%	\$ 464	0.75%	\$ (21,200)	(25.50%)	\$ 1,531	1.88%
Leachate and other contract revenue	331	346	491	461	67.41%	71.80%	(15)	(4.34%)	(130)	(28.20%)	(30)	(6.11%)
Septage tipping fees	502	397	475	645	105.68%	77.83%	105	26.45%	(143)	(22.17%)	170	35.79%
Airplane effluent	39	3	76	90	51.32%	43.33%	36	1200.00%	(51)	(56.67%)	14	18.42%
Late payment and other connection fees	159	143	248	211	64.11%	75.36%	16	11.19%	(52)	(24.64%)	(37)	(14.92%)
Miscellaneous	165	185	253	227	65.22%	72.69%	(20)	(10.81%)	(62)	(27.31%)	(26)	(10.28%)
	63,134	62,548	83,150	84,772	75.93%	74.48%	586	0.94%	(21,638)	(25.52%)	1,622	1.95%
Operating expenditures												
Wastewater collection	10,069	9,535	13,096	13,177	76.89%	76.41%	534	5.60%	(3,108)	(23.59%)	81	0.62%
Wastewater treatment	17,097	15,870	23,395	23,568	73.08%	72.54%	1,227	7.73%	(6,471)	(27.46%)	173	0.74%
Engineering and technology services	5,429	4,386	7,109	7,152	76.37%	75.91%	1,043	23.78%	(1,723)	(24.09%)	43	0.60%
Regulatory services	1,380	1,173	1,674	1,548	82.44%	89.15%	207	17.65%	(168)	(10.85%)	(126)	(7.53%)
Customer services	1,540	1,477	2,171	2,010	70.94%	76.62%	63	4.27%	(470)	(23.38%)	(161)	(7.42%)
Corporate services	966	934	1,310	1,397	73.74%	69.15%	32	3.43%	(431)	(30.85%)	87	6.64%
Administration services	1,667	1,160	2,582	2,582	64.56%	64.56%	507	43.71%	(915)	(35.44%)	0	0.00%
Depreciation and amortization	12,020	11,630	16,093	16,527	74.69%	72.73%	390	3.35%	(4,507)	(27.27%)	434	2.70%
	50,168	46,165	67,430	67,961	74.40%	73.82%	4,003	8.67%	(17,793)	(26.18%)	531	0.79%
Earnings from operations before financial and other revenues and expenditures	12,966	16,383	15,720	16,811	82.48%	77.13%	(3,417)	(20.86%)	(3,845)	(22.87%)	1,091	6.94%
Financial and other revenues												
Interest	104	26	21	121	495.24%	85.95%	78	300.00%	(17)	(14.05%)	100	476.19%
Other	331	85	155	418	213.55%	79.19%	246	289.41%	(87)	(20.81%)	263	169.68%
	435	111	176	539	247.16%	80.71%	324	291.89%	(104)	(19.29%)	363	206.25%
Financial and other expenditures												
Interest on long term debt	2,815	3,186	3,639	3,569	77.36%	78.87%	(371)	(11.64%)	(754)	(21.13%)	(70)	(1.92%)
Repayment on long term debt	10,849	10,248	13,635	13,634	79.57%	79.57%	601	5.86%	(2,785)	(20.43%)	(1)	(0.01%)
Amortization of debt discount	90	94	127	112	70.87%	80.36%	(4)	(4.26%)	(22)	(19.64%)	(15)	(11.81%)
Dividend/grant in lieu of taxes	584	583	736	778	79.35%	75.06%	1	0.17%	(194)	(24.94%)	42	5.71%
Other	8	13	30	25	26.67%	32.00%	(5)	(38.46%)	(17)	(68.00%)	(5)	(16.67%)
	14,346	14,124	18,167	18,118	78.97%	79.18%	222	1.57%	(3,772)	(20.82%)	(49)	(0.27%)
Earnings (loss) for the year	\$ (945)	\$ 2,370	\$ (2,271)	\$ (768)	41.61%	123.05%	\$ (3,315)	(139.87%)	\$ (177)	23.05%	\$ 1,503	(66.18%)

HALIFAX WATER
 UNAUDITED STATEMENT OF EARNINGS - STORMWATER - NSUARB
 APRIL 1, 2022 - DECEMBER 31, 2022 (9 MONTHS)
 ACTUAL YEAR TO DATE COMPLETE: 75.00%

	ACTUAL YEAR TO DATE		APR 1/22 MAR 31/23	APR 1/22 MAR 31/23	ACTUAL YEAR TO DATE	ACTUAL YEAR TO DATE	From Prior Year		Actual to Forecast		Budget to Forecast	
	THIS YEAR	LAST YEAR	BUDGET	FORECAST	as % of	as % of	\$ Change	% Change	\$ Remaining	% Remaining	\$ Change	% Change
	'000	'000	'000	'000	BUDGET	FORECAST						
Operating revenues												
Stormwater site generated service	\$ 5,094	\$ 4,719	\$ 6,790	\$ 6,897	75.02%	73.86%	\$ 375	7.95%	\$ (1,803)	(26.14%)	\$ 107	1.58%
Stormwater right of way service	3,500	2,876	3,996	4,459	87.59%	78.49%	624	21.70%	(959)	(21.51%)	463	11.59%
Late payment and other connection fees	76	55	104	112	73.08%	67.86%	21	38.18%	(36)	(32.14%)	8	7.69%
Miscellaneous	89	98	97	127	91.75%	70.08%	(9)	(9.18%)	(38)	(29.92%)	30	30.93%
	<u>8,759</u>	<u>7,748</u>	<u>10,987</u>	<u>11,595</u>	<u>79.72%</u>	<u>75.54%</u>	<u>1,011</u>	<u>13.05%</u>	<u>(2,836)</u>	<u>(24.46%)</u>	<u>608</u>	<u>5.53%</u>
Operating expenditures												
Stormwater collection	3,424	3,259	5,281	5,037	64.84%	67.98%	165	5.06%	(1,613)	(32.02%)	(244)	(4.62%)
Engineering and technology services	1,576	1,101	2,165	2,178	72.79%	72.36%	475	43.14%	(602)	(27.64%)	13	0.60%
Regulatory services	990	1,128	1,727	1,639	57.32%	60.40%	(138)	(12.23%)	(649)	(39.60%)	(88)	(5.10%)
Customer services	138	201	203	186	67.98%	74.19%	(63)	(31.34%)	(48)	(25.81%)	(17)	(8.37%)
Corporate services	107	152	146	155	73.29%	69.03%	(45)	(29.61%)	(48)	(30.97%)	9	6.16%
Administration services	185	189	287	287	64.46%	64.46%	(4)	(2.12%)	(102)	(35.54%)	0	0.00%
Depreciation and amortization	1,866	1,732	2,588	2,593	72.10%	71.96%	134	7.74%	(727)	(28.04%)	5	0.19%
	<u>8,286</u>	<u>7,762</u>	<u>12,397</u>	<u>12,075</u>	<u>66.84%</u>	<u>68.62%</u>	<u>524</u>	<u>6.75%</u>	<u>(3,789)</u>	<u>(31.38%)</u>	<u>(322)</u>	<u>(2.60%)</u>
Earnings from operations before financial and other revenues and expenditures	<u>473</u>	<u>(14)</u>	<u>(1,410)</u>	<u>(480)</u>	<u>(33.55%)</u>	<u>(98.54%)</u>	<u>487</u>	<u>(3478.57%)</u>	<u>953</u>	<u>(198.54%)</u>	<u>930</u>	<u>(65.96%)</u>
Financial and other revenues												
Interest	(40)	14	12	(45)	(333.33%)	88.89%	(54)	(385.71%)	5	(11.11%)	(57)	(475.00%)
	<u>(40)</u>	<u>14</u>	<u>12</u>	<u>(45)</u>	<u>(333.33%)</u>	<u>88.89%</u>	<u>(54)</u>	<u>(385.71%)</u>	<u>5</u>	<u>(11.11%)</u>	<u>(57)</u>	<u>(475.00%)</u>
Financial and other expenditures												
Interest on long term debt	567	554	723	751	78.42%	75.50%	13	2.35%	(184)	(24.50%)	28	3.87%
Repayment on long term debt	1,610	1,547	2,148	2,148	74.95%	74.95%	63	4.07%	(538)	(25.05%)	0	0.00%
Amortization of debt discount	18	16	22	24	81.82%	75.00%	2	12.50%	(6)	(25.00%)	2	9.09%
Dividend/grant in lieu of taxes	103	102	149	138	69.13%	74.64%	1	0.98%	(35)	(25.36%)	(11)	(7.38%)
	<u>2,298</u>	<u>2,219</u>	<u>3,042</u>	<u>3,061</u>	<u>75.54%</u>	<u>75.07%</u>	<u>79</u>	<u>3.56%</u>	<u>(763)</u>	<u>(24.93%)</u>	<u>19</u>	<u>0.62%</u>
Loss for the year	<u>\$ (1,865)</u>	<u>\$ (2,219)</u>	<u>\$ (4,440)</u>	<u>\$ (3,586)</u>	<u>42.00%</u>	<u>52.01%</u>	<u>\$ 354</u>	<u>(15.95%)</u>	<u>\$ 1,721</u>	<u>(47.99%)</u>	<u>\$ 854</u>	<u>(19.23%)</u>

HALIFAX WATER
 UNAUDITED STATEMENT OF EARNINGS - REGULATED AND UNREGULATED ACTIVITIES - NSUARB
 APRIL 1, 2022 - DECEMBER 31, 2022 (9 MONTHS)
 ACTUAL YEAR TO DATE COMPLETE: 75.00%

	ACTUAL YEAR TO DATE		APR 1/22 MAR 31/23	APR 1/22 MAR 31/23	ACTUAL YEAR TO DATE	ACTUAL YEAR TO DATE	From Prior Year		Actual to Forecast		Budget to Forecast	
	THIS YEAR	LAST YEAR	BUDGET	FORECAST	as % of BUDGET	as % of FORECAST	\$ Change	% Change	\$ Remaining	% Remaining	\$ Change	% Change
	'000	'000	'000	'000								
REGULATED ACTIVITIES												
Operating revenues												
Water	\$ 37,062	\$ 36,636	\$ 48,770	\$ 49,349	75.99%	75.10%	\$ 426	1.16%	\$ (12,287)	(24.90%)	\$ 579	1.19%
Wastewater	61,938	61,474	81,607	83,138	75.90%	74.50%	464	0.75%	(21,200)	(25.50%)	1,531	1.88%
Stormwater	8,594	7,595	10,786	11,356	79.68%	75.68%	999	13.15%	(2,762)	(24.32%)	570	5.28%
Public fire protection	5,767	5,721	7,628	7,725	75.60%	74.65%	46	0.80%	(1,958)	(25.35%)	97	1.27%
Private fire protection	1,002	940	1,335	1,402	75.06%	71.47%	62	6.60%	(400)	(28.53%)	67	5.02%
Miscellaneous	1,162	1,161	1,559	1,518	74.53%	76.55%	1	0.09%	(356)	(23.45%)	(41)	(2.63%)
	115,525	113,527	151,685	154,488	76.16%	74.78%	1,998	1.76%	(38,963)	(25.22%)	2,803	1.85%
Operating expenditures												
Water supply and treatment	8,187	7,590	11,214	12,149	73.01%	67.39%	597	7.87%	(3,962)	(32.61%)	935	8.34%
Water transmission and distribution	8,462	8,054	12,441	11,473	68.02%	73.76%	408	5.07%	(3,011)	(26.24%)	(968)	(7.78%)
Wastewater collection	10,025	9,520	13,014	13,095	77.03%	76.56%	505	5.30%	(3,070)	(23.44%)	81	0.62%
Stormwater collection	3,424	3,259	5,281	5,037	64.84%	67.98%	165	5.06%	(1,613)	(32.02%)	(244)	(4.62%)
Wastewater treatment	16,528	15,343	22,681	22,854	72.87%	72.32%	1,185	7.72%	(6,326)	(27.68%)	173	0.76%
Engineering and technology services	10,717	10,227	13,941	14,025	76.87%	76.41%	490	4.79%	(3,308)	(23.59%)	84	0.60%
Regulatory services	3,377	3,198	4,866	4,532	69.40%	74.51%	179	5.60%	(1,155)	(25.49%)	(334)	(6.86%)
Customer services	3,284	3,513	4,804	4,441	68.36%	73.95%	(229)	(6.52%)	(1,157)	(26.05%)	(363)	(7.56%)
Corporate services	2,274	2,037	2,957	3,155	76.90%	72.08%	237	11.63%	(881)	(27.92%)	198	6.70%
Administration services	3,510	2,807	5,725	5,725	61.31%	61.31%	703	25.04%	(2,215)	(38.69%)	0	0.00%
Depreciation and amortization	22,556	21,712	30,834	31,070	73.15%	72.60%	844	3.89%	(8,514)	(27.40%)	236	0.77%
	92,344	87,260	127,758	127,556	72.28%	72.39%	5,084	5.83%	(35,212)	(27.61%)	(202)	(0.16%)
Earnings from operations before financial and other revenues and expenditures	23,181	26,267	23,927	26,932	96.88%	86.07%	(3,086)	(11.75%)	(3,751)	(13.93%)	3,005	12.56%
Financial and other revenues												
Interest	321	129	105	378	305.71%	84.92%	192	148.84%	(57)	(15.08%)	273	260.00%
Other	28	(8)	5	(5)	560.00%	(560.00%)	36	(450.00%)	33	(660.00%)	(10)	(200.00%)
	349	121	110	373	317.27%	93.57%	228	188.43%	(24)	(6.43%)	263	239.09%
Financial and other expenditures												
Interest on long term debt	5,213	5,334	6,668	6,779	78.18%	76.90%	(121)	(2.27%)	(1,566)	(23.10%)	111	1.66%
Repayment on long term debt	17,148	16,160	21,846	21,846	78.49%	78.49%	988	6.11%	(4,698)	(21.51%)	0	0.00%
Amortization of debt discount	174	171	233	223	74.68%	78.03%	3	1.75%	(49)	(21.97%)	(10)	(4.29%)
Dividend/grant in lieu of taxes	4,893	4,970	6,803	6,524	71.92%	75.00%	(77)	(1.55%)	(1,631)	(25.00%)	(279)	(4.10%)
	27,428	26,635	35,550	35,372	77.15%	77.54%	793	2.98%	(7,944)	(22.46%)	(178)	(0.50%)
Earnings (loss) for the year - Regulated	\$ (3,898)	\$ (247)	\$ (11,513)	\$ (8,067)	33.86%	48.32%	\$ (3,651)	1478.14%	\$ 4,169	(51.68%)	\$ 3,446	(29.93%)

HALIFAX WATER
 UNAUDITED STATEMENT OF EARNINGS - REGULATED AND UNREGULATED ACTIVITIES - NSUARB
 APRIL 1, 2022 - DECEMBER 31, 2022 (9 MONTHS)
 ACTUAL YEAR TO DATE COMPLETE: 75.00%

	ACTUAL YEAR TO DATE		APR 1/22 MAR 31/23	APR 1/22 MAR 31/23	ACTUAL YEAR TO DATE	ACTUAL YEAR TO DATE	From Prior Year		Actual to Forecast		Budget to Forecast	
	THIS YEAR	LAST YEAR	BUDGET	FORECAST	as % of BUDGET	as % of FORECAST	\$ Change	% Change	\$ Remaining	% Remaining	\$ Change	% Change
	'000	'000	'000	'000								
UNREGULATED ACTIVITIES												
Operating revenues												
Septage tipping fees	\$ 502	\$ 397	\$ 475	\$ 645	105.68%	77.83%	\$ 105	26.45%	\$ (143)	(22.17%)	\$ 170	35.79%
Leachate and other contract revenue	331	346	491	461	67.41%	71.80%	(15)	(4.34%)	(130)	(28.20%)	(30)	(6.11%)
Airplane effluent	39	3	76	90	51.32%	43.33%	36	1200.00%	(51)	(56.67%)	14	18.42%
Miscellaneous	29	28	38	38	76.32%	76.32%	1	3.57%	(9)	(23.68%)	0	0.00%
	<u>901</u>	<u>774</u>	<u>1,080</u>	<u>1,234</u>	<u>83.43%</u>	<u>73.01%</u>	<u>127</u>	<u>16.41%</u>	<u>(333)</u>	<u>(26.99%)</u>	<u>154</u>	<u>14.26%</u>
Operating expenditures												
Water supply and treatment	20	30	32	32	62.50%	62.50%	(10)	(33.33%)	(12)	(37.50%)	0	0.00%
Wastewater treatment	569	527	714	714	79.69%	79.69%	42	7.97%	(145)	(20.31%)	0	0.00%
Wastewater collection	44	15	82	82	53.66%	53.66%	29	193.33%	(38)	(46.34%)	0	0.00%
Sponsorships and donations	66	5	73	73	90.41%	90.41%	61	1220.00%	(7)	(9.59%)	0	0.00%
Corporate services	13	13	13	13	100.00%	100.00%	0	0.00%	0	0.00%	0	0.00%
Administration services	84	84	97	97	86.60%	86.60%	0	0.00%	(13)	(13.40%)	0	0.00%
Depreciation and amortization	13	13	18	18	72.22%	72.22%	0	0.00%	(5)	(27.78%)	0	0.00%
	<u>809</u>	<u>687</u>	<u>1,029</u>	<u>1,029</u>	<u>78.62%</u>	<u>78.62%</u>	<u>122</u>	<u>17.76%</u>	<u>(220)</u>	<u>(21.38%)</u>	<u>0</u>	<u>0.00%</u>
Earnings from operations before financial and other revenues and expenditures	<u>92</u>	<u>87</u>	<u>51</u>	<u>205</u>	<u>180.39%</u>	<u>44.88%</u>	<u>5</u>	<u>5.75%</u>	<u>(113)</u>	<u>(55.12%)</u>	<u>154</u>	<u>301.96%</u>
Financial and other revenues												
Other - leases and rentals	504	301	363	647	138.84%	77.90%	203	67.44%	(143)	(22.10%)	284	78.24%
Other - energy projects	161	159	260	225	61.92%	71.56%	2	1.26%	(64)	(28.44%)	(35)	(13.46%)
	<u>665</u>	<u>460</u>	<u>623</u>	<u>872</u>	<u>106.74%</u>	<u>76.26%</u>	<u>205</u>	<u>44.57%</u>	<u>(207)</u>	<u>(23.74%)</u>	<u>249</u>	<u>39.97%</u>
Financial and other expenditures												
Other	98	167	46	141	213.04%	69.50%	(69)	(41.32%)	(43)	(30.50%)	95	206.52%
	<u>98</u>	<u>167</u>	<u>46</u>	<u>141</u>	<u>213.04%</u>	<u>69.50%</u>	<u>(69)</u>	<u>(41.32%)</u>	<u>(43)</u>	<u>(30.50%)</u>	<u>95</u>	<u>206.52%</u>
Earnings for the year - Unregulated	<u>\$ 659</u>	<u>\$ 380</u>	<u>\$ 628</u>	<u>\$ 936</u>	<u>104.94%</u>	<u>70.41%</u>	<u>\$ 279</u>	<u>73.42%</u>	<u>\$ (277)</u>	<u>(29.59%)</u>	<u>\$ 308</u>	<u>49.04%</u>
Total earnings (loss) for the year (Regulated and Unregulated)	<u>\$ (3,239)</u>	<u>\$ 133</u>	<u>\$ (10,885)</u>	<u>\$ (7,131)</u>	<u>29.76%</u>	<u>45.42%</u>	<u>\$ (3,372)</u>	<u>(2535.34%)</u>	<u>\$ 3,892</u>	<u>(54.58%)</u>	<u>\$ 3,754</u>	<u>(34.49%)</u>

TO: Colleen Rollings, P.Eng., PMP., Chair and Members of the Halifax Regional Water Commission Board

SUBMITTED BY:



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Reid Campbell, P. Eng., Director, Engineering & Technology Services

APPROVED:



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de Montbrun
Date: 2023.01.20
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Louis de Montbrun, CPA, CA, Acting General Manager/CEO

DATE: January 16, 2023

SUBJECT: **Proposed 2023/24 Capital Budget**

ORIGIN

Staff compilation of the annual Capital Budget.

RECOMMENDATION

It is recommended that the Halifax Regional Water Commission Board approve the proposed 2023/24 Capital Budget at a total value of \$146,692,000 as detailed in the attached Schedule 1.

BACKGROUND

Halifax Water's 2019 Integrated Resource Plan (IRP) identifies a 30-year capital investment plan valued at \$4.05 billion (\$2.69 billion net present value). With the IRP as a base, the Capital Budget program is developed to meet the infrastructure requirements for the asset renewal, regulatory compliance, and growth drivers.

The capital program helps ensure that the utility continues to provide services in a cost effective and efficient manner with a focus on long-term sustainability.

DISCUSSION

Attached, in Schedule 1, is the proposed Capital Budget for Halifax Water for the fiscal year April 1, 2023 to March 31, 2024. It includes projects for Water, Wastewater, and Stormwater service delivery with a total value of \$146,692,000.

The Capital Budget document reflects the vision of the updated 2019 IRP. This 30-year plan provides a strong vision for the infrastructure requirements needed to ensure the long-term integrity of the utility's assets. The 2023/24 Capital Budget includes many projects from the IRP that will begin to shape the overall direction of the capital plan in future years. The primary driver of the 23/24 Capital Budget is asset renewal at 74.2%, and projects related to growth and compliance are 11.4% and 14.4% respectively.

In developing the capital budget for 2023/24, Halifax Water staff have strived to reflect a budget that can reasonably be delivered and the requirement to deliver the IRP.

To deliver the IRP, staff has identified that the following are required: a) revised business processes – specifically greater asset management and project planning capability – so that the right projects are brought forward and delivered in a time frame consistent with Halifax Water capability and the budgeted timelines; and b) an increase in staff in capital project delivery.

For the 2022/23 fiscal year, Halifax Water staff has focused on the following activities to increase capital delivery capabilities:

- Recruitment of additional engineering staff with a goal of adding 8 engineering FTEs in the fiscal year.
- Realignment of the engineering department from structure based on capital budgets for each service to one based on developing capability in asset management, project planning and project delivery. The realignment is in progress and planned to take effect on March 1.
- Completion of an institutional capacity study that will be undertaken early in 2023 to determine the required level of staffing to deliver the IRP, while provision is made in the 2023/24 operating budget to add additional engineering staff, if necessary, to undertake key planned activities.

Accordingly, this year's proposed capital budget reflects a recognition of increasing capacity and developing additional capability to better plan and deliver projects. It also reflects that there are several large projects and programs that have been in planning phases and in this fiscal year will begin to require greater spending as projects move to the construction phase. This includes projects and programs such as the Burnside Operations Centre, the Water Supply Enhancement Program (WSEP), the Cogswell Interchange Infrastructure, and the Biosolids Processing Facility. The budget also reflects that in the last two years, the number of active projects, the monthly capital spending level, and total amount of capital expenditure have increased.

Halifax Water staff have begun to see early improvements from the improved emphasis on planning and capital project delivery practice. Notwithstanding, there is some risk that the proposed budget will not be met. Factors that may influence this include:

- Difficulty in recruiting additional staff.
- Issues related to the transition to the new organization structure.
- Anticipated large projects coming to construction later than planned due to challenges with:
 - Procurement
 - Land acquisition
 - Permitting.
- HRM choosing not to move certain integrated or interdependent projects forward.
- Projects that may be deferred or cancelled due to supply chain issues or volatile construction pricing.

If resource challenges constrain delivery, resources will be dedicated to projects based on the following:

- Projects critical to maintenance of service or regulatory compliance.
- NSUARB mandated activities.
- Maintaining progress on significant projects and programs.

The Capital Budget funds traditional capital requirements for utility operation, along with a focus on several key strategic initiatives. The following sections provide highlighted details of the Capital Budget by asset category (major capital projects over \$1 million).

The value of the Water Capital Budget for 2023/24 is \$62,217,000 and the major projects include:

- Water Distribution – Main Renewal Program
- Lead Service Line Replacement Program
- Water Supply Enhancement Program
- Hwy 118 Crossing – Shubie Park to Dartmouth Crossing
- Bedford-Burnside Transmission Main
- Aerotech Booster Station Replacement
- HRM Cogswell Redevelopment – Water Transmission Main Relocation

The value of the Wastewater Capital Budget for 2023/24 is \$73,827,600 and the major projects include:

- Wastewater System – Trenchless Rehabilitation Program
- Integrated Wastewater Collection Projects
- Bissett PS Upgrade
- Wastewater Lateral Replacements

- Bayers Road Phase 1 Sewer Separation
- Mill Cove RDII Reduction Program – FMZ07 & FMZ40
- 390 Waverley Road Forcemain Upgrades
- Main Street Pumping Station (Golf View Drive) Upgrade
- Quigley Corner Pumping Station Upgrade
- Autoport Pleasant Street Pumping Station Replacement
- Halifax WWTF – UV Disinfection System – New Modules and PLC Upgrades
- Mill Cove WWTF Upgrades
- Biosolids Processing Facility Upgrade
- HRM Cogswell Redevelopment – Wastewater Sewer Relocation

The value of the Stormwater Capital Budget for 2023/24 is \$10,647,400 and the major projects include:

- Integrated Stormwater Collection Projects
- Driveway and Cross Culvert Renewal Program
- HRM Cogswell Redevelopment – Storm Sewer Relocation

The value of the Corporate Capital Budget for 2023/24 is allocated across the three core asset systems (water, wastewater, and stormwater). The major projects include:

- DA3 (Data, Analytics, Automation and Artificial Intelligence) Program and Project
- Corporate Flow Monitoring Program
- Burnside Operations Centre
- Fleet Upgrade Program
- Infrastructure Master Plan

BUDGET IMPLICATIONS

The funding plan for the proposed 2023/24 Capital Budget is shown below:

2023/24 Capital Budget Funding Sources		
Water:	Depreciation	\$13,293,000
	Debt	\$39,790,000
	Regional Development Charge	\$4,593,000
	External Funding	\$4,541,000
	Capital Cost Contributions	\$0
	SUB-TOTAL	\$62,217,000
Wastewater:	Depreciation	\$17,835,000
	Debt	\$36,089,600
	Regional Development Charge	\$11,983,000
	External Funding	\$3,795,000
	Capital Cost Contributions	\$4,125,000
	SUB-TOTAL	\$73,827,600
Stormwater:	Depreciation	\$2,572,000
	Debt	\$7,558,400
	Regional Development Charge	\$150,000
	External Funding	\$367,000
	Capital Cost Contributions	\$0
	SUB-TOTAL	\$10,647,400
TOTAL CAPITAL FUNDING:		\$146,692,000

1. Funding for Corporate Projects is allocated to the core asset systems (water, wastewater, stormwater).

The capital budget of \$146.7 million aligns closely with the projected capital expenditure in the approved 5-Year Business Plan of \$147.2 million. The proposed capital budget is also \$23.5 million more than the corresponding year identified in the IRP. The current capital budget considers timing changes of several large projects, last year's reduced capital budget, and a deliberate decision to begin increasing capital spend while the utility is increasing staff for the capital delivery teams. It also considers that several major projects have been proceeding with project planning and design and are expected to move to the construction phase and see significant cost expenditures.

The projected annual impact of the 2023/24 Capital Budget on future years' Operating Budgets is estimated to be \$4.6 million in depreciation, \$2.8 million in debt principal payments and \$3.4 million in declining interest payments assuming an interest rate of 4.05% and 30-year term. There will be other incremental impacts to operating expenses resulting from these capital projects; however, the most material impacts are debt servicing and depreciation.

ATTACHMENTS

Attachment 1 – 2023/2024 1 Year Capital Budget
Attachment 2 – 2023/2024 Capital Budget Presentation
Attachment 3 – 2023/2024 Projects Over \$1M


Report Prepared by:



Valerie Williams, P. Eng.
Senior Manager, Asset Management & Capital Planning

Financial Reviewed by:

Alicia
Scallion



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Alicia Scallion, CPA, CA
Acting Director, Corporate Services/CFO

HALIFAX WATER

Capital Budget 2023/24

Summary

Asset Category	Project Costs
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<i>Water - Land -- T O T A L</i>	\$125,000
<i>Water - Transmission -- T O T A L</i>	\$17,935,000
<i>Water - Distribution -- T O T A L</i>	\$9,900,000
<i>Water - Structures -- T O T A L</i>	\$8,640,000
<i>Water - Treatment Facilities -- T O T A L</i>	\$13,980,000
<i>Water - Energy -- T O T A L</i>	\$200,000
<i>Water - Security -- T O T A L</i>	\$75,000
<i>Water - Equipment -- T O T A L</i>	\$310,000
<i>Water - Corporate Projects - T O T A L</i>	\$11,052,000
TOTAL - Water	\$62,217,000

<i>Wastewater - Collection System -- T O T A L</i>	\$17,940,000
<i>Wastewater - Forcemains -- T O T A L</i>	\$6,850,000
<i>Wastewater Structures -- T O T A L</i>	\$13,825,000
<i>Wastewater - Treatment Facility -- T O T A L</i>	\$21,255,000
<i>Wastewater - Energy -- T O T A L</i>	\$600,000
<i>Wastewater - Security -- T O T A L</i>	\$50,000
<i>Wastewater - Equipment -- T O T A L</i>	\$1,292,000
<i>Wastewater - Corporate Projects -- T O T A L</i>	\$12,015,600
TOTAL - Wastewater	\$73,827,600

HALIFAX WATER
Capital Budget 2023/24

Summary

Asset Category	Project Costs
-----------------------	----------------------

<i>Stormwater - Pipes -- T O T A L</i>	\$5,291,000
<i>Stormwater - Culverts -- T O T A L</i>	\$2,465,000
<i>Stormwater - Corporate Projects -- T O T A L</i>	\$2,891,400
TOTAL - Stormwater	\$10,647,400

<i>G R A N D T O T A L</i>	\$146,692,000
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HALIFAX WATER
Capital Budget 2023/24
Water

Project Number	Project Name	Project Cost
<u>Water - Land</u>		
3.033	Watershed Land Acquisition	\$125,000
<u>Water - Land -- T O T A L</u>		\$125,000
<u>Water - Transmission</u>		
3.042	Critical Valve Replacement Program	\$250,000
3.587	Prince Albert Road Transmission Main / PRV Replacement	\$150,000
3.722	Cowie Reservoir Control Chamber - Pipework Optimization Study	\$75,000
3.571	Highway 118 Crossing - Shubie Park to Dartmouth Crossing	\$8,000,000
3.553	Peninsula Intermediate Looping - Quinpool Road to Young St (Windsor St 2023) ***	\$500,000
3.399	Cogswell Interchange - Water Transmission Main Realignment	\$2,560,000
3.658	Bedford to Burnside Transmission Main Phase 1 Remainder of TM Pipework	\$5,700,000
3.653	Bedford to Burnside Transmission Main Phase 3 - Rock Trench Preparations	\$640,000
3.232	MacIntosh Run Estates -Transmission Main Oversizing	\$60,000
<u>Water - Transmission -- T O T A L</u>		\$17,935,000
<u>Water - Distribution</u>		
3.022	Water Distribution - Main Renewal Program	\$6,200,000
3.067	~ Valves Renewals	\$200,000
3.068	~ Hydrants Renewals	\$75,000
3.069	~ Service Lines Renewals	\$100,000
3.39	Lead Service Line Replacement Program	\$2,000,000
3.738	Water Quality Lab Infrastructure	\$40,000
3.296	Water Sampling Station Relocation Program	\$40,000
3.294	Automated Flushing Program	\$30,000
3.696	Tower Road CN Bridge - Watermain Replacement	\$60,000
3.697	Herring Cove Road Watermain Renewal - HRM Integrated Project	\$120,000
3.699	Raymond St / Lakecrest Drive Storm Sewer Replacement - Watermain	\$150,000
3.704	Windsor Street Exchange Redevelopment - Water Infrastructure	\$170,000
3.735	Cathedral Lane Sewer Separation - Watermain Replacement	\$415,000
3.578	New Woodside Industrial Park Feed ***	\$300,000
<u>Water - Distribution -- T O T A L</u>		\$9,900,000
<u>Water - Structures</u>		
3.601	Control Chamber Valve Replacement Program	\$125,000
3.602	Control Chamber - Electrical Panel Replacement Program	\$60,000
3.263	District Metered Areas (DMA) Program	\$125,000
3.455	Reservoir Mixing and Residuals Management Upgrade Program	\$150,000
3.623	Booster Station - Building Envelope - Capital Upgrade Program	\$30,000
3.606	Highway #7 Booster Station - Fire Pump Replacement	\$600,000
3.698	Robie Control Chamber Upgrades	\$400,000
3.700	Robie Emergency Pump Station - Pump Upgrade	\$150,000
3.705	Esson Road PRV Replacement	\$615,000
3.706	Mount Edward Control Chamber - CSE Retrofit	\$20,000
3.707	Albro Lake PRV - CSE Retrofit	\$100,000
3.708	Gordon Avenue PRV Chamber - CSE Retrofit	\$135,000
3.709	White Hills Meter Chamber Replacement	\$25,000
3.713	Waverley Control Chamber - CSE Retrofit	\$115,000
3.712	Mount Edward Reservoir #1 Replacement	\$200,000
3.701	Leaman Dr. Emergency Booster Station	\$200,000
3.714	North Preston Reservoir Building Replacement	\$60,000
3.716	Robie Reservoir Gatehouse - Inlet Outlet Control Upgrades	\$230,000
3.717	Geizer 158 Dump Valve Chamber - Control Valve Replacement	\$50,000
3.718	Hollis St Meter Replacement	\$20,000
3.666	Lake Major Dam - Little Salmon River - DFO Offsetting Requirements	\$410,000
3.719	Geizer 158 - New Reservoir	\$400,000
3.664	Robie 2 PRV Chamber Valve Replacement	\$50,000
3.477	Aerotech Boosted System - Capital Upgrades	\$550,000
3.589	Aerotech Booster Station Replacement	\$1,800,000
3.508	Beaver Bank Reservoir Rehabilitation	\$800,000
3.641	Dam Safety Review - Chain Lake Dam - Capital Work	\$750,000
3.642	Dam Safety Review - Pockwock Lake Dam - Capital Work	\$320,000
3.580	Lyle Emergency Booster Upgrades	\$150,000
<u>Water - Structures -- T O T A L</u>		\$8,640,000

HALIFAX WATER
Capital Budget 2023/24
Water

Project Number	Project Name	Project Cost
<u>Water - Treatment Facilities</u>		
J D Kline Water Supply Plant:		
3.604	JD Kline WSP - Pretreatment and Clarification - WSEP JDK-800.10	\$5,733,000
3.608	JD Kline WSP - Clearwell, reservoir and storage - WSEP JDK-800.25	\$1,557,000
3.611	JD Kline WSP - Backwash and Service Water Pumping Upgrade - WSEP JDK-800.50	\$842,000
3.617	JD Kline WSP - Advanced Treatment for Taste, Odour and Algae - WSEP JDK-800.80	\$191,000
3.680	JD Kline WSP - Lime System Renewal	\$630,000
3.720	JD Kline WSP - Caustic Tank Pipework Improvement and Containment Liner Rehab	\$50,000
3.721	JD Kline WSP - Upgrade Sludge Beds	\$50,000
Lake Major Water Supply Plant:		
3.618	Lake Major WSP - Clarification/Pretreatment - WSEP MAJ 800.15	\$928,000
3.619	Lake Major WSP - Intake/low lift Pump Station - WSEP MAJ-800.20	\$446,000
3.622	Lake Major WSP - Advanced treatment for Taste, Odour and Algae control - WSEP MAJ-800.85	\$183,000
3.321	Lake Major WSP - Replace Fluoride Tank and Piping	\$585,000
3.723	Lake Major WSP - Low Lift Station - Ventilation Upgrade	\$40,000
3.725	Lake Major WSP - Residuals Handling Area - Resiliency Upgrades	\$100,000
3.724	Lake Major WSP - Maintenance Area - Ventilation and HVAC Upgrades	\$75,000
3.736	Lake Major WSP - Roof Replacement	\$1,120,000
Bennery Lake Water Supply Plant:		
3.692	Bennery Lake WSP - Lagoon Maintenance Study and Improvements	\$300,000
3.489	Bennery Lake WSP - Manganese Removal Strategy	\$100,000
3.726	Bennery Lake WSP - Replace Polymer Mixing Tanks	\$10,000
3.727	Bennery Lake WSP - Driveway and Yard Drainage Upgrades	\$30,000
3.728	Bennery Lake WSP - Control Room Upgrades	\$40,000
Non-Urban Core WSP		
3.729	Small Systems - Replace Compressors at Middle Musquodoboit WSP and Collins Pak WSP	\$20,000
3.730	Small Systems - UV Replacement Program - Middle Musquodoboit WSP Collins Park WSP	\$100,000
3.731	Small Systems - Filter Column Replacement Program	\$10,000
3.732	Small Systems - Middle Musquodoboit WSP and Collins Park WSP - Power Flux VFD Modules	\$50,000
3.733	Install Boat Launch at JD Kline	\$65,000
3.734	Install Boat Launch at Collins Park WTP	\$60,000
3.737	Purchase new Emergency portable generator for Small Systems (Collins Park/Mid-Musquodoboit)	\$150,000
3.690	WSP Plants - Instrumentation and Controls Equipment Program	\$100,000
3.691	Pump and Equipment Overhauls Program for WSPs	\$250,000
3.739	Receiving Environment Assessment - Collins Park, Middle Musquodoboit, Lake Major	\$100,000
3.740	Receiving Environment Assessment - Bomont	\$25,000
3.741	Pockwock Water Withdrawal	\$40,000
<u>Water - Treatment Facilities -- T O T A L</u>		\$13,980,000
<u>Water - Energy</u>		
3.635	Energy Management Capital Program (Water)	\$100,000
3.107	Chamber HVAC Retro-Commissioning Program	\$100,000
<u>Water - Energy -- T O T A L</u>		\$200,000
<u>Water - Security</u>		
4.009	Security Upgrade Program (W)	\$75,000
<u>Water - Security -- T O T A L</u>		\$75,000
<u>Water - Equipment</u>		
3.101	Miscellaneous Equipment Replacement (Water)	\$60,000
	North Preston Meters	\$250,000
<u>Water - Equipment -- T O T A L</u>		\$310,000
<u>Water - Corporate Projects - T O T A L</u>		\$11,052,000
<u>GRAND TOTAL - WATER</u>		\$62,217,000

HALIFAX WATER
Capital Budget 2023/24
Wastewater

Project Number	Project Name	Project Cost
<u>Wastewater - Collection System</u>		
2.168	Wastewater System - Trenchless Rehabilitation Program	\$2,500,000
2.839	Eastern Passage Gravity Pressure Sewer	\$700,000
2.103	Herring Cove Road Wastewater Stormwater Renewal - HRM Integrated Project	\$120,000
2.103	Winston Drive Sewer Main Repair	\$95,000
2.357	Manhole Renewals WW	\$60,000
2.358	Lateral Replacements WW (non-tree roots)	\$1,820,000
2.563	Lateral Replacements WW (tree roots)	\$585,000
2.223	Wet Weather Management Program	\$350,000
2.074	Bedford West Collection System CCC	\$25,000
2.052	Integrated Wastewater Projects - Program	\$2,500,000
2.905	Windsor Street Exchange	\$150,000
2.692	Cogswell Redevelopment - Sewer Relocation	\$2,580,000
2.939	York's Lane PS Elimination	\$350,000
2.675	Bayers Road Phase 1 - Sewer Separation	\$1,200,000
2.674	South Park Street - Sewer Separation	\$350,000
2.982	Young Street Pocket - Sewer Separation - Route to Harbour	\$500,000
2.830	Eastern Passage RDII Reduction Program FMZ24 - Lake Loon	\$805,000
2.831	Eastern Passage RDII Reduction Program FMZ37 - Eastern Passage	\$250,000
2.832	Mill Cove RDII Reduction Program FMZ07 & FMZ40 - Lower Sackville	\$3,000,000
<u>Wastewater - Collection System -- T O T A L</u>		\$17,940,000
<u>Wastewater - Force mains</u>		
2.993	Dingle FM Replacement & Twinning	\$850,000
2.945	390 Waverley Road Force main Upgrades	\$5,500,000
2.823	Akerley Blvd Force main Replacement	\$500,000
<u>Wastewater - Force mains -- T O T A L</u>		\$6,850,000
<u>Wastewater - Structures</u>		
2.420	Emergency Pumping Station Pump Replacements	\$300,000
2.442	Wastewater Pumping Station Component Replacement Program - West Region	\$200,000
2.443	Wastewater Pumping Station Component Replacement Program - East Region	\$200,000
2.444	Wastewater Pumping Station Component Replacement Program - Central Region	\$275,000
2.1014	Main Street Pumping Station (Golf View Drive) Upgrade	\$1,350,000
2.66	Bissett PS Component Upgrade	\$2,650,000
2.665	CSO Upgrade Program	\$300,000
2.1004	Pier A Pumping Station VFD Replacement	\$150,000
2.1030	Duffus Street Pumping Station - Mechanical & Electrical Upgrades	\$300,000
2.821	Duffus Street PS Flow Meter Replacement	\$520,000
2.1031	Electrical & Controls Assessment - Wastewater Structures	\$100,000
2.1037	Valleyford Holding Tank - Retaining Wall Replacement	\$70,000
2.846	Quigley Corner Pumping Station Upgrade	\$4,000,000
2.654	PS Control Panel / Electrical Replacement	\$860,000
2.005	Autoport Pleasant Street PS Replacement	\$2,550,000
<u>Wastewater Structures -- T O T A L</u>		\$13,825,000

HALIFAX WATER
Capital Budget 2023/24
Wastewater

Project Number	Project Name	Project Cost
<u>Wastewater - Treatment Facility</u>		
2.056	Plant Optimization Program	\$125,000
2.522	Emergency Wastewater Treatment Facility equipment replacements	\$550,000
2.668	Wastewater Treatment Research Program Pilot Plant	\$100,000
2.1023	HHSPs - Critical Spares	\$250,000
Halifax WWTF		
2.765	Halifax WWTF - Raw Water Pump Refurbishment	\$60,000
2.774	Halifax WWTF - UV Disinfection System - New Modules and PLC Upgrade	\$1,000,000
2.1024	Halifax WWTF - Replace Garage Bay Doors	\$125,000
2.552	Halifax WWTF - MCC Ventilation Upgrades	\$50,000
2.1025	Halifax WWTF - Coarse Screen Room - Regrade Floor Inside Berm	\$50,000
2.1026	Halifax WWTF - Replace Alum Fill Tank Piping	\$50,000
2.103	Halifax WWTF - Replace Hypo Fill Line	\$75,000
Dartmouth WWTF		
2.876	Dartmouth WWTF - Raw Water Pump Refurbishment Program	\$30,000
2.788	Dartmouth WWTF - UV Disinfection System - New Modules and PLC Upgrade	\$775,000
NEW	Dartmouth WWTF - Replace Workshop Bay Door	\$30,000
NEW	Dartmouth WWTF - OCS Damper Actuators	\$50,000
NEW	Dartmouth WWTF - Repair Exterior Door Thresholds	\$25,000
NEW	Dartmouth WWTF - OCS - Carbon Cannister Replacements	\$200,000
NEW	Dartmouth WWTF - Instrumentation Sensors	\$65,000
NEW	Dartmouth WWTF - VFD Replacements	\$100,000
2.871	Dartmouth WWTF - SS Pipe Work Replacement Program	\$200,000
Herring Cove WWTF		
NEW	Herring Cove WWTF - Industrial Water Strainer	\$25,000
NEW	Herring Cove WWTF - Epoxy Coat Floor	\$15,000
NEW	Herring Cove WWTF - Walk Behind Floor Scrubber	\$15,000
NEW	Herring Cove WWTF - Replace Exterior Rear Doors	\$10,000
NEW	Herring Cove WWTF - Roof Replacement	\$500,000
Mill Cove WWTF		
2.903	Mill Cove WWTF - Dewatering - Centrifuge Rebuild Program	\$30,000
2.640	Mill Cove WWTF - Process Upgrades - Preliminary + Detailed Design	\$1,000,000
2.817	Mill Cove WWTF - Plant Upgrade - Design and Contract Admin	\$9,000,000
NEW	Mill Cove WWTF - Pipe Replacement Program	\$250,000
NEW	Mill Cove WWTF - UV AC Unit Replacements	\$25,000
NEW	Mill Cove WWTF - MCC 1 - Replace Ten Buckets	\$150,000
NEW	Mill Cove WWTF - Air Actuated Pumps/Compressors	\$30,000
Eastern Passage WWTF		
2.907	Eastern Passage WWTF - Centrifuge Rebuild	\$50,000
2.908	Eastern Passage WWTF - UV Bank Rebuilds	\$15,000
NEW	Eastern Passage WWTF - VFD Replacements	\$60,000
NEW	Eastern Passage WWTF - Secondary Clarifier Refits	\$150,000
NEW	Eastern Passage WWTF - Centrifuge Rebuild	\$50,000
Aerotech WWTF		
2.913	Aerotech WWTF - Dewatering - Centrifuge Rebuild	\$50,000
2.915	Aerotech WWTF - Lagoon - Building Repairs	\$75,000
NEW	Aerotech WWTF - Aerotech Drive Road Repairs	\$25,000
Timberlea WWTF		
2.509	Timberlea WWTF - Asset Renewal Program	\$150,000
NEW	Timberlea WWTF - RBC Air Scour Blower - VFD Replacement	\$10,000
NEW	Timberlea WWTF - Headworks - Epoxy Floor Coating	\$20,000
NEW	Timberlea WWTF - New Forklift	\$40,000
Community WWTFs		
2.918	Frame WWTF - New Membranes	\$35,000
NEW	Fall River WWTF - Replace Sand Filter Media	\$100,000
Biosolids Processing Facility		
2.737	Biosolids Processing Facility - Scissor Lift Replacement	\$25,000
2.926	Biosolids Processing Facility - Loader Replacement	\$300,000
2.927	Biosolids Processing Facility - LBB #1 Auger Replacement	\$125,000
2.931	Biosolids Processing Facility - Facility Upgrade - RFQ/RFP/Tender/Construction/Commissioning/Assessment	\$5,000,000
2.919	Biosolids Processing Facility - Gas Sensor Upgrade Program	\$15,000
Wastewater - Treatment Facility -- T O T A L		\$21,255,000

HALIFAX WATER
Capital Budget 2023/24
Wastewater

Project Number	Project Name	Project Cost
	<u>Wastewater - Energy</u>	
2.362	Energy Management Capital Program (Wastewater)	\$500,000
2.491	Pump Station HVAC Retro-Commissioning Program	\$100,000
	<i>Wastewater - Energy -- T O T A L</i>	\$600,000
	<u>Wastewater - Security</u>	
4.008	Security Upgrade Program (WW)	\$50,000
	<i>Wastewater - Security -- T O T A L</i>	\$50,000
	<u>Wastewater - Equipment</u>	
2.161	I&I Reduction (SIR) Program Flow Meters and Related Equipment	\$25,000
2.1039	New Bump Station	\$10,000
2.1040	New Pole Camera	\$35,000
2.1041	Two new fridge / sampling units	\$10,000
2.1042	Mobile Bypass Pump	\$215,000
2.451	Miscellaneous Equipment Replacement (WW)	\$120,000
2.1019	Mobile Generator Purchase	\$140,000
2.1020	Lateral Cutter	\$245,000
2.1021	Lateral Lining Equipment	\$320,000
2.1022	Push Camera	\$27,000
2.1029	Wet Well Wizard	\$145,000
	<i>Wastewater - Equipment -- T O T A L</i>	\$1,292,000
	<i>Wastewater - Corporate Projects -- T O T A L</i>	\$12,015,600
	<i>GRAND TOTAL - WASTEWATER</i>	<u>\$73,827,600</u>

HALIFAX WATER
Capital Budget 2023/24
Stormwater

Project Number	Project Name	Project Cost
<u>Stormwater - Pipes</u>		
1.038	Integrated Stormwater Projects - Program	\$1,200,000
1.102	Manhole Renewals SW Program	\$16,000
1.103	Catchbasin Renewals SW Program	\$65,000
1.135	Lateral Replacements SW Program	\$25,000
1.204	National Disaster Mitigation Program	\$50,000
1.145	Sullivan's Pond Storm Sewer System Replacement - Phase 2 Irishtown Rd to Harbour	\$500,000
1.246	Oathill Lake Stormwater System Renewal	\$260,000
1.188	Cogswell Redevelopment - SW Sewer Relocation	\$2,710,000
1.301	Rosedale Stormwater Sewer Renewal	\$100,000
1.302	Willet Street and Sybyl Court Storm System Upgrade - Preliminary Engineering	\$100,000
1.303	Dartmouth Northwest Stormwater Renewal Program - Preliminary Engineering	\$265,000
<u>Stormwater - Pipes -- T O T A L</u>		\$5,291,000
<u>Stormwater - Culverts/Ditches</u>		
1.104	Driveway Culvert Replacement Program	\$1,200,000
1.279	Cross Road Culvert Replacement Program - Field discovery and operations construction	\$100,000
1.288	Cross Road Culvert Replacement Program - Engineering	\$100,000
1.289	Culvert Extension 20 French Mast Lane	\$100,000
1.221	Culvert Replacement - Murray Rd at Caldwell Rd	\$75,000
1.305	Culvert Replacement - Canterbury Lane (Near Civic 2)	\$55,000
1.306	Culvert Replacement - Dolomite Court, near civic 7	\$85,000
1.307	Culvert Replacement - Foster Avenue, near civic 45	\$100,000
1.308	Culvert Replacement - Philip Drive, near civic 196	\$55,000
1.309	Culvert Replacement - Robinson Drive, near civic 77	\$60,000
1.310	Culvert Replacement - Gold Lane, near civic 5	\$70,000
1.290	Culvert Replacement - Grant Line Road, near civic 2	\$60,000
1.311	Culvert Replacement - Lakecrest Drive, near civic 82	\$60,000
1.312	Culvert Replacement - Rising Sun Trail, near civic 4	\$95,000
1.313	Culvert Replacement - Highway 2, near civic 2774	\$55,000
1.316	Culvert Replacement - Glenwood Drive, near civic 120	\$65,000
1.315	Culvert Replacement - Glenwood Drive, near civic 80	\$65,000
1.314	Culvert Replacement - Glenwood Drive, near civic 50	\$65,000
<u>Stormwater - Culverts/Ditches -- T O T A L</u>		\$2,465,000
<u>Stormwater - Corporate Projects -- T O T A L</u>		\$2,891,400
<u>GRAND TOTAL - STORMWATER</u>		\$10,647,400

HALIFAX WATER
Capital Budget 2023/24
Corporate Projects

Project Number	Project Name	Project Cost
<u>Corporate - Information Technology</u>		
4.151	Capital Planning	\$450,000
4.105	Cityworks Upgrade	\$200,000
4.011	Computer Replacement Program	\$400,000
4.206	Cayenta Upgrades	\$200,000
4.255	General IT System Upgrades	\$300,000
4.207	Pension Implementation	\$425,000
4.208	DA3 – Program & Project	\$2,300,000
4.215	EE - Retention, Succession and Attraction I&T Plan	\$250,000
4.216	EE - New AMI Ert Read System - Neptune 360	\$250,000
4.217	EE- Equipment	\$250,000
4.218	EE- ITSM Process	\$250,000
4.219	EE - Electrical Safety Program	\$250,000
4.222	CS - Case Mgmt	\$200,000
4.226	ES - AMI Battery Replacement	\$350,000
4.228	QSC - Enterprise Architecture	\$250,000
4.229	QSC - Detection Equipment CSO-SSO	\$800,000
4.231	QSC - Detection Equipment SCADA Wan Update	\$150,000
4.232	QSC - Strategic Planning Business Cases	\$150,000
4.239	QSC - TS Work Tracking	\$250,000
4.258	Project Process Enhancements	\$250,000
4.259	Health and Safety	\$500,000
4.012	Network Upgrades	\$280,000
4.107	Customer Portal	\$200,000
4.243	Security Awareness (Cyber Awareness)	\$146,000
4.244	Incident Response	\$290,000
4.246	Vulnerability and Patch Management	\$487,000
4.25	Asset and Configuration Management (Asset Management)	\$161,000
4.252	MAG Remediation	\$300,000
4.195	New Service Account Compliance Program	\$200,000
4.189	Central Spread Spectrum Radio Network Replacement Program	\$100,000
4.191	ICS Cyber-Security Enhancements 2022-2023	\$200,000
4.192	PI System Enhancements 2022-2023	\$400,000
4.193	AMI Communications Upgrade 2022/2023	\$200,000
4.19	SCADA Equipment Renewals 2022-2023	\$200,000
Corporate - Information Technology -- T O T A L		\$11,589,000
<u>Corporate - GIS</u>		
4.040	GIS Data Program	\$250,000
4.039	GIS FORMS Project	\$150,000
4.105	GIS/Cityworks Upgrade Program	\$200,000
4.059	GIS Data Model (Utility Network Readiness)	\$250,000
4.155	Stormwater Billing Imagery Acquisition and Analysis	\$250,000
4.01	Service Gap Project	\$250,000
Corporate - GIS -- T O T A L		\$1,350,000

HALIFAX WATER
Capital Budget 2023/24
Corporate Projects

Project Number	Project Name	Project Cost
<u>Corporate - Asset Management</u>		
4.156	Asset Management Program Roadmap Update – Implementation	\$150,000
2.872	Wastewater Sewer Condition Assessment	\$445,000
1.254	Storm Sewer Condition Assessment	\$195,000
2.043	Corporate Flow Monitoring Program	\$1,200,000
4.158	Condition Assessment Program	\$500,000
4.163	Annual Asset Management Plan Update	\$20,000
4.168	Model Enhancements	\$70,000
4.113	Climate Change Management Program	\$200,000
4.169	Infrastructure Master Plan Update	\$1,500,000
4.256	Fairview Stormwater Model	\$75,000
4.257	Halifax Peninsula Combined Sewer Model Verification	\$50,000
Corporate - Asset Management -- T O T A L		\$4,405,000
<u>Corporate - Facility</u>		
4.187	Burnside Operations Centre	\$4,300,000
4.077	Building Capital Improvements	\$375,000
3.221	Energy Management Capital Program	\$100,000
Corporate - Facility -- T O T A L		\$4,775,000
<u>Corporate - SCADA & Other Equipment</u>		
4.154	Customer Meters - New and Replacement	\$400,000
Corporate - SCADA & Other Equipment -- T O T A L		\$400,000
<u>Corporate - Fleet</u>		
4.006	Fleet Upgrade Program Stormwater	\$508,000
4.006	Fleet Upgrade Program Wastewater	\$2,032,000
4.007	Fleet Upgrade Program Water	\$900,000
Corporate - Fleet -- T O T A L		\$3,440,000
GRAND TOTAL - Corporate Projects		\$25,959,000
<u>ALLOCATION BREAKDOWN:</u>		
Water - Corporate Projects - T O T A L		\$11,052,000
Wastewater - Corporate Projects -- T O T A L		\$12,015,600
Stormwater - Corporate Projects -- T O T A L		\$2,891,400
GRAND TOTAL - Corporate Projects		\$25,959,000

HALIFAX WATER

Capital Budget 2023/24

Summary of Routine Capital Expenditures included within Capital Budget

Project Number	Project Name	Project Cost	Asset Class
3.067	~ Valves Renewals	\$200,000	Water
3.068	~ Hydrants Renewals	\$75,000	Water
3.069	~ Service Lines Renewals	\$100,000	Water
3.39	Lead Service Line Replacement Program	\$2,000,000	Water
3.101	Miscellaneous Equipment Replacement (Water)	\$60,000	Water
4.007	Fleet Upgrade Program Water	\$900,000	Water
2.357	Manhole Renewals WW	\$60,000	Wastewater
2.358	Lateral Replacements WW (non-tree roots)	\$1,820,000	Wastewater
2.563	Lateral Replacements WW (tree roots)	\$585,000	Wastewater
2.451	Miscellaneous Equipment Replacement (WW)	\$120,000	Wastewater
4.006	Fleet Upgrade Program Wastewater	\$2,032,000	Wastewater
1.102	Manhole Renewals SW Program	\$16,000	Stormwater
1.103	Catchbasin Renewals SW Program	\$65,000	Stormwater
1.135	Lateral Replacements SW Program	\$25,000	Stormwater
4.006	Fleet Upgrade Program Stormwater	\$508,000	Stormwater
4.154	Customer Meters - New and Replacement	\$400,000	Corporate
4.012	Network Upgrades	\$280,000	Corporate
4.011	Computer Replacement Program	\$400,000	Corporate
GRAND TOTAL - Routine Capital Projects		\$9,646,000	



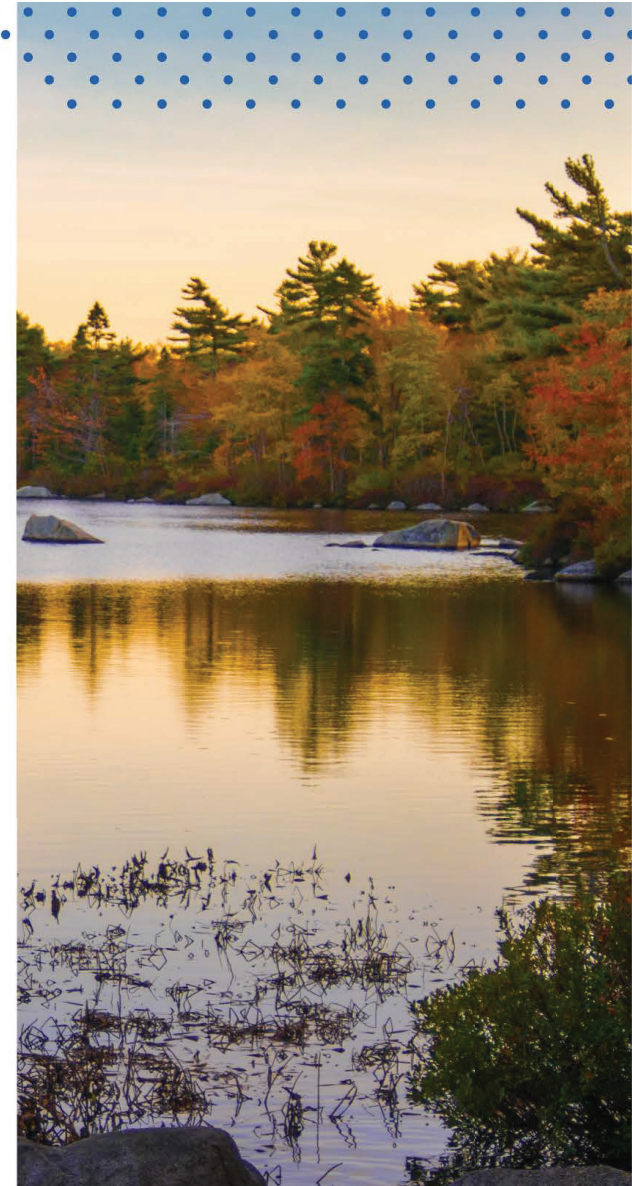
2023/24 Capital Budget

Halifax Water Board

Reid Campbell
Director, Engineering and Technology Services

January 26, 2023

**STRAIGHT from
the SOURCE**



Halifax Water 2023/24 Capital Budget

Long Term Vision

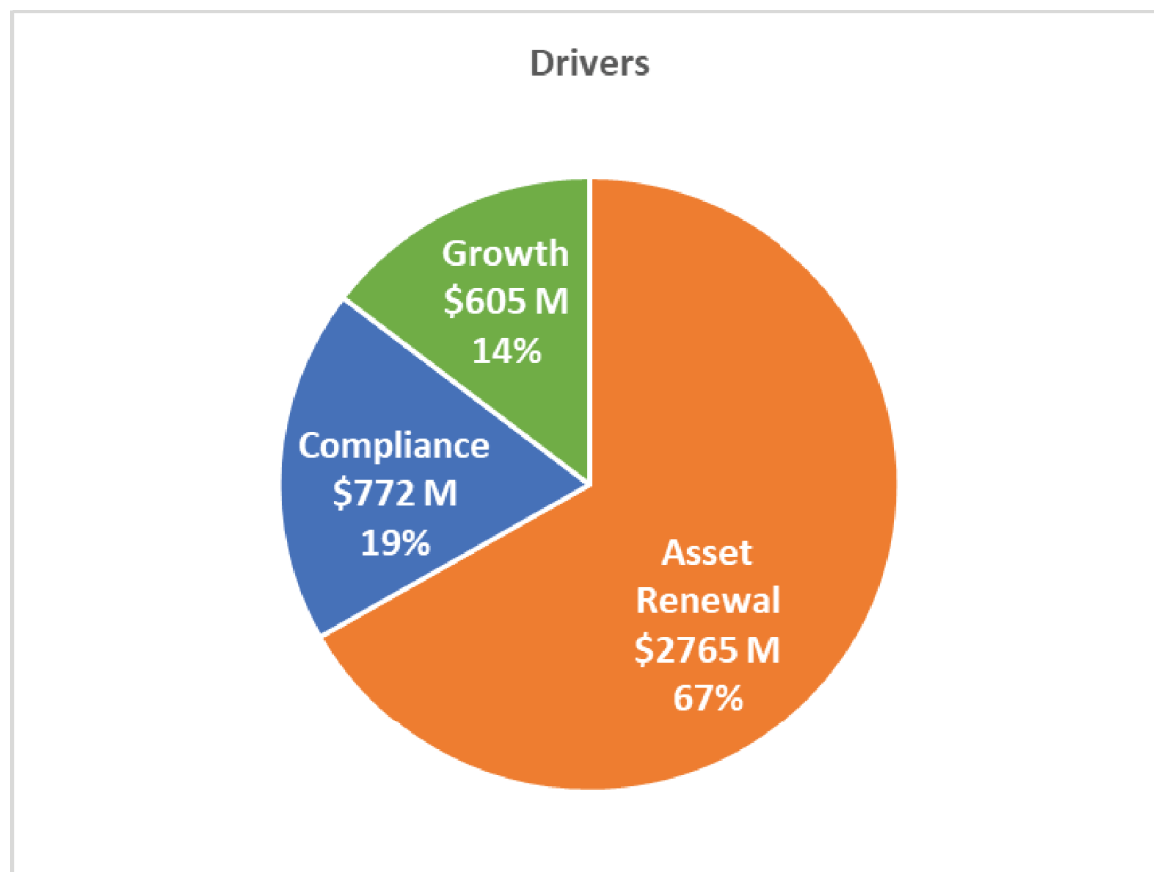
Halifax Water's 2019 *Integrated Resource Plan* identifies the 30-year capital investment plan valued at \$4.05 billion (\$2.69 billion net present value)

Program Drivers

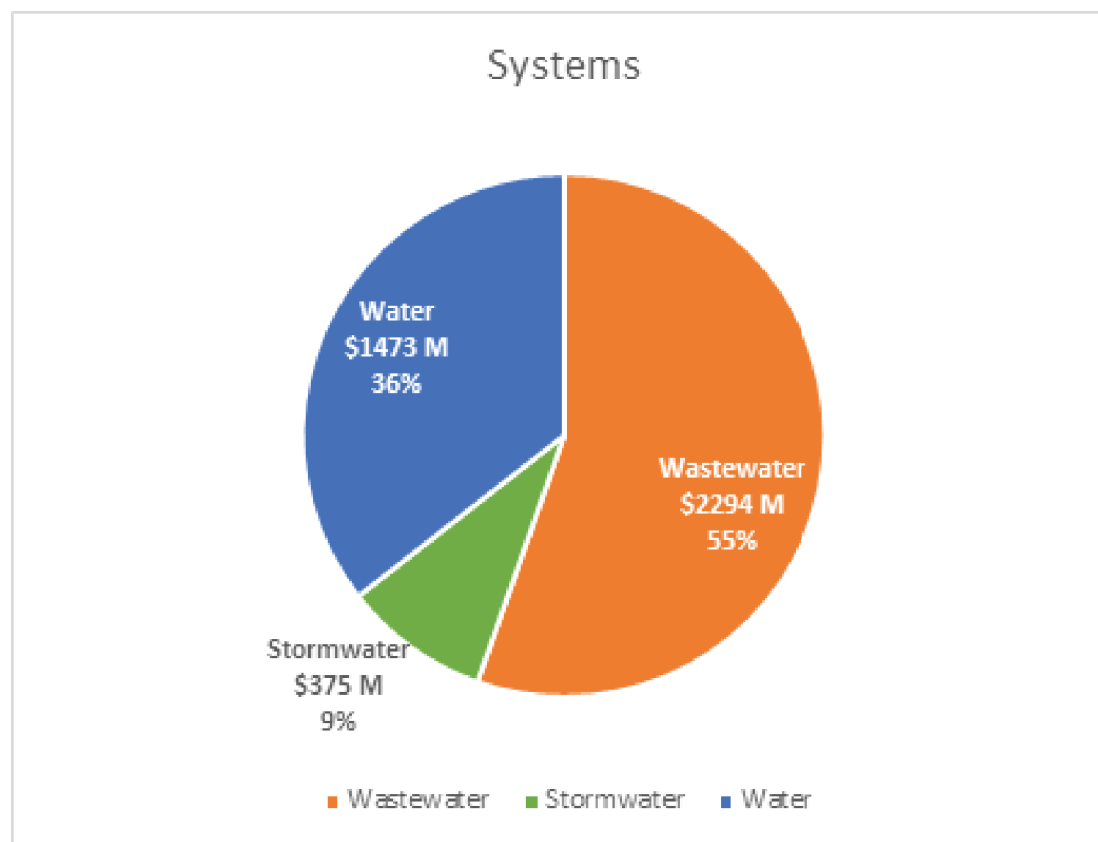
- Asset Renewal
- Compliance
- Growth



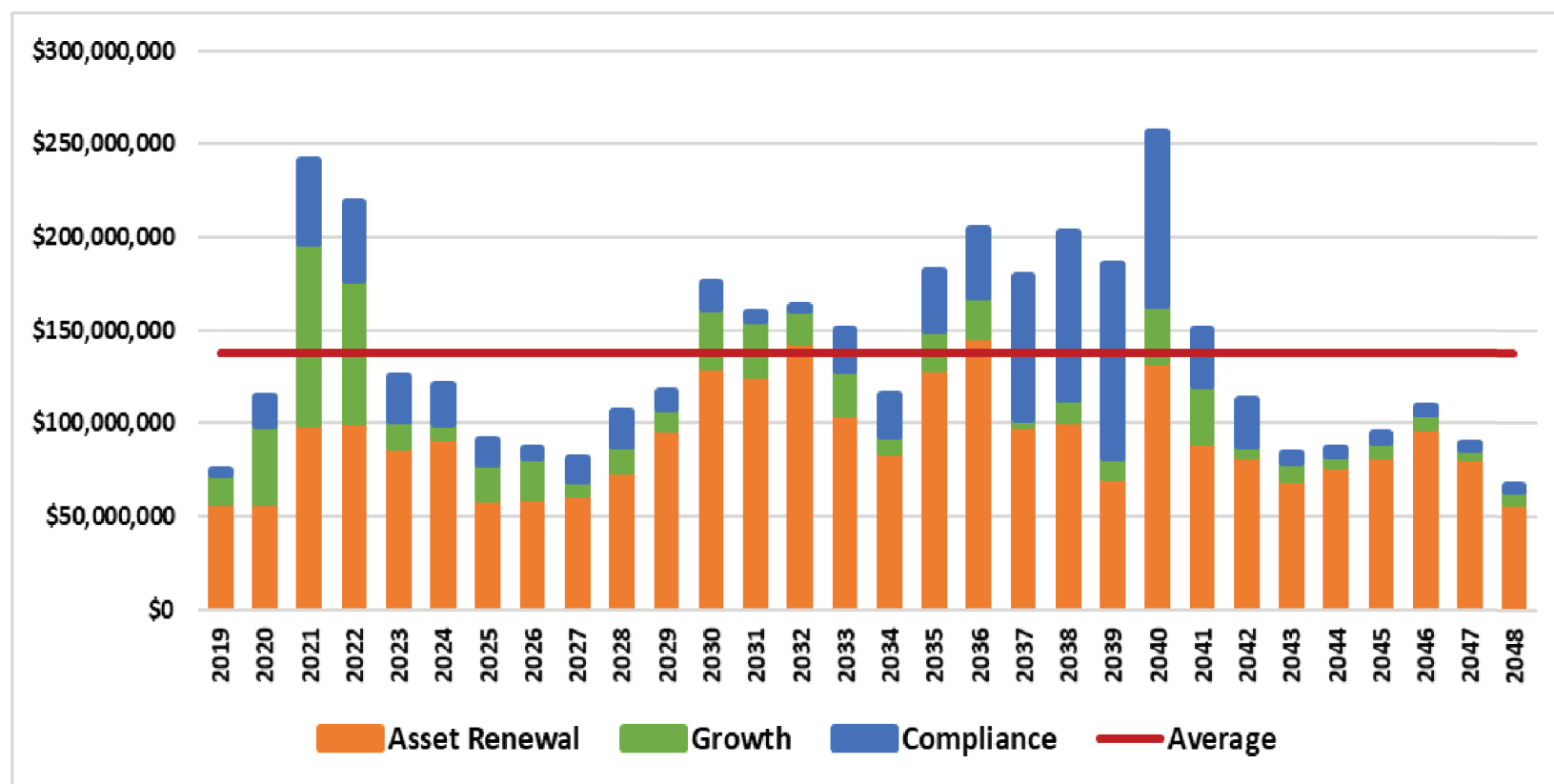
30-Year IRP Expenditures by Driver



30-Year IRP Expenditures by Infrastructure System



30-Year IRP Expenditure Profile



Halifax Water 2023/24 Capital Budget

Overview

- Halifax Water develops an annual One-Year and Five-Year Capital Budget
- Identify capital projects aimed at providing cost-effective services with a focus on long-term systems integrity
- Capital projects are defined as items with value greater than \$5,000 and service life greater than one year
- Budget development is led by Engineering & Technology Services with cross corporate collaboration and candidate project prioritization
- Capital budget increase for 2023/24 yet reduced from previous plan for the year to acknowledge resource capacity constraints and ongoing departmental realignment



Halifax Water 2023/24 Capital Budget

Review and Approval

- Budget is reviewed by executive staff and the *Audit and Finance Committee of the Board*
- Budget is reviewed and approved by the *Halifax Water Board*
- Budget is submitted for review and filing to the *Nova Scotia Utility and Review Board*



Halifax Water 2023/24 Capital Budget

Budget Structure

Capital Budget document includes three core infrastructure system categories:

- Water
- Wastewater
- Stormwater

Plus,

- Corporate Projects – costs are allocated to the three core categories



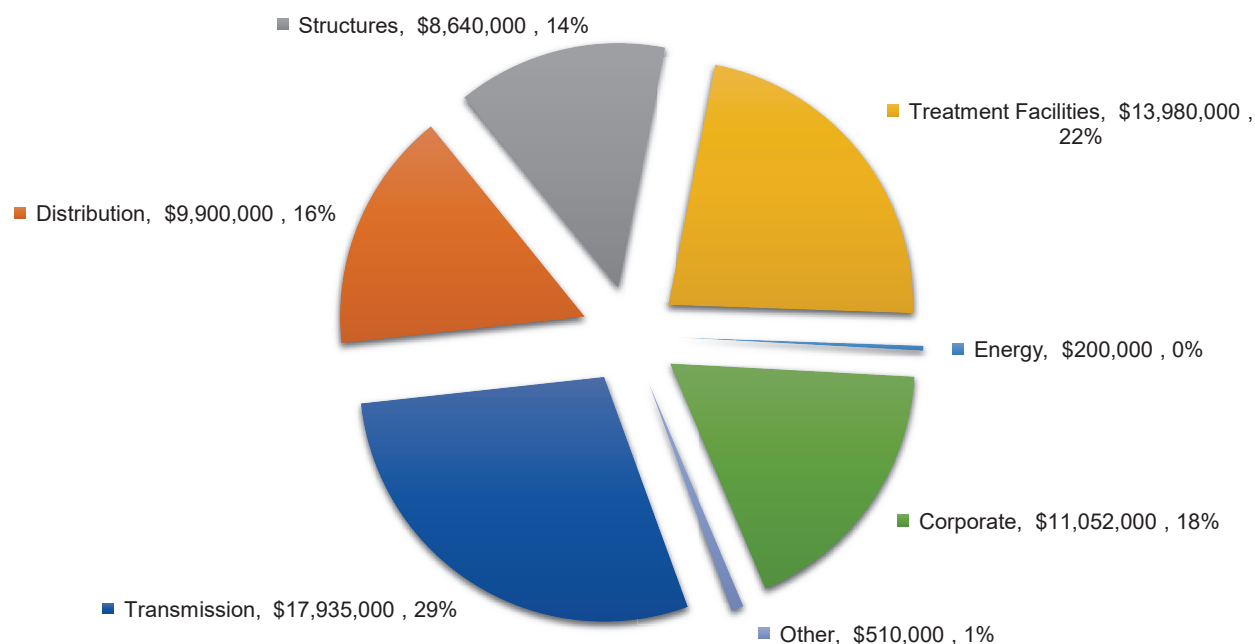
Halifax Water 2023/24 Capital Budget

2023/2024 Capital Budget by Asset Class - All Divisions



Halifax Water 2023/24 Capital Budget

2023/2024 Capital Budget by Asset Class - Water



Total - \$62,217,000



Halifax Water 2023/24 Capital Budget

Water Infrastructure - \$62,217,000

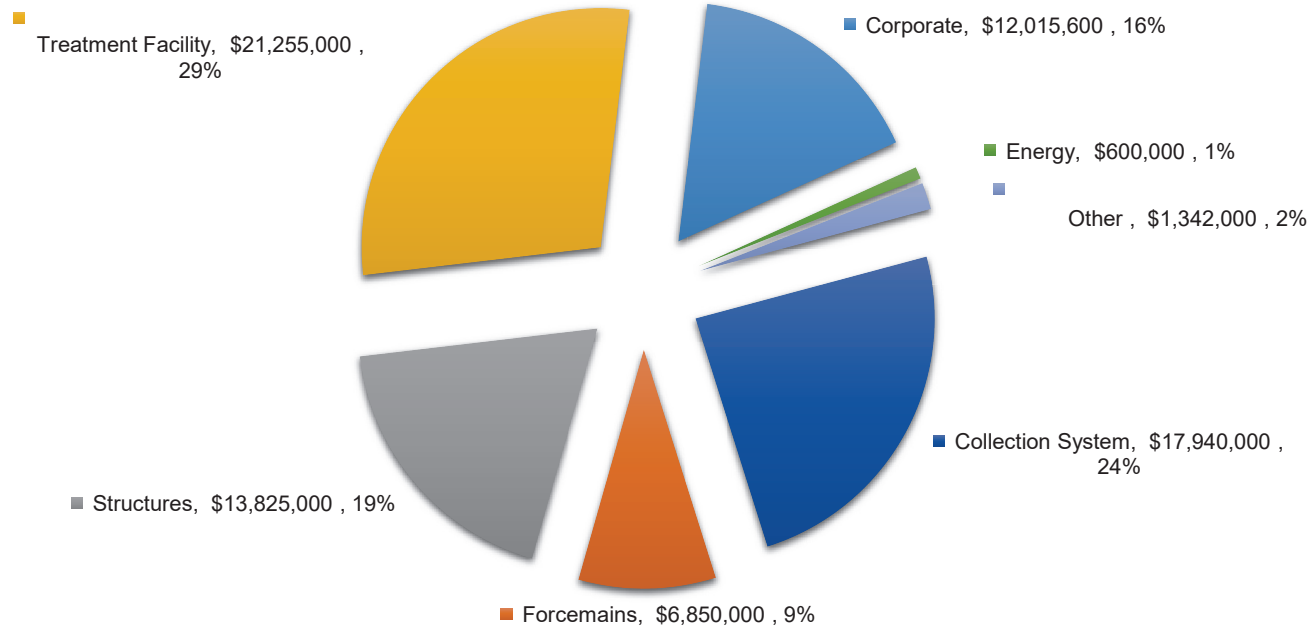
Major projects:

- Water Distribution – Main Renewal Program
- Lead Service Line Replacement Program
- Water Supply Enhancement Program
- Hwy 118 Crossing – Shubie Park to Dartmouth Crossing
- Bedford-Burnside Transmission Main
- Aerotech Booster Station Replacement
- HRM Cogswell Redevelopment – Water Transmission Main Relocation



Halifax Water 2023/24 Capital Budget

2023/2024 Capital Budget by Asset Class - Wastewater



Total - \$73,827,600



Halifax Water 2023/24 Capital Budget

Wastewater Infrastructure - \$73,827,600

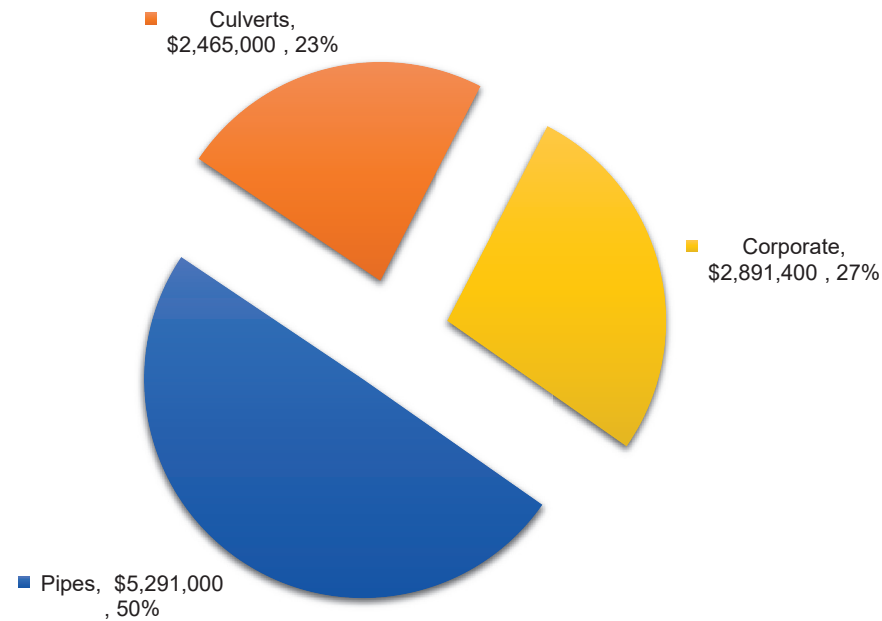
Major projects:

- Wastewater System – Trenchless Rehabilitation Program
- Integrated Wastewater Collection Projects
- Bissett PS Upgrade
- Wastewater Lateral Replacements
- Bayers Road Phase 1 Sewer Separation
- Mill Cove RDII Reduction Program – FMZ07 & FMZ40
- 390 Waverley Road Forcemain Upgrades
- Main Street Pumping Station (Golf View Drive) Upgrade
- Quigley Corner Pumping Station Upgrade
- Autoport Pleasant Street Pumping Station Replacement
- Halifax WWTF – UV Disinfection System – New Modules and PLC Upgrades
- Mill Cove WWTF Upgrades
- Biosolids Processing Facility Upgrade
- HRM Cogswell Redevelopment – Wastewater Sewer Relocation



Halifax Water 2023/24 Capital Budget

2023/2024 Capital Budget by Asset Class - Stormwater



Total - \$10,647,400



Halifax Water 2023/24 Capital Budget

Stormwater Infrastructure - \$10,647,400

Major projects:

- Integrated Stormwater Collection Projects
- Driveway and Cross Culvert Renewal Program
- HRM Cogswell Redevelopment – Storm Sewer Relocation



Halifax Water 2023/24 Capital Budget

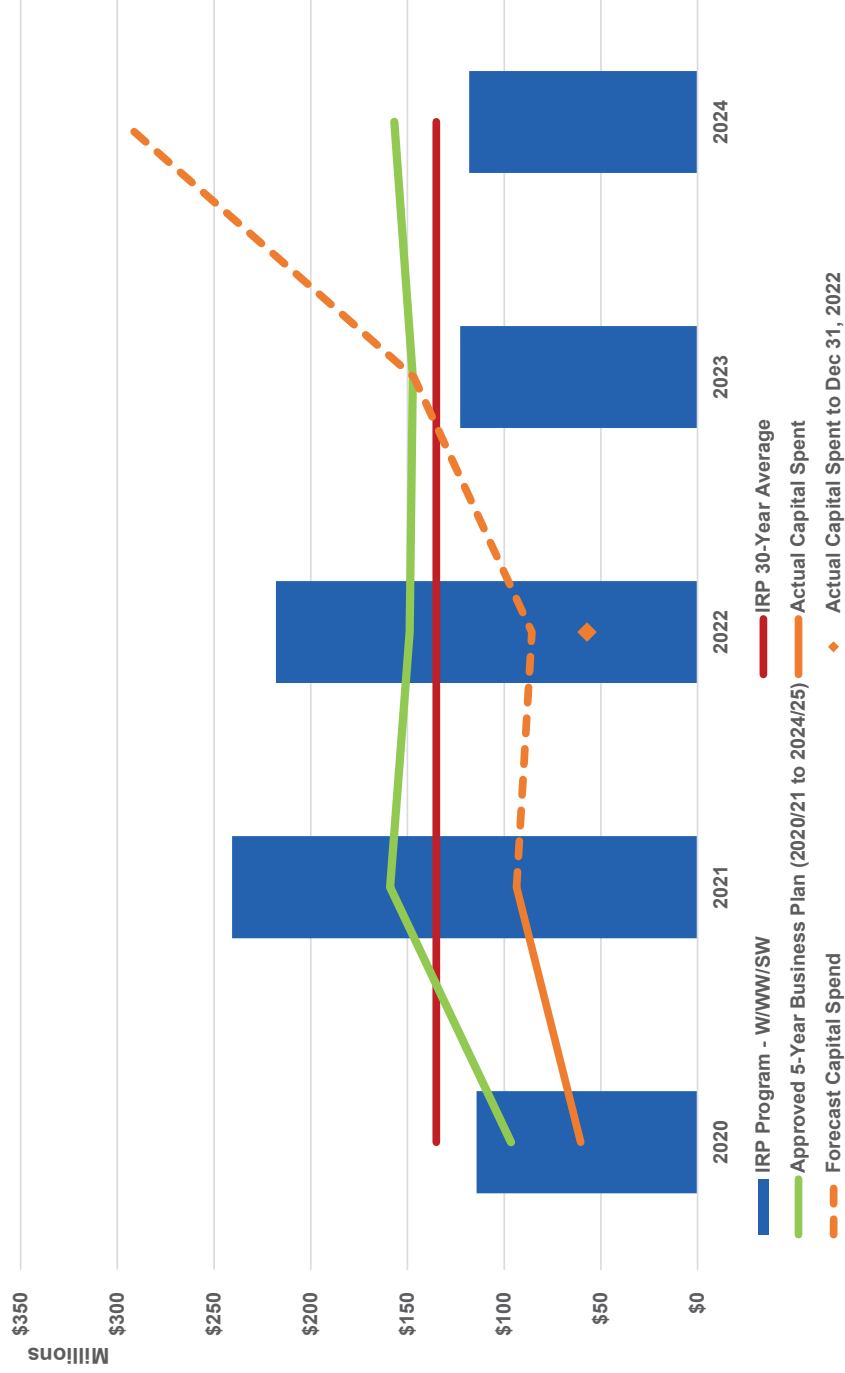
Corporate Projects - \$25,959,000 (costs allocated to core infrastructure categories)

Major projects:

- DA3 (Data, Analytics, Automation and Artificial Intelligence) Program and Project
- Corporate Flow Monitoring Program
- Burnside Operations Centre
- Fleet Upgrade Program
- Infrastructure Master Plan



Comparison of IRP to 5-Year Business Plan (2020/21 to 2024/25)



2022/23 Forecast actual capital spend to end of fiscal based on actual to Dec 31, 2022, plus 50%



Halifax Water 2023/24 Capital Budget

Water - Land -- T O T A L	\$125,000
Water - Transmission -- T O T A L	\$17,935,000
Water - Distribution -- T O T A L	\$9,900,000
Water - Structures -- T O T A L	\$8,640,000
Water - Treatment Facilities -- T O T A L	\$13,980,000
Water - Energy -- T O T A L	\$200,000
Water - Security -- T O T A L	\$75,000
Water - Equipment -- T O T A L	\$310,000
Water - Corporate Projects - T O T A L	\$11,052,000
TOTAL - Water	\$62,217,000
Wastewater - Collection System -- T O T A L	\$17,940,000
Wastewater - Force mains -- T O T A L	\$6,850,000
Wastewater Structures -- T O T A L	\$13,825,000
Wastewater - Treatment Facility -- T O T A L	\$21,255,000
Wastewater - Energy -- T O T A L	\$600,000
Wastewater - Security -- T O T A L	\$50,000
Wastewater - Equipment -- T O T A L	\$1,292,000
Wastewater - Corporate Projects -- T O T A L	\$12,015,600
TOTAL - Wastewater	\$73,827,600
Stormwater - Pipes -- T O T A L	\$5,291,000
Stormwater - Culverts -- T O T A L	\$2,465,000
Stormwater - Corporate Projects -- T O T A L	\$2,891,400
TOTAL - Stormwater	\$10,647,400
GRAND T O T A L	\$146,692,000



Halifax Water 2023/24 Capital Budget

Funding Sources

Funding Source	Amount
Depreciation	\$33,700,000
Debt	\$83,438,000
Regional Development Charge	\$16,726,000
External Funding	\$8,703,000
Capital Cost Contribution	\$4,125,000
TOTAL	\$146,692,000



Halifax Water 2023/24 Capital Budget

QUESTIONS or COMMENTS?

HALIFAX WATER

Capital Budget 2023/24

Summary of Capital Projects included within Capital Budget over \$1M

Project Number	Project Name	Project Cost	Asset Class
3.390	Lead Service Line Replacement Program	\$2,000,000	Water
3.022	Water Distribution - Main Renewal Program	\$6,200,000	Water
3.571	Highway 118 Crossing - Shubie Park to Dartmouth Crossing	\$8,000,000	Water
3.399	Cogswell Interchange - Water Transmission Main Realignment	\$2,560,000	Water
3.658	Bedford to Burnside Transmission Main Phase 1 Remainder of TM Pipework	\$5,700,000	Water
3.589	Aerotech Booster Station Replacement	\$1,800,000	Water
3.604	JD Kline WSP - Pretreatment and Clarification - WSEP JDK-800.10	\$5,733,000	Water
3.608	JD Kline WSP - Clearwell, reservoir and storage - WSEP JDK-800.25	\$1,557,000	Water
3.736	Lake Major WSP - Roof Replacement	\$1,120,000	Water
2.168	Wastewater System - Trenchless Rehabilitation Program	\$2,500,000	Wastewater
2.358	Lateral Replacements WW (non-tree roots)	\$1,820,000	Wastewater
2.052	Integrated Wastewater Projects - Program	\$2,500,000	Wastewater
2.692	Cogswell Redevelopment - Sewer Relocation	\$2,580,000	Wastewater
2.675	Bayers Road Phase 1 - Sewer Separation	\$1,200,000	Wastewater
2.832	Mill Cove RDII Reduction Program FMZ07 & FMZ40 - Lower Sackville	\$3,000,000	Wastewater
2.945	390 Waverley Road Forcemain Upgrades	\$5,500,000	Wastewater
2.1014	Main Street Pumping Station (Golf View Drive) Upgrade	\$1,350,000	Wastewater
2.66	Bissett PS Component Upgrade	\$2,650,000	Wastewater
2.846	Quigley Corner Pumping Station Upgrade	\$4,000,000	Wastewater
2.005	Autoport Pleasant Street PS Replacement	\$2,550,000	Wastewater
2.774	Halifax WWTF - UV Disinfection System - New Modules and PLC Upgrade	\$1,000,000	Wastewater
2.640	Mill Cove WWTF - Process Upgrades - Preliminary + Detailed Design	\$1,000,000	Wastewater
2.817	Mill Cove WWTF - Plant Upgrade - Design and Contract Admin	\$9,000,000	Wastewater
2.931	Biosolids Processing Facility - Facility Upgrade - RFQ/RFP/Tender/Construction/Commissioning/Assessment	\$5,000,000	Wastewater
4.006	Fleet Upgrade Program Wastewater	\$2,032,000	Wastewater
1.038	Integrated Stormwater Projects - Program	\$1,200,000	Stormwater
1.188	Cogswell Redevelopment - SW Sewer Relocation	\$2,710,000	Stormwater
1.104	Driveway Culvert Replacement Program	\$1,200,000	Stormwater
4.208	DA3 – Program & Project	\$2,300,000	Corporate
2.043	Corporate Flow Monitoring Program	\$1,200,000	Corporate
4.169	Infrastructure Master Plan Update	\$1,500,000	Corporate
4.187	Burnside Operations Centre	\$4,300,000	Corporate
GRAND TOTAL - Projects over \$1 Million		\$96,762,000	

TO: Colleen Rollings, P.Eng., PMP., Chair and Members of the Halifax Regional Water Commission Board

SUBMITTED BY: Alicia Scallion
Alicia Scallion, CPA, CA
Acting Director, Corporate Services/CFO

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Date: 2023.01.20
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APPROVED BY: Louis de Montbrun
Louis de Montbrun, CPA, CA
Acting General Manager/CEO

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de Montbrun
Date: 2023.01.20
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DATE: January 20, 2023

SUBJECT: **Proposed 2023/24 Operating Budget**

ORIGIN

The Halifax Regional Water Commission Board of Commissioners (the “Board”) approves Halifax Water’s 2023/24 Operating Budget.

RECOMMENDATION

It is recommended the Board approve the attached proposed 2023/24 Operating Budget, inclusive of the proposed 2023/24 budget for unregulated activities.

It is recommended the Board approve the list of 2023/24 sponsorships totaling \$33,100.

BACKGROUND

The operating budget prepared for 2023/24 is based on the proposed business plan for 2023/24 and aligns with the Five-Year Business Plan.

The purpose of the 2023/24 Operating Budget is to outline the revenue and expenditures required to provide the services as highlighted in Halifax Water’s Five-Year Business Plan, and the 2023/24 Annual Business Plan.

DISCUSSION

Table 1 below outlines the operating budget for 2023/24 which shows a projected deficit of \$2.3 million. All three services (water, wastewater and stormwater) forecast deficits for the 2022/23 fiscal year. With the approval from the NSUARB in 2022/23 to increase rates effective April 1, 2023, wastewater is the only service with budgeted earnings for 2023/24. Halifax Water received approval to utilize \$2.4 million of accumulated operating surpluses to offset the shortfall in water operations. In addition, during the rate application hearing, Halifax Water identified to the NSUARB that the proposed increases in stormwater rates were not sufficient for the service to break even and that further stormwater rate increases would be required.

The budget reflects requirements to maintain current levels of service, deliver projects already in progress or approved, and address any changing environmental or regulatory requirements. The 2023/24 Operating Budget is prepared on a modified accrual basis to provide broader information for decision making and be reflective of reporting under the Nova Scotia Utility and Review Board Water Utility (NSUARB) Accounting and Reporting Handbook, which is used in determining revenue requirements for rate making purposes.

Table 1:

Operating Budget Summary (in thousands)					
	Approved Budget 2022/23	Proposed Budget 2023/24	Per Rate Application 2023/24	Change from Prior Year	Change from Rate App
Operating revenues	\$ 152,765	\$ 168,896	\$ 152,765	\$ 16,132	\$ (16,132)
Operating expenditures	128,788	135,949	134,564	7,161	(1,385)
Earnings from operations	23,977	32,947	18,200	8,970	(14,746)
Financial and other revenues	733	951	733	218	(218)
Financial and other expenditures	35,598	36,207	35,734	610	(473)
Loss for the year	\$ (10,888)	\$ (2,309)	\$ (16,801)	\$ 8,579	\$ (14,492)

Halifax Water faces financial pressure associated with both growth and renewal of assets, increases in customers due to growth in the municipality, and compliance with regulatory requirements. These issues are described in the Five-Year Business Plan and the Integrated Resource Plan. Additions to utility plant in service result in increased costs associated with depreciation, debt servicing, the dividend/grant in lieu of taxes payable to Halifax Regional Municipality (HRM), and incremental costs to operate and maintain the assets.

Continuing to build organizational capacity to deliver programs and capital projects envisioned in the Integrated Resource Plan requires additional staffing for departments within the utility.

Operating Revenues

Halifax Water's main revenue sources are derived from rate-regulated activities, with approximately 75% of water and wastewater revenues coming from consumption/discharge rates and 25% from base charges. The 2023/24 Operating Budget is based on regulated rates and charges approved by the NSUARB effective April 1, 2023. Base charges for both water and wastewater have remained unchanged since April 1, 2016. The water consumption rate has increased to \$1.128 from \$1.017 per cubic meter and the wastewater discharge rate has increased to \$2.259 from \$2.189 per cubic meter. Stormwater rates have increased for all customer types. The site related flow charge for non-residential property customers has increased to \$0.173 from \$0.145 per square meter and the rates per tier for residential property customers have increased just under 20% from previous rates.

There was no projected increase in total consumption for 2023/24 compared to the 1% increase in the prior year. New customer connections are estimated at 680 for water services and 640 for wastewater services based on historic trending.

The remainder of Halifax Water's revenues are from miscellaneous fees, financial and other revenues, and unregulated activities.

Operating Expenditures

The main cost drivers in Halifax Water's operating budget are salaries and benefits, energy, chemicals, depreciation, and debt servicing. Key assumptions in each of these areas are outlined below:

Salaries and benefits

- Salary rate increases:
Salary and wage escalations for active employees range between 1.75% and 2.50%. Increases for unionized staff are based on rate increases provided for in the approved collective agreements. For non-union staff the increase is based on the most recent market study with non-union compensation increasing 2.00% effective January 1, 2023. In addition, there is an allowance of 0.50% which represents the impact of step increases for all active employees moving within salary bands or reclassification of positions.
- Changes to full-time equivalents (FTE):

ITEM #4.3

Halifax Water Board

January 26, 2023

The budget for 2023/24 includes an increase of 48.5 new positions, equivalent to 39.5 FTEs, as not all positions will be filled by April 1, 2023. The net impact of the new FTEs on the 2023/24 Operating Budget is estimated at \$1.6 million (excluding benefits), where a portion of the total cost has been assigned to capital projects. For some business units new FTEs will result in off-setting savings in other costs such as contract services, consulting, etc.

The impact by business unit is illustrated below:

2023 - 24 Proposed New FTEs							
	Original New Positions	Revised New Positions	Total New FTEs	% of Total	Salary Increase	Allocated to Capital	Net Increase to Operating
<i>Corporate Services</i>	7.50	7.75	5.70	14%	368,325	(15,500)	352,825
<i>Engineering & Technology Services</i>	27.00	23.00	18.75	47%	1,555,962	(1,152,532)	403,429
<i>Administration</i>	2.00	4.00	3.50	9%	158,575	(70,000)	88,575
<i>Regulatory Services</i>	3.00	2.00	1.80	5%	136,934	(29,507)	107,427
<i>Wastewater / Stormwater</i>	2.00	2.00	2.00	5%	126,795	-	126,795
<i>Water</i>	12.75	9.75	7.75	20%	504,961	(24,552)	480,409
	54.25	48.50	39.50		2,851,553	(1,292,092)	1,559,461

Energy:

Assumptions respecting electricity, furnace oil and natural gas rate increases are outlined below.

- Electricity 10.37%
- Furnace Oil 15.00%
- Natural Gas 15.00%

Chemical Costs:

Chemicals are tendered annually in January for optimal pricing. Chemical rate increases of 5.0% are budgeted for 2023/24.

Depreciation

Depreciation is an integral funding source to support asset renewal, growth, and regulatory compliance requirements. Depreciation is budgeted at \$32.7 million, an increase of \$1.8 million over the 2022/23 budget, and calculated on funded water, wastewater, and stormwater assets. In addition to the depreciation on funded assets, 25% of depreciation related to contributed (donated) stormwater assets is included in depreciation expense and the stormwater rates. On July 1, 2017, the NSUARB approved the phase in of depreciation related to contributed stormwater assets.

Depreciation related to water and wastewater assets funded from other sources such as Capital Costs Contribution, Regional Development Charges, or other external funding sources such as government grants, is not considered a cost for rate calculation purposes. In future rate applications, Halifax Water will request to phase in depreciation on contributed water and wastewater assets and to increase the percentage for stormwater assets.

Debt Servicing

New debt principal and interest payments are budgeted to support the 2022/23 additions to utility plant in service. The amount and timing of any increases in debt servicing are contingent upon the completion of projects, financing rates, and cash flow requirements. Debt servicing is projected to increase to \$29.4 million in 2023/24 compared to \$28.7 million in 2022/23, representing a \$0.7 million or 6.0% increase. This is reflective of the increasing financing rates available through the Municipal Finance Corporation (MFC). Halifax Water's capital financing strategy is designed to maintain a debt service ratio of 35% or less. The debt service ratio based on the 2023/24 Operating Budget is 17.0%.

Other Expenditures

- Expenditures such as electricity and chemicals, which are subject to greater cost volatility, have been afforded special attention due to the dependence placed on these commodities. For other expenditures carrying a high dollar value, such as contract services and materials/supplies, there is an element of judgement, as these expenditures are contingent upon other factors such as:
 - Service expectations,
 - Regulatory requirements and compliance,
 - Maintenance and renewal of infrastructure.

Water Service

Water operations are detailed on page 2 of the proposed 2023/24 Operating Budget attached, reporting a loss for the year of \$1.7 million. Within the 2022/23 rate application, approval was granted to draw up to \$2.4 million from the accumulated operating surplus to cover the projected deficit.

Operating revenues for 2023/24 total \$64.3 million, representing an increase of \$5.6 million or 10% compared to 2022/23. The increase is attributed to the approved rate increases in regulated revenues and the projected increase of 680 new customers.

Operating expenditures for 2023/24 total \$52.0 million, representing an increase of \$3.0 million or 6% compared to 2022/23. The increase is driven by the following:

1. Supply and treatment costs have increased \$1.4 million mainly due to increases in chemical costs and private lead service lateral replacement (LSLR) costs. Chemical costs have increased \$0.8 million and are driven by price increases experienced in the past year for chemicals such as chlorine, phosphate, and lime. LSLR costs have increased \$0.2 million due to an increased number of replacements from prior year.
2. Transmission and distribution costs have increased by \$0.8 million primarily due to salaries and benefits. There are new positions budgeted in 2023/24, accounting for \$0.4 million of the increase with a portion of the remainder relating to annual salary and wage increases.
3. Depreciation has increased \$0.4 million due to projected additions to utility plant in service.
4. Costs allocated to water service from other business units within the utility are \$0.4 million (3.3%) higher than the prior year due in part to annual cost increases and projected new positions. Allocated costs from other business units reflect budgeted changes within those units, including any projected FTE additions.

Financial and other revenues are comparable to the prior year. Financial and other expenditures report an increase of \$0.3 million or 2.0% due to an increase in debt servicing costs offset by a decrease in the dividend/grant in lieu of taxes.

Wastewater Service

Wastewater operations are detailed on page 3 of the proposed 2023/24 Operating Budget attached, reporting earnings of \$0.1 million.

Operating revenues for 2023/24 total \$89.0 million, representing an increase of \$5.9 million or 7% compared to 2022/23. The increase is attributed to the approved rate increases in regulated revenues and the projected increase of 640 new customers in 2023/24.

Operating expenditures in 2023/24 total \$71.1 million, representing an increase of \$3.7 million or 5% compared to 2022/23. The increase is driven by the following:

1. Wastewater collection costs have increased by \$0.5 million however, wastewater and stormwater collection share the same staffing pool therefore the two areas should be compared together. Stormwater collections costs have increased \$0.1

- million resulting in a combined increase of \$0.6 million. Overall, the total increase is driven by increases in salaries and benefits, electricity, and fleet services.
2. Wastewater treatment costs have increased \$1.7 million and are due to increases in chemical costs, contract services, and electricity. Chemical costs have increased \$0.5 million driven by price increases for chemicals such as polymer and alum. Contract services have increased \$0.8 million mainly due to biosolids trucking and processing costs due to increased fuel pricing/transport costs and increased production. Electricity has increased due to the projected increase in rates. There are new positions budgeted in 2023/24, increasing the operating budget by \$0.1 million, excluding benefits.
 5. Depreciation is reporting an increase of \$1.2 million due to projected additions to utility plant in service.
 6. Costs allocated to wastewater service from other business units are \$0.3 million (2.3%) higher than the prior year due in part to annual cost increases and projected new positions. Allocated costs from other business units reflect budgeted changes within those units, including any projected FTE additions.

Financial and other revenues are comparable to the prior year as are financial and other expenditures.

Stormwater Service

Stormwater operations are detailed on page 4 of the proposed 2023/24 Operating Budget attached, reporting a loss of \$0.7 million.

Operating revenues for 2023/24 total \$15.6 million, representing an increase of \$4.6 million or 42% compared to 2022/23. This increase is attributed to the approved rate increases in regulated revenues, including a significant increase in right-of-way charges.

Operating expenditures in 2022/23 total \$12.8 million, representing an increase of \$0.5 million or 4% compared to 2022/23. The increase is driven by the following:

1. Stormwater collection has increased by \$0.1 million, and as mentioned previously in the wastewater section, changes in stormwater collection should be compared in aggregate with wastewater collection.
2. Depreciation is reporting an increase of \$0.2 million due to projected additions to utility plant in service.
3. Costs allocated to stormwater service from other business units are \$0.3 million (2.3%) higher than the prior year due in part to annual cost increases and projected new positions. Allocated costs from other business units reflect budgeted changes within those units, including any projected FTE additions.

Financial revenues are comparable to the prior year. Financial expenditures increased \$0.3 million or 11% due to an increase in debt servicing costs.

Unregulated Activities

Unregulated activities are detailed on page 5 of the proposed 2023/24 Operating Budget attached, reporting a budget surplus of \$0.6 million.

Unregulated revenues can be used to fund rate-regulated activities and applied against unregulated expenditures. Revenues from unregulated activities for 2023/24 are budgeted at \$1.1 million, which is comparable to the prior year. Revenues are derived primarily from septage tipping fees and external contracts. These contracts include the operation and maintenance of the Leachate Treatment Facility at Otter Lake, plus several other smaller HRM facilities including Twin Oaks-The Birches, the Upper Sackville Recreation Center, and the Harrietsfield Recreation Center.

Unregulated operating expenditures for 2023/24 are comparable to 2022/23. Included in unregulated operating expenditures are sponsorships and donations, which are treated as unregulated in nature because of a 2012 NSUARB Rate Decision. For 2023/24, these expenditures are budgeted at \$73,100 and consist of:

- Help to Others (H2O) Program \$ 40,000
- Sponsorships and Donations \$ 33,100

The H2O (Help to Others) Program was established to provide financial assistance to residents who require financial assistance with their water bill. The program is funded by Halifax Water and its employees and administered by the Salvation Army Halifax Water employees participate in the program through tax deductible contributions, which are matched by Halifax Water.

A full description of the costs associated with Sponsorships is provided below:

Sponsorships:

Discovery Centre	5,000
Conference Sponsorship	1,000
NSCC Scholarships First Nations	4,000
NSCC Scholarships RT Peacock	2,000
NSCC Scholarships HRWC Achievement	2,000
NSCC Scholarships Arnold Johnston	3,600
NSCC Scholarship Women in Trades	2,000
Special Olympics	2,000
Chamber Conference Sponsorship	1,500
Greater Halifax Partnership	10,000
	<u>33,100</u>

Halifax Water is in year three of a three-year agreement with the Discovery Centre to educate children and families about the water cycle and water stewardship. This initiative included development of some displays and education materials with emphasis on water quality and stormwater management.

The contribution to the Greater Halifax Partnership is part of a partnership agreement that allows Halifax Water to gain access to economic information that will support development of Halifax Water's long-range plans; provide access to assistance to calculate and communicate the impact that Halifax Water has on the local economy; and enables Halifax Water to engage directly with stakeholders through initiatives like the Green Economy CEOs' Council, and the CEO Council on Affordable Housing.

Sponsorships and Donations are relatively small in value however, the Board is requested to approve the amounts noted above as part of the overall budget.

Accumulated Surplus (Deficit)

The accumulated operating surplus (based on the NSUARB Water Utility Accounting and Reporting Handbook) at March 31, 2024, is projected to be \$15.5 million, which consists of the accumulated operating surplus for the 2021/22 fiscal year, projected results for 2022/23 based on forecasting to December 31, 2022, and a budgeted deficit of \$2.3 million for 2023/24. Table 3 below summaries the continuity of the accumulated surplus (deficit) by service.

Table 3:

Accumulated Operating Surplus (Deficit) - NSUARB (in thousands)				
	Total	Water	Wastewater	Stormwater
2021/22 Fiscal Year				
Balance, beginning of year	33,609	23,133	6,965	3,511
Earnings (loss) for the year	(6,380)	(3,427)	390	(3,343)
Cumulative impact of depreciation on contributed SW assets	(2,301)	0	0	(2,301)
Reallocation of expenses between WW and SW	0	0	847	(847)
Surplus (deficit), end of year	24,928	19,706	8,202	(2,980)
2022/23 Fiscal Year				
Balance, beginning of year	24,928	19,706	8,202	(2,980)
Projected (loss) for the year	(7,131)	(2,777)	(768)	(3,586)
Projected surplus (deficit), end of year	\$ 17,797	\$ 16,929	\$ 7,434	\$ (6,566)
2023/24 Fiscal Year				
Balance, beginning of year	17,797	16,929	7,434	(6,566)
Projected (loss) for the year	(2,309)	(1,712)	73	(670)
Projected surplus (deficit), end of year	\$ 15,488	\$ 15,217	\$ 7,507	\$ (7,236)

Halifax Water targets to maintain a minimum accumulated operating surplus of 3% of total expenditures to mitigate risk. Accumulated operating surplus' can be used to offset operating losses, or to fund future additions to utility plant in service, subject to NSUARB approval. Based on the projected financial position as at March 31, 2024, a projected accumulated surplus of \$15.5 million represents 11% of total expenditures.

BUDGET IMPLICATIONS

The combined operations of Water, Wastewater and Stormwater report a budgeted deficit \$2.3 million. This deficit is then reduced through a draw from the water operating surplus of \$2.4 million and an anticipated deficit built into the 2022/23 rate application of \$1.1 million for total earnings for the year of \$1.2 million. of \$10.9 million for 2022/23.

ALTERNATIVES

The Board could direct staff to revise the proposed 2023/24 Operating Budget.

ATTACHMENT

Proposed 2023/24 Operating Budget

Report Prepared by:

**Alicia
Scallion**

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Scallion
Date: 2023.01.20
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Alicia Scallion, CPA, CA

Acting Director Corporate Services/CFO (902) 497-9785 Page 10 of 10

HALIFAX WATER
STATEMENT OF EARNINGS - ALL SERVICES - NSUARB
PROPOSED OPERATING BUDGET
APRIL 1, 2023 to MARCH 31, 2024
(in thousands)

	APPROVED BUDGET APR 1/22 MAR 31/23	PROPOSED BUDGET APR 1/23 MAR 31/24
Operating revenues	\$ 152,765	\$ 168,896
Operating expenditures	<u>128,788</u>	<u>135,949</u>
Earnings from operations before financial and other revenues and expenditures	<u>23,977</u>	<u>32,947</u>
Financial and other revenues		
Interest	105	324
Other	<u>628</u>	<u>627</u>
	<u>733</u>	<u>951</u>
Financial and other expenditures		
Interest on long term debt	6,669	7,050
Repayment on long term debt	21,846	22,191
Amortization of debt discount	233	201
Dividend/grant in lieu of taxes	6,804	6,589
Other	<u>46</u>	<u>175</u>
	<u>35,598</u>	<u>36,207</u>
Loss for the year	<u><u>\$ (10,888)</u></u>	<u><u>\$ (2,309)</u></u>

HALIFAX WATER
STATEMENT OF EARNINGS - WATER - NSUARB
PROPOSED OPERATING BUDGET
APRIL 1, 2023 to MARCH 31, 2024
(in thousands)

	APPROVED BUDGET APR 1/22 MAR 31/23	PROPOSED BUDGET APR 1/23 MAR 31/24
Operating revenues		
Water	\$ 48,771	\$ 53,669
Public fire protection	7,628	8,083
Private fire protection	1,335	1,652
Bulk water stations	334	338
Late payment and other connection fees	264	252
Miscellaneous	296	258
	<u>58,629</u>	<u>64,252</u>
Operating expenditures		
Water supply and treatment	11,246	12,621
Water transmission and distribution	12,441	13,203
Engineering and technology services	4,667	4,703
Regulatory services	1,465	1,521
Corporate services	3,985	4,172
Administration	2,986	3,157
Depreciation and amortization	12,171	12,594
	<u>48,961</u>	<u>51,972</u>
Earnings from operations before financial and other revenues and expenditures	<u>9,667</u>	<u>12,281</u>
Financial and other revenues		
Interest	72	259
Other	473	465
	<u>545</u>	<u>724</u>
Financial and other expenditures		
Interest on long term debt	2,306	2,767
Repayment on long term debt	6,063	6,077
Amortization of debt discount	84	79
Dividend/grant in lieu of taxes	5,918	5,664
Other	16	130
	<u>14,387</u>	<u>14,717</u>
Loss for the year	<u>\$ (4,175)</u>	<u>\$ (1,712)</u>

HALIFAX WATER
STATEMENT OF EARNINGS - WASTEWATER - NSUARB
PROPOSED OPERATING BUDGET
APRIL 1, 2023 to MARCH 31, 2024
(in thousands)

	APPROVED BUDGET APR 1/22 MAR 31/23	PROPOSED BUDGET APR 1/23 MAR 31/24
Operating revenues		
Wastewater	\$ 81,608	\$ 87,450
Leachate and other contract revenue	491	494
Septage tipping fees	475	535
Overstrength surcharge	0	0
Airplane effluent	76	105
Late payment and other connection fees	247	234
Miscellaneous	253	223
	<u>83,149</u>	<u>89,040</u>
Operating expenditures		
Wastewater collection	13,096	13,554
Wastewater treatment	23,395	25,065
Engineering and technology services	7,109	7,096
Regulatory services	1,674	1,733
Corporate services	3,480	3,640
Administration	2,582	2,730
Depreciation and amortization	16,093	17,310
	<u>67,429</u>	<u>71,128</u>
Earnings from operations before financial and other revenues and expenditures	<u>15,721</u>	<u>17,912</u>
Financial and other revenues		
Interest	21	104
Other	155	162
	<u>176</u>	<u>266</u>
Financial and other expenditures		
Interest on long term debt	3,639	3,385
Repayment on long term debt	13,635	13,790
Amortization of debt discount	127	99
Dividend/grant in lieu of taxes	736	786
Other	30	45
	<u>18,167</u>	<u>18,104</u>
Earnings (loss) for the year	<u>\$ (2,270)</u>	<u>\$ 73</u>

HALIFAX WATER
STATEMENT OF EARNINGS - STORMWATER - NSUARB
PROPOSED OPERATING BUDGET
APRIL 1, 2023 to MARCH 31, 2024
(in thousands)

	APPROVED BUDGET APR 1/22 MAR 31/23	PROPOSED BUDGET APR 1/23 MAR 31/24
Operating revenues		
Stormwater site generated service	\$ 6,790	\$ 8,873
Stormwater right of way service	3,996	6,515
Late payment and other connection fees	104	141
Miscellaneous	97	75
	<u>10,987</u>	<u>15,604</u>
Operating expenditures		
Stormwater collection	5,281	5,382
Engineering and technology services	2,165	2,210
Regulatory services	1,727	1,806
Corporate services	349	368
Administration	287	303
Depreciation and amortization	2,588	2,780
	<u>12,398</u>	<u>12,849</u>
Earnings from operations before financial and other revenues and expenditures	<u>(1,411)</u>	<u>2,755</u>
Financial and other revenues		
Interest	12	(39)
Other	0	0
	<u>12</u>	<u>(39)</u>
Financial and other expenditures		
Interest on long term debt	723	899
Repayment on long term debt	2,148	2,324
Amortization of debt discount	22	24
Dividend/grant in lieu of taxes	149	139
Other	0	0
	<u>3,043</u>	<u>3,386</u>
Loss for the year	<u>\$ (4,442)</u>	<u>\$ (670)</u>

HALIFAX WATER
STATEMENT OF EARNINGS - REGULATED AND UNREGULATED ACTIVITIES - NSUARB
PROPOSED OPERATING BUDGET
APRIL 1, 2023 to MARCH 31, 2024
(in thousands)

	APPROVED BUDGET APR 1/22 MAR 31/23	PROPOSED BUDGET APR 1/23 MAR 31/24
REGULATED ACTIVITIES		
Operating revenues		
Water	\$ 48,771	\$ 53,669
Wastewater	81,608	87,450
Stormwater	10,785	15,388
Public fire protection	7,628	8,083
Private fire protection	1,335	1,652
Other	1,557	1,520
	<u>151,684</u>	<u>167,762</u>
Operating expenditures		
Water supply and treatment	11,214	12,615
Water transmission and distribution	12,441	13,203
Wastewater collection	13,014	13,458
Stormwater collection	5,281	5,382
Wastewater treatment	22,681	24,250
Engineering and technology services	13,942	14,001
Regulatory services	4,866	5,060
Corporate services	7,800	8,168
Administration	5,685	6,041
Depreciation and amortization	30,834	32,666
	<u>127,759</u>	<u>134,844</u>
Earnings from operations before financial and other revenues and expenditures	<u>23,925</u>	<u>32,918</u>
Financial and other revenues		
Interest	105	324
Other	32	30
	<u>137</u>	<u>354</u>
Financial and other expenditures		
Interest on long term debt	6,669	7,050
Repayment on long term debt	21,846	22,191
Amortization of debt discount	233	201
Dividend/grant in lieu of taxes	6,804	6,589
Other	0	129
	<u>35,552</u>	<u>36,161</u>
Loss for the year	<u>\$ (11,489)</u>	<u>\$ (2,888)</u>
UNREGULATED ACTIVITIES		
Operating revenues		
Septage tipping fees	\$ 475	\$ 535
Leachate and other contract revenue	491	494
Airplane effluent	76	105
Miscellaneous	38	0
	<u>1,080</u>	<u>1,134</u>
Operating expenditures		
Water supply and treatment	32	6
Wastewater collection	82	96
Wastewater treatment	714	815
Sponsorships and donations	73	73
Depreciation and amortization	18	18
Administration	110	98
	<u>1,029</u>	<u>1,105</u>
Earnings from operations before financial and other revenues and expenditures	<u>51</u>	<u>28</u>
Financial and other revenues		
Other	596	597
	<u>596</u>	<u>597</u>
Financial and other expenditures		
Other	46	46
	<u>46</u>	<u>46</u>
Earnings for the year	<u>\$ 601</u>	<u>\$ 579</u>
Total earnings (loss) for the year (Regulated and Unregulated)	<u>\$ (10,888)</u>	<u>\$ (2,309)</u>

TO: Colleen Rollings, P.Eng., PMP., Chair and Members of the Halifax Regional Water Commission Board

SUBMITTED BY: Alicia Scallion

Digitally signed by Alicia Scallion
Date: 2023.01.20 10:01:48 -04'00'

Alicia Scallion, CPA, CA
Acting Director, Corporate Services/CFO

Digitally signed by Reid Campbell
Date: 2023.01.20 12:06:17 -04'00'

Reid Campbell, M.Eng., P.Eng.
Director, Engineering and Technology Services

APPROVED:

Digitally signed by Louis de Montbrun
Date: 2023.01.20 12:02:54 -04'00'

Louis de Montbrun, CPA, CA
Acting General Manager/CEO

DATE: January 18, 2023

SUBJECT: Capital Expenditures for the nine months ended December 31, 2022

ORIGIN

The Corporate Balanced Scorecard identifies the percentage of capital budget spent by the end of the fiscal year as a critical success factor and sets a target of 70-80%.

BACKGROUND

The Halifax Regional Water Commission (Halifax Water) Board is required to review periodic financial information throughout the year. Halifax Water's 2019 *Integrated Resource Plan* (IRP) identifies a 30-year capital investment plan valued at \$2.7 billion (net present value). In relation to the IRP, the capital budget program focuses on providing required infrastructure for asset renewal, regulatory compliance, and growth. The IRP calls for delivery of an average of \$135 million in capital projects per year. Halifax Water's annual capital budget, and capability to deliver capital projects, has not yet reached this level.

ITEM # 5.1

Halifax Water Board

November 24, 2022

DISCUSSION

Below is the breakdown by asset class and project status of the expenditures for the nine months ended December 31, 2022. Halifax Water has spent \$109.1 million to date on active projects, of which \$57.2 million was spent during the nine months ended December 31, 2022. Approximately \$22.7 million of the \$57.2 million relates to the 2022/23 capital budget of \$106.5 million, resulting in a year-to-date delivery rate of 21.3%. There were several significant projects in last year's capital budget for which construction had been delayed or extended into the next construction season for reasons including, construction market conditions, land acquisition, planning consideration or issues that arose during the planning phase which required a scope change.

Halifax Water is trying to improve on annual Integrated Resource Plan (IRP) execution and can measure progress through the number of projects completed annually (close-outs), the dollar value of projects completed as a percentage of total available capital spend, and the percentage of capital projects completed within the fiscal year they are budgeted. For 2022/23, Halifax Water is targeting a 5% increase in the percentage of capital projects completed within the fiscal year compared to prior year, and a 5% reduction in total available capital remaining to be spent.

Currently there are 662 active projects, compared to 532 at this point last year. The average capital spend per month compared to prior year has increased from \$4.5 million to \$6.4 million. Achievement of the targets for improvement this year is at risk due to the timing of several large projects – the Cogswell Redevelopment, the Burnside Depot, the Fairview Cove Trunk Sewer and the Bio-Solids Processing facility upgrade.

Capital Expenditure Report

Budget Category	Total Budget Available	Expenditures to March 31, 2022	Expenditures April 1, 2022 to December 31, 2022	Total Expenditures to December 31, 2022	Remaining Budget Available as of December 31, 2022	Total Forecasted Expenditures to March 31, 2023	Total Forecasted Expenditures to the End of the Project	Remaining Budget Available	Total Expenditures to December 31, 2022 as a Percentage of Total Budget Available	Total Expenditures to December 31, 2022 as a Percentage of Total Forecasted Expenditures to the End of the Project
Active										
Water	\$ 148,776,236	\$ 27,824,364	\$ 32,424,850	\$ 60,249,214	\$ 88,527,022	\$ 74,115,656	\$173,852,220	\$ (25,075,984)	40.5%	34.7%
Wastewater	106,678,636	21,647,050	22,273,995	43,921,045	62,757,591	56,622,741	89,127,615	17,551,021	41.2%	49.3%
Stormwater	14,544,079	2,451,810	2,477,020	4,928,830	9,615,249	8,190,000	10,377,947	4,166,132	33.9%	47.5%
	269,998,951	51,923,224	57,175,865	109,099,089	160,899,862	138,928,397	273,357,782	(3,358,831)	40.4%	39.9%
Pending										
Water	11,382,277	27,888	10,954	38,842	11,343,435	-	-	11,382,277	0.3%	0.0%
Wastewater	39,507,000	25,850	(25,850)	-	39,507,000	450,000	18,825,000	20,682,000	0.0%	0.0%
Stormwater	784,238	-	-	-	784,238	-	-	784,238	0.0%	0.0%
	51,673,515	53,738	(14,896)	38,842	51,634,673	450,000	18,825,000	32,848,515	0.1%	0.2%
Closed										
Water	10,000	-	6,293	6,293	3,707	6,293	6,293	3,707	62.9%	100.0%
Wastewater	-	-	-	-	-	-	-	-	0.0%	0.0%
Stormwater	-	-	-	-	-	-	-	-	0.0%	0.0%
	10,000	-	6,293	6,293	3,707	6,293	6,293	3,707	62.9%	100.0%
	\$ 321,682,466	\$ 51,976,962	\$ 57,167,262	\$ 109,144,224	\$ 212,538,242	\$ 139,384,690	\$292,189,075	\$ 29,493,391	33.9%	37.4%

The Total Budget Available of \$321.7 million represents total approved budgets for pending, active, and closed projects as at the end of December 31, 2022.

ITEM # 5.1
Halifax Water Board
November 24, 2022

Total Expenditures to December 31, 2022 of \$109.1 million include expenditures of \$52.0 million incurred prior to April 1, 2022 and expenditures of \$57.2 million in the current fiscal year. This results in a Remaining Budget Available as of December 31, 2022 of \$212.5 million.

In the Pending project category, there is \$28.4 million that has been deferred or cancelled. This funding is available to be reallocated to existing projects, if required, or used to fund future capital budgets.

ATTACHMENT

Capital Expenditure Report December 31, 2022

Report prepared by:



Corey Ellis, CPA, CGA, Accountant, (902)-490-2976

Capital Expenditure Report
For the Period Ending December 31/22

Status	Service	Asset Category	Total Budget Available	Expenditures to March 31, 2022	Expenditures April 1, 2022 to December 31, 2022	Total Expenditures to December 31, 2022	Remaining Budget Available as of December 31, 2022	Total Forecasted Expenditures to March 31, 2023	Total Forecasted Expenditures to the End of the Project	Remaining Budget Available
Active	W	Water - Land	555,000	44,796	-	44,796	510,204	40,000	175,000	380,000
		Water - Transmission	24,069,400	1,227,177	2,582,407	3,809,584	20,259,816	6,132,000	16,764,000	7,305,400
		Water - Distribution	14,446,814	175,224	5,741,430	5,916,654	8,530,160	11,622,000	12,221,000	2,225,814
		Water - Energy	400,000	-	-	-	400,000	-	-	400,000
		Water - Structures	28,296,000	8,156,230	5,751,618	13,907,848	14,388,152	16,165,790	26,715,999	1,580,001
		Water - Treatment Facilities	12,594,900	537,270	1,363,398	1,900,668	10,694,232	2,364,319	10,556,252	2,038,648
		Water - Security	225,000	-	42,066	42,066	182,934	-	-	225,000
		Water - Equipment	13,134,000	3,039,191	7,973,422	11,012,613	2,121,387	10,675,587	13,058,000	76,000
		Water - Corporate Projects	55,055,122	14,644,476	8,970,510	23,614,986	31,440,136	27,115,960	94,361,969	(39,306,847)
	W Total		148,776,236	27,824,364	32,424,851	60,249,215	88,527,021	74,115,656	173,852,220	(25,075,984)
	WW	Wastewater - Trunk Sewers	251,963	576,936	-	576,936	(324,973)	578,000	578,000	(326,037)
		Wastewater - Collection System	38,825,806	7,956,801	13,392,756	21,349,557	17,476,249	27,413,063	34,406,000	4,419,806
		Wastewater - Force mains	3,930,000	1,532,774	1,288,253	2,821,027	1,108,973	2,894,000	3,930,000	-
		Wastewater - Structures	24,808,570	6,168,301	2,685,493	8,853,794	15,954,776	11,751,000	28,110,000	(3,301,430)
		Wastewater - Treatment Facility	23,489,024	3,517,082	4,176,437	7,693,519	15,795,505	9,968,417	15,794,417	7,694,607
		Wastewater - Energy	1,339,000	60,958	-	60,958	1,278,042	216,500	700,000	639,000
		Wastewater - Security	475,000	129,514	57,775	187,289	287,711	-	-	475,000
		Wastewater - Equipment	592,000	104,973	170,986	275,959	316,041	293,776	482,000	110,000
		Wastewater - Corporate Projects	12,852,273	1,491,608	502,294	1,993,902	10,858,371	3,470,197	5,082,198	7,770,075
		Wastewater - Unregulated	115,000	108,103	-	108,103	6,897	37,788	45,000	70,000
	WW Total		106,678,636	21,647,050	22,273,994	43,921,044	62,757,592	56,622,741	89,127,615	17,551,021
	SW	Stormwater - Pipes	4,995,000	435,340	182,722	618,062	4,376,938	1,266,000	3,096,947	1,898,053
		Stormwater - Culverts/Ditches	6,639,000	1,614,582	2,176,900	3,791,482	2,847,518	6,331,000	6,454,000	185,000
		Stormwater - Structures	1,190,000	43,661	22,909	66,570	1,123,430	101,000	295,000	895,000
		Stormwater - Corporate Projects	1,720,079	358,227	94,489	452,716	1,267,363	492,000	532,000	1,188,079
	SW Total		14,544,079	2,451,810	2,477,020	4,928,830	9,615,249	8,190,000	10,377,947	4,166,132
Active Total			269,998,951	51,923,224	57,175,865	109,099,089	160,899,862	138,928,397	273,357,782	(3,358,831)
Pending	W	Water - Land	580,000	-	-	-	580,000	-	-	580,000
		Water - Transmission	1,237,400	-	10,954	10,954	1,226,446	-	-	1,237,400
		Water - Distribution	34,000	-	-	-	34,000	-	-	34,000
		Water - Energy	455,000	-	-	-	455,000	-	-	455,000
		Water - Structures	2,300,000	-	-	-	2,300,000	-	-	2,300,000
		Water - Treatment Facilities	2,434,000	-	-	-	2,434,000	-	-	2,434,000
		Water - Corporate Projects	4,341,877	27,888	-	27,888	4,313,989	-	-	4,341,877
	W Total		11,382,277	27,888	10,954	38,842	11,343,435	-	-	11,382,277
	WW	Wastewater - Trunk Sewers	17,525,000	25,850	(25,850)	-	17,525,000	50,000	17,525,000	-
		Wastewater - Collection System	4,750,000	-	-	-	4,750,000	-	-	4,750,000
		Wastewater - Force mains	60,000	-	-	-	60,000	-	-	60,000
		Wastewater - Structures	7,674,000	-	-	-	7,674,000	200,000	200,000	7,474,000
		Wastewater - Treatment Facility	7,580,500	-	-	-	7,580,500	200,000	1,100,000	6,480,500
		Wastewater - Energy	1,662,500	-	-	-	1,662,500	-	-	1,662,500
		Wastewater - Security	100,000	-	-	-	100,000	-	-	100,000
		Wastewater - Equipment	150,000	-	-	-	150,000	-	-	150,000
		Wastewater - Corporate Projects	5,000	-	-	-	5,000	-	-	5,000
	WW Total		39,507,000	25,850	(25,850)	-	39,507,000	450,000	18,825,000	20,682,000
	SW	Stormwater - Pipes	381,238	-	-	-	381,238	-	-	381,238
		Stormwater - Culverts/Ditches	280,000	-	-	-	280,000	-	-	280,000
		Stormwater - Structures	93,000	-	-	-	93,000	-	-	93,000
		Stormwater - Corporate Projects	30,000	-	-	-	30,000	-	-	30,000
	SW Total		784,238	-	-	-	784,238	-	-	784,238
Pending Total			51,673,515	53,738	(14,896)	38,842	51,634,673	450,000	18,825,000	32,848,515
Closed 22/23	W	Water - Distribution	-	-	6,293	6,293	(6,293)	6,293	6,293	(6,293)
		Water - Corporate Projects	10,000	-	-	-	10,000	-	-	10,000
	W Total		10,000	-	6,293	6,293	3,707	6,293	6,293	3,707
Closed 22/23 Total			10,000	-	6,293	6,293	3,707	6,293	6,293	3,707
Grand Total			321,682,466	51,976,962	57,167,262	109,144,224	212,538,242	139,384,690	292,189,075	29,493,391


TO: Colleen Rollings, P.Eng., PMP., Chair and Members of the Halifax Regional Water Commission Board

SUBMITTED BY:

 Digitally signed by Reid Campbell
Date: 2023.01.20 13:48:00 -04'00'

Reid Campbell, P. Eng.
Director, Engineering & Technology Services

APPROVED:

 Digitally signed by Louis de Montbrun
Date: 2023.01.20 13:39:01 -04'00'

Louis de Montbrun, CPA, CA, Acting General Manager/CEO

DATE: January 16, 2023

SUBJECT: Jubilee Road CN Bridge Replacement Project

ORIGIN

2021/22 Capital Budget

RECOMMENDATION

The Halifax Water Board approve the Jubilee Road CN Bridge Replacement (Water/Wastewater) for a total project cost of \$2.67 million (including net HST).

BACKGROUND

In recent years, the Halifax Regional Municipality (HRM) and Canadian National Railways (CN) have been developing a program to rehabilitate several road bridges that cross the CN rail-cut on the Halifax Peninsula. The bridges are owned by CN thus the rehabilitation program is being led by CN but given the importance of these bridges to the municipality's road network, the program is being jointly planned and coordinated by CN and HRM. Several bridges have been completed under this program and Jubilee Road CN bridge is next in the schedule and the existing bridge currently supports water and wastewater infrastructure that must be removed and replaced as part of the project.

DISCUSSION

Design work for the Jubilee Road CN Bridge Replacement project began in late 2021. Due to the nature of the work to rehabilitate the concrete bridge arch, it is not possible to maintain the existing water and wastewater pipes during construction or to reinstate the existing wastewater pipes in their existing size and layout once the bridge work is complete. As outlined in the attached Servicing Options Feasibility Study by Hatch, a number of options were developed in accordance with CN and Halifax Water standards to temporarily maintain flows during construction and to reinstate a permanent solution. The recommended options were adopted and designed. During construction, a temporary wastewater pipe supported by a temporary utility bridge will maintain wastewater service whereas the watermain can simply be taken out of service, removed and capped with minimal impact to adjacent customers. After bridge work is complete, the watermain and modified wastewater pipes are to be reinstalled over the CN bridge and the temporary pipe and utility bridge removed.

Design work for the Jubilee Road CN Bridge Replacement project was completed in 2022 and the tender, issued by CN, has closed. Based on the attached cost share agreement from CN, the total project cost for water and wastewater upgrades is \$2.67 million (\$670,000 for water and \$2 million for wastewater).

The construction tender price for the overall project exceeds the construction cost estimate by approximately \$350,000 (\$3.52 versus \$3.17 million). Although tender pricing for CN and HRM components are less than estimated, tender pricing for the Halifax Water components of the work is higher than estimated, specifically for wastewater components. These discrepancies are related to:

- Challenging location/difficult access for wastewater bypass;
- Size of the bypass (significantly larger than previous CN projects involving bypass);
- Availability/source of elliptical concrete pipes - during the tender process it was discovered that the closest supplier was purchased and could no longer supply this pipe;
- Missing items/quantities and revised quantities (construction cost estimate versus tender pricing).

Halifax Water has reviewed the CN cost share agreement and concurs with the cost share amounts is reasonable, given the circumstances.

BUDGET IMPLICATIONS

Funding in the amount of \$400,000 (water) and \$900,000 (wastewater) was allocated in the 2022/23 Capital Budget. These amounts were allocated in the absence of the fully developed design & scope. The balance of funding required for this project in the amount of \$1.37 million (\$270,000 for water, \$1.1 million for wastewater) is available from surpluses in previously closed projects or projects that have been deferred or cancelled. As this increase in funding exceeds the

greater of \$250,000 or 5%, according to the Halifax Water Capital Funding Approval Policy, approval is required from the Halifax Water Board and subsequently the UARB in accordance with Halifax Water's Capital Project Funding Approval policy.

The proposed expenditure meets the "NO REGRETS- UNAVOIDABLE NEEDS" approach of the 2012 Integrated Resource Plan. The proposed work meets the NR-UN criteria of "Required to ensure infrastructure system integrity and safety.

ALTERNATIVES

The only alternative is to not participate in the joint project. This is not recommended as it would result in loss of continuity for the water and wastewater networks in these areas, the loss of local service and impair Halifax Water's ability to provide service across the railroad cut in this location in future.

ATTACHMENTS

Project Location Sketch
Servicing Options Feasibility Study (Hatch)
Pre-Tender Estimate (Hatch)
CN Cost Share Agreement
Project Cost Estimate


Report Prepared by:



Greg Rice, P.Eng., Project Engineer, 902-476-3520

Financial Reviewed by:

Alicia
Scallion

 Digitally signed by Alicia
Scallion
Date: 2023.01.20
13:43:58 -04'00'

Alicia Scallion, CPA, CA
Acting Director, Corporate Services/CFO

JUBILEE ROAD CN BRIDGE REPLACEMENT HALIFAX



CN Bridge Replacement



0 10 20 40
Metres

Drawn By: AliciaM
Data Source: Halifax Water / HRM
Datum/Projection: NAD83(CSRs) v6;
MTM NS zone 5; CGVD2013
Date: Tuesday, December 20, 2022
Contact: GISProducts@halifaxwater.ca

**STRAIGHT from
the SOURCE**

**Halifax
Water**

The infrastructure information shown on this map is based on our best available records. However, the location of this infrastructure may not be accurate or complete. For any work being done in this area the design engineer and contractor are responsible to confirm information in the field including existing dimensions, elevations and locations. Halifax Water will not be held liable for misuse of this information.



Service Nova Scotia and Internal Services

Jubilee Road Bridge Rehabilitation Servicing Options Feasibility Study

Prepared For:
Halifax Water



Signature(s) / Initial(s) / Stamp(s)			<i>A Woods</i>	<i>J. Theriault</i>	<i>D. Johnson</i>	
2022-03-18	0	Issued to Client	A. Woods	J. Theriault	D. Johnson	G. Rice
Date	Rev.	Status	Prepared By	Checked By	Approved By	Approved By Client
HATCH						

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Project Report

March 18, 2022

Halifax Water

Jubilee Road Bridge Rehabilitation

Distribution
Greg Rice, P. Eng.
John MacDougall, P. Eng.

Servicing Options Feasibility Study

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1. Introduction

1.1 Project Description

Jubilee Road is a two-lane local street with sidewalks on both sides (for the majority of its length and within this project's limits) that runs from the Northwest Arm to the Veterans Memorial Hospital. The road passes overtop of the Canadian National Railway (CN) tracks between the Bloomingdale Terrace and Fairfield Road intersections (refer to Figure 1-1: Project Location) by way of a concrete arch bridge, owned primarily by CN. This bridge is over 100 years old and is scheduled to undergo a complete rehabilitation in the spring/summer of 2022.

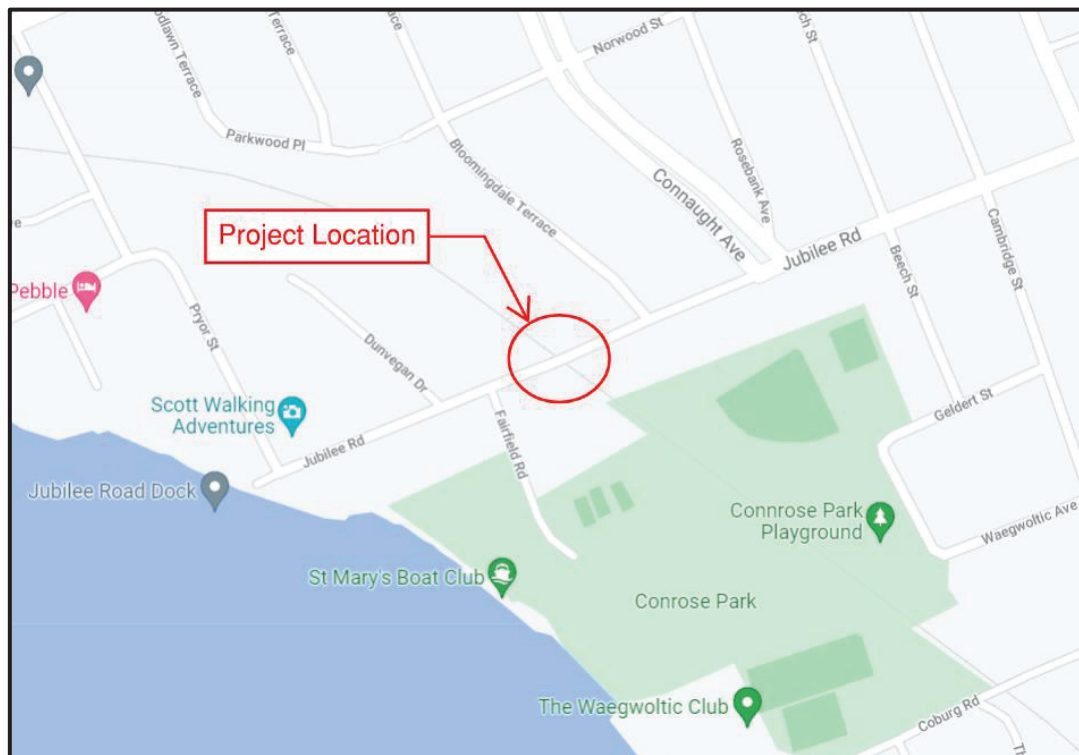


Figure 1-1: Project Location

1.2 Project Scope of Work for Bridge Rehabilitation

Through a separate but related project, Hatch Ltd. (Hatch) is working for CN and Halifax Regional Municipality (HRM) to produce engineered construction drawings for the bridge and road rehabilitation. The proposed rehabilitation includes:

1. Complete demolition/removal of the existing:
 - Road, sidewalks, and corresponding substructures.
 - Utilities and services.
 - Bridge railings, spandrel walls, and counterforts.
2. Rehabilitation of the existing:

- Underside of bridge arch, wingwalls and posts, and abutments.
- 3. New construction of:
 - 300 mm thick concrete arch overtop of the existing bridge arch.
 - Bridge spandrel walls, counterforts, and railings.
 - Utilities and services.
 - Road, sidewalks and corresponding substructures.

1.3 Services Feasibility Study Scope of Work

The purpose of this feasibility study is to survey, review, and verify existing utilities information and subsequently determine a cost effective solution(s) for the following two key challenges prior to detailed design:

1. Maintaining the operation of services throughout construction (approximately 4 to 6 months).
2. Reinstating permanent services following construction by solution acceptable to all stakeholders.

1.3.1 Baseline Information and Project Requirements (Provided by Halifax Water)

Refer to Attachment A. Two separate services currently exist within the project limits, namely water and combined sewer, and the following options have been investigated as part of this study:

1. Water:
 - a. Operation throughout construction:
 - i. No options will be included in this study as the portion of this service which lies within the project limits provides a redundant loop and is not required to be maintained throughout construction. Should residential services be located within the limits of existing valves to be used for isolation during construction, a number of options will be reviewed during detailed design to maintain service to all affected properties. Such options may include new mainline valves installed on the existing main to shorten the isolation zone, services lateral modifications or temporary servicing.
 - b. Reinstatement following construction:
 - i. Reinstatement within the bridge structure with finished road elevations matching existing road elevations.
 - ii. Reinstatement within the bridge structure with finished road elevations greater than existing road elevations.
 - iii. Integrating services within the bridge structure by box culvert, depression or penetration.

- iv. Rerouting of services to be supported on the outside of the bridge structure.
 - v. Rerouting of services to be supported by a separate structure, independent of the CN bridge.
2. Combined sewer:
- a. Operation throughout construction:
 - i. Diversion to one or more gravity sewers in the vicinity.
 - ii. Temporary pump station and force main system.
 - iii. Temporary rerouting and aerial support of sewer across rail cut.
 - b. Reinstatement following construction:
 - i. Reinstatement within the bridge structure with finished road elevations matching existing road elevations.
 - ii. Reinstatement within the bridge structure with finished road elevations greater than existing road elevations.
 - iii. Integrating services within the bridge structure by box culvert, depression or penetration.
 - iv. Rerouting of services to be supported on the outside of the bridge structure.
 - v. Rerouting of services to be supported by a separate structure, independent of the CN bridge.

1.3.2 Survey and 3D Scan (Provided by Talisman Technical Solutions)

A topographical and services verification survey (including accessible tops of manholes, valve nuts, inverts and diameters of pipes within manholes) has been completed to aid in confirming record information over 50 years old. Where exiting infrastructure remains inaccessible, record information has been used to fill data gaps.

As part of the CN work, a high precision 3D scan has been completed to capture the bridge structure. This scan has been used for the purpose of this study to collect an accurate measurement of the available distance between underside of arch and top of existing road, as well as other key dimensions.

1.3.3 CCTV Inspection

Halifax Water has provided Hatch with CCTV footage of the existing combined sewer system within the project limits. This will be used as an aid to verify the existence of certain elements that could not be located by above ground visual inspection.

1.3.4 Flow Monitoring Data

Halifax Water has provided Hatch with flow monitoring data collected in support of the proposed Fairfield holding tank rehabilitation project. The data provided includes dry weather flow as well as wet weather flow during four distinct wet weather events. All combined sewer

flow crossing the CN arch bridge is diverted into the Fairfield holding tank thus passes through the flowmeter generating the data provided.

1.3.5 **Hydro-Excavation**

Through discussions with Halifax Water, it was originally deemed that hydro-excavation won't not provide further useful information that could not be provided by the work completed above. Hydro-excavation poses significant risk in damaging the existing combined sewer system, given its age and materials.

Following further investigation into the feasibility of the options, piping inverts will need to be raised in order to meet clearance requirements of the project, regardless of the chosen option. Existing sewer laterals may be impacted and attempts to locate them by hydro-excavation is being completed in support of detailed design. This information was not available at the time of writing this report.

2. **Existing Conditions**

2.1 **Limitations of Study**

A site visit was conducted by Hatch to visually review the project location, as well as identify manholes, valves and other infrastructure indicated to exist by the drawing provided. Hatch's site investigation was limited by private property boundaries and physical barriers.

Similarly to the site investigation, the 3D scan is limited to what can be captured by it's line of sight. The survey is limited by the accessibility of manholes, pipe inverts, and valves. Hatch notes that several manholes within the project limits are of older generation construction and constructed specifically to suit the unique applications, with lids offset from piping and impractical to reach reference points. As such, certain piping inverts are estimates using best survey practices.

CCTV inspection footage and report have been conducted and provided to Hatch by Halifax Water.

2.2 **Combined Sewer Infrastructure**

2.2.1 **On-Site Investigation and Existing Information Review**

Refer to Attachment B. Two manholes, which are shown on the attached, have not been located by visual inspection nor by use of a metal detector. Hatch recommended that a CCTV inspection be conducted to confirm the arrangement of the system and verify the locations/existence of missing elements.

Referring to the drawing provided (see Figure 2-1: Clip from Attachment A), as well as the survey and CCTV inspection, the existing combined sewer system over the arch consists of (from east to west):

- Two (2) 900 mm diameter concrete pipes meeting at a concrete manhole approximately in the center of the arch bridge and outflowing as one (1) 900 mm diameter concrete pipe.

- All catch basin leads within the project location tie into this combined sewer system.

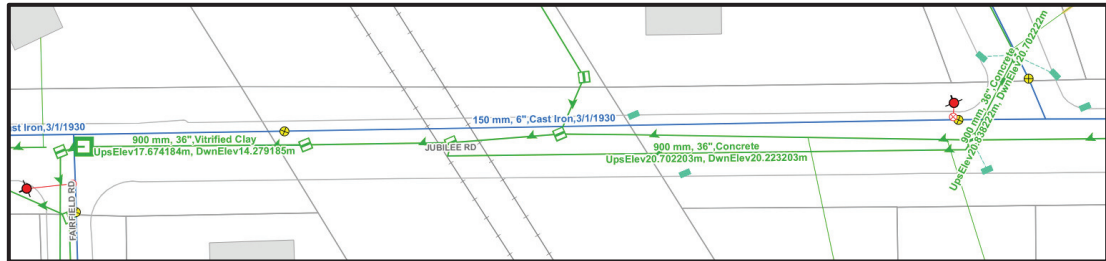


Figure 2-1: Clip from Attachment A

2.2.2 3D Scan and Survey Review

Refer to Figure 2-2: Section from Jubilee Bridge 3D Scan for a section pulled from the 3D scan. The minimum amount of space available between underside of arch and top of existing road is approximately 1572 mm (north roadway edge) and maximum is approximately 1828 mm (roadway centerline). From the Jubilee bridge record drawings and Hatch's past experiences with equivalently aged and constructed bridges along this railway line, the existing concrete arch thickness is approximately 300 to 350 mm at a minimum. Similarly, the thickness of existing asphalt is approximately 100 to 150 mm at a minimum. This results in a combined sewer pipe cover (top of pipe to underside of asphalt) of approximately 528 mm at most and 172 mm at least.

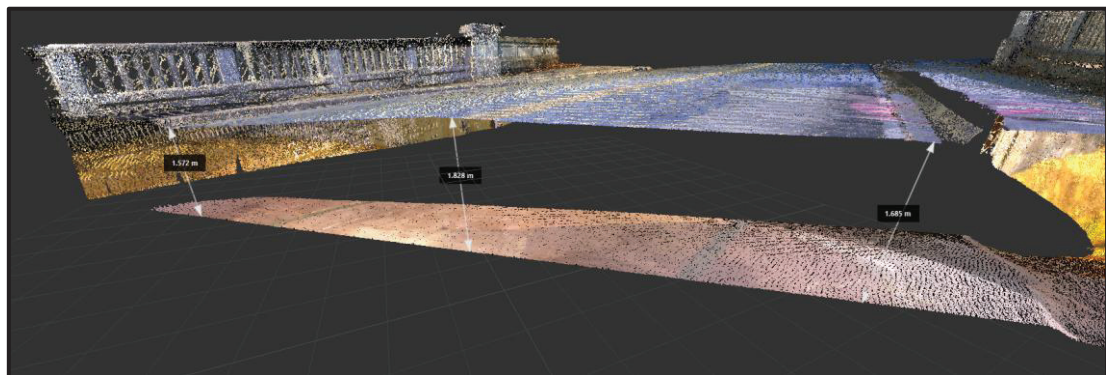


Figure 2-2: Section from Jubilee Bridge 3D Scan

2.2.3 CCTV Inspection Review

Using the provided CCTV footage and report, sewer piping and manhole connections have been verified, as well as materials and conditions. Overall, there were several areas noted as damaged, having offset joints, and experiencing miscellaneous material changes. Some joints were offset to a point where the camera could no longer proceed its investigation.

2.2.4 Summarized Drawing

Refer to Attachment C. A PDF markup drawing has been produced to capture all of the above noted reviews.

2.3 Water Main Infrastructure

Refer to Attachment A. Evidence suggests the water main infrastructure crossing the bridge is:

- One (1) 150 mm diameter cast iron pipe.

Refer to Figure 2-1: Clip from Attachment A. The water main crosses the bridge approximately half way between the north roadway edge and the roadway centerline. In the east it tees to feed Bloomingdale Terrace and in the west it tees to feed Fairfield Road. There is a gate valve to the west of the bridge, prior to the Fairfield Road tee, and another gate valve to the east of the bridge, prior to Bloomingdale Terrace tee and immediately following a hydrant connection.

Evidence from Jubilee Road bridge record drawings provided by CN (refer to Figure 2-3: Jubilee Road Bridge Sections) suggests that the water main is encased in a box structure (possibly concrete) packed with "frost protective packing" (possibly loose insulation) at the top of the arch. The section pulled from the existing drawings seen in the figure below visually describes the situation and also further reinforces the notion discussed in the section above that minimal cover is present above the service piping at the crown of the arch (approximately 900 mm above the water main based on the figure below). It also suggests that the section of the water piping crossing the bridge is in fact 225 mm in diameter. Halifax Water have asked that Hatch consider replacement to be a minimum 250 mm diameter pipe.

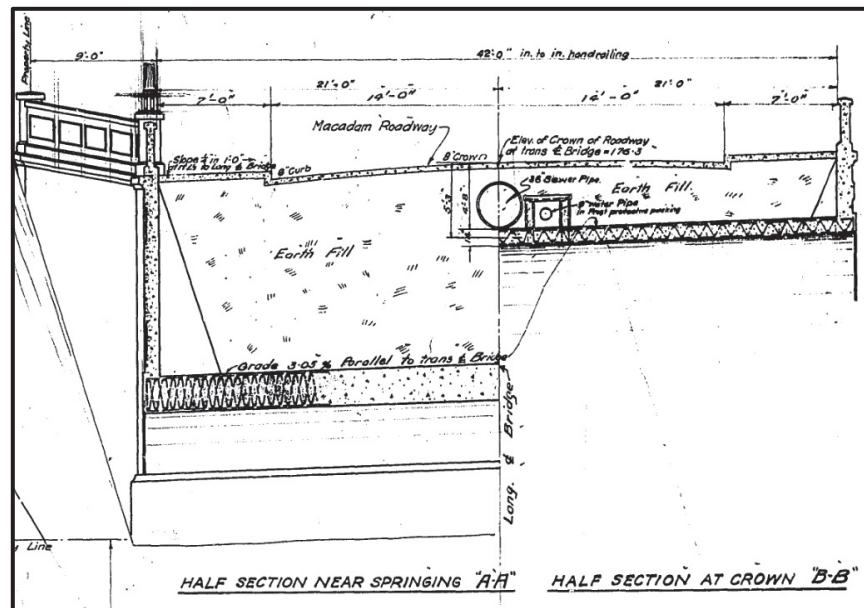


Figure 2-3: Jubilee Road Bridge Sections

3. Options Evaluation – Temporary Combined Sewer Servicing During Bridge Construction

3.1 Option T1: Diversion to Existing Infrastructure

3.1.1 *Description*

This option investigated the sewershed which directs flow to the combined sewer pipe crossing the CN arch bridge. More specifically, to identify if there is potential to divert said flow to a separate sewershed during construction.

3.1.2 *Evaluation*

Based on available information, the sewershed draining over the CN arch at Jubilee is shown to covers approximately 65 hectares and covers an wide area between Jubilee and Chebucto Roads, extending as far northeast as Monastery Lane. Anticipated flows provided as part of the Request for Proposal for the Northwest Arm Trunk Sewer Rehabilitation project (Map 9, CBCL/Robinson Consultants/Halifax Water, Jan 2017) indicate that the 4x Average Dry Weather Flow for this sewershed is 115.1 L/s. This is in general conformance with the provided flow monitoring data which indicated a minimum dry weather flow of 13 L/s and a maximum of 21 L/s. In contrast, the maximum wet weather flow was recorded to be 1067 L/s.

Adjacent sewersheds have similar capacity constraints as they also drain over the CN rail cut at Quinpool Road and Coburg Road respectively. The sewer systems at both of these locations has recently been replaced as part of previous CN arch rehabilitations, with piping sized to meet capacity requirements of their existing sewersheds. No reserve capacity is available to accommodate the magnitude of flow which would require diversion.

3.1.3 *Feasibility*

Based on the magnitude of flow conveyed by the combined sewer system crossing the CN arch at Jubilee Road and the lack of reserve capacity on neighboring sewersheds , diversion of the Jubilee Road sewers to other exiting systems is deemed as infeasible.

3.2 Option T2: Temporary Pump Station and Force Main System

3.2.1 *Description*

Bypass pumping is a commonly used method at worksites with requirements similar to those present for this project. A typical arrangement consists of a temporary pumping station and force main piping system which increases in complexity with greater required peak flows, pipe sizes, run times, and accessibility.

3.2.2 *Evaluation*

Pumping stations are generally designed to be able to pump the design peak instantaneous flow. Given that the construction period will span into the fall, significant wet weather must be considered within the combined sewer system. As noted in the evaluation of Option T1, the maximum wet weather flow which was recorded at the Fairfield holding tank flow monitor during the monitoring period was 1067 L/s (1.068 m³/s). The peak 5-minute rainfall intensity recorded during the wet weather event was 27.48 mm/hr, which is less than half the 2-year return period event for Halifax which is 72.7 mm/hr. It can therefore be expected that flows

generated during more infrequent return period storms could exceed this recorded amount, provided that the pipes and upstream inlets were not operating at capacity.

3.2.3 *Feasibility*

Jubilee's significant flows would require a significant pumping station to handle the wide variety of pumping scenarios anticipated, from low dry weather flows to large wet weather flows. Based on the measured peak wet weather flow observed during the monitoring period, a wet well sized to accommodate peak wet weather flows would require 1 m³ of volume for each second of flow. Due to the size and complexity required for what is considered a short term, temporary solution, the corresponding need for a force main to cross the rail cut, as well as the lack of available public land to house a pumping station of this scale in close proximity to the project site, this option is being deemed as not practical.

3.3 **Option T3: Temporary Rerouting and Aerial Support Across Rail Cut**

3.3.1 *Description*

This option would require the construction of a pipe support structure, separate from the CN bridge, to allow the combined sewer to span overtop of the rail cut. To avoid significant work on private property and realignment challenges, the structure is assumed to be constructed on the north side of the CN bridge. This option has the benefit of remaining in place (with proper design considerations) and becoming a permanent solution, which is further discussed in section 4.5.

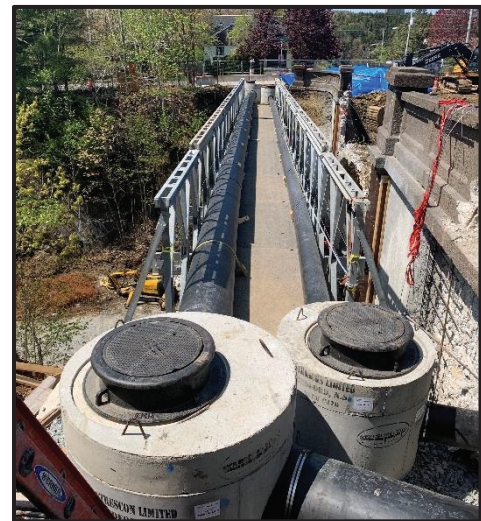


Figure 3-1: Temp. Bridge at South St. in 2021

3.3.2 *Evaluation*

The primary three (3) factors in determining the feasibility for this approach is whether a realigned combined sewer routing to span over the tracks will be capable of:

1. Maintaining the Halifax Water standard minimum pipe grade of:
 - a. 0.4% for storm.
 - b. 0.6% for sanitary.
2. Maintaining the CN required vertical track clearance of 7.01 meters (potential for CN to approve 6.71 meters, considering this would be a temporary structure).
3. Having an adequate support structure which maintains the CN required vertical track clearance (considering deflections) and does not require vertical supports that would otherwise interfere with the existing rail cut clearances.

The existing top of rail, on the north side of the bridge, is at an approximate elevation of 12.67 meters. Based on past experience (South Street temporary utility bridge in 2021), we can expect a utility bridge to have a beam height of approximately 250 to 300 mm and bridge deck thickness of 50 to 75 mm. As such, should bottom of the piping, crossing the utility bridge, above the track be at minimum 20.06 meters of elevation, CN's vertical track clearance would theoretically be met.

The following figure represents some modifications to the existing combined sewer system required along Jubilee and Bloomindale to ensure CN's vertical track clearance is met.

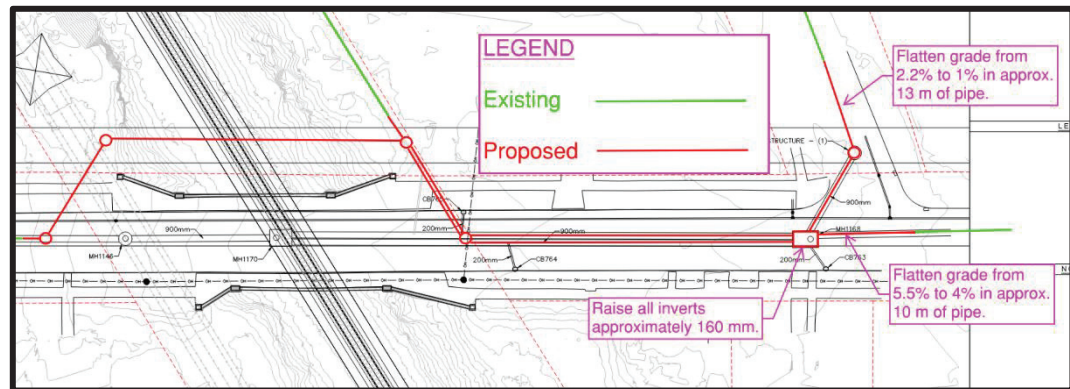


Figure 3-2: Proposed Combined Sewer Routing/Modifications for Utility Bridge

3.3.3 Feasibility

Two of the three primary factors could be met if the presented modifications are acceptable. The factor which would not be met is the minimum standard pipe grade of 0.6% for sanitary piping although, it meets the minimum of 0.4% for storm. To ensure CN's vertical clearance requirement is met, the modifications presented would need to be completed. Nonetheless, the presented option does ensure that the temporary piping meets (or exceeds) existing capacities of the existing combined sewer system.

This option has been further reviewed with utility bridge suppliers (Algonquin Bridge and Acrow) to ensure scheduling of the material is feasible for the proposed bridge rehabilitation construction schedule (summer 2022) and to verify required dimensions above. Both suppliers have indicated feasibility as probable however, it would be best to have the rental purchased prior to project tender to secure materials.

With the above review, this option is deemed as feasible provided the necessary modifications are completed.

4. Options Evaluation – Permanent Servicing After Bridge Construction

4.1 Option P1: Replacement of Services within Bridge Structure with Finished Road Elevations Matching Existing Road Elevations

4.1.1 Description

Naturally, permanently reinstating the services in their existing location is the first option which should be analyzed and evaluated. This approach follows the conventional method of maintaining services within the roadway right-of-way and would allow for minimal realignment to tie into existing services.

4.1.2 Evaluation

At a minimum, for this option to prove viable, both the proposed water main and combined sewer services would require the following criteria to be met:

1. Halifax Water standard minimum pipe grades of:
 - a. 0.4% for sanitary.
 - b. 0.6% for storm.
2. Equal or greater capacity than the existing services.
3. Adequate granular pipe bedding and protection gravels for reinstated pipes or protection by alternate means.
4. Water main services will be required to be wrapped in 50 mm thick insulation and be equipped with a heat trace line.

As reviewed in section 1.3.3, there is minimal clearance between the existing top of arch and bottom of asphalt. As part of the bridge rehabilitation, a new 300 mm thick arch will be poured on top of the existing arch, further reducing the available clearance for services to be replaced as existing. See below for a section cut along the width at the center of the arch.

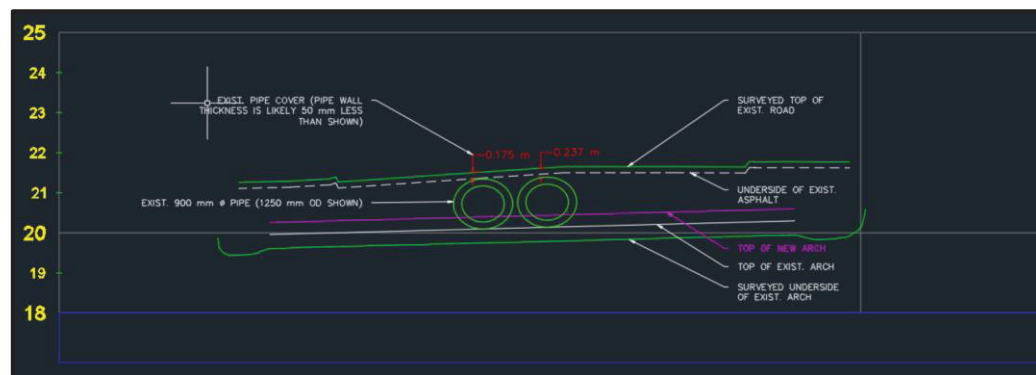


Figure 4-1: Existing Combined Sewer Bridge Section

As can be seen from the section in Figure 4-1 above, in order for this option to have any viability, the existing combined sewer pipe inverts would have to be raised in order to allow for the new arch construction. This would have an impact on the existing slope and hence

capacity of the existing pipes. Based on available information, pipe slopes between Bloomingdale Terrace and the CN arch are already at relatively shallow slopes. It appears as though a previously existing manhole (MH-2) located immediately east of the CN arch where a 450 mm main connects into the Jubilee system has been removed and replaced with straight sections on 900 mm concrete pipe on both combined sewer piping runs. This is supported by the CCTV results. MH-2 is depicted on historic drawings as being the location of a grade break in the piping between Bloomingdale Terrace and the CN arch, which is also supported by the CCTV results. The existing combined sewer piping layout in the area has been investigated using a number of historic Halifax Water and HRM drawings, CCTV, topographic survey and site visits. The findings summarized in the figure below. Capacities are considered to be limited by the sections at 0.42% slope. Reducing slopes of upstream piping currently at steeper grades appears feasible as a means of raising inverts at the arch.

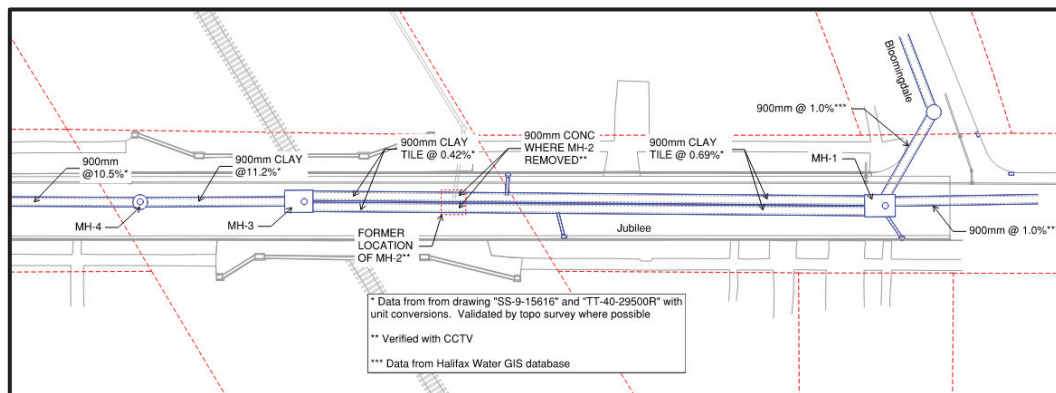


Figure 4-2: Summarized Findings from Existing/New Information

4.1.3 Feasibility

With the information above, this option is found to be infeasible for the combined sewer. The construction of the new 300 mm thick arch does not allow for the pipes to be replaced directly within the bridge structure without compromising the amount of cover available and the minimum pipe grades required along the system found on Jubilee, between Bloomingdale and Fairfield intersections.

However, this option remains possible for the water main infrastructure. Cover above the 150 mm diameter pipe would be approximately 400 mm (considering insulation thickness) and an additional 75 to 100 mm could be provided should the water main be realigned to the North sidewalk area (similar approach done at Coburg Road bridge).

Although, this option has been found to be infeasible, refer to section 4.3 for a similar investigation with alternative combined sewer system cross sections.

4.2 Option P2: Replacement of Services within Bridge Structure with Finished Road Elevations Greater Than Existing Road Elevations

4.2.1 Description

Reviewing the provided existing drawings and survey, an immediate challenge presents itself in the form of available vertical distance within the bridge structure. The option to increase existing road elevations at the center of the arch, and subsequently grades east and west of center, is a straightforward approach investigated to determine its potential impacts and feasibility.

4.2.2 Evaluation

The criteria for this option match those discussed in section 4.1.2 along with the required:

1. HRM standard maximum road grade of 10%.
2. HRM standard minimum road grade of 0.5%.

Refer to Attachment D for a visual of the existing topography and contours at Jubilee Road bridge. The following table summarizes the known information and reviewed road grade increases, with reference to the combined sewer infrastructure pipe cover:

Table 4-1: Existing Bridge Deck Road Grades and Piping Cover Options

Option Description	Road Grade (30 m West from Bridge Center)	Road Grade (15 m West from Bridge Center)	Pipe Cover at Center of Arch (mm)	Road Grade (15 m East from Bridge Center)	Road Grade (30 m East from Bridge Center)
Existing	-8.3%	-7.3%	300 mm	3.3%	3.0%
Proposed New Arch	-	-	0 mm	-	-
Proposed + 100 mm Road Elev. Increase at Center of Arch	-8.6%	-8.0%	100 mm	2.7%	2.7%
+ 200 mm	-9.0%	-8.7%	200 mm	2.0%	2.3%
+ 300 mm	-9.3%	-9.3%	300 mm	1.3%	2.0%
+ 400 mm	-9.6%	-10.0%	400 mm	0.7%	1.7%

Note: The table above represents approximate values to the best of Hatch's knowledge. It does not consider curvature required in the proposed road profiles for smooth transitioning and should be further reviewed during design.

4.2.3 *Feasibility*

It is apparent that increasing the elevations of the existing road and grades provides benefits to the issue of pipe cover. However, the construction cost implications of this option increase as sidewalks, curbs, road cross slopes, catch basins, valves, manholes, bridge spandrel walls, and other elements must be reviewed to fit each new elevation within the affected areas. It would also need to be further investigated to ensure road tie in locations are a smooth transition between new and existing.

This option alone does not fulfill all requirements however, this option, if combined with another(s), has the potential to fulfill all objectives of this study and is therefore deemed as feasible.

4.3 **Option P3: Integrating Services within Bridge Structure by Box Culvert, Elliptical Piping, Depression or Penetration**

4.3.1 *Description*

Further to the possibilities discussed above, this option considers an approach where the geometry of the services and/or bridge arch are modified for less demand on vertical clearances. A similar methodology was applied to Coburg Road bridge (depression in the new arch to provide additional pipe cover) in 2020.



Figure 4-3: Depression in Arch at Coburg Bridge in 2020

4.3.2 *Evaluation*

The structural engineering team at Hatch has reviewed the allowable limit for embedment of piping systems into the new concrete arch. As part of the bridge rehabilitation project, a bond breaking system will be installed between existing arch and new arch. This will allow CN to return at later date and remove the existing arch to allow for possibilities such as increasing vertical track clearance or incorporating additional track railways. As such, the new arch thickness cannot be reduced beyond 250 mm. This allows for a maximum depression of 50 mm.

Penetration through the arch can be accomplished structurally however, it will encroach beyond what CN is willing to review for vertical track clearance.

Replacing the existing circular piping with either box culverts or elliptical piping are both options that would allow for the objectives of this study to be partially satisfied. With modifications to the existing system's pipe grading along Jubilee and Bloomingdale, these two options can entirely satisfy the objectives of this study.

Please see below for a section regarding the box culverts (1200 wide by 600 high by 300 mm thick). To satisfy existing capacity of the system, two box culverts would be required with the bottom side of the box culverts being integrated into the new concrete arch. Box culverts can be sourced locally in Halifax by way of precast or cast-in-place construction.

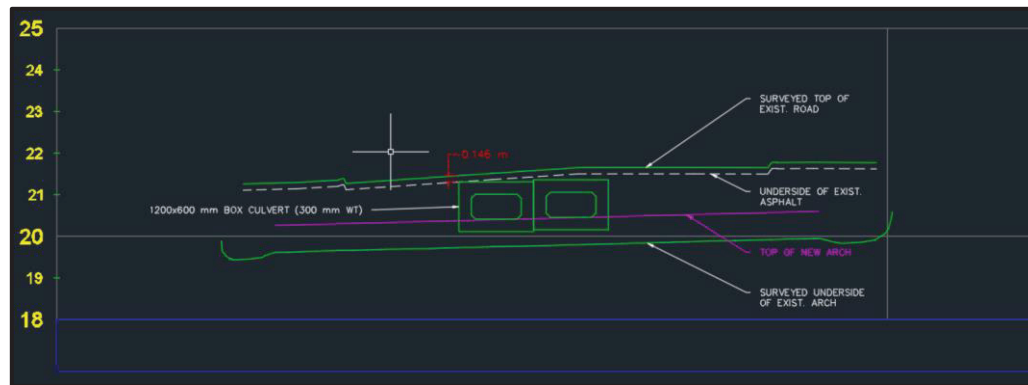


Figure 4-4: Box Culverts at Center of Arch Section

Please see below for a section regarding the elliptical pipes (1143 by 737 by 114 mm thick). To satisfy the existing capacity of the system, two elliptical pipes would be required, with the bottom side being embedded 50 mm into the new concrete arch. Elliptical piping products can be sourced out of Ontario, Canada.

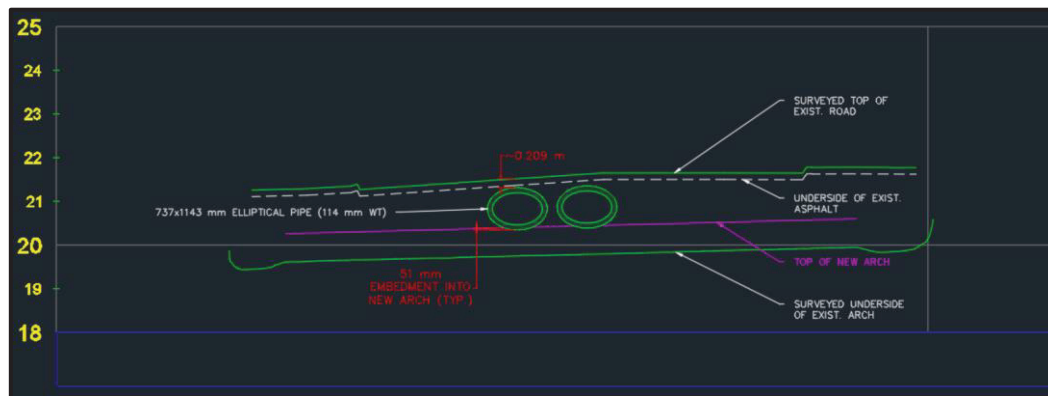


Figure 4-5: Elliptical Pipes at Center of Arch Section

4.3.3 Feasibility

Based on the above evaluation, two options exist in the form of non-circular piping products. Alone, these options do not meet existing capacity, as the pipe grades would be too shallow. This can be alleviated by modifying the existing combined sewer system further up Jubilee and Bloomingdale as discussed previously. This option also does not satisfy cover requirements. This can be further mitigated by modifying the existing road grades, as discussed previously.

Therefore, these options both partially meet the objectives set out in this study. If one, or the other, we're to be completed in combination with another presented option(s), it could meet all the objectives and is thus deemed feasible.

4.4 Option P4: Rerouting Services to be Supported on the Outside of Bridge Structure

4.4.1 Description

This option was similarly employed at the Marlborough Woods bridge in 2019 (water main was supported by hangers anchored into the CN bridge's north spandrel wall to cross the rail cut). It is a commonly used method to support water, sewer, force main, and other piping systems at bridge crossings. It is assumed that the supports will be on the north side of the bridge, with the potential requirement for a second line on the south side.



Figure 4-6: Watermain Support Hangers at Marlborough in 2019

4.4.2 Evaluation

To maintain capacity in the combined sewer system crossing the CN bridge, two 900 mm diameter pipes would need to be supported by hangers. It is also possible to meet existing capacity with a single 1200 mm diameter pipe when provided the appropriate grade.

The large diameter of the piping would require custom fabricated hangers and contrary to the bridge project mentioned above, these would be significantly more robust and take the shape of a cantilevered platform supported by underneath, rather than a hanger supported by above.

Without further modifications to the existing sewer system up Jubilee, the piping platform would encroach into CN's vertical track clearance with little room for reduction. The embedment requirements for anchors would require an increase in the thickness of the new spandrel wall or a significant increase to the amount of custom platform supports required.

4.4.3 Feasibility

Due to the modifications required to the CN bridge, modifications to the combined sewer system, size and quantity of supports required and encroachment into vertical track clearance, this option is being set aside as infeasible. The challenges it presents would be better handled with the option of installing a permanent utility bridge.

4.5 Option P5: Rerouting Services to be Supported by a Separate Structure, Independent of CN Bridge

4.5.1 *Description*

Also an option formerly utilized, in this case at the Quinpool bridge in 2018. It involves the use of a separate structure to support piping and is assumed to be constructed on the north side of the bridge.



Figure 4-7: Quinpool Utility Bridge in 2018

4.5.2 *Evaluation*

To adequately review this option, Hatch has reviewed the project with utility bridge suppliers, Algonquin Bridge and Acrow, regarding concept drawings and preliminary planning. The combined sewer system elevations are the limiting factor for utility bridge elevation design, as the water infrastructure is pressurized and can handle the elevation differences required to meet CN's vertical track clearance. The following figure is a profile view of the potential utility bridge and provides a visual for the encroachment.

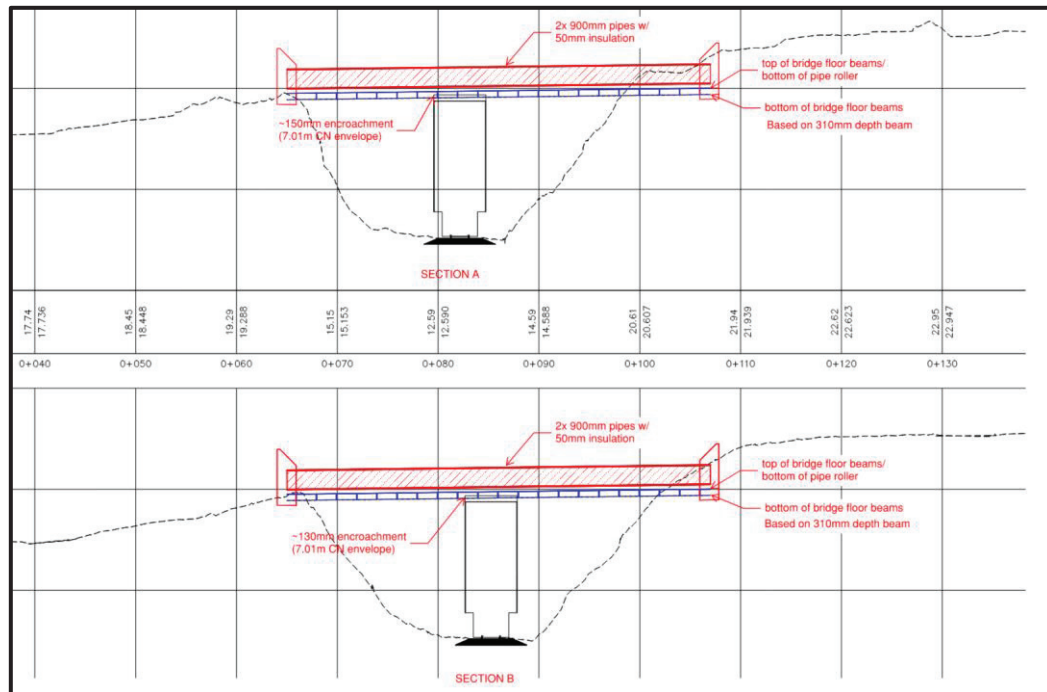


Figure 4-8: Utility Bridge Profile View on North Side of Jubilee Road

The figure above is without invert modifications to the existing combined sewer system. With some of the modifications described in section 3.3 to the combined sewer system, this encroachment can be alleviated.

4.5.3 Feasibility

Ultimately, the feasibility for this option will come down to the availability of the custom designed and fabricated bridge. Both suppliers have indicated the possibility to meet the summer 2022 construction schedule, although both have also insisted on purchasing the bridge prior to tender to secure materials.

This option will also rely the ability to modify the combined sewer as described to meet elevations required and maintain existing capacity of the system. These modifications would likely be more significant than described, as CN's vertical clearance requirements increase (both in height and width) for a permanent structure. This option is therefore feasible should these measures be implemented.

5. Recommended Solutions and Justification

A number of options have been evaluated for temporarily maintaining combined sewer servicing during construction as well as final conditions following conditions. These are summarized as follows:

Table 5-1: Temporary Solution Summary Table

Temporary Solution	Feasibility
T1 - Diversion to Existing Infrastructure	Found to be infeasible due to high flow volumes during wet weather events and lack of reserve capacity in adjacent sewersheds.
T2 - Temporary Pump Station and Force Main System	Found to be infeasible due to high flow volumes during wet weather events, requiring significantly sized wet well, pumping equipment and force main which is not justified for temporary conditions.
T3 - Temporary Rerouting and Aerial Support Across Rail Cut	Found to be feasible, may require modifications to the Jubilee combined sewer system to raise inverts and allow for required CN vertical clearances to be achieved.

Three options were reviewed for a temporary solution and only one was deemed feasible for the objectives of this report. As such, Hatch recommends:

- That a temporary utility bridge be pursued and that this rental is pre-purchased prior to tender of the CN bridge project to ensure materials are secured, if possible.
- The required modifications to the combined sewer system be further designed to ensure invert elevations are adequate to meet CN's vertical track clearance regarding a temporary structure, as well as existing capacities of the combined sewer system.
- That hydro-excavation be completed to locate and verify elevations of any service laterals that could be potentially impacted by the design modifications.

As discussed in the report, a temporary water service is not required for this project.

Table 5-2: Permanent Solution Summary Table

Permanent Solution	Feasibility
P1 – Replacement within Bridge without Road Surface Modifications (Round Piping)	Found to be infeasible due to lack of available space between new arch surface and road surface.
P2 – Replacement within Bridge with Road Surface Modifications (Round Piping)	Found to be feasible from a servicing perspective, but would have significant impact on other aspects of the project and extend reinstatement limits.
P3 – Integrating Services within Bridge Structure by Box Culvert, Elliptical Piping, Depression or Penetration	Found to be feasible, may require modifications to the Jubilee combined sewer system to raise inverts and allow for required CN vertical clearances to be achieved.
P4 – Rerouting Services to be Supported on the Outside of Bridge Structure	Found to be infeasible due to structural requirements of supports, and may not allow for required CN track clearances.
P5 – Rerouting Services to be Supported by a Separate Structure, Independent of CN Bridge	Found to be feasible, may require significant modifications to Jubilee combined sewer system to raise inverts and allow for required CN vertical clearances to be achieved. Modifications would also extend along Bloomingdale and past the Bloomingdale/Jubilee intersection.

As summarized in Table 5-2: Permanent Solution Summary Table, of the five options evaluated for the permanent servicing solution, three have been deemed viable. Two of the solutions involve reinstatement of the combined sewer piping within the street above the CN arch (P2 and P3) and the third involves the construction of a permanent utility bridge independent of the CN Bridge. Based on conversations with Halifax Water, a preference has been expressed for a solution which avoids the need for an independent utility bridge which would result in added maintenance in the future. As such, Hatch recommends:

- That the option of reinstating the combined sewer piping within the street above the CN arch be developed through detailed design. The ultimate solution may include aspects of both option P2 and P3 (i.e. road surface modifications and/or use of alternative conduit materials such as elliptical pipe or box culvert).
- That the use of custom fabricated vertical bends be considered to avoid the need for a shallow structure(s) at the crown of the arch where a change in pipe slopes would be required.
- That the existing piping along Jubilee between the CN arch and Bloomingdale be replaced at lower grades to allow for inverts to be raised and allow for crossing the new arch structure. This may also include some pipe replacement/re-grading past the intersection.

As discussed in the report, water servicing can be reinstated as requested (250 mm diameter) within the bridge structure. During detailed design, consideration for shut off valves and isolation shall be accounted for.

Upon direction from Halifax Water, Hatch is prepared to submit a fee proposal for the detailed design of the services.

Attachment A

Halifax Water Services Dwg. No. 1193079

Attachment B

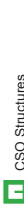
Dwg. 1193079 with Hatch Site Review Markups

HALIFAX WATER SERVICES

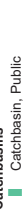
WATER-WASTE-STORM



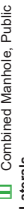
CSO Structures



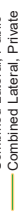
Catchbasins



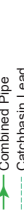
Manholes



Laterals



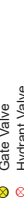
Public Pipes



Water Hydrants



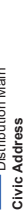
Water Valves



Water Service Laterals



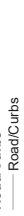
Water Pipes



Civic Address



Street Name



Road/Curbs



Railroad



Building



Parcels



Drawn By: Alciam

Data Source: Halifax Water / HRM

Drawn Date: 2021-11-25

MTM NS zone 5, CGVD2013

Date: Monday, July 26, 2021

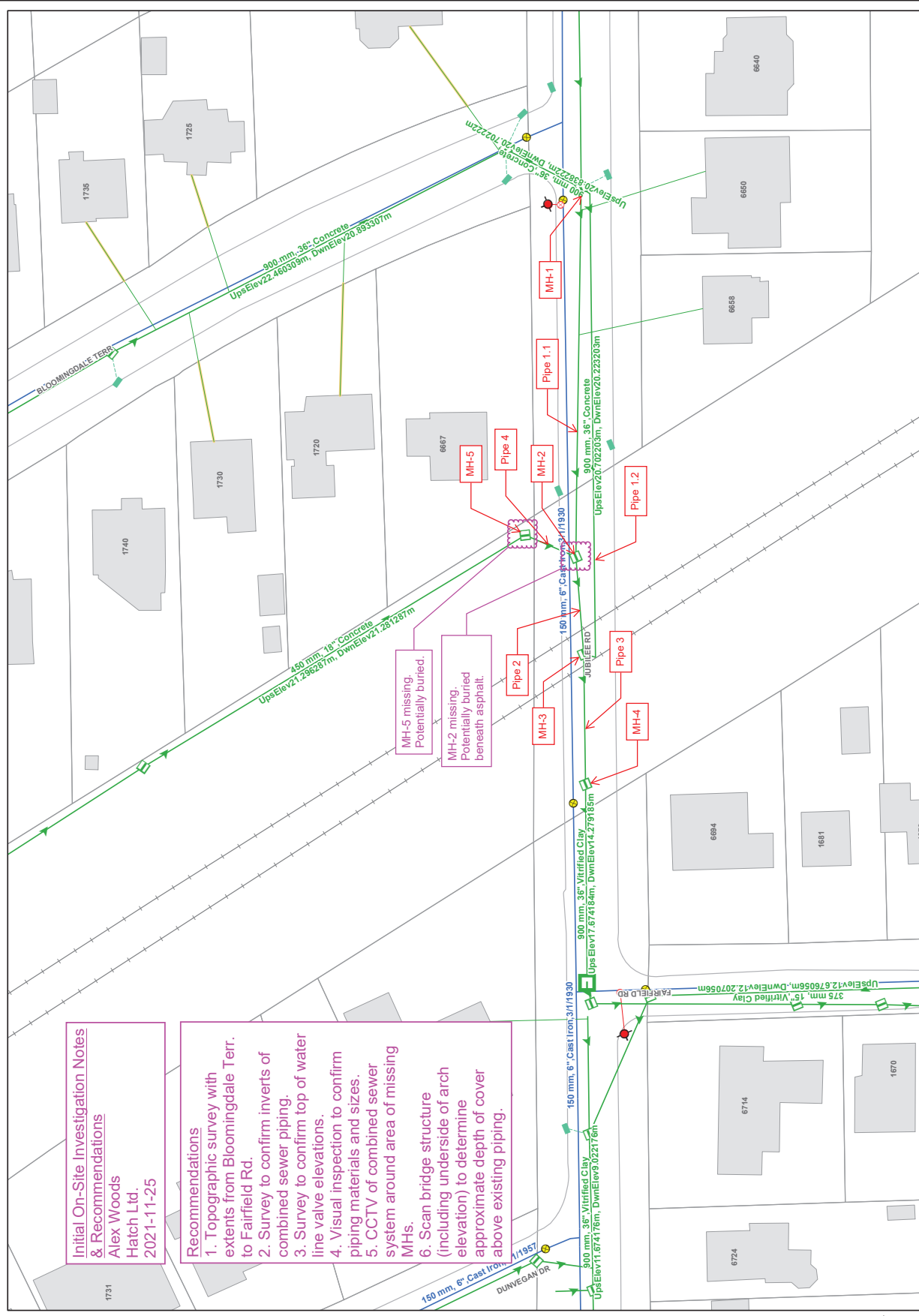
Contact: GISProducts@halifaxwater.ca

The information contained on this map may not be complete and/or accurate in all areas. Should accurate information or engineering be required, please contact the Engineering Department of Halifax Water. Halifax Water will not be held liable for misuse of this information.

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Initial On-Site Investigation Notes & Recommendations
Alex Woods
Hatch Ltd.
2021-11-25

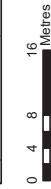
- Recommendations**
1. Topographic survey with extents from Bloomingdale Terr. to Fairfield Rd.
 2. Survey to confirm inverts of combined sewer piping.
 3. Survey to confirm top of water line valve elevations.
 4. Visual inspection to confirm piping materials and sizes.
 5. CCTV of combined sewer system around area of missing MHs.
 6. Scan bridge structure (including underside of arch elevation) to determine approximate depth of cover above existing piping.



Attachment C

Dwg. 1193079 Summary Review

WATER-WASTE-STORM

[illegible]

Attachment D

Jubilee 3D Scan Topography



Scale is 1:200

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CN - Jubilee Road Bridge Rehabilitation
Engineer's Estimate Cost Sharing Budget
November 2, 2022

Item No.	Description	Unit	Estimated Quantity	Unit Price	Cost	Responsibility %			Traffic Control Required	CN Cost	HRM Cost	HW Cost
HRM Payment Items												
	Remove sidewalks, curbs & asphalt	LS	1.0	\$18,975.00	\$18,975.00	0%	100%	0%	Yes	\$0.00	\$18,975.00	\$0.00
	Mass excavation	m³	1800.0	\$40.80	\$73,440.00	0%	100%	0%	Yes	\$0.00	\$73,440.00	\$0.00
	Type 2 Gravel	m³	1800.0	\$72.00	\$129,600.00	0%	100%	0%	Yes	\$0.00	\$129,600.00	\$0.00
	Gravels - Type 1, 150mm thick	m²	1200.0	\$24.00	\$28,800.00	0%	100%	0%	Yes	\$0.00	\$28,800.00	\$0.00
	Asphaltic Concrete - 50mm type C-HF	m²	1200.0	\$47.25	\$56,700.00	0%	100%	0%	Yes	\$0.00	\$56,700.00	\$0.00
	Asphaltic Concrete - 75mm B-HF	m²	1200.0	\$60.75	\$72,900.00	0%	100%	0%	Yes	\$0.00	\$72,900.00	\$0.00
	Sidewalk	m²	280.0	\$125.00	\$35,000.00	0%	100%	0%	Yes	\$0.00	\$35,000.00	\$0.00
	Concrete Curb and Gutter	m	180.0	\$168.75	\$30,375.00	0%	100%	0%	Yes	\$0.00	\$30,375.00	\$0.00
	Driveway Reinstatement	m²	20.0	\$75.00	\$1,500.00	0%	100%	0%	Yes	\$0.00	\$1,500.00	\$0.00
	P1 - Replace Frames and Grates or Covers	Ea.	5.0	\$1,150.00	\$5,750.00	0%	100%	0%	Yes	\$0.00	\$5,750.00	\$0.00
	P2 - Tactile Plates	Ea.	6.0	\$287.50	\$1,725.00	0%	100%	0%	Yes	\$0.00	\$1,725.00	\$0.00
Halifax Water Payment Items												
	Gravels - Type 1, 150mm thick	m²	200.0	\$24.00	\$4,800.00	0%	0%	100%	Yes	0.00	0.00	\$4,800.00
	Asphaltic Concrete - 50mm Type C-HF	m²	200.0	\$47.25	\$9,450.00	0%	0%	100%	Yes	0.00	0.00	\$9,450.00
	Asphaltic Concrete - 75mm B-HF	m²	200.0	\$60.75	\$12,150.00	0%	0%	100%	Yes	0.00	0.00	\$12,150.00
	Precast Gravity Pipe - 900mm Reinf. Conc.	m	60.0	\$1,440.00	\$86,400.00	0%	0%	100%	Yes	0.00	0.00	\$86,400.00
	Precast Gravity Pipe - 1200mm Reinf. Conc.	m	50.0	\$2,000.00	\$100,000.00	0%	0%	100%	Yes	0.00	0.00	\$100,000.00
	Gravity Pipe - 250mm PVC DR35	m	10.0	\$600.00	\$6,000.00	0%	0%	100%	Yes	0.00	0.00	\$6,000.00
	Gravity Pipe - 250mm PVC DR18	m	5.0	\$900.00	\$4,500.00	0%	0%	100%	Yes	0.00	0.00	\$4,500.00
	Gravity Pipe - 900mm PVC DR35, including connections to existing	m	6.0	\$1,320.00	\$7,920.00	0%	0%	100%	Yes	0.00	0.00	\$7,920.00
	Precast Elliptical Gravity Pipe - 1143 by 737 mm Reinf. Conc.	m	70.0	\$2,160.00	\$151,200.00	0%	0%	100%	Yes	0.00	0.00	\$151,200.00
	Precast Elliptical Gravity Pipe - Vertical Bend Reinf. Conc.	Ea.	2.0	\$7,500.00	\$15,000.00	0%	0%	100%	Yes	0.00	0.00	\$15,000.00
	Reinstate Lateral Connections	Ea.	3.0	\$690.00	\$2,070.00	0%	0%	100%	Yes	0.00	0.00	\$2,070.00
	1200mm Precast Manhole	Ea	3.0	\$6,000.00	\$18,000.00	0%	0%	100%	Yes	0.00	0.00	\$18,000.00
	2100mm Precast Manhole	Ea	3.0	\$9,000.00	\$27,000.00	0%	0%	100%	Yes	0.00	0.00	\$27,000.00
	Precast Vaults	Ea	2.0	\$12,500.00	\$25,000.00	0%	0%	100%	Yes	0.00	0.00	\$25,000.00
	Temporary Sanitary Diversion	LS	1.0	\$10,000.00	\$10,000.00	0%	0%	100%	Yes	0.00	0.00	\$10,000.00
	Pre-Insulated Pipe – 250mm HDPE DR11	m	75.0	\$1,440.00	\$108,000.00	0%	0%	100%	Yes	0.00	0.00	\$108,000.00
	Pipe - 200mm DI CL52	m	4.0	\$1,500.00	\$6,000.00	0%	0%	100%	Yes	0.00	0.00	\$6,000.00
	Gate Valve - 200mm	Ea	1.0	\$900.00	\$900.00	0%	0%	100%	Yes	0.00	0.00	\$900.00
	Gate Valve - 250mm	Ea	1.0	\$1,200.00	\$1,200.00	0%	0%	100%	Yes	0.00	0.00	\$1,200.00
	Underground Conduit and Wiring	m	40.0	\$540.00	\$21,600.00	0%	0%	100%	Yes	0.00	0.00	\$21,600.00
	Transition - HDPE to DI (including thrust wall)	Ea	2.0	\$3,750.00	\$7,500.00	0%	0%	100%	Yes	0.00	0.00	\$7,500.00
	West Tie-in Connection	LS	1.0	\$17,250.00	\$17,250.00	0%	0%	100%	Yes	0.00	0.00	\$17,250.00
	East Tie-in Connection	LS	1.0	\$17,250.00	\$17,250.00	0%	0%	100%	Yes	0.00	0.00	\$17,250.00
	Heat Trace Termination Pull Box	Ea.	1.0	\$5,750.00	\$5,750.00	0%	0%	100%	Yes	0.00	0.00	\$5,750.00
	Testing and Commissioning	LS	1.0	\$5,500.00	\$5,500.00	0%	0%	100%	Yes	0.00	0.00	\$5,500.00
	Trench Excavation - Rock	m³	80.0	\$500.00	\$40,000.00	0%	0%	100%	Yes	0.00	0.00	\$40,000.00
	Temp Utility Support Structure	LS	1.0	283,500.00	283,500.00	0.0%	0.0%	100%	N/A	\$0.00	\$0.00	\$283,500.00
	Temp Utility Support Structure Abutments	LS	1.0	37,500.00	37,500.00	0.0%	0.0%	100%	N/A	\$0.00	\$0.00	\$37,500.00

Overall % of Work
Total \$3,169,580.00
CN \$1,520,075.00 47.96%
HRM \$474,565.00 14.97%
HW \$1,174,940.00 37.07%

% requiring Traffic Control
Total \$2,909,580.00
CN \$1,260,075.00 43.31%
HRM \$474,565.00 16.31%
HW \$1,174,940.00 40.38%



Canadien National
Services de l'ingénierie

255 Chemin Hump Yard
Moncton (Nouveau-Brunswick) E1E 4S3
Téléphone: ((506) 853-2985
Télécopieur: (506) 853-2757

Canadian National
Engineering Services

255 Hump Yard Road
Moncton, N.B. E1E- 4S3
Telephone: (506) 853-2985
Facsimile: (506) 853-2757

January 17, 2023

Via email: reid.campbell@halifaxwater.ca

Halifax Regional Water Commission
Engineering & Information Services
450 Cowie Hill Road
Halifax, NS
B3K 5M1

Attention: Reid Campbell, M.Eng., P.Eng.

Re: Jubilee Road Arch Bridge Rehabilitation - Cost Sharing of Utility Works

As you are aware, Canadian National Railway (CN) and Halifax Regional Municipality (HRM) will be conducting bridge and roadway rehabilitation work on and around the arch bridge structure at Jubilee Road in 2023. At the request of Halifax Water (HW), reconstruction and modification of a 900mm diameter combined sewer main, and reconstruction of a 250mm water main, including all connections adjacent to and within the bridge, will be included in the overall project. The water and combined sewer mains will be constructed in accordance with Halifax Water's specifications, Part 5 of AREMA for overhead pipeline crossings, and CN's overhead clearance requirements. In order to proceed with the integration of HW work with the overall project, HW has requested that CN provide a letter outlining the cost sharing responsibilities.

Per our previous cost-sharing agreements, HW is responsible for 100% of the cost of installation of the water and sewer mains and all supporting infrastructure, as well as 100% of any future maintenance and reconstruction. This will be formalized in a standard utility crossing agreement between CN

and HW. In addition, due to the installation of the temporary combined infrastructure on the required temporary support structure, HW is responsible for 100% of the costs associated with the temporary support structure. Resulting from HW's agreement with HRM (separate from CN), 50% of roadway reinstatement costs above the utility trenches are to be borne by Halifax Water as well.

Mobilization/Demobilization costs are shared between all parties to the project, based on the overall percentage of project costs allocated to each party. Traffic Control costs are shared between all parties to the project, based on the percentage of costs requiring traffic control that are allocated to each party.

Based on the tender prices submitted for the project, HW's estimated portion of the costs is summarized as follows (all costs are provided without taxes):

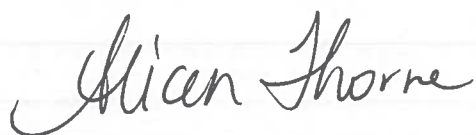
Water & Sewer Construction	\$ 1,950,175.21
Contingency	\$ 195,017.53
Site Supervision Costs	<u>\$ 146,824.76</u>
Subtotal	\$ 2,292,017.60
Overhead (6%)	<u>\$ 137,521.06</u>
Requested HW Contribution:	\$ 2,429,538.66

It is understood this is a post-tender estimate provided by CN. Project scope and quantity changes may occur during construction, which may affect the final costs, and therefore HW's portion of the costs associated with the work. Final cost sharing for HW's portion of the work will be based on pricing provided in the accepted tender bid plus any changes during construction resulting from site conditions as approved in consensus with HW's project representative.

By signing below, HW agrees to reimburse CN for the above amount, adjusted by actual quantities and approved changes during construction.

January 17, 2023
Page 3

Sincerely,

A handwritten signature in cursive script that reads "Alicen Thorne".

Alicen Thorne, P.Eng.
Design & Construction Engineer
Canadian National Railway

Tel: 506.863.8949
alicen.thorne@cn.ca

Reid Campbell
Director, Engineering & Technology Services
Halifax Regional Water Commission


Date

18-Jan-2023


Jubilee Road CN Bridge Replacement
Project Cost Estimate

Item	Total Cost
Construction (See attached CN Cost Share Letter)	\$2,429,539
Consultant Costs (Design Phase)	\$70,000
Sub-total	\$2,499,539
Net HST (4.286%)	\$107,130
Sub-total	\$2,606,669
Halifax Water Staff and Related Expenses	\$30,000
Sub-total	\$2,636,669
Interest & Overhead (1%)	\$26,367
Total Project Cost Estimate	\$2,670,000

TO: Colleen Rollings, P.Eng., PMP., Chair and Members of the Halifax Regional Water Commission Board

SUBMITTED BY:  Digitally signed by Reid Campbell
Date: 2023.01.20 11:52:36 -04'00'

Reid Campbell, P. Eng.
Director, Engineering & Technology Services

APPROVED:  Digitally signed by Louis de Montbrun
Date: 2023.01.20 14:18:32 -04'00'

Louis de Montbrun, CPA, CA
Acting General Manager/CEO

DATE: January 16, 2023

SUBJECT: Albro Lakes and Wyse Road Separation Project Phase 1 - Additional Funding

ORIGIN

2021/2022 Capital Budget.

RECOMMENDATION

It is recommended that the Halifax Regional Water Commission Board approve additional funding in the amount of \$1,800,000 to complete the Albro Lakes and Wyse Road Separation Project for a revised estimated total project cost of \$9,500,000.

BACKGROUND

In its Decision letter dated December 9, 2021, the Nova Scotia Utility and Review Board (NSUARB) approved funding in the amount of \$7,182,000 for the Albro Lakes and Wyse Road Separation project for an estimated revised total project cost of \$7,700,000.

DISCUSSION

Stormwater discharge from the Albro Lakes currently enters a combined wastewater system and flows to the Jamieson Street Pump Station (PS) where it is pumped and eventually treated at the Dartmouth Wastewater Treatment Facility (WWTF).

DesignPoint Engineering and Surveying Ltd (DesignPoint) completed the design phase of the Albro Lakes and Wyse Road Separation Project Phase 1 in March 2021 and the project tender closed on April 20, 2021. The low bidder was Atlantic Road Construction & Paving (ARCP).

Due to discussions with the three private landowners (Plazacorp/Sobeys, DND and CN) taking longer than anticipated, the start of construction was delayed until 2022.

Halifax Water negotiated a 3% increase of the tender price with ARCP to cover anticipated increased labour and material costs associated with completing the project in 2022 instead of 2021.

ARCP initiated the project in the winter of 2022. The project is almost complete. The new separated system is expected to be functional by the end of January 2023. Access agreements with Plazacorp and Sobeys, DND and CN were all agreed in principle. They will be completed process and formally executed upon completion of record drawings.

BUDGET IMPLICATIONS

Several key factors have resulted in the increased total project cost since September 2021 and are identified in the list below:

- Items extra to the contract were subject to market related increases in construction pricing since the time of signing the contract and the original funding approval from the NSUARB.
- Additional existing infrastructure replaced during construction;
- CN culvert cost increases;
- Revisions to the design related to property owner concerns from DND and CN;
- Identification of unknown infrastructure with the HRM right-of-way during construction;
- Additional testing and treatment for contaminated material prior to disposal;
- Construction schedule was longer than expected, which resulted in additional construction administration costs.

DesignPoint prepared a commentary on the overall costs in a letter dated January 13, 2022, see Attachment 1 for more detailed information.

The total revised project cost is \$9,500,000. This amount is greater than the original total project cost of \$7,700,000, and an additional \$1,800,000 is required. Please refer to Attachment 2 - Project Cost – January 2023.

As this increase in funding exceeds the greater of \$250,000 or 5%, according to the Halifax Water Capital Funding Approval Policy, approval is required from the Halifax Water Board and subsequently the UARB in accordance with Halifax Water’s Capital Project Funding Approval policy. Halifax Water staff have been working through and monitoring the various changes to the work with the consultant and contractor since the beginning of the project with an attention to working within the approved contingency funding. Key factors that resulted in the timing of this increased funding request since the last Halifax Water Board Meeting include:

- The construction schedule of the CN culvert crossing was adjusted to September from August. CN had to negotiate final costs with the contractor following the work, resulting in Halifax Water receiving the cost information in January 2023.

Negotiations related to contaminated soil were still on-going as of November 2022. Other change orders are still being negotiated at this time. This funding requested is anticipated to cover the final project costs once negotiated items are agreed upon.

The work includes a growth-related project in the current IMP (Albro Lakes Separation Project), with 95% funding allocated from the Regional Development Charge reserve account, and the remaining 5% funding allocated to normal utility funding, based upon the benefit to existing customers.

The work also includes a section of IMP Project D2 – LoWSCA: Wyse Road Separation Phase 2 with 25% funding allocated from the Regional Development Charge reserve account, 56.25% funding allocated to normal utility funding, based upon the benefit to existing customers and 18.75% funded from HRM.

Final funding allocation values will be determined during the project close-out process.

Additional funding in the amount of additional funding of \$1,800,000 is available from the Regional Development Charge reserve account and from surpluses in previously closed projects, or projects that have deferred or cancelled.

The proposed expenditure meets the “NO REGRETS- UNAVOIDABLE NEEDS” approach of the 2012 Integrated Resource Plan. The proposed work meets the NR-UN criteria of “Directly supports the implementation of the Asset Management program and “Growth related infrastructure supported by pre-design level master plan”.

ALTERNATIVES

There are no recommended alternatives.

ATTACHMENTS

Attachment 1 - Additional Costs – DesignPoint’s letter dated January 13, 2023

Attachment 2 - Project Cost – January 2023

Attachment 3 - HRWC Board Item 3C Approval – September 10, 2021

Attachment 4 - M10271 – NSUARB Decision Letter – December 9, 2021

Report Prepared By:



Renée Roberge, P.Eng., PMP, Project Engineer, 902-817-5980

Financial Approved By:

Alicia
Scallion

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Scallion
Date: 2023.01.20
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Alicia Scallion, CPA, CA
Acting Director, Corporate Services

January 13, 2023

Halifax Water

450 Cowie Hill Road

Halifax, NS B3P 2V3

Attention: Renée Roberge, P.Eng., PMP

RE: Albrow Lakes and Wyse Road Separation Project – Additional Costs

DP Project No: 20-086

As requested, this letter is a commentary on the overall costs relating to T05.2021 – Albrow Lakes and Wyse Road Separation Project – Phase 1. The original construction tender price for this project was \$5,169,000.00 excluding HST and HRM permit fees. The project was delayed by one year and the agreed upon revised contract price was \$5,324,070.00 with the same exclusions. We now estimate the final cost of this project to be \$6.6M (24% higher than the revised contract price).

The construction prices noted above do not include consultant fees, internal Halifax Water costs, or the cost of the culvert installation under the CN tracks. We understand that Halifax Water prepared an overall budget which included these items and have provided commentary on these items as they relate to the construction of T05.2021. We continue to work with Halifax Water and the Contractor to finalize quantities and costs for the extra work. Pending final agreement between the Contractor and Halifax Water on a few significant items, the final price may still vary from our estimate.

The higher costs are due to the following reasons:

- 1) From the time of tender to signing a contract, Halifax Water delayed the project to 2022 to allow sufficient time to receive approvals. The Contractor agreed to this with a 3% increase in price (noted above as the revised contract price). Given the price increases in the market between the signing of the contract and completion of the work, it is our opinion that construction costs would have been higher had the project been retendered in 2022.
- 2) During construction, existing infrastructure (water, sewer, and storm) was uncovered and found to be in poor condition. As a result, some of the aged infrastructure was replaced.
- 3) There was a need to install a culvert under the CN rail line near the Halifax Harbour. The estimate was completed pre-tender. Received bids were higher than the estimate and CN added additional water control measures to the construction scope.
- 4) Improvements were made to the tendered design such as extending the storm pipe at the lower end of the site to reduce the amount of open channel that Halifax Water would need to maintain.
- 5) During construction, the Contractor uncovered unknown infrastructure which needed to be worked around, replaced, or relocated. For example, there was an underground Bell Aliant duct bank on Windmill Road which was not known prior to construction.

- 6) There was acidic slate on site which was expected based on the geotechnical work completed during design. The slate had minor amounts of hydrocarbon and/or PAH and the Contractor claimed that the disposal site (Halifax Port Authority) would not accept the slate until it was cleaned. The Contractor claimed that this material had to be taken to Envirosoil for treatment prior to disposal at the Halifax Port Authority site. The Contractor has claimed additional costs for the treatment of the slate.
- 7) The Contractor noted that environmental testing of surplus material was required prior to removing the material from the site. The test results indicated high levels of background metals as well as some locations with low levels of hydrocarbons and/or PAH. These results were consistent with the findings from the environmental report completed during design. It is the Contractor's opinion that the surplus material is deemed contaminated based on these results. The contract defines any material with hydrocarbons or PAH as contaminated and refers to the applicable guidelines for soil impacted with metals. The provincial guidelines are not specific when it comes to background metals. For most of the soil, it was Stantec's recommendation that the soil with high metals (but consistent with background levels) was suitable to dispose of on a commercial site in HRM. The Contractor stated that they could not find a commercial site that would accept this soil.

Stantec was hired by Halifax Water under the standing offer to provide environmental testing of surplus materials. The cost of the environmental testing was higher than originally estimated as Stantec was required to be present at the site on a regular basis to confirm volumes and monitor handling at the request of the contractor. While onsite, Stantec reviewed disposal and categorized material. Stantec's presence improved confidence in which material was classified as soil or rock as much of the material was mixed. Disposal of contaminated rock was completed at a much higher cost than contaminated soil, therefore categorization was crucial to limiting additional costs.

- 8) The level of effort required by DesignPoint during the construction stage was higher than originally anticipated. Halifax Water requested that DesignPoint staff be on site most days in order to monitor progress, identify and address potential construction issues, and maintain a dialogue with the contractor. This request was made during the early stages of the project in response to questions and claims by the contractor during construction. The Contractor has submitted numerous extra claims, and we are spending more time than is typical for the claims, contemplated change orders, and change orders. We do not agree with the Contractor on many items within the claims and continue to work with Halifax Water and the Contractor to resolve items in dispute.
- 9) Construction has taken longer than originally anticipated. Construction was originally budgeted for 20 weeks and is now anticipated to be completed in 42 weeks. The extended schedule has had an impact on Halifax Water internal fees for site, operations, and office personnel and on consultant fees for both DesignPoint (Engineer of record) and Stantec (geotechnical and environmental testing). It is our opinion that the prolonged schedule was due in part to scope additions but was primarily driven by a lack of resources which has been the case industry wide in 2022.

While the overall costs for this project exceed the original budget, valuable information has been learned which will aid in budgeting future projects. Future tenders can address potentially contaminated materials to more clearly identify disposal expectations and provide provisional rates as needed for budgeting purposes. There are also operational considerations both during and after construction involved in separating a combined sewer which can be incorporated into future work.

It is important to note that typical construction costs for this type of work have increased from the 2021 tender date due to cost increases in materials, fuel, and labour. We are seeing cost increases in excess of 50% compared to pre-2021. Despite the estimated 24% cost increase for this project, we think this project will be completed well below 2022 market value for this type of work.

If you have any questions or would like to discuss this further, please feel free to contact us.

Thank you,
DesignPoint Engineering & Surveying Ltd.



Glenn Woodford, P.Eng.
Senior Engineer & Principal

GSW/alc

Albro Lakes and Wyse Road Separation
Project Cost Estimate

Item	Estimate September 2021	Projected (End)
Contractor (See attached Engineer's letter)	\$ 5,324,070	\$ 6,600,000
Consultant Costs (Construction Phase)	\$ 141,624	\$ 317,350
Sub-total	\$ 5,465,694	\$ 6,917,350
Construction Contingency (10% of above)	\$ 546,569	\$ -
Consultant Costs (Design/Tender Phase)	\$ 282,411	\$ 296,888
Sub-total	\$ 6,294,674	\$ 7,214,238
Net HST (4.286%)	\$ 269,790	\$ 309,202
Sub-total	\$ 6,564,464	\$ 7,523,440
Halifax Water Staff and Related Expenses	\$ 50,000	\$ 200,000
Stantec Fees (geotechnical and environmental testing)		\$ 135,000
Easement (Plazacorp & Sobeys)	\$ 136,000	\$ 136,000
CN Culvert	\$ 775,000	\$ 1,335,208
DND License Agreement	\$ 10,000	\$ 500
Sub-total	\$ 7,535,464	\$ 9,330,148
Overhead (1%)	\$ 75,355	\$ 93,301
Total Project Cost Estimate	\$ 7,610,819	\$ 9,423,449
Rounded Total	\$ 7,700,000	\$ 9,500,000
Already approved in 2020/21 Budget WW	\$518,000	
Already approved - M10271	\$7,182,000	
Additional funding required		\$1,800,000



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December 9, 2021

cathieo@halifaxwater.ca

Cathie O'Toole
General Manager
Halifax Regional Water Commission
450 Cowie Hill Road
Halifax, NS B3M 5M1

Dear Ms. O'Toole:

M10271– Halifax Regional Water Commission – Albro Lakes and Wyse Road Separation Project – Phase 1 (Construction)– WW-HRWC-E-21

This is in response to Halifax Water's letter to the Board dated October 4, 2021, requesting Board approval for funding in the amount of \$7,182,000 for the Albro Lakes and Wyse Road Separation Project Phase 1 (Project) for an estimated revised total Project cost of \$7,700,000. Attached to the approval request letter was the Post Tender Project Cost Estimate, and a map of the Project area and the existing Albro Lakes system drainage area.

Stormwater discharge from the Albro Lakes currently enters a combined wastewater system and flows to the Jamieson Street Pump Station (PS) where it is pumped and eventually treated at the Dartmouth Wastewater Treatment Facility (WWTF). WSP Canada Inc. (WSP) was retained by Halifax Water in 2017 to prepare a Preliminary Design Report for the gravity stormwater sewer from Little Albro Lake to the Jamieson Street PS, with the purpose of evaluating the hydraulic diversion and physical alignment options for a new dedicated stormwater system. The intent of a proposed dedicated stormwater system is to relieve the existing Jamieson Street combined wastewater system of stormwater impacts, and to provide the opportunity to divert the existing and future dedicated stormwater system connections at Wyse Road.

Halifax Water's 2019 Infrastructure Master Plan (IMP), prepared by GM BluePlan, identified that sewer separation of the Albro Lakes and Wyse Road area is a significant opportunity to reduce stormwater discharge in the wastewater system and at the Dartmouth WWTF. As well, in the 2016 Regional Centre Local Wastewater Servicing Capacity Analysis (LoWSCA), HRM established Wyse Road as a growth area.

DesignPoint Engineering and Surveying Ltd (DesignPoint) completed the design phase of the Albro Lakes and Wyse Road Separation Project Phase 1 in March 2021.

After reviewing options for the Project, DesignPoint's recommendation was a hybrid solution that considered aspects of both of the following options:

- Install a new trunk stormwater system over the length of the project; and
- Convert the existing combined wastewater system into a stormwater system and install a new combined wastewater system the length of the project.

The Project includes the installation of approximately 540 m of 1050 mm diameter new combined wastewater system from Cairn Street to Windmill Road, and the conversion of the existing combined sewer system between Cairn Street and Windmill Road to a stormwater system. The final part of the Project is to construct a new stormwater system, consisting of approximately 130 m of 1200 mm diameter pipe, 60 m of 1500 mm diameter pipe and 100 m of drainage ditch, to connect to the newly converted stormwater system and convey flows from Windmill Road to Halifax Harbour. The work includes the removal and replacement of several existing mains, services, and ancillary items, and the reinstatement/reconstruction of HRM streets

The Project alignment follows the existing sewer alignment, which is generally from Cairn Street, across a private property parking lot owned by Plazacorp Property Holdings Inc. and Sobeys's Capital Inc. (Plazacorp and Sobeys), then along Wyse Road and Jamieson Street to Windmill Road where it follows an existing sewer easement on DND property to the Jamieson Street PS site. From there it discharges to a new culvert under the Canadian National Railway (CN) rail line to Halifax Harbour.

Halifax Water noted that one residential property and three commercial properties were identified to be connected to the combined system to be converted to a stormwater system and that these connections will have to be abandoned. Also, the Downspout Disconnection Program has identified 5 of 32 properties with downspouts connected to the combined wastewater system, which will be further investigated as a part of the Project.

The Project also includes watermain infrastructure replacement at an estimated cost of \$498,000. Approximately 120 m of 250 mm diameter asbestos cement watermain was identified as a priority for replacement within an easement on the Plazacorp and Sobeys's property. Also, a 75 m section of 300 mm diameter water main on Wyse Road must be removed to accommodate the new combined pipe will be replaced with a 400 mm diameter water main. Halifax Water described this watermain work as incremental to the overall work scope, while taking advantage of completing the work in a common trench.

The Project tender closed on April 20, 2021, and construction of the Project was originally intended to take place during the 2021 construction season. Due to discussions with the three private landowners (Plazacorp and Sobeys, DND and CN) taking longer than anticipated, the start of the Project construction was delayed. After reviewing the options available, Halifax Water decided to defer construction to commence in the Spring of 2022 and negotiated a 3% increase to the tender price with the low bidder to cover increased labour and material costs associated with the completing the Project in 2022 instead of 2021.

Halifax Water explained that it is currently in the process of completing access agreements with the three identified property owners. With respect to the Plazacorp and Sobeys property, Halifax Water has proposed to increase the existing easement to allow for the new pipe. Issues related to the alignment and construction timing of the new pipe to be constructed on the property have been agreed upon, with a memorandum of understanding and easement language currently with the parties' counsels for signature.

Halifax Water is negotiating with DND to renew an expired licence for the combined system on the property to include the new stormwater system on the property. A new license agreement was proposed by DND which Halifax Water has reviewed and returned to DND for review.

An existing CN culvert is located near the downstream section of the proposed stormwater system. Halifax Water has proposed to CN to upgrade this culvert to a Halifax Water owned culvert that would accommodate the additional flows from the Project to prevent the need for an additional rail line crossing. This solution is also beneficial to Halifax Water in that it could act as a future outfall location for the Jamieson Street Combined Sewer Overflow when infrastructure renewal is required. The new culvert would be installed in place and require a short service shutdown of the rail line. CN would prefer to manage the tender and construction phase of the culvert upgrade, and prior to tendering the Project, requires an authorization to proceed confirming Halifax Water funding. Halifax Water and CN continue to negotiate a license and need to agree on culvert replacement timing that will work for the Project.

Halifax Water's letter to the Board explained that while discussions with all the property owners are ongoing, if property access is not granted, another alignment, at an incremental cost of \$650,000, is available. However, even under the alternative alignment, the CN rail crossing is a requirement.

Halifax Water indicated that Project funding in the amount of \$6,684,000 is available in the 2021/22 Capital Budget under *Wastewater Collection System – Albro Lakes Watershed Separation and Wyse Road Separation Phase 1*. The remaining funding in the amount of \$498,000 is available in the 2021/22 Capital Budget under *Water Distribution – Water Distribution – Main Renewal Program*, for the total amount request for Board approval of \$7,182,000. The letter to the Board noted that funding in the amount of \$518,000 was previously approved within the 2020/21 Capital Budget for the design phase services, bringing the total estimated Project cost to \$7,700,000.

Board staff requested additional information with respect to the Project on October 19, and November 15, 2021, to which responses were received on November 10, and December 7, 2021, respectively. The responses provided further information with respect to the Project cost and scope. It was explained that the Wyse Road Separation Project was mistakenly identified as Phase 1 instead of Phase 2 in the 2021/22 Capital Budget, noting that the Project meets the objective of the Albro Lakes Watershed Separation project and a portion of the Wyse Road Separation Phase 2 project, as identified in the IMP.

Halifax Water provided further details on wastewater flow monitoring of the existing sewer and the ability to measure the success of the Project in achieving the goal of significantly reducing the volume of stormwater discharged into the area's wastewater system. Halifax Water explained that its program to monitor the success of its sewer separation projects continues to evolve, and as the program matures, outside input will be sought on the appropriate level of dedication of its resources. Halifax Water added that while there is currently no detailed schedule for maturing its process of reporting on separation results, it is in the process of expanding its Asset Management resources to be able to complete this activity. It explained that it sees this reporting as eventually becoming an input of the IMP to be used to evaluate the need of future separation projects.

Halifax Water further confirmed that the three components of the Project will be allocated to the Regional Development Charge (RDC) as: Wyse Road Sewer Separation (portion of Phase 2) (25%); Albro Lakes Watershed Separation Project (95%); and Watermain Renewal (0%).

Based upon the information provided, the Board approves the Project funding and proposed source of funds, in the amount of \$7,182,000, for a total revised Project cost of \$7,700,000.

Yours truly,



Steven M. Murphy, MBA, P.Eng.
Member

TO: Colleen Rollings, P.Eng., PMP., Chair and Members of the Halifax Regional Water Commission Board

SUBMITTED BY:



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Date: 2023.01.20
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Reid Campbell, P. Eng.
Director, Engineering & Technology Services

APPROVED:



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de Montbrun
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Louis de Montbrun, CPA, CA, Acting General Manager/CEO

DATE: January 16, 2023

SUBJECT: Quigley's Corner Pump Station Upgrade and Optimization Project

ORIGIN

2020/21, 2021/22 and 2023/24 Capital Budgets.

RECOMMENDATION

The Halifax Water Board approve the Quigley's Corner Pump Station Upgrade and Optimization project for a total project cost of \$5.8 million (including net HST).

BACKGROUND

The Quigley's Corner Pump Station is a wetwell/drywell station located at 1516 Shore Road at the corner of Shore Road and Cow Bay Road, in Eastern Passage, NS. It presently receives wastewater generated in the Eastern Passage area and conveys it to the Eastern Passage Treatment Facility. The station was constructed in 1974 and many of the components date back to the original installation. Electrical and mechanical systems at the station, including pumps, have reached the end of their useful life and require replacement. Due to the condition and age of the existing mechanical and electrical equipment, the majority will be removed and replaced as part of this project.

DISCUSSION

In November 2020, Engineering Services were awarded to CBCL Ltd. The pre-design report has been completed, the 90% design package has been reviewed and the design team is now working towards the detailed drawings and specifications for the tender stage. Based on the most recent pre-tender construction estimate by CBCL of \$3,790,000, the estimated total project cost is \$5,800,000. The project cost estimate is attached.

The work generally includes the removal of existing equipment, pumps, piping and valving, building modifications, roofing, supply and installation of piping, valves, electrical, controls, mechanical equipment, stairways and platform replacements for below grade drywells and wet wells. A preselection process for the pumps was completed in July 2022 to facilitate the design process. The work also includes supply and installation of the preselected pumps and the provision of extensive temporary pumping systems to permit by-pass of the station for the duration of the installation work.

The design of these upgrades considers the planned growth and targeted rainfall derived inflow and infiltration reduction recommended by the East Region Wastewater Infrastructure Master Plan (IMP).

The recommended peak design pumping capacity for the Quigley's Corner Pump Station is 500 L/s. As noted in CBCL's pre-design report, the Autoport Pump Station has an existing connection to one of Quigley's Corner Pump Station's forcemains, in addition to its own dedicated forcemain, to provide redundancy. Replacement of the Autoport Pump Station is proceeding as a separate project and both consultants are integrating their respective designs to ensure that the pump systems and hydraulics at both stations are compatible with each other.

This project has not yet been tendered. Approval for this project is being sought at this stage as a cost mitigation strategy to reduce the time from tender closing to award. This is consistent with advice received from the Construction Association of Nova Scotia and directly from contractors. Industry feedback has indicated that lengthy award periods can compound issues with supply chain delays and volatile pricing leading to higher bids to address these risks. Obtaining funding approval in advance of tendering will result in a shorter timeframe for award thus help to mitigate this effect.

Due to the nature and scope of this project, Halifax Water issued a Request for Supplier Qualifications (RFSQ) on January 3, 2023. Only bidders who meet the requirements of the RFSQ will be eligible to participate in the second-stage procurement process, tender documents anticipated to be issued in March 2023.

Notwithstanding this strategy, current market conditions are resulting in volatile pricing which is difficult to predict. The Project Cost Estimate (Pre-Tender) includes a 25% inflation/market contingency. After tender closing, should project costs exceed funding allocated in the approval being sought, Halifax Water will evaluate the new project cost and make a determination whether

it is prudent to proceed with the project. If the decision is to proceed, Halifax Water staff will seek an expedited approval for an increase in funding from the Halifax Water Board and the NSUARB.

Factors which Halifax Water will consider relevant to determine whether to proceed with the project include, tendered cost compared to the approved funding, information we learn through the tendering process as to whether there are design features that are driving the price up inordinately, whether market conditions are likely to improve in the near future and the impact to operations of not proceeding at this time.

BUDGET IMPLICATIONS

Funding for this project in the amounts of \$309,000, \$1,619,000 and \$4,000,000 were planned for the 2020/21, 2021/22 and 2023/24 Capital Budgets respectively. Originally there were two capital projects planned, Upgrade Quigley's Corner Pumping Station and Optimize Quigley's Corner Pumping Station. The scopes of these two projects were combined and will be accomplished through the project being requested from this report. The total funding budgeted for these projects was \$5,928,000. This funding will support the cash flow requirements of the requested project as construction will take place in 2023 and 2024.

The proposed expenditure meets the "NO REGRETS- UNAVOIDABLE NEEDS" approach of the 2012 Integrated Resource Plan. The proposed work meets the NR-UN criteria of "Required to ensure infrastructure system integrity and safety" and "Directly supports the implementation of the Asset Management program". The project meets these criteria based on the following: The current equipment is failing due to age and end of life (Asset Management), causing performance/operational issues (Infrastructure System Integrity).

ALTERNATIVES

An alternative would be to not proceed with the project however it is not recommended. The risks with continued operation include potential pump failures, equipment becoming obsolete and unrepairable, electrical & process control equipment failures, safety and staff resource concerns related to repairs within the station and environmental impacts related to emergency overflows. Failure would result in overflows to the environment. O&M costs will increase as equipment continues to age, and the need for maintenance intervention will become more frequent.

ATTACHMENTS

- Attachment 1 - Project Location Sketch
- Attachment 2 - Project Cost Estimate (Pre-Tender)
- Attachment 3 - Consultant Preliminary Design Report

Report Prepared By:



Renée Roberge, P.Eng., PMP, Project Engineer, 902-817-5980

Financial Approved By:

Alicia
Scallion

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Scallion
Date: 2023.01.20
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Alicia Scallion, CPA, CA
Acting Director, Corporate Services

QUIGLEY'S CORNER PUMP STATION

EASTERN PASSAGE



Quigley's Corner PS

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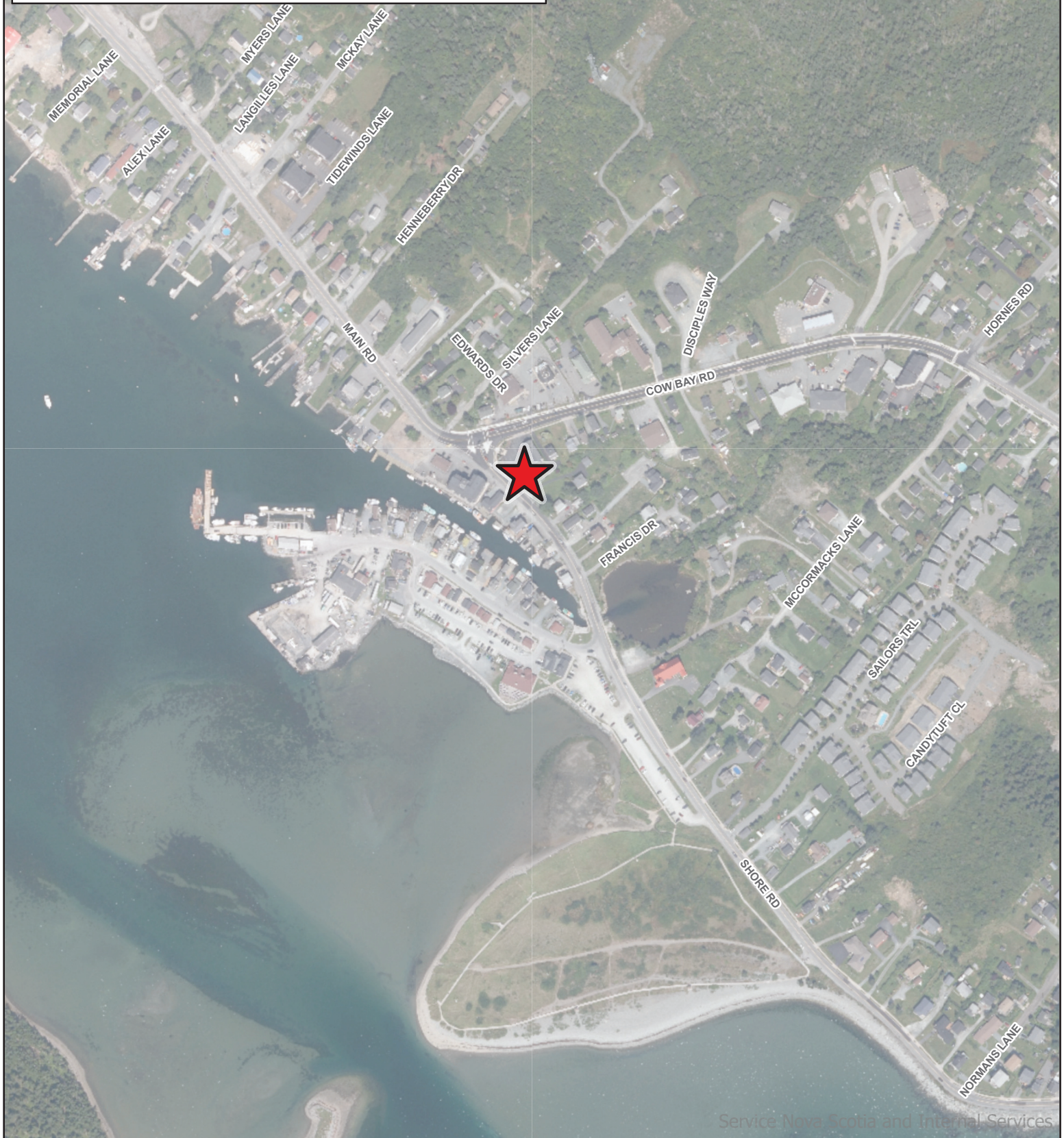
STRAIGHT from
the SOURCE

Halifax
Water



Drawn By: AliciaM
Data Source: Halifax Water / HRM
Datum/Projection: NAD83(CSRs) v6;
MTM NS zone 5; CGVD2013
Date: Monday, January 9, 2023
Contact: GISProducts@halifaxwater.ca

The infrastructure information shown on this map is based on our best available records. However, the location of this infrastructure may not be accurate or complete. For any work being done in this area the design engineer and contractor are responsible to confirm information in the field including existing dimensions, elevations and locations. Halifax Water will not be held liable for misuse of this information.



Service Nova Scotia and Internal Services

January 16, 2023

Quigley's Corner Pump Station Upgrade and Optimization
Project Cost Estimate

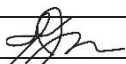



Item	Total Cost
Contractor (See attached Engineer's estimate dated November 21, 2022)	\$3,790,000
Consultant Costs (Construction Phase)	\$304,394
Contingency - incl. Inflation/Marketplace Risk (25% of above)	\$1,023,598
Sub-total	\$5,117,992
Consultant Costs (Design/TenderPhase)	\$270,124
Sub-total	\$5,388,117
Net HST (4.286%)	\$230,935
Sub-total	\$5,619,051
Halifax Water Staff and Related Expenses	\$75,000
Sub-total	\$5,694,051
Overhead (1%)	\$56,941
Total Project Cost Estimate	\$5,750,992
Rounded Total	\$5,800,000
Already approved in 2020/21, 2021/22 and 2023/24	\$5,928,000



Quigley's Corner Pump Station Upgrade and Optimization Preliminary Design Report



201004.00 • July 2022

	Issued as Final		Jul. 14, 2022	
	Draft Issued for Review	K. Murphy	Jan. 25, 2022	J. Clair
Issue or Revision		Reviewed By:	Date	Issued By:
 <p>This document was prepared for the party indicated herein. The material and information in the document reflects CBCL Limited's opinion and best judgment based on the information available at the time of preparation. Any use of this document or reliance on its content by third parties is the responsibility of the third party. CBCL Limited accepts no responsibility for any damages suffered as a result of third party use of this document.</p>				



July 14, 2022

Renee Roberge, P.Eng
Project Engineer
Halifax Water
450 Cowie Hill Road
Halifax, NS B3K 5M1

Dear Ms. Roberge:

RE: Quigley's Corner Pump Station Upgrade – Final Preliminary Design Report

We are pleased to submit our revised preliminary design report as final for the above project for your consideration. Please feel free to contact the undersigned if you wish to discuss any aspects of the information presented herein.

Yours very truly,

CBCL Limited



for Prepared by:
Jeffrey Clair, P.Eng.
Senior Municipal Engineer
Direct: 902-421-7241, Ext. 2427
E-Mail: jclair@cbcl.ca



Reviewed by:
Kevin Murphy, P.Eng
Senior Project Manager

Project No: 211000.00

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Appendices

- A Piping Schematic
- B Site Plan
- C Opinion of Probable Cost
- D Pre-Selected Pump Performance Curve

Chapter 1 Introduction

CBCL has been engaged by Halifax Water for the design of mechanical and electrical upgrades and optimization of the pump station and forcemains for the existing Quigley's Corner Sanitary Pump Station (QCPS). This report will summarize our investigations to date along with recommended upgrades and probable costs.

In accordance with the terms of reference, our scope includes the following:

- ▶ Develop proposed design capacity based on a review of available flow monitoring data and consider future development.
- ▶ Assess condition of existing electrical, mechanical and instrumentation systems within the station.
- ▶ Determine requirements for a new main electrical service and standby generator.
- ▶ Assess HVAC requirements for all occupied spaces in accordance with NFPA 820 and recently updated Halifax Water pump station standards.
- ▶ Evaluate various alternatives for developing/modifying the spaces within the existing station to enhance overall functionality.
- ▶ Prepare a preliminary cost estimate for the upgrade.

1.1 Background

The QCPS services approximately 400 Ha of developed lands of Eastern Passage, see Figure 1-1 showing the service area and sub-sewershed boundaries. Five (5) sanitary pump stations within the tributary sewershed convey flows to the QCPS through gravity sewer: Atikian Drive, York Lane, Thorncrest Crescent, South East Passage, and Hartlen Point.

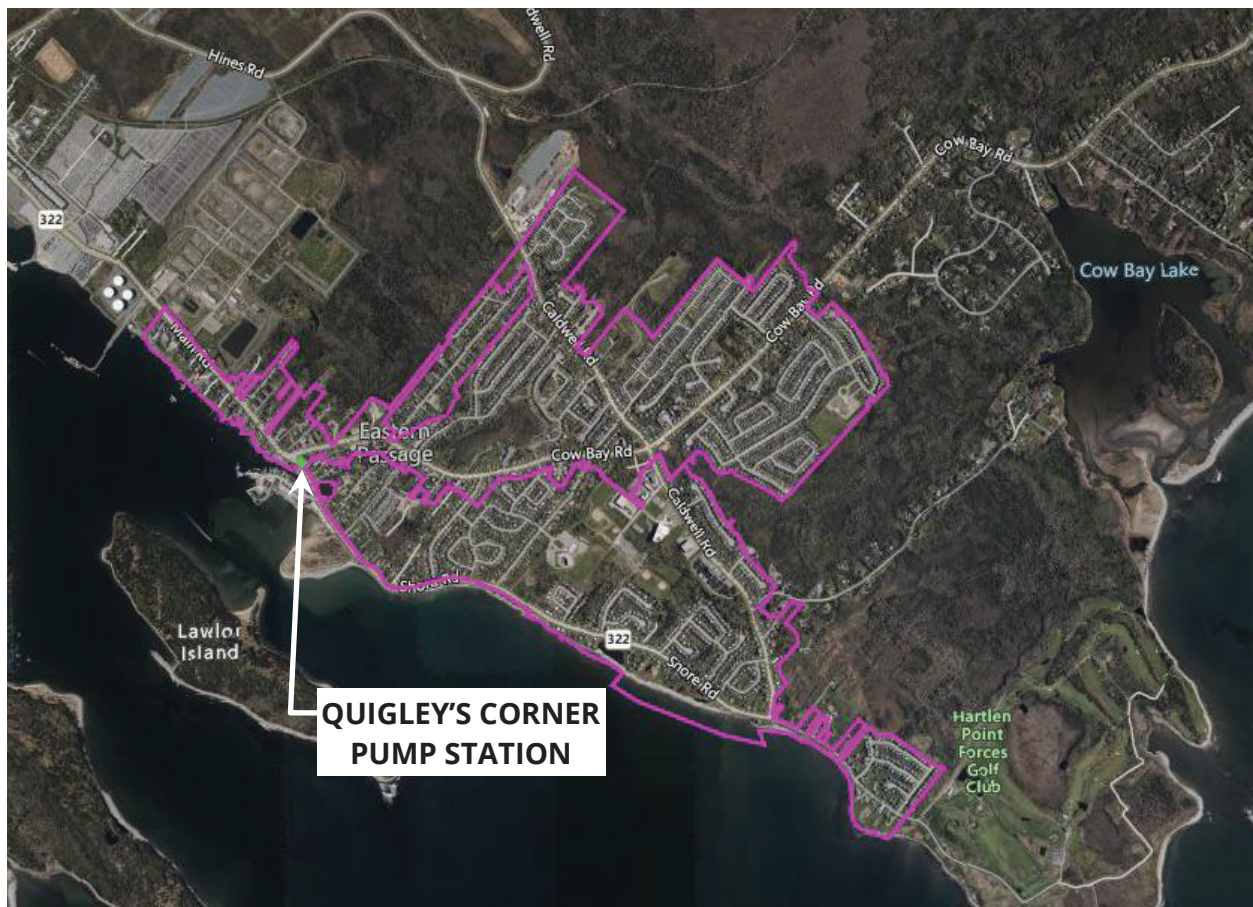


Figure 1-1: Quigley's Corner Service Area

The station was originally constructed as a wet well/dry well configuration with extended shaft pumps in 1974. The building does not appear to have undergone any major retrofits or upgrades since its construction. The pump station houses three (3) pumps with space for the addition of a fourth pump and does not have standby power. The inlet of the station originally housed a comminutor, but this has since been removed. The wastewater flow is not screened as it flows through the original comminutor channels/openings.

The QCPS originally pumped into a single 500 mm Ductile Iron (DI) forcemain which conveyed wastewater along Main Road and ultimately discharged at the Eastern Passage WWTP. In 2000, two new 500 mm PVC forcemains were constructed to replace the original forcemain.

1.2 Scope of Upgrades

The existing QCPS is largely unchanged since its construction. Due to the condition and age of the existing mechanical and electrical equipment, the majority will be removed and replaced as part of the project. In general, the following outlines the proposed scope of the station upgrades; additional detail is provided in Chapter 5 and 6.

Process / Mechanical

- ▶ Remove the extended shaft pumps and motors and replace with dry pit submersible, consistent with current Halifax Water standards.
- ▶ Replace all mechanical process piping and valving, including wet well suction bells.
- ▶ Replace all ventilation to comply with the Canadian Electrical Code and NFPA 820.
- ▶ Replace the domestic water service within the building.

Electrical

- ▶ Replace all electrical equipment, including the MCC.
- ▶ Install an emergency generator.
- ▶ Install modern PLC control complete with new SCADA system. Replace existing instrumentation and include flow meters.
- ▶ Replace all lighting (interior and exterior) with new LED fixtures.

Structural / Architectural

- ▶ Replace all doorways and frames.
- ▶ Replace all wet well and drywell platforms, grating and stairways.
- ▶ Provide a new crane system moving of pumps, piping and equipment.
- ▶ Replace existing roofing.
- ▶ Separate the main floor from the dry well with a new partition.

Chapter 2 Inflow Analysis

The purpose of this chapter is to document the development of design flow. The proposed pumping system upgrades as part of this project are expected to realize a 20–25-year life to 2047. The existing QCPS structure will be 73 years old as of that date.

2.1 Dry Weather Flow Analysis

2.1.1 Basis of Dry Weather Flow Analysis

To form the basis of the Dry Weather Flow (DWF) analysis, we reviewed the definition and derivation of DWFs as outlined in the *2019 Halifax Water Infrastructure Master Plan* (and its supporting documents), herein referred to as the IMP. DWF is “the flow that exists in the sewer collection system during dry period or where this is no effect of rainfall on the wastewater system” as defined in the *Wastewater Model Loading Methodology* (GM Blueplan, 2019). As part of the wastewater model development, the *Infrastructure Master Plan General Information Final Report Volume 1* stated that “Typical DWF days were selected as days without observed preceding rain and where the flow patterns remained stable with no significant increases or decrease inflows from day to day” (GM Blueplan, 2019).

DWF is made of two distinct components (GM Blueplan, 2019):

- ▶ Sanitary Flow.
- ▶ Base Flow (which includes Base Ground Water Infiltration (BWGI)).

DWF, by definition, excludes Wet Weather Flow (WWF). WWF is comprised of Rainfall Derived Inflow and Infiltration. Wet Weather runoff is “generated when rainfall or snowmelt occurs” (GM Blueplan, 2019).

For the purposes of this analysis, the DWF definition outlined the *US EPA Guide for Estimating Infiltration and Inflow (June 2014)* is used: “All flow in a sewer (includes sanitary flow and infiltration) except that caused directly by rainfall. Measured during a period of extended dry weather (7 to 14 days) and seasonally high groundwater.” Seven (7) days was selected for this analysis.

2.1.2 Dry Weather Flow

Halifax Water provided flow (or flow monitoring) and rain gauge data as follows:

- ▶ Flow Gauge FG95:
 - Raw data from September 2016 to December 31, 2020.
 - Raw data for January 1, 2021, to August 11, 2021.
- ▶ Flow Gauge FG96:
 - Raw data from September 2016 to December 31, 2020.
 - Raw data for January 1, 2021, to August 31, 2021.
- ▶ Rain Gauge RA11:
 - Located at the Eastern Passage Wastewater Treatment Facility and was installed in May 2017.
 - Precipitation data for May 2017 to August 31, 2021.

Flow gauges FG95 and FG96 are installed in the piping immediately upstream of the Quigley's Corner Pump Station and capture all flows entering the station.

The flow and rain gauging data were compiled and flows for FG96 and FG95 were added. The combined flow was used for the analysis. To extract DWF's from the data, the following approach was taken:

- ▶ Using PCSWMM, flows recorded within a 7-day transitional period following the end of a rain event were excluded from the analysis. Note that where subsequent rain fell within 48 hours from start of the initial rainfall it is considered a single rain event.
- ▶ Snow and temperature data was not available to determine when snowmelt would occur. As a result, we did not include the months of December through to March in our DWF analysis as these months are more likely to have snowmelt influence.

The results of the DWF analysis are shown in Table 2-1. A total of 25 DWF events meet the criteria noted above for the years 2017 to 2021. Of these 25 events only one (1) was reported within the spring season (March 20 – June 21) when groundwater would normally be higher.

Table 2-1: Results of DWF Analysis

Year	Maximum Observed DWF (instantaneous)	Month of Occurrence
2017 (starting May)	76.9 L/s	August
2018	64.4 L/s	July
2019	74.5 L/s	August
2020	73.6 L/s	May
2021 (to Aug 31)	- ¹	n/a

¹ A flow for 21.2 L/s met the dry weather criteria in April of 2021, however, this appears to be an erroneous value and is not used.

The maximum observed DWF from 2017 to 2021 is **76.9 L/s**, recorded on August 5, 2017. The flow and rain data from July 24 to August 9, 2017, is shown in Figure 2-1.

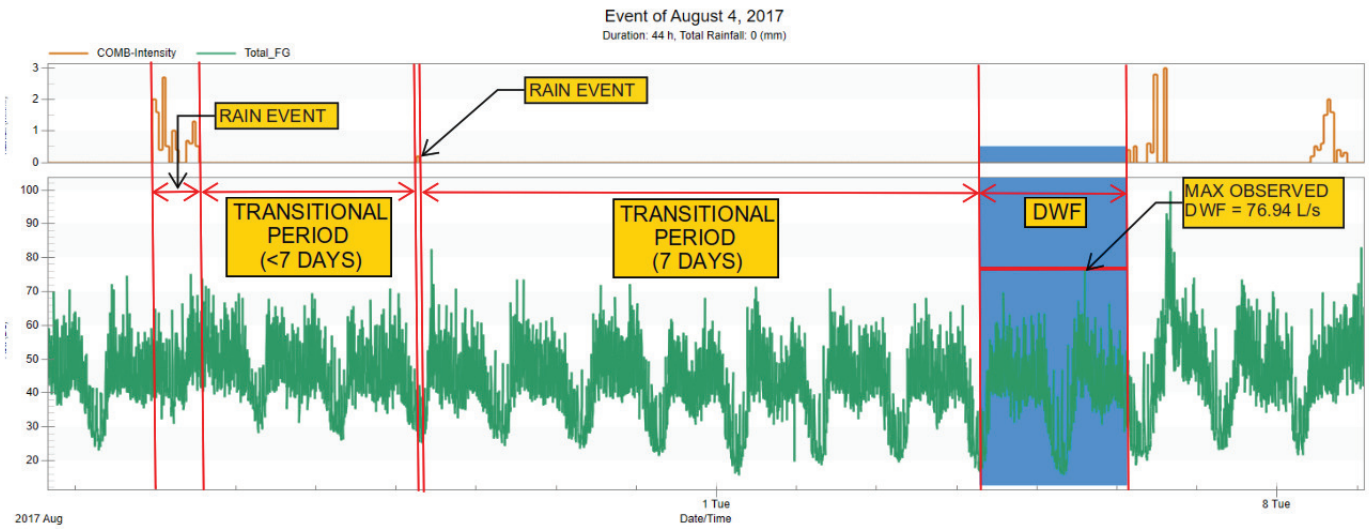


Figure 2-1: Flow and Rain Data from July 24th to August 9th, 2017

2.2 Wet Weather Flow Analysis

Halifax Water provided Rainfall Derived Inflow and Infiltration (RDII) analysis for both flow monitors installed immediately upstream of the QCPS. The RDII analysis graph is shown in Figure 2-2 and shows recorded peak flows along as a function of 24-hour rainfall depth with a linear regression for the data.

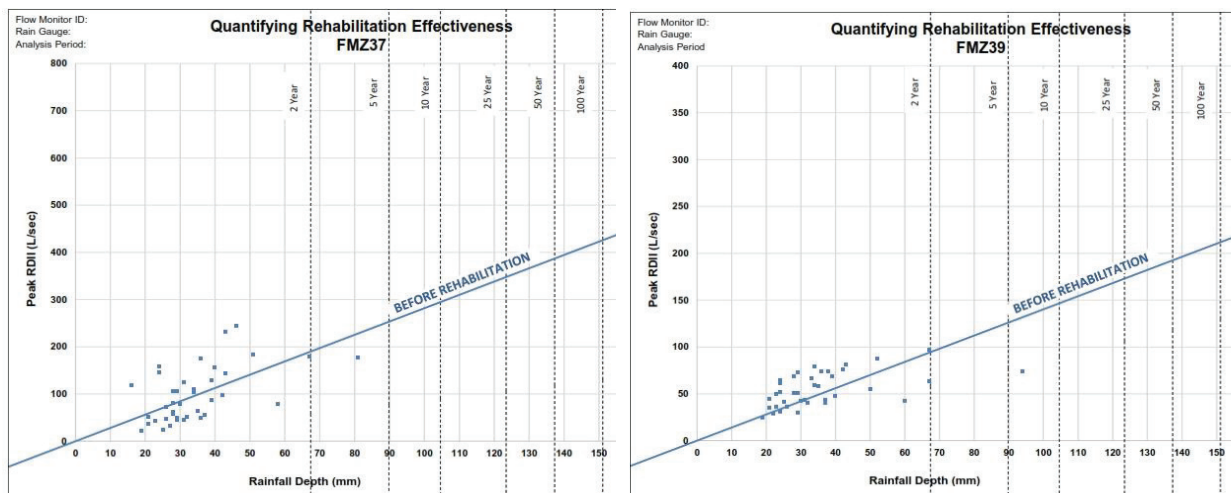


Figure 2-2: RDII Analysis for Flow Monitors FMZ37 and FMZ39

Because the upgraded design horizon is for 20-25 years, climate change effects should be accounted for up to that period of time. If the station continues to operate beyond 2047, further capacity increases, if necessary, could be incorporated with the upgrades that will be required at that time.

The 24-hour rainfall from the Shearwater RCS 2017 Intensity-Duration-Frequency Curve for a 1 in 5 year return period is 89.7 mm. Based on the linear regression of the RDII analysis (Figure 2-2), the RDII flow rates for the 1 in 5 year event are shown in Table 2-2. The projected increase for short duration rainfall intensity due to Climate Change to the 2050s is 9% as projected by the Nova Scotia Government. The resulting 24-hour rainfall total is 97.8 mm. The RDII flow rates for this rainfall depth is also taken from the RDII analysis, the net increase to RDII flow rates from climate change effects is shown in Table 2-2. Halifax Water are targeting an RDII reduction of 44.3 L/s for a 1 in 5 year return period for FMZ37. If realized, the reduction would occur sometime in the future following the upgrades to the QCPS. Therefore, we have accounted for the reduction for the 2050s peak RDII flow rate.

Table 2-2: Peak RDII Flow Rates Current and Adjusted for Climate Change

	Wet Weather Flows
FMZ37 RDII (see Figure 2-2)	253 L/s
FMZ39 RDII (see Figure 2-2)	126 L/s
Total 1 in 5 Year RDII Present Day	379 L/s
Climate Change Effects to Peak RDII (net increase)	32 L/s
Targeted RDII Reduction (FMZ37) ¹	-44.3 L/s
Total Adjusted RDII incorporating Climate Change and RDII Reduction	366.6 L/s

1 Targeted RDII reduction from IMP Vol 5, Section 7.2.4.

2 The 2050s projected wet weather flows for FMZ37 is 275 L/s and for FMZ39 is 136 L/s an increase of 22 L/s and 10 L/s (22 L/s + 10 L/s = 32 L/s) over present day flows, respectively.

2.3 Growth

The projected growth within the QCPS sewershed is a population of 326 with an area of 4.6 Ha as outlined in the IMP. Wastewater flow attributed to the growth was calculated in accordance with the 2020 Halifax Water Design Specifications.

2.4 Peak Design Inflow

The total peak inflow is summarized in Table 2-3 below and is the sum of the peak dry weather, peak wet weather and growth as outlined in the sections above.

Table 2-3: Total Peak Design Flows

Component	Flows
Peak Dry Weather Flow (Table 2-1)	76.9 L/s
Peak Wet Weather Flow (Table 2-2)	366.6 L/s
Growth ¹	4.6 L/s
TOTAL PEAK INFLOW	448.1 L/s

1 Includes both peak dry and wet weather flows.

While the total peak inflow is 448.1 L/s, for design purposes, CBCL recommends rated station pumping capacity of **500 L/s**. This higher pumping capacity offers flexibility to manage various operating and forcemain conditions both presently and in the future.

Chapter 3 Hydraulic Assessment

3.1 Flows

As discussed in Chapter 3, the recommended peak design, pumping capacity for the Quigley's Corner Pump Station is 500 L/s. This chapter provides a summary of our analysis of the existing pump system, the forcemains, system constraints and transient analysis.

The new pumps must be compatible with the stations existing forcemains and downstream infrastructure for both present flows into the station as well as those in the future. During high flow conditions, there will be an incremental increase in flow delivered to the Eastern Passage Wastewater Treatment Facility (WWTF) following the upgrades to the station. Discussions with operators at the Eastern Passage WWTF indicate that the additional flow is well below the current unused capacity at the plant.

3.2 Existing Pump Station Forcemains

The QCPS receives all sanitary sewage generated in the Eastern Passage area and conveys it to the Eastern Passage WWTF. The existing pump station and original forcemain was constructed in 1974 and replaced with a new, twinned forcemain constructed in 2000. According to the CBCL Limited "Issued for Construction" drawings, both forcemains are 2,300 m long, 500 mm diameter PVC pipes. The forcemains extend from the pump station, located at the corner of Shore Road and Cow Bay Road, to the discharge at a manhole on the Eastern Passage WWTF. According to the "Issued for Construction" drawings, the pipeline material is PVC DR25. This is only noted in one detail on the drawings. There are no other references to the pipe material on the drawings. According to the IPEX (Centurion) catalogue from 2007, a 500 mm diameter PVC DR25 pipe has a 505 mm inside diameter and is pressure rated for 165 psi with a short-term pressure rating 215 psi (S.F. = 2.5). The elevation of the forcemain, where it discharges into the manhole at Eastern Passage WWTF, is approximately +3.70 m elevation. The two forcemains exit the QCPS structure one above each other. According to the drawings, the lowest of the two forcemains is approximately -3.10 m elevation where it exits the station. Both forcemains have a highpoint, with air-vacuum valves installed, at approximately 1,000 m from the QCPS.

3.3 Autoport Pump System

The Autoport Pump Station (APS) is located at 1151 Main Road in Eastern Passage and was constructed in 1974. This station is located approximately 0.6 km from the Eastern Passage WWTF. The APS has its own dedicated 300 mm forcemain which discharges to the same manhole as the QCPS forcemains. To provide forcemain redundancy, the station is also connected to one of the 500 mm diameter forcemains from QCPS. The APS is nearing the end of its life and is presently in the design phase for the rehabilitation/replacement.

The connection to the QCPS forcemain is only used during an emergency or during a planned shutdown of the dedicated 300 mm diameter forcemain. While the use of the QCPS forcemain by the APS is remote and of short duration, it will have an influence on the hydraulics of the Quigley's Corner pumping system and its effect will be considered in our analysis. Similarly, an upgraded QCPS will also influence the hydraulics at APS. We have modelled various future pumping scenarios. The APS rehabilitation/replacement is too early in the design phase and Halifax Water could not provide the proposed design capacity for the station. As such, we have allocated a design pumping flow of 160 L/s based on previous flow investigations for our model and from discussions with Halifax Water staff.

During our hydraulic analysis, an unusual scenario was identified where the APS discharges to the 500 mm forcemain while the Quigley's Corner pumps are off and both 500 mm diameter forcemains are available. The model predicts that a portion of the APS flow will generate reverse flows through the 500 mm diameter forcemain to the QCPS and then flow through the second 500 mm diameter forcemain toward the Eastern Passage WWTF. The two 500 mm diameter forcemains do not have check valves to prevent this scenario from occurring. This reversal of flow would be infrequent, of limited duration, and should have limited impact on operations. As such, we do not recommend the addition check valves on each forcemain or any other modifications.

3.4 Testing and Analysis of Existing Pumping System and Hydraulic Model

On March 16, 2021, CBCL's project staff met on-site with Halifax Water to perform testing on the existing pumps and make observations at the station. CBCL installed a calibrated pressure gauge on one forcemain at the discharge of station. Pressures were recorded while observing flows by the station's existing magnetic flow meter. The primary purpose of the testing was to determine the frictional characteristic of the existing forcemains for calibration of the hydraulic model. A model of the pumping system was developed using our KYPIPE 2018 hydraulic modelling software, shown in Figure 3-1. This model was also used to conduct a transient analysis which is discussed later in this report.

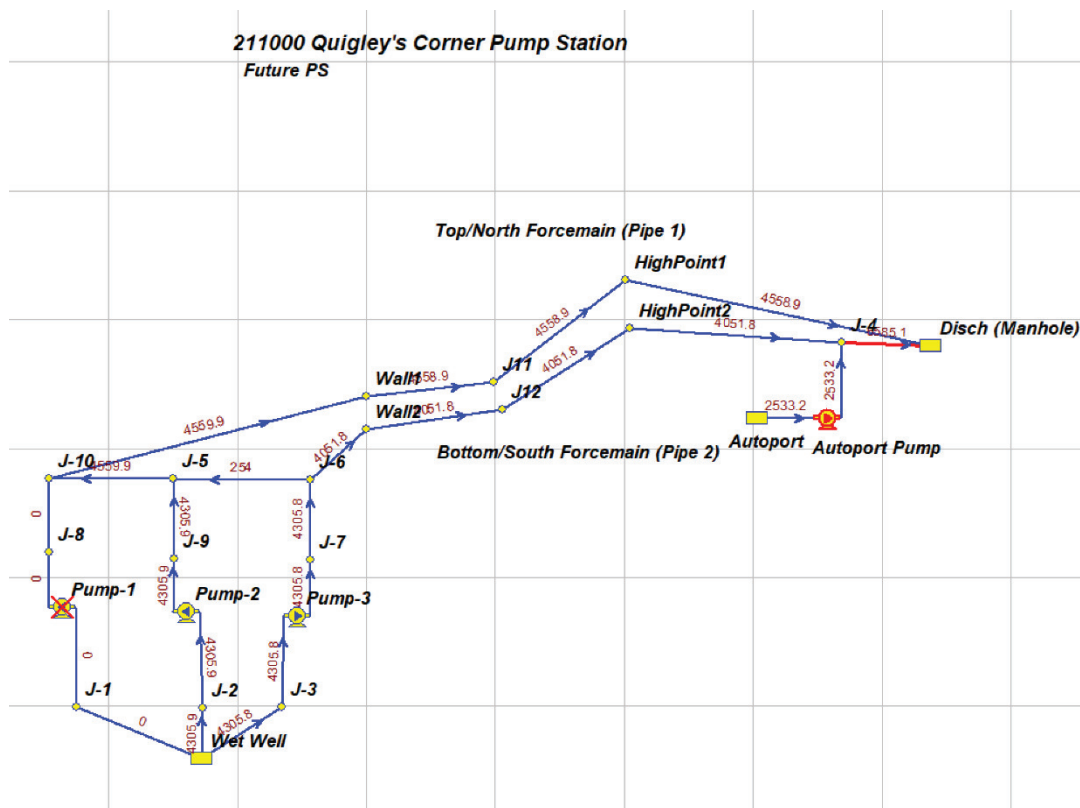


Figure 3-1: Quigley's Corner Pumping System (Model)

The measured pumping rate and discharge pressure from the flow testing aligns reasonably well with the pump curve though, however, at a lower flow than the rated duty point (164 L/s @39.6 m TDH). Based on flow and pressure data collected and the higher-than-normal headlosses observed, the two forcemains exhibited headlosses that were consistent with an 'effective' C factors (roughness) of between 74-76. The forcemain material is smooth walled PVC. There could be some 'roughness' due to hardened grease or some other deposits adhered to the inside of the pipe, however it is more likely that a significant portion of the high headloss is due to reduced inside pipe area. With the two active forcemains, the existing pumps are not capable of maintaining the required velocities to keep solids in suspension. Present pumping velocities are typically 0.47 m/s based on an inside diameter of 505 mm (PVC DR 25). Generally, velocities of 0.6 m/s are required to prevent solids being deposited and 0.9 m/s is required to re-suspend some heavier material.

When self-scouring velocities are not maintained in a liquid stream carrying solids, the solids will accumulate in the liquid carrying conduit. The solids will continue to accumulate in the conduit until the open area is sufficiently restricted that velocities become high enough to keep material in suspension. In other words, the open area of the pipe reduces until a velocity increases to allow self scouring and prevent further solids deposition. With additional pumping capacity (and sufficient head), the open area on the interior of the pipe will tend to increase. The increased capacity, provided with the recently repaired existing pump, should, at times, increase flow through the forcemain. During periods of high

pumping rates, accumulated solids will likely be scoured and removed from the forcemain. Then, when flows return to normal, solids will tend to accumulate due to the low forcemain velocities. This is expected to continue after upgrades and optimization of the station as average flows are not expected to increase significantly from present day. However, the deposition of solids can be mitigated, somewhat, with use of VFDs in conjunction with an operations plan as discussed in Chapter 4.

3.5 Existing Pump Station and System Constraints

The station's wet well has a floor at – 6.25 m elevation. Though present control levels may be different, it is reasonable that future liquid levels in the wet well will typically vary between – 3.20 m (high) and – 5.35 m elevation (low). For the purpose of design, we have selected a nominal (maximum) water level – 3.20 m elevation in the wet-well (approximately 150 mm below the invert of the inlet channel entering the wet-well). There is only one wet well compartment. The wet well has an overall width of 20 ft (6.09 m) and a length of 19 ft (5.79 m). Present intakes are positioned along the length of the wet well. The wet well is flat for 5.5 ft (1.67 m) along the width at its lowest elevation (floor). Beyond the flat portion of the floor, the wet well is sloped at 1:1 in both directions. The flat and sloped profile extends the full length of the wet well.

At this time, Halifax Water does not intend to modify the existing wet well. By all accounts the pump intakes (suction from the wet well to the pumps) are original. Three intakes are active. There is a fourth that is blanked off with a blind flange, which has never been used as only three pumps have ever been installed. According to the original drawings for the station, the existing suction/intakes are 400 mm ductile iron pipes, cast into the structural wall and through the sloped concrete, with a down turned, bell-mouth suction elbow. The condition of these pipes and fittings are unknown however they have been installed in a corrosive environment for approximately 47 years. New 400 mm diameter down turned; bell-mouth suction elbows will be installed for each new pump.

The existing pumps typically deliver between 155 and 200 L/s when a single pump is running, depending on which pump is called into operation. At higher flows into the station the existing pumps can pump 370 to 400 L/s depending on liquid levels in the wet well. The existing pumps are constant speed and over the past three years the pump station has been pumping, most frequently at a rate of 180 L/s.

Approximately two (2) years ago, Halifax Water began to operate the station with two active forcemains, instead of one, to increase pumped flows and decrease overflow events. Since that time, odour related problems and operation of the station have been improved. This appears to be somewhat counter-intuitive as the second forcemain doubles the volume. This doubles the residence time when the wastewater is contained in the forcemain and subject to anoxic conditions. Even with only one forcemain active and assuming average DWF, the theoretical residence time in the pipeline is 2.75 hrs. It would be reduced

somewhat, depending on how much actual open area is available in the forcemain, however this is a relatively long residence period. The present operation of two forcemains likely results in a residence time between 5.5 – 4.5 hrs under average DWF of 46.3 L/s.

Pumping for shorter periods at a higher rate will tend to suspend and scour more solids, however the net residence time cannot be reduced. This is because the volume of the forcemains much larger than the total available volume in the station's wet well. The volume of one forcemain is 460,000 L and the maximum available volume in the wet well is 78,000 L. Flow can be pumped for a short duration, at a higher rate but the wastewater will remain in the forcemain until there are sufficient number of cycles where the wet well is filled and emptied.

3.6 Transient Analysis

Transient pressures, otherwise known as water hammer, occur in a piping system when velocity energy in the liquid is converted to energy in the form of pressure. These transient pressures can be both positive or negative depending on whether the fluid is accelerated or decelerated. The magnitude of these pressures is a function of the fluid, pipe material properties and the rate at which flow changes. The rate at which the fluid velocity changes is important. The critical period in any system is the period of time that it takes for a sound wave to travel the full distance of the pipe and return. The critical period for the Quigley's Corner forcemain(s) is 13.8 seconds. If a change in velocity occurs within the critical time period, then that appears as an instantaneous change in velocity and produces the maximum potential transient pressure. The transient pressures are additive meaning that the transient pressure component is added (or subtracted in the case of negative pressures) to the ambient pressures within the pipeline. Sometimes reflected or returning waves combine with other waves resulting in pressures of a substantially higher magnitude.

When pumps lose power suddenly, such as during a power interruption, it is called a motor (or pump) trip. Such trips can cause significant transient pressures. In a pump trip scenario, both the pump impeller and the liquid being pumped decelerate rapidly. This results in a negative pressure wave that is sent out through the downstream piping system and then subsequently returns as a positive pressure wave. In the below Figure 3-2, the worst-case scenario is two pumps tripping while delivering maximum design flow. The event does not result in pressures which exceed the pressure rating of the forcemains.

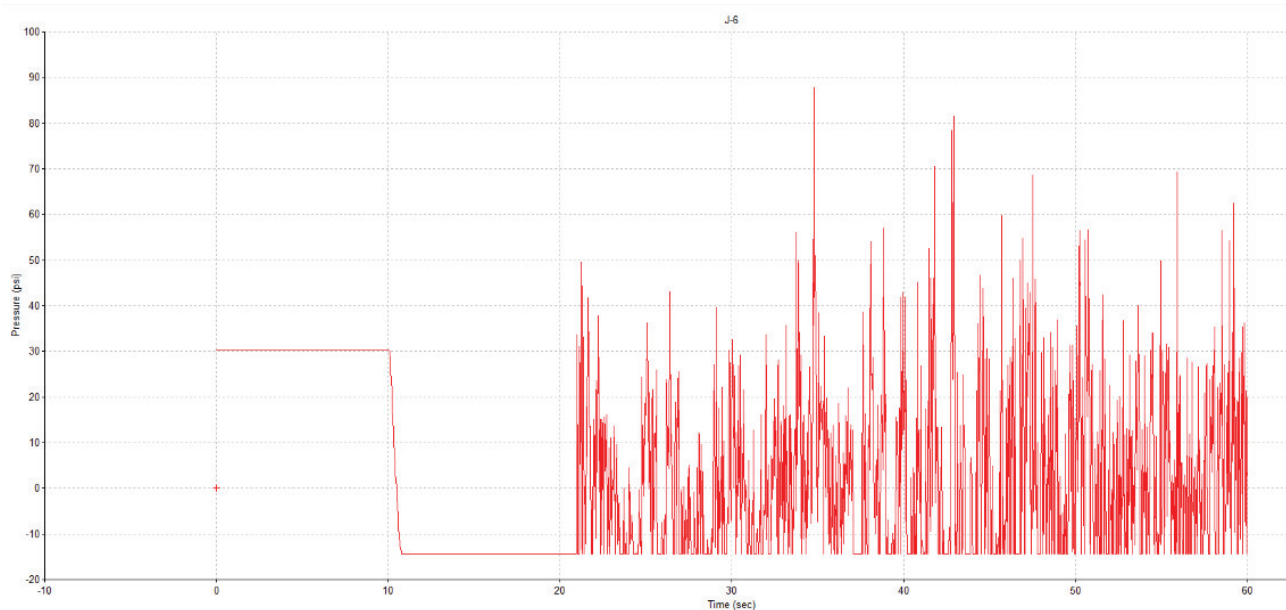


Figure 3-2: Pressures Measured at Station Discharge with Pumps ‘Tripping’ at Time = 10 s

In some cases, the magnitude of the negative pressure wave can result in cavitation, followed by column separation. Column separation, is when a gas bubble forms in the downstream piping and then collapses with the returning positive pressure wave. The phenomena can result in magnifying the surge pressures and can produce pressures much greater than those that would otherwise be experienced. Combination air-vacuum release valves are often required to be installed on local highpoints to expel accumulated gases but also to relieve the vacuum conditions that can lead to column separation. There are existing air-vacuum valves located at the high point of each forcemain and based on our observations during testing, they appear to be functional. In the above Figure 3-2 scenario, we have assumed that the existing air-vacuum valves are not functioning. This results in cavitation at the high points and contributes to the predicted surge pressures. This would be the worst-case scenario, however, the pressures do not exceed the pressure rating of the forcemains.

The forcemain material is PVC which is fairly flexible and results in relatively low wave speed compared to concrete or steel pipes. This tends to reduce the magnitude of transient pressures. However, in some cases when pipes are repeatedly subjected to momentary pressures above 50% of the pipes normal operating pressure, the material life can be substantially reduced. This phenomenon is called cyclical fatigue. Certain types of PVC pipe are more susceptible to this form of failure than other common piping materials. The model does not show pressures of a magnitude that would be a concern for cyclical fatigue.

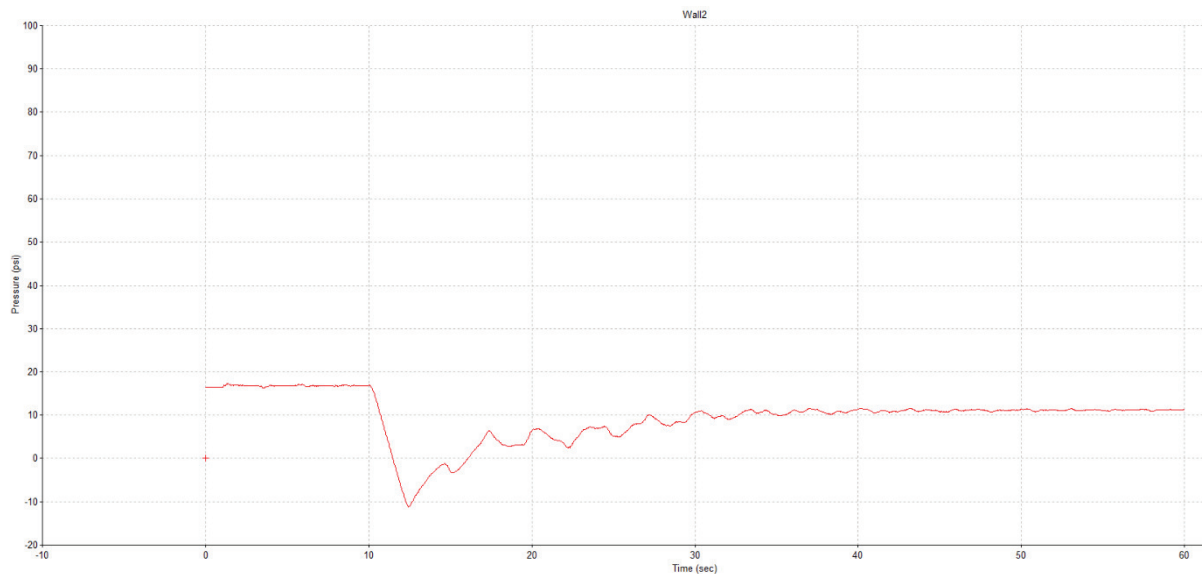


Figure 3-3: Pressures Measured at Station Discharge with Pump Turning off at Time = 10 s

The above Figure 3-3 shows pressures when the pumps are turned off rapidly (within the critical period). When the pumps are turned on and off rapidly, the model predicts transient pressure waves of a relatively low magnitude throughout the entire forcemain. The electrical utility does not allow 'across-the-line' starters for the motor sizes that will be required for the pump at the QCPS. Therefore, either variable frequency drives (VFDs) or reduced voltage starters will be required. Modelling indicates that both provide an acceptable means for controlling the starting and stopping of the pumps.

Chapter 4 Recommended Pumping Configuration

4.1 Future Operation of Pump Station and Forcemains

The 400 mm diameter bell-mouth suction elbows and piping render suction velocities suitable for either a three or four pump system (respectively two or three active pumps plus one standby). Based on the elevation, where the existing pipes are cast into the wall and the geometry of a standard bell-mouth suction elbow, the inlet is approximately 400 mm above the floor of the sump. Though higher than desirable, does not appear to interfere with present pump operation. Future suction velocities dictate a minimum liquid depth of +/- 900mm should be adequate to prevent vortexing.

A future pumping system consisting of either three or four pumps appears feasible. The pumps will be specified as dry-pit submersible and each pump will have its own check and isolation valves. The pumps will discharge into a 350 mm diameter header to connect to the existing 350 mm diameter pipes that exit the pump station. Magnetic flow meters complete with isolation valves will be installed on the piping just prior to exiting the station. This will allow for each forcemain to be easily taken on and offline and will allow monitoring of flow in the individual forcemains.

Operating the station with two active forcemains appears to have alleviated operational problems such as odour issues. Though the second forcemain results in longer residence times for the sewage in the forcemains, and tends to allow more settlement of suspended solids, we are hesitant to change from this mode of operation due to its success. The variable headloss characteristics of the forcemain (due to the probable deposition of solids) is a challenge from a hydraulics perspective. For this reason, the use of VFD's may offer more flexibility for the operators to maintain a flowrate and velocity in the forcemains which works best.

VFDs do not appear to be required for starting and stopping of the pumps to mitigate transient concerns. They are also not required for matching the flow entering the station. Flow matching is sometimes required for pumping systems with high variations in

incoming flow and limited wet well capacity. This does not appear to be the case as the station has one large wet well with adequate volume to prevent pumps from 'short cycling'. Because velocities are already low, there is no advantage to operate the station at pumping rates below what is presently pumped. To mimic current operations, we would choose a flow of 200 L/s as the minimum pumped flowrate.

There would be an additional capital cost to install VFD's and there would be operating costs associated with the additional electrical energy used by the VFD. We roughly estimate a yearly pumping energy cost of \$20,000. This is based on assumed operating conditions and a \$0.12/kw-hr energy cost. It is typical to assume a 3% energy efficiency lost through the VFD, which would result in a small additional energy cost of \$600 per year. We obtained budget pricing to compare the cost for the supply VFD's compared to the costs of reduced voltage (soft) starters. The estimated price to purchase three wall-mounted, factory enclosed VFD's, complete with fused disconnect, line reactor, and dv/dt output filter is \$72,000 compared to an equivalent cost of \$29,000 for reduced voltage (soft) starters. The difference of \$43,000 is not particularly significant compared to the overall cost of the upgrade or the cost of three new pumps which is estimated to be in the range of \$250,000.

Note that since the pumping requirements will not change significantly there is no opportunity to improve efficiencies with the upgrades and optimization of the QCPS. The rationale for use of VFDs is discussed in the following section.

4.2 Three Pump vs Four Pump System

As stated previously, a pumping system consisting of either three or four pumps are both viable solutions. The purchase and installation cost of three pump units will be less than that for four pump units. However, VFD's are required for a three-pump system to provide a minimum pumped flowrate close to the present nominal pumping rate of 200 L/s. Without VFDs, the minimum flow (one pump running) for a three-pump system would be approximately 325 L/s. A higher flow rate is desirable as it would result in higher minimum velocities in the forcemain. However, it would be a significant change from the current pumping regime during average and dry weather flows. A four pump system would not require VFDs and one pump could operate at 200 L/s.

Having the ability to control the output flow from QCPS is an advantage considering the variable headloss characteristics of the forcemain and for controlling deposition of solids in the pipeline. Having output flow control is also an advantage during variable hydraulic conditions in the scenario when the APS is required to pump into one of the QCPS forcemains. A three-pump system, with VFD's would appear to be better suited to provide output flow control than a four-pump system. Turn-down, which is sometimes a concern with larger pump unit capacities, would not be a constraint as the required minimum flow need not be less than 200 L/s. The installed cost for a three-pump system operating on VFD's will also likely be less than the cost for a four-pump system. Therefore, CBCL

recommends a three pump system operated on VFDs to provide the desired flow control flexibility and reduced capital cost.

4.3 Recommended Pump System

We recommend a three-pump system (two pumps providing design flow plus one standby) for the upgraded station. It is further recommended that these pumps be operated on VFDs to provide flexibility to control pumped flowrates. Three identical pumps have been selected as dry-pit submersible pumps with the following approximate characteristics:

- 1 Rated Duty: 250 L/s @ 25 m head (3962 USgpm @ 82 FT head).
- 2 Rated (maximum) Speed: 1800 rpm.
- 3 Inlet Size (estimated): 300 mm diameter.
- 4 Discharge Size (estimated): 200 mm diameter.
- 5 Pump Motor Rated Power (estimated): 104.4 kW (140 Hp).

The rated duty point for each pump is 250 L/s @ 25 m and is required to achieve the rated station design output of 500 L/s with two pumps operating. The pumps will be selected for optimised operation for one pump operating in the range of 200 L/s as this will likely be the flow where the pumping system will operate most frequently. This condition, Duty Point #1 is where energy efficiency is most important. The selected pumps must be suitable for the heads and flows for one pump operating in the general range between 180 L/s and 320 L/s. The 320 L/s allows for overlap when transitioning from one pump operating to two pumps operating. With two pumps operating in parallel, each much produce 150 – 250 L/s (for total, combined pumped flow of 300 – 500 L/s). The pump system must satisfy a number of operating conditions such as the forcemains with varying headloss characteristics as well as the ability to overcome the additional headloss caused by the Autoport Pump Station pumping through one of the Quigley's Corner forcemains. below, provides a summary of the required duty points for the proposed pumps.

There are a number of duty points presented the Figure 4-1 showing idealized pump curves operating in parallel at various speeds and head conditions. These speeds are referred to as 'XX', 'YY' and 'ZZ' and are a function of the selected pump. There are several system curves shown. The system curve labelled 'System (1 running) C=75' is for one pump operating through two forcemains and defines Duty Points #1 and #2. A second system curve 'System (1 Running) C=100' is a second probable condition for one pump operating through two forcemains, though, it does not define a duty point. The system curve labelled '2 Pumps Running System Curve' is for two pumps operating through two forcemains and is relevant to Duty Point #3.

The hydraulic conditions for each duty point are described as follows:

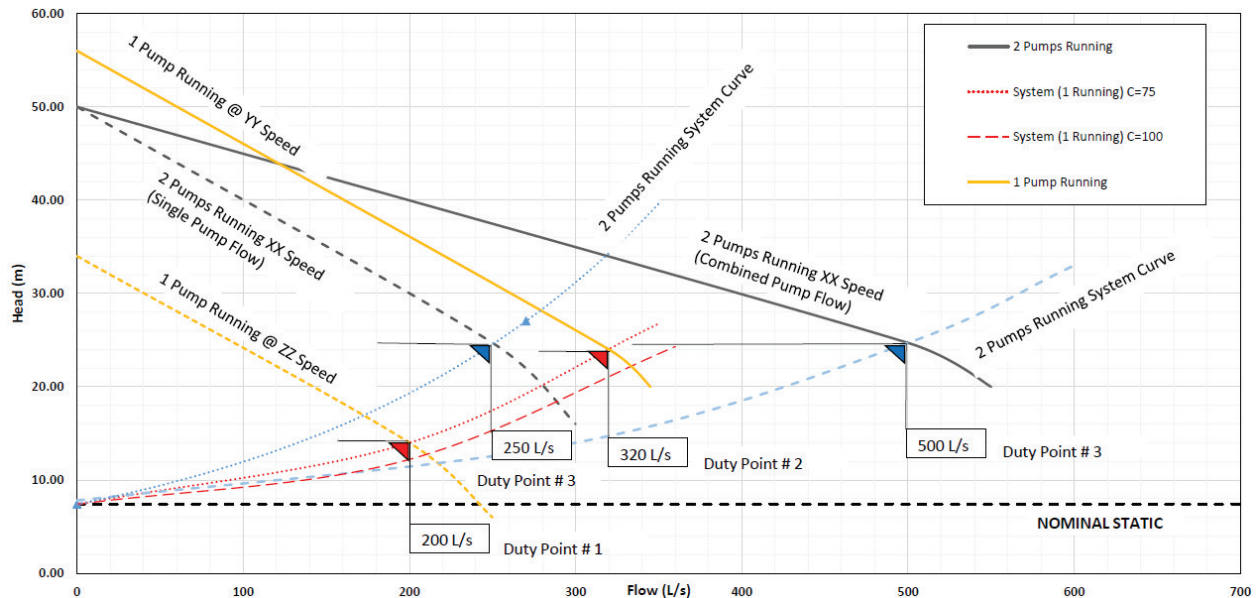


Figure 4-1: Pump Curves and Design Conditions

- **Duty Points #1:** The flow with one pump running at a reduced speed 'ZZ' is 200 L/s the TDH is 14 m, referred to as Duty Point #1. This duty point is based on one (1) pumping through two active forcemains with an effective (roughness) C factor of 75.
- **Duty Points #2:** With one pump running at full speed 'YY' the flow will be 320 L/s at a TDH of 24m and is based on two active forcemains with an effective (roughness) C factor of 75. This is a conservative operating condition and will define the motor power requirements for the pumps. A minimum rated power of 140 Hp (104.4 kW) has been assumed.
- **Duty Point #3:** The Total Dynamic Head (TDH) at a flow of 500 L/s, through two active forcemains with two (2) pumps operating is 25m is the total flow for two pumps operating at Duty Point #3. This is based on an effective (roughness) C factor of 100 for both forcemains. The calculated brake horsepower is 110 Hp (82 kW), per pump, assuming a hydraulic efficiency of 75%. The proposed pumps must be capable of achieving the Duty Point #3 (250 L/s @ 25m) at a speed 'XX'.

The QCPS pumps have been pre-selected and are Flygt N 3315 LT 625 satisfying the above characteristics and duty points. The pump mounting configuration (horizontal or vertical) will be determined in detailed design. The pump performance curve is included in Appendix D.

Following station upgrades, we expect that pumps will be operated at higher flows more frequently with VFD operation. As a result, solids in the two existing forcemains will tend to be scoured and removed as a result of the higher flow as velocities in the forcemains would

exceed 0.9 m/s. The higher velocities will thereby increase the effective C factor of the forcemains, lowering dynamic head, resulting in increased flow for the same pump speed. We are not certain of how quickly or by how much the effective C factor of the forcemains will change following start-up with the new higher flow rate pumps. It could become evident that some of the solids could not be expelled and observed headlosses remain consistent with an effective C factor of less than 110. It does not appear that such a low effective C factor will be sustained at high pumping rate. Thus, we do not believe that design pumping conditions should be based on the existing 'effective' C factor characteristics. If after it becomes apparent that the 'effective' C factor remains below 110, we would anticipate that Halifax Water would perform cleaning or pigging the forcemains to improve friction characteristics and thus, increase capacity. The effective C factor can be determined via flow testing similar to the method outlined in section 3.5.

The aforementioned duty point #2 requires the greatest head with calculated brake horsepower of 82 kW (110 Hp), assuming a hydraulic efficiency of 75% for the pump. Depending on the actual pump selected, there will be a reserve amount of power between the required pumping power and the rated power of the pump. The full capacity of both the pump and the driver (motor) has been specified at this time because of the configuration of the pumps. The pumps will be suitable for operating over the full range of flows (present typical to future ultimate capacity) by changing pump speeds with a variable speed drive. Thus, there is no requirement to install reduced sized impellers for present operating conditions. Also note that the pumps will be able to provide more than their rated flow by increasing pump speed up to the point where the motors are operating at their rated capacity.

During project workshops/meetings with Halifax Water, it was noted that the firm pumping capacity for the station is based on the pumps maintaining liquid levels in the station's wet well below the incoming sewers (no surcharging of the collection system).

While the pumps will be selected to pump the design flow of 500 L/s, there will be additional reserve capacity available, resulting in higher flow rates, due to:

- ▶ Reserve power between the required pumping power and the pump motor rating allowing increased pump speeds.
- ▶ The probable condition that the APS is operating normally and not using the QCPS forcemain.

This reserve capacity, estimated to be between 10 and 20% and will provide additional opportunities for Halifax Water to further reduce the frequency of overflows at the station beyond the 1 in 5 year design flow events.

Chapter 5 Recommended Station Upgrades

5.1 Resiliency

As per Halifax Water's Design Specification & Supplementary Standard Specifications (2020), the functionality of any infrastructure to be installed below 4.86 m elev. is a concern with respect to storm surge events and future sea level rise.

▶ High – Water Level (HHWL):	0.73 metres (CGVD2013)
▶ Sea Level Rise as a Result of Climate Change:	1.50 metres
▶ Storm Surge and Wave Run-up:	<u>2.63 metres</u>
▶ Total:	4.86 metres (CGVD2013)

Unfortunately, it is not practical to modify the existing QCPS to be adapted for sea level events of + 4.86 m. A completely new station, as well as other extensive changes to the existing sanitary collection system, would be required. The street adjacent to the station is at approximately + 1.5 m elevation. The ocean would be 3.36m higher. The main floor level of the existing station is at + 3.009 m elev. The only infallible method to prevent damage from flooding is to build infrastructure above the highest possible water level. The proposed pumps will be submersible style and it is technically possible to install water-proof electrical equipment within the station's drywell such that it could function if completely flooded. To keep the station functional, the main electrical systems (transformers, starters, controls panels, etc.) as well as the station's proposed standby generator, would have to be raised over 1.86m above the existing floor level. The station already has less than adequate height below the ceiling making this impractical.

The main floor level of the station, as well as the adjacent grades around the building (where the station's transformer and generator will be mounted), are the limiting factors that will impact the full functionality of the station when subjected to storm surge and future sea level rise. Various intermediate strategies are available that could deal with certain flooding scenarios. Relying on the seals around the exterior doors of the station and building a wall around the yard of the station, with a water-tight slide gate, could be effective for fairly high flooding conditions. Such measures should be planned and could be installed now or in the future.

Previous concerns have also been expressed with respect to seawater ingress along Shore Road which could affect inflow to the pump station. Inside the pump station wet well, there is a check valve (custom flap gate) on the overflow pipe. This prevents seawater from flowing back into the wet well during high tide events. It appears to be functioning properly and operating staff are not aware of any previous issues. No other concerns, such as elevated salinity levels in wastewater, have been expressed with operators at the Eastern Passage WWTF. No evidence of excessive corrosion was observed in the station's wet well.

The existing overflow for the QCPS discharges to the Fisherman's Cove. As such is can be affected by storm surge and will also be impacted future sea level rise. The overflow pipe is a 750mm diameter concrete pipe which exits the wet well at an invert elevation of + 1.20m elev. The pipe crosses the road and connects to a manhole where water levels are monitored by an existing ultrasonic level transmitter. As an aside, this level transmitter was installed to monitor overflows, however it essentially measures tide levels because the bottom of the manhole is constantly submerged as it is directly connected to the ocean. Wet well overflows will be measured by a level transducer within the wet well after the station is upgraded. A 750mm diameter concrete pipe exits this monitoring manhole and terminates in the ocean at an invert elevation of - 2.02 m elev. with a bar-rack.

The hydraulics (headlosses) were estimated for the overflow pipe from the pump station wet well to the outfall in the ocean.

▶ Current High High-Water Level (HHWL):	0.73 metres (CGVD2013)
▶ Estimated Overflow Headlosses @ 500 L/s:	<u>0.83 metres</u>
▶ Resultant Water Level in Wet Well:	1.56 metres (CGVD2013)

There are many overflow scenarios involving different flows through the overflow pipe concurrent with different tide levels. The higher the tide level, the higher the driving head (wet well level) required to force flow through the overflow pipe. The scenario of the station pumps being non-functional during an extreme storm event could occur. If the station is overflowing at the station capacity of 500 L/s, with the previously noted storm surge and wave run-up height of 2.63 m, it would result in a ('simplistically calculated') water level of + 4.19 m elev. in the wet well. The main floor level of the station is at + 3.009 m elev. We use the term 'simplistically calculated' because the actual liquid level would likely be less. An accurate calculation would require complex modelling of the sewers backing up in the collection system while the tide was changing over time. The risk of this event is low, however it does demonstrate the finite capacity of the existing overflow in light of potential storm surges and future sea level rise.

Based on the above and discussions with Halifax Water, no modifications for flood mitigation or resiliency are required to be incorporated into the present upgrades of the station. Additional study will be necessary to determine which mitigation strategies should be implemented at a later time.

5.2 Dry Well

It is proposed that all existing piping, valving, and supports be removed and replaced as part of the station upgrades. New piping is to be specified as stainless steel and isolation valves will be specified as plug. The two forcemains will be interconnected but will have isolation to operate independently as needed. A piping schematic is provided in Appendix A. Each forcemain will have flow meters for recording of flows. Each pump will be provided with suction and discharge isolation with check valves. Pump discharge isolation valves will be positioned vertically and located close to the common header. It is intended that the check valves will be located horizontally, however, the pumps may need to be moved from their current location. These details and the piping configuration will be progressed following pre-selection of the pumps. Manual air bleeds will be provided at high points and will drain back to the wet well so there is no release within the dry well.

There are four (4) existing suction penetrations through the common wet/dry well wall, however, only three (3) will be required following the upgrades. The unused through wall suction piping can be blocked off. As noted in Chapter 4, the existing unused through-wall piping is 400 mm diameter and greater than required for the new pumping. It is proposed that suction flares be replaced. New suction isolation valves will replace the existing and will be specified as plug. We will investigate the feasibility of providing operating stem extensions to the main floor in the detailed design phase as this is preferred by Halifax Water and standard practice for new pump station construction.

With the pumps selected, we will review the available headroom on the main floor to determine if sufficient to allow for the dry pit submersible pumps to be brought in through the main door via a monorail and lowered through the existing hatch to the floor of the drywell. Halifax Water has stated that pump motors can be separated from pump volutes that further reduce headroom requirements. When on the floor of the drywell, the pumps will need to be moved into place. This will be accomplished by a motorized under-running crane and electric trolley and hoist system.

The existing intermediate platform and stairway will be removed. A new stairway and landing will be provided and designed to accommodate the installation and removal of the new pumps and piping header. The proposed configuration is shown in Figure 5-1. Due to the existing building construction; the stairway rise will be 192 mm to match that of the existing stairway. This rise is greater than the building code maximum rise of 180 mm but is necessary to provide the required headroom when crossing under the main floor beam. While not shown in the figure, railings will be provided in accordance with the building code.

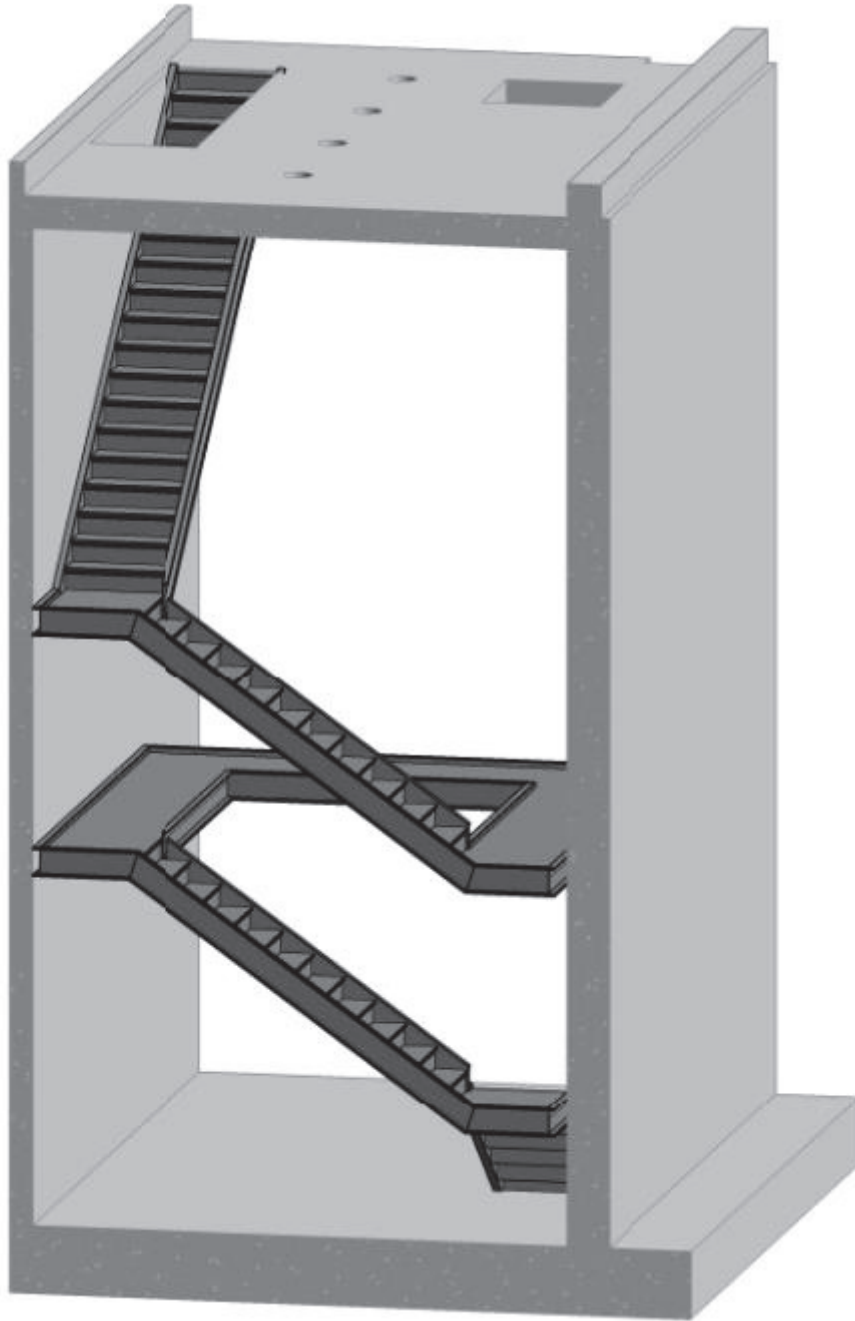


Figure 5-1: Drywell Stairway and Landing Configuration

To reduce energy costs for heating and continuously ventilating the drywell, the area will be classified as Zone 2. The dry well will be continuously ventilated at one (1) air change per hour. During occupancy, the space will be ventilated at three (3) air changes per hour and will be switch operated. An HRV will be considered in the design to determine if the addition would improve efficiencies in these areas.

5.3 Incoming Sewer / Wet Well

As noted in Chapter 3, no changes are proposed to incoming sewer troughs or wet well. Cleaning of the wet well compartment will be carried out in similar manner as today. The existing trough isolation slide gates will be replaced. The suction piping / bells will be replaced. The existing overflow structure / backwater valve on the overflow pipe does not appear to be original. We understand that it is functioning with no issues or leaks observed. However, its removal and replacement will be incorporated with the upgrades.

The existing stairway and landing will be removed and replaced. At this time, the replacement will match existing.

The wet well will be rated Zone 1 and not normally ventilated. During occupancy, the space will be ventilated at 30 air changes per hour and will be switch operated. All existing ventilation ducting, fans and equipment will be removed and replaced.

The existing station is not known to have issues from odour generation and there is no odour control in place today. The wet well and pumping operation will remain relatively unchanged after the upgrades. Therefore, we expect no significant changes to the odour generation potential of the station and no mitigation is proposed.

5.4 Main Floor and Building Envelope

The main floor will be isolated and sealed from the dry well to achieve an unclassified hazardous rating. The main floor space will be ventilated at the greater of a minimum of one (1) air change per hour or ASHRAE ventilation requirements for the space. All existing ventilation ducting, fans and equipment will be removed and replaced.

To achieve the required physical separation from the dry well, the design will incorporate the following modifications to the main floor:

- ▶ A new partition wall around the existing stairwell to create the physical separation between the two spaces.
- ▶ A new self-closing interior door to provide access to the dry well.
- ▶ Where existing openings are no longer required (such as existing access points), they will be blocked off.
- ▶ A gas-tight hatch will be installed to replace the existing.

The ventilation improvements in accordance with the CEC and NFPA outlined above will improve the pump station safety.

Other modifications to the main floor and building envelope will include:

- ▶ A new hoisting system, or method, for lowering the pumps into the drywell through the existing main doors and existing main floor hatch. At this time, enlargement of the hatch opening does not appear warranted.

- ▶ All existing exterior doors will be replaced with new.
- ▶ Replacement of the roof membrane. This is based on discussions with Halifax Water but will be confirmed by CBCL during the detailed design.
- ▶ Removal of the existing work bench and water closet to provide space for new electrical equipment. This is needed to facilitate staging of the work to maintain operation of the station during construction. We intend to have a new work bench and water closet reinstalled in a new location. However, due to electrical layout requirements, and space constraints, it may not be feasible within the current building envelope. We recognize the value of the bench and water closet and will, therefore, work with Halifax Water during the detailed design phase to provide these features, if feasible.
- ▶ Remove the window from the partition wall and infill to provide additional wall space for electrical equipment.
- ▶ Replace existing domestic water service entry assembly (Meter, PRV, BFP) and all domestic water piping. Relocation of the entry assembly may be necessary to accommodate electrical equipment on the exterior wall.

Refer to Figure 5-2 showing the proposed main floor modifications.

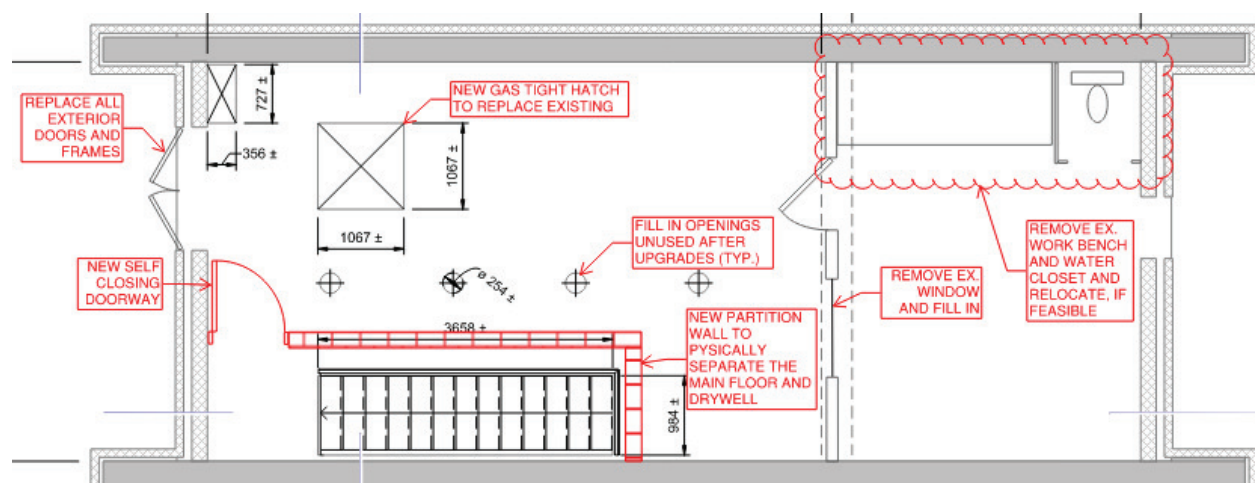


Figure 5-2: Proposed Modifications to the Main Floor

5.5 Electrical and Instrumentation

5.5.1 Existing Service

The pumping station is fed from a utility padmount transformer (150kVA) at 600V, 3-phase, 4 wire. Based on preliminary pump station loading, the existing utility transformer and electrical service size are undersized for the expected electrical load. Replacement of the existing padmount transformer is expected and will be investigated further during detailed design. The transformer will be located on the east side of the building as shown on the Civil Site Plan, Appendix B.

5.5.2 Power Distribution and Motor Controls

A new 600V, 600A main service switchboard complete with main circuit breaker complete with electronic trip unit, power meter, utility metering section, and outgoing lug section will be installed to replace the existing. The main switchboard will feed a new standalone automatic transfer switch (non-bypass). A new diesel generator, currently estimated at 350 kVA and capable of operating with two (2) pumps running, will be installed on a concrete pad located adjacent to the building as shown on the Civil Site Plan in Appendix B. The generator will be installed in a weatherproof sound-attenuated enclosure with a sub-base double walled, diesel fuel tank. The diesel fuel tank will be sized to allow for 24 hours of run time on the generator. The new generator will feed the automatic transfer switch to provide back-up power to the entire pump station upon utility power failure.

The two (2) existing full voltage non-reversing starters in the existing MCC for the 45 kW (60 hp) pumps and existing VFD feeding the existing 75 kW (100 hp) pump will be removed. The existing MCC along with associated circuitry will also be removed as it is nearing the end of its service life. A new 600V, 600A distribution switchboard downstream of the transfer switch, new stand-alone variable frequency drives (VFD's) for the pumps, and a new 120/208V panelboard for building loads will be installed. The new 600V distribution switchboard will be sized to allow for a temporary feed to the existing MCC in order to maintain operation of the existing pumps during construction. The new VFD's will be specified with line reactors for harmonic mitigation and dv/dt output filters for pump motor protection. Pump protection relays for pump over-temperature and seal leakage will be connected to the VFD controls. Surge protection will be included for equipment.

If necessary, selected pump station loads can also be turned off by hardwired controls or PLC programming to prevent operation when on generator power to reduce the size of the generator.

New motor starters and controls will be installed to suit mechanical loads including electric heaters, hot water tanks, and ventilation.

5.5.3 Lighting

All interior lighting (wet well, dry well, main floor) will be removed and replaced with LED type fixtures to suit the application and environmental conditions. Open industrial lights will be installed on the main floor. Interior lighting control is by line voltage light switches installed near the entry doors into each space. Emergency and exit lighting will be removed as necessary and replaced and installed as required by applicable codes. Exterior lighting will be controlled by photocell with motion detectors to reduce light levels when no one is around.

5.5.4 Controls and Instrumentation

A PLC based control system will be installed to control / monitor the pumps. It will also monitor other equipment including, generator, and transfer switches. The station control panel will include an operator interface (HMI) for display of measured values, as well as auto control set points. The pump VFD's will be complete with integral "Hand / Off / Auto" selector switches to allow for local hand control during a PLC failure. The pump station control panel will be located on the main floor in a NEMA 12 panel and will be in line with Halifax Water's standard design specifications. The PLC/RTU controller will be a CMI SCADAPack334 or equivalent with sufficient I/O to meet the pump station requirements.

Allowance in the control panel layout (~300x300) will be included for the Halifax Water supplied communications equipment to provide remote monitoring and alarming.

New instrumentation will consist of two new flow meters with the remote transmitters located on the main floor and wired to the PLC control panel. The existing pressure level transmitter will be removed and replaced with a new laser type level sensor for the wet well. The level and flow transmitters will be wired to the new PLC panel and will be used to control the pumps in auto.

New float switches will be installed to replace the existing float switches for high level alarming in the wet well and flood alarming in the dry well.

Gas detectors and alarm notification will not be installed at the pump station to monitor and alarm hazardous gas levels in the wet well and dry well areas.

The generator and ATS status will be monitored by the PLC via hardwired I/O connections. Either Hardwired PLC I/O connections or Ethernet communications to each pump VFD will be included for monitoring/control and will be determined in detailed design in consultation with Halifax Water.

A heat detector in the main floor area housing the main electrical equipment and exterior door contacts will also be monitored by the station control panel for alarming.

5.6 Sequencing of Modifications

It is important to consider constructability of the proposed modifications in such a way to minimize disruption to service. Currently, all three (3) existing pumps are relied during wet weather, though firm station capacity is with two (2) pumps available and one (1) as standby. It may not be possible to maintain present capacity with three pumps running for during construction. The duration of construction will occur over a number of months so temporary bypass pumping configuration may not be ideal. Though, to accommodate replacement of the wet well platform and suction elbows, the incoming flow will need to be

stopped. We expect that a temporary bypass pumping configuration will be necessary during this phase of the work.

For the construction staging approach, there are constraints, risks and restrictions that should be considered:

- ▶ Physical restrictions, depending on the piping/pump geometry, may inhibit a staged approach and will be further evaluated in detailed design.
- ▶ Staging of construction, while part of the station remains operational, will take longer than if all pumps and pumping were removed and installed at one time. This will likely result in a longer construction schedule.
- ▶ It appears that the current pumping capacity will be reduced for a period of time to allow for installation of new pumps and piping.

The sequencing of construction restrictions imposed on the Contractor will be considered throughout detailed design and with the engagement of Halifax Water.

Chapter 6 Estimated Construction Cost

The Class II opinion of probable cost for the above-described modifications to the existing Quigley's Corner pump Station is \$ 3,356,000 (excl. HST) in 2023 dollars. This amount includes 15% contingency. Refer to the cost estimate in Appendix C for additional detail.

Opinions of probable cost are presented on the basis of experience, qualifications, and best judgement. They have been prepared in accordance with acceptable principles and practices. Sudden market trends, non-competitive bidding situations, unforeseen labour and material adjustments, and the like are beyond the control of CBCL, and as such, we cannot warrant or guarantee that actual costs will not vary significantly from the opinion provided.

Chapter 7 Closure

The QCPS was constructed in 1974 and has not undergone any significant modifications or upgrades since. The existing mechanical and electrical equipment are nearing the end of their useful life and are no longer in compliance with current standards. The proposed station upgrade includes replacement of the pumps, piping, electrical equipment, a new electrical service, the addition of standby power generation and ventilation. These upgrades will extend the life of the station and bring this equipment up to modern codes. Other significant station modifications include new stairways, platforms and landings, physical separation of the main floor from the drywell, and the installation of an under running crane.

It is proposed that the firm capacity of the QCPS following the upgrades align with current and predicted future peak wet weather flows with a peak design inflow of 500 L/s. This capacity will be achieved using three (3) new identical pumps (2 duty, 1 standby) operating on VFDs. The pump units have been pre-selected.

This report summarizes the overall objectives to the pump station upgrades. This revised report incorporates Halifax Water feedback on the proposed upgrades and we have progressed into the detailed design phase. Should there be any questions on the content, please feel free to contact the undersigned.



Prepared by:
Jeff Clair, P.Eng.
Senior Municipal Engineer

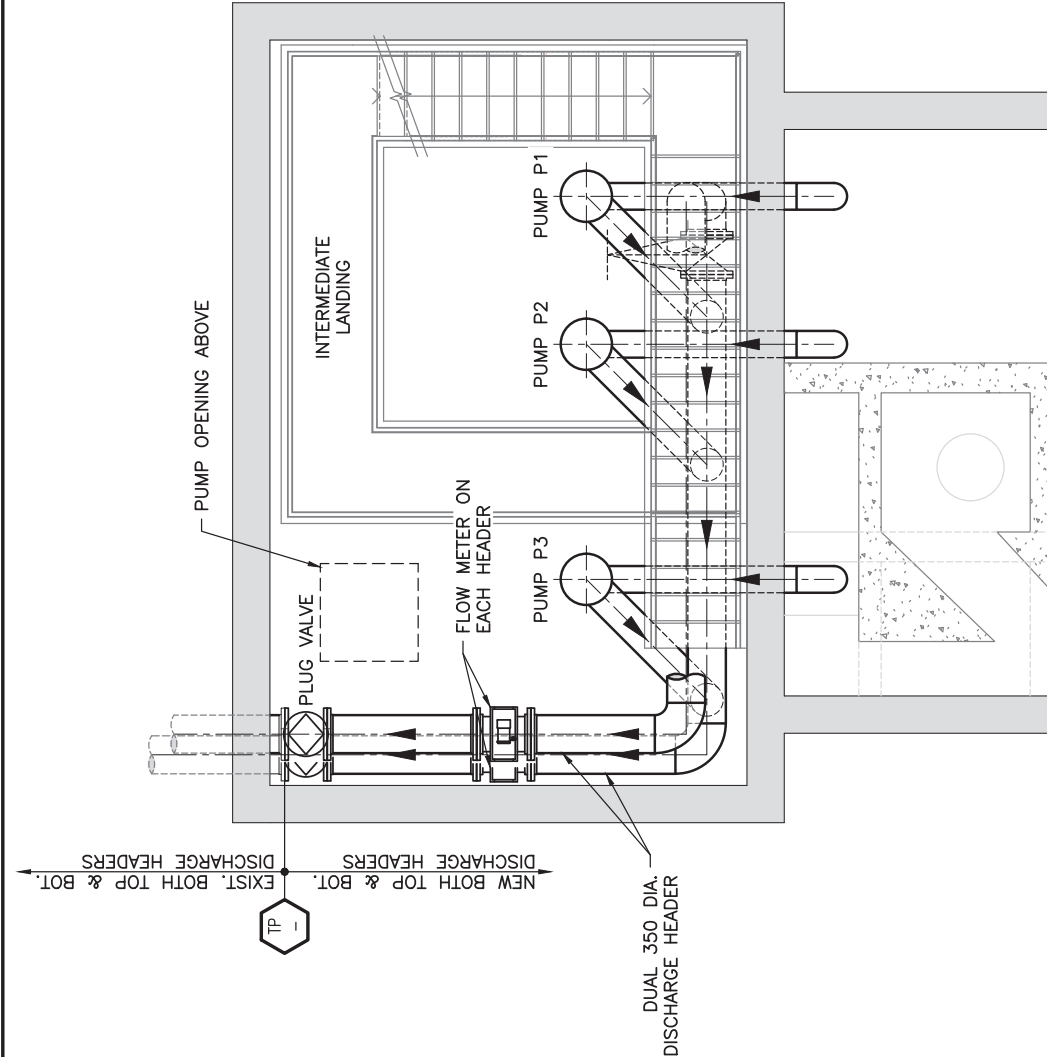


Reviewed by:
Kevin Murphy, P.Eng.
Senior Project Manager

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APPENDIX A

Piping Schematic



PLAN—T.O. LANDING ELEVATION

1:50

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										Drawing		Contract ####	
												CBCL No. 211000.00	
												P01	
												HALIFAX WATER	
												HW QUIGLEYS CORNER PS UPGRADES	

APPENDIX B

Site Plan



Halifax
Water

DRAWN	MZ	SCALE (PLAN)	1:150
CHECKED	JC	DATE (ORIGIN)	2021/11/18
APPROVED	JC	PROJECT No.	
TX2021			
C01			
NO. No.			

1. EXISTING UTILITIES ARE SHOWN APPROXIMATELY ONLY AND BASED ON FIELD SURVEYS. AVAILABLE RECORDS AND INFORMATION SHOULD BE USED TO VERIFY THE LOCATION OF ALL UTILITIES. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO AVOID DAMAGE TO ANY UTILITIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING ALL UTILITIES DAMAGED BY HIS WORK.
2. NO PROPOSED SURVEY UNDERGAINS BY GCEI LIMITED TO TOPOGRAHY, ELEVATION, OR DISTANCE. ALL MEASUREMENTS AND BEARINGS ARE MIN. ZONE 5 (NAD83).
3. ELEVATIONS ARE BASED ON CANADIAN GEODETIC DATUM 1984 (CGD84) WITH AN ASSUMED ELEVATION TAKEN ON NAVA SCOTIA HIGH PRECISION NETWORK AT 27.10m.
4. REINSTATE ALL SURFACES DISTURBED DURING CONSTRUCTION AND RETURN TO ORIGINAL GRADE.
5. REINSTATE GRASSSED SURFACES WITH 150 TON TOPSOIL, 500 AND 500 SEED.
6. REINSTATE EXISTING VALVES ON THE EXISTING STATION. ANY ESCAPEMENT VALVES THAT EXIST PRIOR TO CONSTRUCTION SHALL REMAIN IN PLACE. FIREWORKS EXCEPT THOSE LOCATED WITHIN THE PUMP

DATE PLOTTED: 1

APPENDIX C

Opinion of Probable Cost



OPINION of PROBABLE CONSTRUCTION COSTS

Quigley's Corner Pump Station Upgrade
Dartmouth NS

DATE:	June 30, 2022
CBCL FILE No.:	201100.00
PREPARED BY:	KJM
EST. DESCRIPTION :	Class II Estimate

No.	DESCRIPTION	COST	
	ESTIMATED CONSTRUCTION COSTS		
	Civil Work	\$ 55,000	
	Demolition & Removals	\$ 53,000	
	Reinforced Concrete	\$ 18,000	
	Masonry and Walls	\$ 12,000	
	Roof Structure and Roofing	\$ 90,000	
	Miscellaneous Metals	\$ 233,000	
	Building Finish	\$ 30,000	
	Temporary Works	\$ 74,000	
	Pump Equipment	\$ 498,000	
	Process Mechanical	\$ 612,000	
	Material Handling and Building Equipment	\$ 155,000	
	Process Integration (instrumentation & control)	\$ 158,000	
	Building Mechanical	\$ 237,000	
	Electrical	\$ 693,000	
	SUB-TOTAL COSTS (Excluding contingency)	\$ 2,918,000	
	Contingency 15%	\$ 438,000	
	TOTAL CONSTRUCTION COSTS (not Incl HST)	\$3,356,000	
	Taxes (Net HST) 4.286%	\$ 143,838	
	TOTAL ESTIMATE OF PROBABLE COST c/w HST	\$3,500,000	

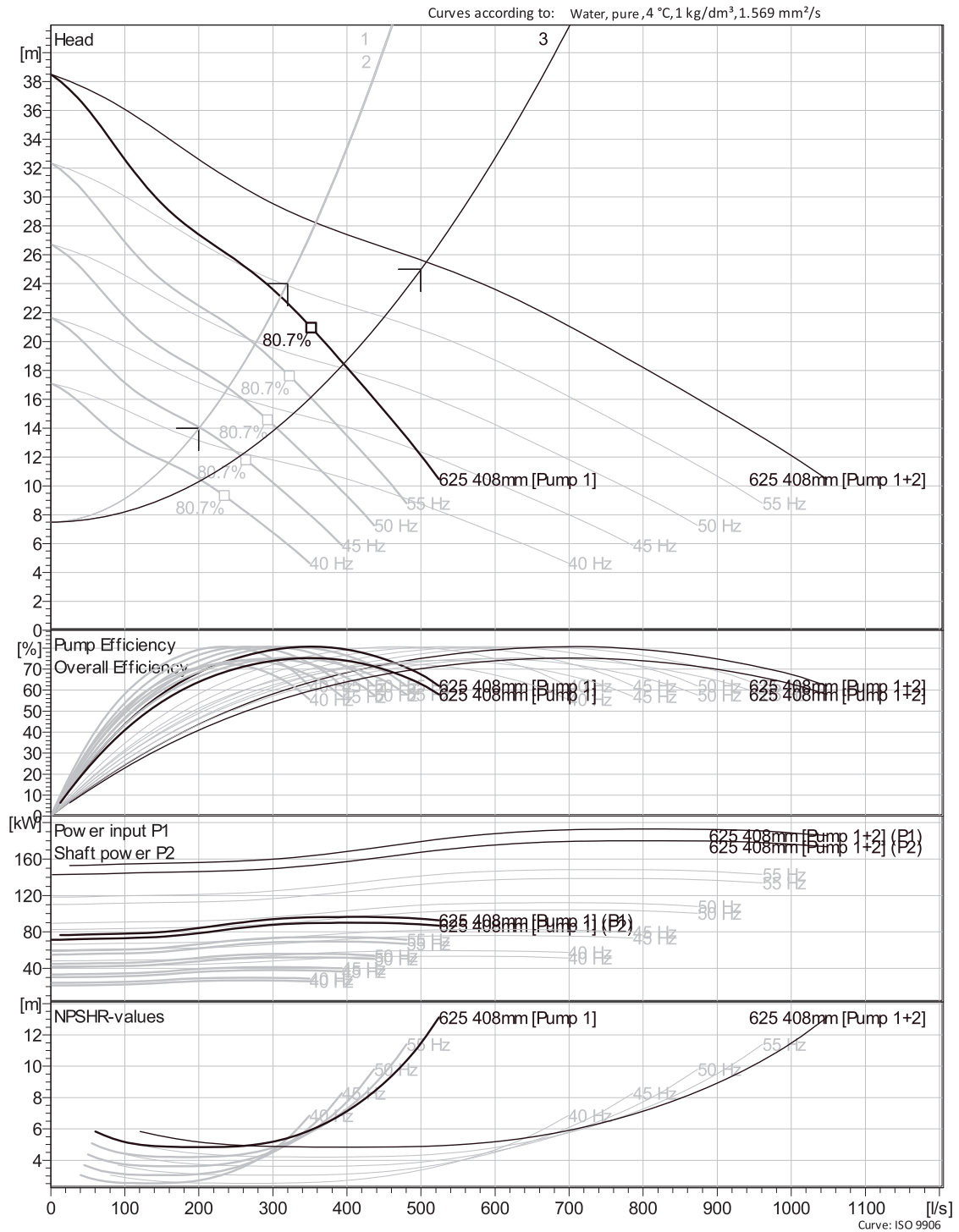
THIS OPINION OF PROBABLE COSTS IS PRESENTED ON THE BASIS OF EXPERIENCE, QUALIFICATIONS, AND BEST JUDGEMENT. IT HAS BEEN PREPARED IN ACCORDANCE WITH ACCEPTABLE PRINCIPLES AND PRACTICES. MARKET TRENDS, NON-COMPETITIVE BIDDING SITUATIONS, UNFORESEEN LABOUR AND MATERIAL ADJUSTMENTS AND THE LIKE ARE BEYOND THE CONTROL OF CBCL LIMITED. AS SUCH WE CANNOT WARRANT OR GUARANTEE THAT ACTUAL COSTS WILL NOT VARY FROM THE OPINION PROVIDED.

APPENDIX D

Pre-Selected Pump Performance Curve

NT 3315 LT 3~ 625

VFD Curve



Project	Created by	Caroline Page
Block	Created on	4/22/2022
	Last update	4/22/2022

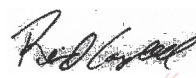


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TO: Colleen Rollings, P.Eng., PMP., Chair and Members of the Halifax Regional Water Commission Board

SUBMITTED BY:


Digitally signed by Reid Campbell
Date: 2023.01.20 13:45:30 -04'00'

Reid Campbell, P. Eng.
Director, Engineering & Technology Services

APPROVED:


Digitally signed by Louis de Montbrun
Date: 2023.01.20 12:15:13 -04'00'

Louis de Montbrun, CPA, CA, Acting General Manager

DATE: January 18, 2023

SUBJECT: **Burnside to Bedford Connector Transmission Main – Remaining Phase 1 Pipe Work**

ORIGIN

Halifax Water's Integrated Resource Plan

RECOMMENDATION

The Halifax Water Board approve the Burnside to Bedford Connector Transmission Main – Remaining Phase 1 Pipe Work project at a total cost of \$5,374,000.

BACKGROUND

Halifax Water's Infrastructure Master Plan recommended a Bedford to Burnside system interconnection in order to meet the supply objectives for the Lake Major system. It is part of the overall system supply strategy and there are significant other benefits that the commissioning of this interconnection would provide other than just supporting Lake Major growth:

- Allows for improved operation of Akerley Reservoir, which is currently only supplied via the Caledonia Road transmission Main. Less reliance on Topsail Chamber and would strengthen the overall Lake Major system.
- Minimizes the requirement for transmission upgrades within the Lake Major network.
- Helps provide improved resiliency within the Lake Major system.
- Allows for potential future abandonment of the Lake Lamont backup supply.
- Provides opportunities for some emergency supply to the Pockwock system.

The Nova Scotia Department of Public Works (NSPW) is in the process of constructing the Highway 107 Burnside to Bedford Connector Highway. Portions of the highway and future Burnside Drive Extension were completed in 2022. The Akerley Roundabout is scheduled to be tendered and constructed in 2023.

DISCUSSION

Halifax Water's Infrastructure Master Plan recommended the construction of a 750mm diameter transmission main to link the East and West-Central Water Supply systems (Project 29.1 and 29.2). The recommended timing for this future work is in the 2036-2040 range at an estimated cost of \$36 million.

The construction of the Highway 107 Bedford to Burnside connector highway has presented an opportunity for utilities to work with NSPW to coordinate the highway construction with planned utility connections between Bedford and Burnside. NSPW has agreed to cost share with utilities to preserve a corridor within the highway right of way and facilitate the future construction of utilities through rock removal and utility trench preparations.

Eastward Energy (formerly Heritage Gas) also has an interest in ensuring the provision for a future gas main along the highway corridor as well. Halifax Water has been working with NSPW, HRM and Eastward Energy on the design and layout for the utility corridor along the highway including a route for the future transmission main.

HRM's Burnside Industrial Park is located adjacent to the Highway 107 corridor. NSPW is constructing an interchange and access to Burnside industrial Park Phase 13 as part of their project. In the future, Phase 13 of the Burnside Park will be serviced from a 400mm diameter connection to the future 750mm diameter Burnside to Bedford Transmission Main. This will supplement the Phase 13's initial single water connection on Wilkinson Avenue.

The Phase 1 area of the Highway 107 project that encompasses the utility corridor is located on the Burnside end of the project and extends from Akerley Blvd to the CN Rail crossing (approximately 1.4 kms). Halifax Water retained Crandall Engineering (Englobe) to complete the design work for the Phase 1 scope.

In 2022, a portion of the Phase 1 pipe work that was impacted by the Highway 107 and Burnside Drive construction was tendered by NSPW. Dexter Construction was awarded this contract at a contract value of \$2,338,548 plus taxes. Halifax Water entered into cost sharing agreements with NSPW, Heritage Gas and HRM and the overall project cost to Halifax Water was estimated to be \$2,053,000 including net HST. This project was completed in 2022.

NSPW intends to complete the remainder of the Highway 107 construction work within the Phase 1 area this season. This includes the construction of the new roundabout connection to Akerley Boulevard and paving the Burnside connector between Akerley Boulevard and the Burnside industrial Park Phase 13 connection. It is Halifax Water's intention to install the remaining Phase 1 Transmission main in conjunction with NSPW's construction schedule.

The design work for the Phase 1 transmission main is complete. Subject to approval, it is Halifax Water's plan to tender the contract for the section of 750mm diameter Transmission Main along the Burnside Connector and HRM's section of 400mm main that serves the Phase 13 area of the Burnside Business Park this winter, with construction proceeding in the spring.

NSPW is still working on the final design of the Akerley Roundabout. For the purpose of co-ordination and efficiency, NSPW has elected to include Halifax Water's Transmission Main work in this area within their tender package. NSPW plans to tender the Akerley Roundabout later this season, once their design work is complete. The approximate value of transmission main work within the roundabout is estimated at \$682,000 plus net HST. This amount is included in the total project funding amount requested.

Similar to the previously approved phase of the project, Halifax Water has agreed to install additional infrastructure on behalf of HRM and Eastward Energy. Halifax Water has draft cost-share agreements prepared for the portions of the work that benefit HRM and Eastward Energy. The cost-share agreements will be updated based on tender pricing.

In light of NSPW's timelines for overall project completion and in order to reduce supply chain risks associated with pipe supply, the supply and delivery of portions of the required 750mm transmission main pipe materials, valves and tie-in materials were tendered and awarded in Fall 2022. The value of materials tendered and awarded to Wolseley Waterworks is \$1,670,000 plus net HST. Delivery of these materials is anticipated by Spring 2023. The value of these materials is included in the total project cost estimate.

In order to meet schedules for the overall project timelines established by NSPW, Halifax Water's is seeking approval at this time for both sections of the remaining Phase 1 work (Burnside Connector pipework, led by Halifax Water and the Akerley Roundabout led by NSPW) based on Pre-tender estimate rather than waiting for the tender results for both contracts and seeking approval separately.

It is recognized that current market conditions are volatile. The Pre-Tender project estimate includes a 25% inflation/market contingency. After tender closing, should project costs exceed the funding allocated in the approval being sought, Halifax Water will evaluate the new project cost and make a determination whether it is prudent to proceed. If the decision is to proceed, Halifax Water will seek an expedited approval for an increase in funding.

BUDGET IMPLICATIONS

As mentioned above, a portion of this Phase 1 work was approved in 2021 and completed in 2022.

The NSPW requires financial commitment from Halifax Water at this time for the Akerley Roundabout work to proceed.

The value of work to complete the Bedford to Burnside Transmission Main Phase 1 Remainder of TM Pipework is estimated to be \$5,374,000 inclusive of net HST.

Capital funding in the amount of \$5,374,000 has been identified in the 2023/2024 Capital Budget (*Bedford to Burnside Transmission Main Phase 1 Remainder of TM Pipework*).

The 750 mm diameter Bedford to Burnside Transmission Main was identified in the 2020 Regional Development Charge (RDC) as having a growth component of 47.04% and will be funded to that percentage from the RDC.

The proposed expenditure meets the “No Regrets – Unavoidable Needs” approach of the 2012 Integrated Resource Plan. The proposed work meets the NR-UN criteria of “Required to support growth and to ensure infrastructure system integrity and safety”.

RISK

This project has a low risk level associated with it; therefore, Halifax Water will continue to monitor the risk and respond as required.

ALTERNATIVES

N/A

ATTACHMENT


1. Cost Estimate
2. Site Plan

Report Prepared by:



Tom Gorman, P.Eng
Manager, Water Infrastructure Engineering

Financial Reviewed by:



Alicia Scallion, CPA, CA
Acting Director, Corporate Services

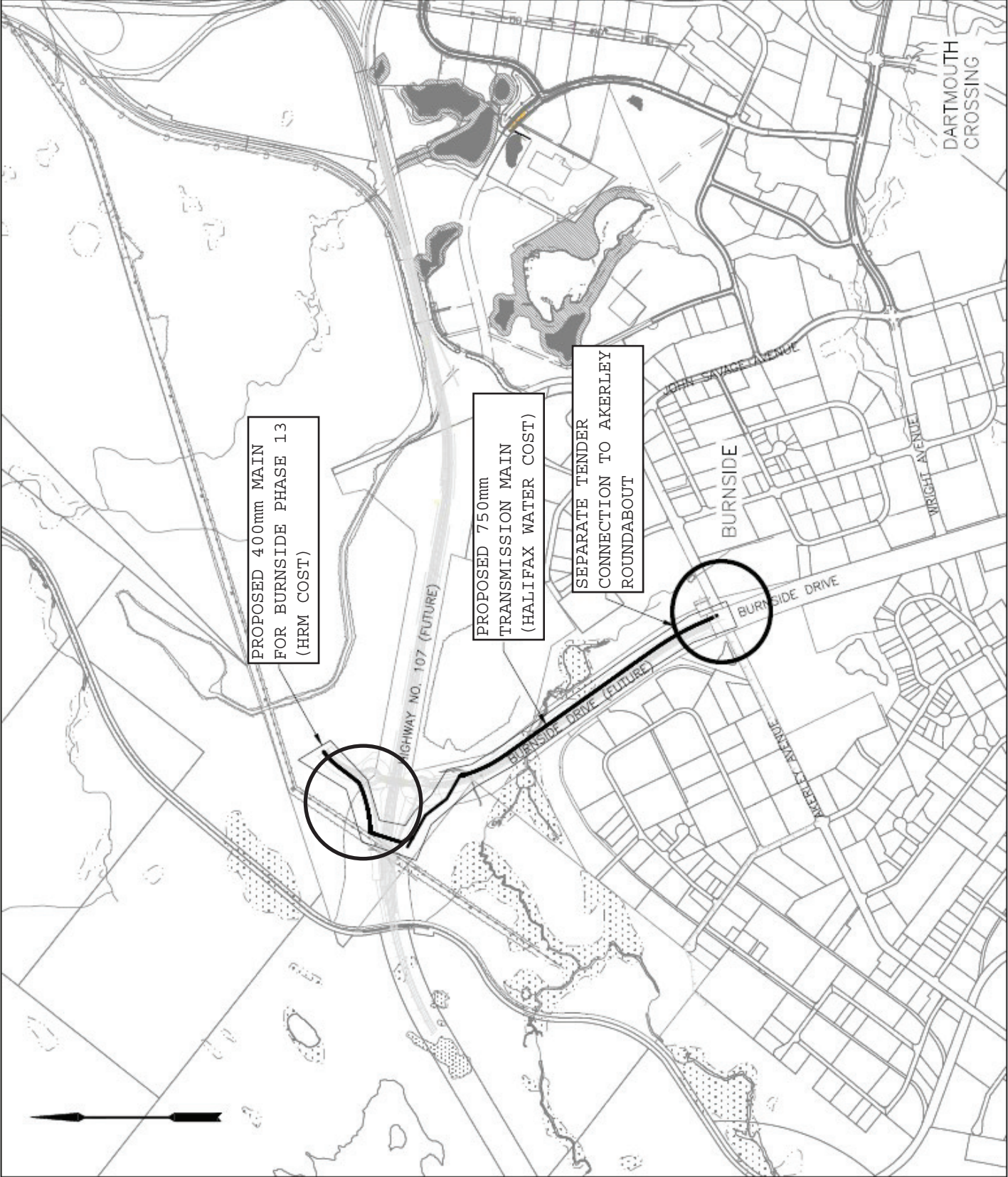
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Burnside Drive Watermain - 2023 Extension - Project Cost Estimate - Jan 18, 2023


Description	Amount
Burnside Drive Extension 2023 Construction Estimate	\$1,788,000.00
Englobe Construction Inspection/Geotech Costs Estimate	\$237,000.00
Separate NSTIR Tender - Akerley Connection Estimate	\$682,000.00
Sub-Total	\$2,707,000.00
25% Contingency - Inflation/Marketplace Risk	\$676,750.00
Communications Allowance	\$15,000.00
Halifax Water Engineering/Operations	\$35,000.00
Previously Awarded Material Supply Tender	\$1,670,000.00
Sub-total	\$5,103,750.00
Net HST (4.286%)	\$218,746.73
Overhead/Interest (1%)	\$51,037.50
Total Estimated Construction Cost	\$5,373,534.23

Total Funding Required (ROUNDED) \$5,374,000

Burnside to Bedford Connector Transmission Main - Remaining Phase 1 Pipe Work



TO: Colleen Rollings., Chair and Members of the Halifax Regional Water Commission Board

SUBMITTED BY:  Digitally signed by Louis de Montbrun
Date: 2023.01.20 14:55:43 -04'00'

Louis de Montbrun, CPA, CA Acting General Manager and CEO

DATE: January 20, 2023

SUBJECT: **Proposed 2023/24 Business Plan**

ORIGIN

Annual operational requirement in accordance with *Halifax Regional Water Commission Act*, and Halifax Regional Municipality Administrative Order 2018-001-ADM

RECOMMENDATION

That the Halifax Water Board approve the 2023/24 Business Plan as attached to this report dated January 20, 2023, subject to non-substantive corrections and amendments, and direct the General Manager to submit the final 2023/24 Business Plan to Halifax Regional Council.

BACKGROUND

Halifax Water develops both long-term and short-term business plans for the approval of the Board. The 2023/24 Business Plan reflects the strategic direction in the Five-Year Business Plan (2020/21 – 2024/25) which was approved by the Board on January 30, 2020; and the 2023/24 strategic objectives discussed with the Board at a workshop on December 16, 2022. The 2023/24 and Five-Year Business Plans are consistent with the updated Integrated Resource Plan [IRP] approved by the Board in November 2019.

DISCUSSION

Halifax Water provides water, wastewater and stormwater services to a municipality that is one of the fastest growing in Canada. There is a tremendous amount of day-to-day work that is fundamental to the delivery of these services that does not necessarily get highlighted in the business plan. The business plan provides information on the key initiatives that continue to move the organization forward strategically and effectively.

Capital Investment

With a proposed capital budget of \$146.7 million, Halifax Water is continuing to make progress in getting to the required IRP level of spend. Within the capital budget, 74.2% of the projects focus on renewing existing assets, 11.4% on addressing growth, and 14.4% on ensuring regulatory compliance. This new capital investment coupled with the continued delivery of the residual capital funds from prior years is a key driver to restructuring the Engineering and Technology Services Department and increasing our institutional capacity within the Engineering team. Additional details regarding the proposed capital budget are found within the business plan and are also summarized in Halifax Water Board Report - Item 4.2 dated January 16, 2022.

Research-Based Decision Making

Halifax Water has a commitment to research supported decision making. In partnership with Dalhousie University and NSERC, research continues on water treatment plant optimization, the new technologies that are available, and the contaminants of emerging concern. Our five-year research program will assist Halifax Water in implementing the Water Supply Enhancement Program and the selection of climate conscious technologies for wastewater treatment to comply with Wastewater System Effluent Regulations by 2040. Halifax Water is also in the third year of a wastewater research partnership with regards to COVID-19.

Halifax Water continues to research and study the effects of lake recovery, lead, geosmin and corrosion control. In addition, investigations into artificial intelligence to provide information on leak detection, pressure management and optimizing distribution operations to prevent breaks have started and will be a key component of the next five-year Information and Technology Services Road Map which will begin in 2023/24. The Road Map will also focus data and analytics to facilitate improved business intelligence, decision making and customer service.

Environmental Sustainability and Climate Change

From an environmental sustainability perspective, Halifax Water remains focused on the ongoing expansion of the corporate Environmental Management System (EMS), continuing development of a Climate Action Plan, and ensuring major initiatives such as the Water Supply Enhancement Program, Water Safety Plan, Wastewater Treatment Facility Study, and Biosolids project are forward-looking and considering the environmental requirements of tomorrow.

The Cogswell District Energy System is a significant step to reducing greenhouse gas (GHG) in Halifax. Subject to NSUARB approval, Halifax Water will continue to move this exciting project forward, including the beginning of the detailed design of the energy centre.

Another significant area is the new Biosolids Processing facility. Subject to NSUARB and Halifax Water Board approvals, Halifax Water intends to award a long term contract to design, build, operate, and maintain the facility. The facility will be designed to process the increase in residential biosolids as Halifax grows, continue to create a soil amendment product for beneficial use and also generate renewable gas with the resulting reduction in GHG emissions.

Institutional Capacity and Service Delivery

Halifax Water has continued to invest in its people and the tools required to deliver services to customers. In 2023/24, Halifax Water will continue to recruit employees into all aspects of the organization. Increasing the number of engineers and procurement staff to deliver the capital budget will continue in 2023/24, people will be added in information services and asset management to support capital planning and decision making and staff will continue to be added to address the expanding infrastructure and operational requirements. Halifax Water will also continue to invest in the tools, and our operational infrastructure to improve the efficiency of our operations. Investments include IT systems such as the ERP, an updated document management system and the design of the Burnside Operations Depot. The Burnside Operations Depot will have a significant impact on our ability to operate more efficiently in our One Team One Water environment.

In addition to these investments, we will always be focused on our employees. Our commitment to the health and well-being of our employees includes the creation of a psychological health framework and the continued focus on safety. Halifax Water will also be continuing to focus on diversity of our workforce and in planning to implement the Diversity Equity and Inclusion Policy and Framework.

The collective agreements with our two unions will be expiring in 2023/24 and Halifax Water will be working with our union partners to negotiate new agreements. Union contracts that are fair to our employees and recognize the regulatory and fiscal environment we operate in are critical.

Our Customers

Investing in our people and our infrastructure is very important. Understanding our customers is also very important. To ensure Halifax Water improves its understanding, the 2023/24 business plan highlights two key initiatives. The first is a review and redesign of our rates. This is a significant undertaking that will review how we develop our rates, the rates required to fund our services and capital investments and also on the affordability of the rates. The second is the development of a comprehensive stakeholder engagement plan. This plan will help us better understand who we serve and how they are impacted by our projects, processes and decisions.

The Future

There is a lot planned for 2023/24 and the business plan highlights significant projects and initiatives. Halifax Water's business must always focus on the future. To guide the utility over the next five years, Halifax Water will be beginning to develop the next Five-Year Business Plan. This plan will set the direction and guide the utility for the next five years and further. The leadership of our Board is critical to setting this direction as is the leadership of the General Manager. As we move into 2023/24, Halifax Water will be hiring its next permanent General Manager.

This is an exciting time for Halifax Water with a focus on the future, our customers, and the people that make it all happen.

ALTERNATIVES

The Halifax Water Board could ask for revisions to the plan.

ATTACHMENT

1. 2023/24 Annual Business Plan on a Page
2. 2023/24 Annual Business Plan (electronic copy only)

Report Prepared by:



Digitally signed by Louis
de Montbrun
Date: 2023.01.20
14:56:06 -04'00'

Louis de Montbrun, CPA, CA
Acting General Manager and CEO, 902-490-4840

Our Purpose

Our purpose is to supply and safeguard sustainable, high-quality water services.

Our Vision

We will provide our customers with high quality water, wastewater and stormwater services. Through adoption of best practices, we will place the highest value on public health, customer service, fiscal responsibility, workplace safety and security, asset management, regulatory compliance, and stewardship of the environment. We will fully engage employees through teamwork, innovation, and professional development.

Relationships

We nurture relationships with our customers, our team members and the environment. We are engaged in the neighbourhoods we serve and we support continual learning across our team.

Innovation

We are among the top utilities across the continent and we are known on the global stage. We always ask, "how can we improve efficiency, sustainability, creativity and the customer experience?"

Accountability

We refuse to cut corners. We check in with our excellence standards regularly and look to one another for support. Safety steers our decision-making. We are driven to make our policies, decisions and projects as clear as our drinking water.

Protection

Halifax Water protects the health and well-being of our population. We exist to guard natural resources, finding ways to sustain our communities and environment.

Our Values

Our Goals



People

We attract and retain high-quality team members in an inclusive and respectful work environment. We are committed to our customers and the communities where we live and work, determined to provide a high level of service and sustainable future through ongoing engagement.

- Increase institutional capacity by filling new and vacant positions critical to achieving utility objectives.
- Continue to implement Document Management System.
- Proactive and Constructive Approach to Labour Management.
- Continue to increase engagement with stakeholders and customers.
- Complete the year-two activities of the Diversity, Equity, and Inclusion Framework.



Health, Safety & Environment

The health and safety of our employees, contractors, and the public is our top priority. We are focused on a safety-first culture, working to provide healthy, safe, sustainable, and reliable services for our community.

- Adopt standards for psychological health and safe workplaces to continue to build a safe work culture.
- Develop a Climate Action Plan.
- Enhance wastewater modelling and develop a strategy to consistently meet regulatory reporting requirements regarding CSOs and SSOs.
- Finalize and implement the Water Safety Plan.
- Gain approvals, execute the contract, and start the design of the new Biosolids Processing Facility.
- Continue to advance the Water Supply Enhancement Program.



Financial & Regulatory Accountability

It is fundamental to ensure that Halifax Water has capacity to fund existing and future infrastructure. We prudently manage assets and operate our business by balancing value and customer service.

- Develop the next Five-Year Business Plan, including a long-term funding strategy for operating and capital budgets.
- Develop the detailed design for Cogswell District Energy System.
- Successfully implement the new Enterprise Resource Planning System (ERP) and Capital Management and Planning Information System.
- Develop and finalize an updated HRM-Halifax Water Service Level agreement.
- Develop a revised rate design and file required rate applications.



Operational Excellence

We are committed to service, reliability, and quality for our customers. Focused on safely and efficiently building, operating, and maintaining our critical infrastructure, we ensure a more sustainable community.

- Develop and implement the Comprehensive Emergency Management Program.
- Keep significant capital projects and planning studies on track through regular monitoring and reporting.
- Enhance all capital-related areas (approval, budgeting, project planning and delivery).
- Develop the five-year Information & Technology Services Road Map and continue to improve cyber security.
- Develop dashboards and metrics to measure and support operational excellence and the level of service to our customers.

Annual Business Plan



2023/24

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GLOSSARY

AM	Asset Management	RF	Radio Frequency
AMI	Advanced Meter Infrastructure	RFP	Request for Proposal
AMP	Asset Management Plan	RFQ	Request for Quote
BCP	Business Continuity Plan	SCADA	Supervisory Control and Data Acquisition
BPF	Biosolids Processing Facility	SMS	Safety Management System
CAD	Computer Aided Drafting	SSES	Sanitary Sewer Evaluation Survey
CAP	Climate Action Plan	SSO	Sanitary Sewer Overflow
CBS	Corporate Balanced Scorecard	UV	Ultraviolet
CCC	Capital Cost Contribution	WRWIP	West Region Wastewater Infrastructure Plan
CCME	Canadian Council Minister of the Environment	WSEP	Water Supply Enhancement Program
CEMP	Comprehensive Emergency Management Program	WSER	Wastewater System Effluent Regulations
CPI	Consumer Price Index	WSP	Water Supply Plant
CSF	Critical Success Factor	WWMP	Wet Weather Management Program
CSO	Combined Sewer Overflow	WWTF	Wastewater Treatment Facility
CUPE	Canadian Union of Public Employees		
DEI	Diversity, Equity, and Inclusion		
DES	District Energy System		
DFO	Department of Fisheries and Oceans		
DLS&I	Department of Labour, Skills and Immigration		
DMS	Document Management System		
DOM&E	Nova Scotia Department of Mines and Energy		
EMAP	Energy Management Action Plan		
EMP	Emergency Management Plan		
EMS	Environmental Management System		
ERM	Enterprise Risk Management		
ERP	Enterprise Resource Planning		
ETS	Engineering and Technology Services		
GHG	Green House Gas		
GIS	Geographic Information System		
H2O	Help to Others Program		
HHSP	Halifax Harbour Solutions Plant		
HR	Human Resources		
HRWC	Halifax Regional Water Commission		
I&I	Inflow and Infiltration		
IC&I	Industrial, Commercial and Institutional		
ICIP	Investing in Canada Infrastructure Program		
IFRS	International Financial Reporting Standards		
IMP	Integrated Master Plan		
INFC	Infrastructure Canada Fund Programs		
IRP	Integrated Resource Plan		
IS	Information Services		
ISO	International Organization for Standardization		
IT	Information Technology		
LCC	Life Cycle Cost		
LED	Light-emitting Diode		
LOS	Level of Service		
NOM	Natural Organic Matter		
NSECC	Nova Scotia Environment and Climate Change		
NSERC	Natural Sciences and Engineering Research Council		
NSPI	Nova Scotia Power Incorporated		
NSPW	Nova Scotia Department of Public Works		
NSUARB	Nova Scotia Utility and Review Board		
OI	Organizational Indicator		
RDA	Regional Development Area		
RDC	Regional Development Charge		
RDII	Rain Derived Inflow and Infiltration		
RDP	Regional Development Plan		

INTRODUCTION

Halifax Water is an integrated water, wastewater, and stormwater utility that serves more than 106,000 customers and an estimated population of 381,000.

This document outlines the utility's business plan for fiscal 2023/24, which officially begins on April 1 of 2023.

For 2023/24, Halifax Water has developed a plan that addresses the challenges of growth, aging infrastructure, and the increasing demands of customers. In addition to addressing these challenges, this plan focuses on ensuring Halifax Water customers continue receiving quality service and that the utility's employees are supported and empowered with the required resources.

PURPOSE

Our purpose is to supply and safeguard sustainable, high-quality water services.

VISION

We will provide our customers with high-quality water, wastewater, and stormwater services. Through adoption of best practices, we will place the highest value on public health, customer service, fiscal responsibility, workplace safety and security, asset management, regulatory compliance, and stewardship of the environment. We will fully engage employees through teamwork, innovation, and professional development.

VALUES

Relationships - We nurture relationships with our customers, our team members, and the environment. We are engaged in the neighbourhoods we serve, and we support continual learning across our team.

Innovation - We are among the top utilities across the continent, and we are known on the global stage. We always ask, "how can we improve efficiency, sustainability, creativity and the customer experience?"

Accountability - We refuse to cut corners. We check in with our excellence standards regularly and look to one another for support. Safety steers our decision-making. We are driven to make our policies, decisions, and projects as clear as our drinking water.

Protection - Halifax Water protects the health and well-being of our population. We exist to guard natural resources, finding ways to sustain our communities and environment.

EXECUTIVE SUMMARY

For 2023/24, Halifax Water continues to focus on improving our overall financial position as we address the organizational capacity required to meet the service demands of our current and future customers. To do this, we will continue to meet the challenges caused by growth, aging infrastructure, and environmental compliance and protection costs.

As a result, we will be developing a new 5-year business plan this year. This will be informed by several key inputs, including what our team will be working on this year, the Asset Management Plan (AMP), the Integrated Resource Plan (IRP), the municipality's Population Growth Studies and the development of a new Rate Design Structure.

As in last year's Business Plan, many of our initiatives will be implemented over multiple years. As a result, further advancing plans, studies and programs will ultimately improve customer service. We will continue our Water Supply Enhancement Program, Water Safety Plan, Wastewater Treatment Facility Study, and Biosolids Project for this fiscal year.

These are all designed to ensure Halifax Water anticipates changing environmental conditions and adapting to more rigorous environmental requirements. This includes a continued focus on implementing our corporate-wide Environmental Management System (EMS) and completing a Climate Action Plan.

In 2023/24, we will continue to focus on increasing our workforce capacity by adding people in areas that allow us to address the resource requirements, climate change, and an increased stormwater service delivery area. As we continue to add people to manage these resource requirements, we remain focused on our employees' physical and psychological health and safety.

Through our one team, one water approach, Halifax Water employees focus on collaborating to benefit our customers and community. As with last year, the goals for this year's Business Plan demonstrate that we are all working together with shared and common goals. These strategic and ambitious goals will bring immediate and long-term value to Halifax Water customers.

We are looking forward to a successful year.

Louis de Montbrun, CPA, CA

General Manager and CEO (Acting)



Working together with mutual trust, respect and shared values that focus on our commitment to customers, community, and the environment.



People



Health, Safety &
Environment



Financial &
Regulatory
Accountability




Operational
Excellence


STRATEGIC INITIATIVES AND PROGRAMS 2023/24

People

We attract and retain high-quality team members in an inclusive and respectful work environment. We are committed to our customers and the communities where we live and work, determined to provide a high level of service and a sustainable future through ongoing engagement.

 <p>Increase institutional capacity by filling new and vacant positions critical to achieving utility objectives.</p>	Goal	<ul style="list-style-type: none"> Recruit and hire a new General Manager in Q1 of 2023/24. Recruit and hire for engineering positions approved in the 2022/23 and 2023/24 fiscal years.
	Rationale	<ul style="list-style-type: none"> A General Manager and their leadership are crucial to the organization. Additional engineers are essential to addressing resource capacity gaps and delivering on our planned capital work established in the current business plan and budget.
	Impact	<ul style="list-style-type: none"> We must remain competitive in a tight labour market. <ul style="list-style-type: none"> Retention of current employees is a key factor in our ability to meet our goals. Our ability to hire impacts our planned capital project delivery.

 <p>Continue to implement Document Management System.</p>	Goal	<ul style="list-style-type: none"> Complete the implementation of the Document Management System (DMS). <ul style="list-style-type: none"> Complete phase two of the DMS functional rollout by September 1. Complete phase three by the end of Q3. Close out by the end of Q4.
	Rationale	<ul style="list-style-type: none"> The DMS will facilitate easier knowledge transfer between current and retiring staff. It will also enable staff to access organizational knowledge more effectively and efficiently through robust searching and accessibility.
	Impact	<ul style="list-style-type: none"> This mitigates the risk of loss of information and documentation by inadvertent destruction, retirements, or inability to locate information.


 <p>Proactive and Constructive Approach to Labour Management.</p>	Goal	<ul style="list-style-type: none"> • Complete the CUPE Local 227 Job Review by the end of Q2. • Engage in pre-bargaining exploratory meetings with CUPE Locals 1431 and 227 by the end of Q2. • Engage in collective bargaining negotiations by the end of Q4.
	Rationale	<ul style="list-style-type: none"> • Planning for and negotiating collective agreements allow both the unions and management to clearly understand expectations from a procedural, logistical and financial perspective.
	Impact	<ul style="list-style-type: none"> • Maintains operational continuity and reduces the risk of uncertainty and low morale associated with operating without an up-to-date collective agreement.


 <p>Continue to increase engagement with stakeholders and customers.</p>	Goal	<ul style="list-style-type: none"> • Building a comprehensive stakeholder engagement plan to support long-term planning for Halifax Water by Q1. <ul style="list-style-type: none"> ◦ Develop realistic timelines and appropriate engagement tactics that align with the timing of critical initiatives, such as redesigning the rate design structure, RDC, IRP etc. ◦ Conduct a stakeholder heat map for each initiative to ensure stakeholders can inform our planning.
	Rationale	<ul style="list-style-type: none"> • Engaging stakeholders helps us better understand whom we serve and leads to improvements in Halifax Water projects and processes.
	Impact	<ul style="list-style-type: none"> • Through a more collaborative approach that embraces positive and productive dialogue, we can better inform our business decisions and better understand the impact of our decisions on stakeholders. This understanding also helps build greater trust and support for our financial and regulatory decisions with everyone.

 <p>Complete the year-two activities of the Diversity, Equity, and Inclusion Framework.</p>	Goal	<ul style="list-style-type: none"> • Implement Diversity, Equity, and Inclusion (DEI) and fair hiring policies by Q1. • Complete promotional campaign to assist with increasing women in non-traditional roles (Operations) by Q2. • Increase employee participation in Diversity Moments by 50% by Q2. • Deliver respectful workplace training by Q4. • Continue to train on unconscious bias. • Complete the Human Resources analytics dashboard and add more metrics on diversity by Q4.
	Rationale	<ul style="list-style-type: none"> • Increasing diversity in the workplace will provide for greater creativity and innovation and increase employee morale. • Better understand diverse perspectives. • Ensuring that we are an organization that embraces diversity will assist employees wanting to stay and be productive. • Increase employee morale as they will have a sense of belonging and fitting in.
	Impact	<ul style="list-style-type: none"> • Improve retention of employees. • Create an organizational culture of inclusivity and belonging. • Improve our understanding of and ability to respond to the communities we serve. • Enhance our reputation of being an employer of choice with job seekers.


Health, Safety & Environment


The health and safety of our employees, contractors and the public is our top priority. We are focused on a safety-first culture, working to provide healthy, safe, sustainable, and reliable services for our community.


 <p>Adopt standards for psychological health and safe workplaces to continue to build a safe work culture.</p>	Goal	<ul style="list-style-type: none"> Create a psychological health and safe workplaces framework by Q2 to be implemented over the next three years.
	Rationale	<ul style="list-style-type: none"> Improve our safety culture and support employee mental health. Having a healthy and safe workplace for employees is paramount for Halifax Water.
	Impact	<ul style="list-style-type: none"> Ensuring employees are safe both physically and mentally will reduce workplace injuries. Improves employee morale and productivity.

 <p>Develop a Climate Action Plan.</p>	Goal	<ul style="list-style-type: none"> Develop a Climate Action Plan (CAP) for Halifax Water for approval by the Halifax Water Board in Q4.
	Rationale	<ul style="list-style-type: none"> A CAP will guide Halifax Water's investment decisions and ensure the long-term resiliency of our environment and infrastructure. It will also allow the utility to establish targets and track the progress of mitigative measures and adaptation strategies. A CAP will support HalifACT 2050 actions that provide value to Halifax Water's ratepayers and align with the utility's EMS program.
	Impact	<ul style="list-style-type: none"> Improves our planning for future infrastructure requirements as we adjust the evolution of climate science. Improves service and reduces the need to recover costs related to climate change and the impact on our infrastructure. Provides direction and better prepares us for the changing climate, reduces energy use, lowering emissions as we continue to provide a high level of service (LOS) to customers.

 <p>Enhance wastewater modelling and develop a strategy to consistently meet regulatory reporting requirements regarding CSOs and SSOs.</p>	Goal	<ul style="list-style-type: none"> Enhance data availability and structure to report combined sewer overflows (CSOs) and sanitary sewer overflows (SSOs) more efficiently. Have an implementation strategy by Q3 to inform the updates to the Environmental Compliance Plan over Q2 2024/25 to Q2 2025/26.
	Rationale	<ul style="list-style-type: none"> Assessing flow monitoring equipment for accuracy and developing a long-term strategy to optimize the use of this flow monitoring equipment in the wastewater system, ultimately identifying a multi-year management and mitigation program.
	Impact	<ul style="list-style-type: none"> Enhanced accuracy of reporting and responses to non-compliance with federal and provincial regulations. Improves our ability to proactively address discharges to the environment, thereby reducing potential impacts on receiving waters.

 <p>Finalize and implement the Water Safety Plan.</p>	Goal	<ul style="list-style-type: none"> Complete the governance framework for the Water Safety Plan by Q2. Complete the first draft of the Water Safety Plan for all drinking water systems by Q4.
	Rationale	<ul style="list-style-type: none"> Building on the Water Quality Master Plan, Halifax Water is developing a comprehensive and adaptive risk assessment and risk management approach to the quality and safety of drinking water. This approach involves continuous improvement and risk management, including constantly assessing new risks.
	Impact	<ul style="list-style-type: none"> The Water Safety Plan will help to mitigate several corporate risks, including source lake recovery, climate change, critical infrastructure failure, water contamination, chemical supply chain disruption, asset management and aging infrastructure, adopting leading practices, and customer experience. The Water Safety plan will provide a means for integrating with other corporate plans, including the infrastructure master plan, compliance plan and capital plans.


 <p>Gain approvals, execute the contract, and start the design of the new Biosolids Processing Facility.</p>	Goal	<ul style="list-style-type: none"> Halifax Water will request the required approvals, award and execute the contract and begin the detailed design of a new Biosolids Processing facility. <ul style="list-style-type: none"> Present a construction and operating contract for approval by the Halifax Water Board and NSUARB by Q4.
	Rationale	<ul style="list-style-type: none"> Biosolids processing is an integral part of the wastewater treatment cycle and is critical to meeting our LOS to our stakeholders. The existing facility is approaching its processing capacity limits and is at the end of its useful life. It needs to be replaced to accommodate the forecasted increase in biosolids production resulting from population growth and the requirement for secondary wastewater treatment of wastewater as required by CCME regulations by 2040.
	Impact	<ul style="list-style-type: none"> This project has the potential to mitigate the following organizational risks: <ul style="list-style-type: none"> Environmental – Ensures the continued service and performance of our Biosolids Management Program. Financial – significantly reduces the capital and operating life cycle costs to process biosolids, which will, directly and indirectly, benefit ratepayers. Infrastructure and capital assets – ensure the facility can meet the processing requirements and utilize by-products of the treatment processes. Regulatory – ensures continued compliance with current regulatory requirements and upgrading the HHSPs to a secondary level of treatment by 2040.


 <p>Continue to advance the Water Supply Enhancement Program.</p>	Goal	<ul style="list-style-type: none"> As we continue to advance our Water Supply Enhancement Plan, we will: <ul style="list-style-type: none"> Complete detailed design and request funding approval for new clarifiers at the JD Kline Water Supply Plant (WSP) in Q4. Complete detailed design and request funding approval for the Lake Major WSP clarifiers in Q4. Begin detailed design of the Lake Major pumping station and intake by Q4.
	Rationale	<ul style="list-style-type: none"> The Water Supply Enhancement Program will equip both large water supply plants with a more robust and resilient treatment process, allowing the plants to continue producing high-quality water while dealing with changing source water quality driven by lake recovery and climate change. Maintains the JD Kline and Lake Major WSP in a state of good repair. Equips WSPs to provide advanced treatment to deal with the taste and odour-causing algal and other emerging risks to source water quality.
	Impact	<ul style="list-style-type: none"> This program helps ensure we can continue providing safe and high-quality water.


Financial & Regulatory Accountability


We are ensuring that Halifax Water has the capacity to fund existing and future infrastructure. We prudently manage assets and operate our business by balancing value and customer service.

 <p>Develop the next Five-Year Business Plan, including a long-term funding strategy for operating and capital budgets.</p>	Goal	<ul style="list-style-type: none"> Develop the five-year business plan for 2025/26 - 2029/30 by the end of Q3. Develop a new template for the five-year business plan that aligns with the “four pillars” used in the annual business plan and the new purpose statement by the end of Q1. Seek approval from Halifax Water Board in Q4.
	Rationale	<ul style="list-style-type: none"> This satisfies the NSUARB financial reporting requirements and the HRM Council Administrative Order regarding Halifax Water. Supports Halifax Water’s commitment to increased stakeholder engagement.
	Impact	<ul style="list-style-type: none"> The next five-year business plan will set the organization’s long-term direction. It will incorporate improvements in our risk management, increased resource capacity and a commitment to stakeholders.

 <p>Develop the detailed design for Cogswell District Energy System.</p>	Goal	<ul style="list-style-type: none"> Subject to the NSUARB approval, begin the process to secure HRM Council approval to expand the service boundary to align with the current construction by the end of Q2. Begin the process of drafting regulations for the DES by the end of Q3. Begin the detailed design by the end of Q2.
	Rationale	<ul style="list-style-type: none"> Development of the Cogswell District Energy System is important to reduce GHG emissions, aligning with HaliFACT2050.
	Impact	<ul style="list-style-type: none"> This project helps Halifax Water reduce GHG emissions.


 <p>Successfully implement the new Enterprise Resource Planning System (ERP) and Capital Management and Planning Information System.</p>	Goal	<ul style="list-style-type: none"> Implement the new Cayenta ERP system in the first half of the fiscal year, including developing sound business processes to support the implementation. <ul style="list-style-type: none"> Ensure that employees are appropriately trained in using the ERP upon implementation and go-live. Ensure that functionality, integration and reporting within the new ERP support efficiencies in decision-making and administrative and business processes. Establish a clear plan for continued enhancements of functionality in the ERP. Implement a new Capital Planning and Management Information System (CPMIS) to manage the creation, budgeting and administration of capital projects, including the capability for reporting and auditing, by the end of the fiscal year.
	Rationale	<ul style="list-style-type: none"> A new ERP is required to manage the utility effectively. As the utility's new ERP system, Cayenta will streamline many financial and customer relationship management processes and provide more effective reporting. With the IRP requirement to increase the annual capital expenditures, it is necessary to replace the existing spreadsheet-based management system to effectively manage projects, improve reporting and achieve increased accountability by project managers for budget and schedule.
	Impact	<ul style="list-style-type: none"> The ERP will support the financial management and the continued financial health of the utility. The ERP is a significant, organization-wide implementation and will impact all parts of the organization. Staff from across the organization will have improved access to information to support decision-making. Greater access to project reporting and project information will improve project planning and scheduling, timeliness of project delivery and provide enhanced reporting on project financial performance


 <p>Develop and finalize an updated HRM-Halifax Water Service Level agreement.</p>	Goal	<ul style="list-style-type: none"> Finalize an updated service level agreement with HRM and present it to the Halifax Water Board by Q4.
	Rationale	<ul style="list-style-type: none"> Having standards for conducting business between Halifax Water and HRM will allow for greater efficiencies and lead to less confusion and frustrations from the public.
	Impact	<ul style="list-style-type: none"> Decreases the likelihood of customer confusion and complaints related to which entity is responsible for a particular service. This improves Halifax Water's reputation and relationship with its stakeholders (HRM, developers, etc.) and regulators (NSUARB).


 <p>Develop a revised rate design and file required rate applications.</p>	Goal	<ul style="list-style-type: none"> Develop the framework for a new rate design for water and wastewater, and seek approvals for a revised Cost of Service Manual by the end of Q4. Develop a strategy for rate applications by Q3. File a rate application for stormwater services in Q4, if required.
	Rationale	<ul style="list-style-type: none"> A revised rate design is required to ensure rates are affordable, provide the financial stability required, and ensure that users pay for the services they utilize.
	Impact	<ul style="list-style-type: none"> A revised rate design will support the utility's financial viability and provide a framework for long-term affordable rates to fund operating and capital requirements.


Operational Excellence


We are committed to service, reliability, and quality for our customers. We ensure a more sustainable community by focusing on safely and efficiently building, operating, and maintaining our critical infrastructure.

 <p>Develop and Implement the Comprehensive Emergency Management Program.</p>	Goal	<ul style="list-style-type: none"> Complete key components of the Comprehensive Emergency Management Program (CEMP), including the Emergency Response Plan and Business Continuity Plan (BCP), by Q2. Implement the CEMP Program by Q4. Conduct an emergency simulation (a tabletop exercise) to test the plan by Q4.
	Rationale	<ul style="list-style-type: none"> The CEMP is revising the current Emergency Management Plan (EMP) that enhances Halifax Water's emergency response measures and further develops its business continuity planning.
	Impact	<ul style="list-style-type: none"> The CEMP will provide clear and concise emergency management information and training aligned and integrated with other systems and processes throughout the organizations.

 <p>Keep significant capital projects and planning studies on track through regular monitoring and reporting.</p>	Goal	<ul style="list-style-type: none"> Complete all critical planning activities such that the development of the next IRP begins as required by the NSUARB in 2024/25.
	Rationale	<ul style="list-style-type: none"> The IRP is a key guiding document for Halifax Water's capital project delivery and long-term sustainability. Staying on track with planning studies and projects is a key factor in Halifax Water's long-term sustainability.
	Impact	<ul style="list-style-type: none"> Reduces service interruptions due to infrastructure failure. Ensuring that we retain qualified staff could prevent Halifax Water from achieving this goal.

 <p>Enhance all capital-related areas (approval, budgeting, project planning and delivery).</p>	Goal	<ul style="list-style-type: none"> • Launch new engineering department structure by Q1. • Complete Institutional Capacity Study by Q3. • Develop project management and planning process by the end of Q4.
	Rationale	<ul style="list-style-type: none"> • Halifax Water needs to deliver the IMP required spend averaging \$135 million per year to meet its asset renewal, compliance, and growth requirements. To accomplish this, Halifax Water needs to: <ul style="list-style-type: none"> ○ enhance its planning systems, budgeting, and approval processes ○ increase the number of people focused on project planning and delivering.
	Impact	<ul style="list-style-type: none"> • Enhancing the planning, budgeting and approval processes and increasing the number of staff planning and delivering capital projects will allow Halifax Water to meet the required level of capital project delivery in a cost-effective and timely manner.

 <p>Develop the five-year Information & Technology Services Road Map and continue to improve cyber security.</p>	Goal	<ul style="list-style-type: none"> • Deliver a new five-year IT road map in Q1. • Continue to improve cyber security by: <ul style="list-style-type: none"> ○ Completing Multi-Factor Authentication project in Q1. ○ Completing live test of Disaster Recovery facility in Q3. ○ Develop a response plan to Municipal Auditor General's IT cyber audit by the end of Q1.
	Rationale	<ul style="list-style-type: none"> • The current IT roadmap, which expires at the end of 2022/23, focuses on establishing foundational IT systems. While essentially complete, some of the original themes of connecting employees everywhere and improving customer experience are not fully realized. Further, data and analytics are becoming more important to daily operations. • Cyber security is rapidly evolving. Halifax Water must have robust measures in place against cyber threats to protect sensitive data and maintain continuity of service.
	Impact	<ul style="list-style-type: none"> • This helps mitigate the risk of a cyber-attack or loss of sensitive data. • Increases connectivity with employees and improves data analytic capabilities and the customer experience.

 <p>Develop dashboards and metrics to measure and support operational excellence and the level of service to our customers.</p>	Goal	<ul style="list-style-type: none"> • Develop maintenance reports on a selected number of assets by the end of Q4. • Formalize performance standards for customer response and the level of service required to meet these standards by the end of Q4.
	Rationale	<ul style="list-style-type: none"> • By adopting standardized metrics, we can: <ul style="list-style-type: none"> ○ Demonstrate greater accountability and value for the services we provide to our customers (did we meet our commitments) ○ Make more informed decisions as part of business planning and budget development and can assist with financial forecasting. ○ Assign the appropriate service levels and timing to reduce the likelihood of service interruptions and reduce operating costs associated with emergencies.
	Impact	<ul style="list-style-type: none"> • Dashboards and established metrics allow Halifax Water to: <ul style="list-style-type: none"> ○ Improve tracking of infrastructure inventory and maintains critical infrastructure, improving drinking water quality, service reliability, regulatory compliance and public health benefits. ○ Reduce unplanned/emergency repairs that strain operational resources and our ability to execute maintenance plans. ○ Increase operation focus on work execution. ○ Optimize resources to achieve defined service levels better.

BUDGET SUMMARY

Capital Budget

Halifax Water's 2023/24 capital budget at a total value of \$146,692,000 and detailed information on the capital budget is provided in Appendix B.

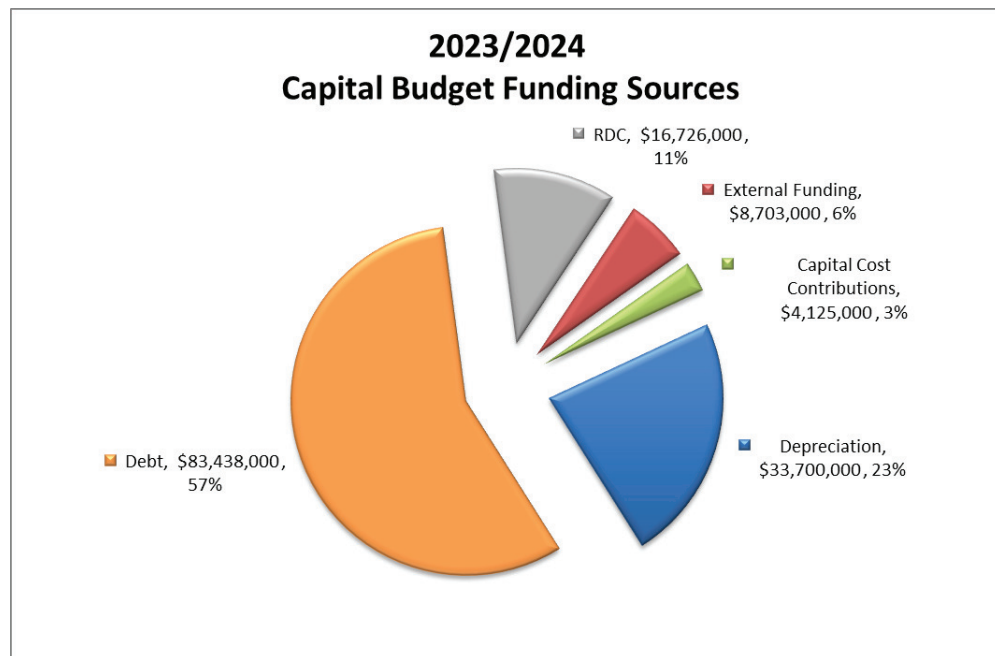
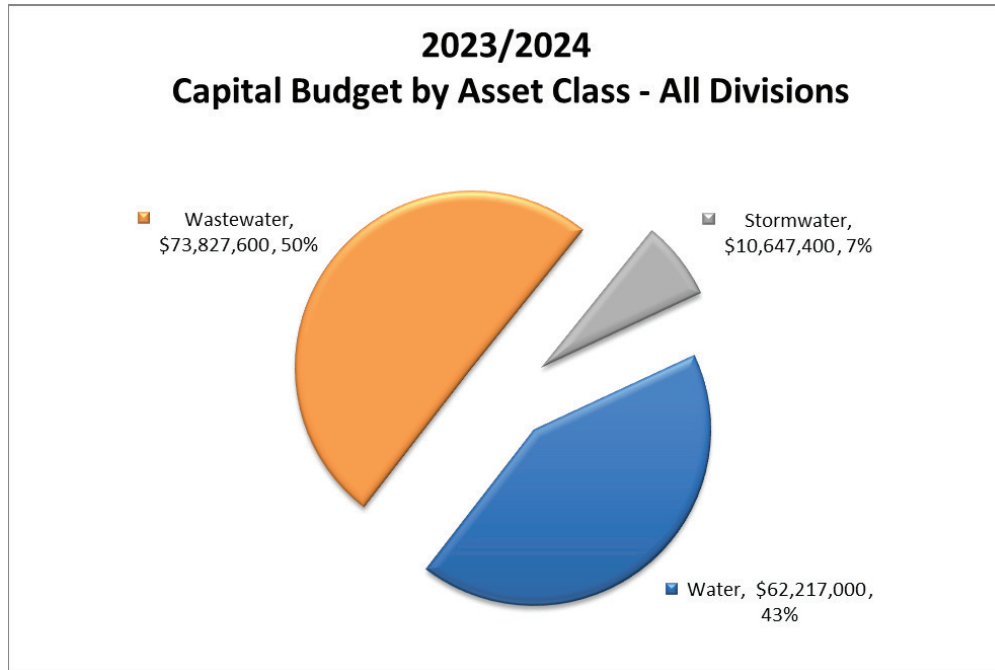
Halifax Water's 2019 IRP identifies a 30-year capital investment plan valued at \$2.7 billion (net present value) and a requirement to achieve an average level of spend of \$135 million per year. In relation to the IRP, the capital budget program focuses on providing the required infrastructure for asset renewal, regulatory compliance, and growth.

The 2023/24 capital budget recognizes Halifax Water's significant challenge in increasing a capital budget from approximately \$30 million ten years ago to an average annual IRP target of \$135 million and, in some years, exceeding \$200 million.

Preparation of the 2023/24 capital budget also balanced the expectation of what can reasonably be delivered with capital program targets identified. Developing a budget based on our current workforce and business process constraints will help improve our performance tracking to the capital budget targets. At the same time, delivering on our recommended annual IRP capital program target provides improved service sustainability and a reduced risk of service interruption.

The proposed capital budget for 2023/24 aligns with the budget outlined in the most recent five-year business plan for 2020/21 to 2024/25. It shows an increase of \$40 million from last year's budget of \$106 million for a proposed budget of \$146,692,000). This is intended to achieve critical projects with well-advanced planning while respecting the current capacity to deliver, augmented by some human resource additions.

The funding plan for the capital budget comprises the following funding sources; depreciation, debt, regional development charge reserve, capital cost contribution, Federal/Provincial infrastructure funding, HRM cost sharing and energy rebates.



Water		Wastewater		Stormwater	
Depreciation	\$ 13,293,000	Depreciation	\$ 17,835,000	Depreciation	\$ 2,572,000
Debt	\$ 39,790,000	Debt	\$ 36,089,600	Debt	\$ 7,558,400
RDC	\$ 4,593,000	RDC	\$ 11,983,000	RDC	\$ 150,000
External Funding	\$ 4,541,000	External Funding	\$ 3,795,000	External Funding	\$ 367,000
Capital Cost Contributions	\$ -	Capital Cost Contributions	\$ 4,125,000	Capital Cost Contributions	\$ -
	\$ 62,217,000		\$ 73,827,600		\$ 10,647,400

Operating Budget

The operating budget for 2023/24 reflects a projected deficit of \$2.3 million. The budget is based on regulated rates and charges approved by the NSUARB, effective April 1, 2023. Base charges for water and wastewater have remained unchanged since April 1, 2016.

The main cost drivers of Halifax Water's operating budget are salaries and wages, energy costs, chemicals, depreciation, and debt servicing. Operating expenditures are proposed to increase by \$7.2 million or 6.0% compared to the prior year's budget. Full details of the operating budget are provided in Appendix C.

Operating Budget Summary (in thousands)					
	Approved Budget 2022/23	Proposed Budget 2023/24	Per Rate Application 2023/24	Change from Prior Year	Change from Rate App
Operating revenues	\$ 152,765	\$ 168,896	\$ 152,765	\$ 16,132	\$ (16,132)
Operating expenditures	128,788	135,949	134,564	7,161	(1,385)
Earnings from operations	23,977	32,947	18,200	8,970	(14,746)
Financial and other revenues	733	951	733	218	(218)
Financial and other expenditures	35,598	36,207	35,734	610	(473)
Loss for the year	\$ (10,888)	\$ (2,309)	\$ (16,801)	\$ 8,579	\$ (14,492)

All three services (water, wastewater and stormwater) forecast deficits for the 2022/23 fiscal year. With the approval from the NSUARB in 2022/23 to increase rates effective April 1, 2023, wastewater is the only service with budgeted earnings for 2023/24. Halifax Water received approval to utilize \$2.4 million of accumulated operating surpluses to offset the shortfall in water operations. In addition, during the rate application hearing, Halifax Water identified to the NSUARB that the proposed increases in stormwater rates were not sufficient for the service to break even and that further stormwater rate increases would be required. Halifax Water is planning to submit a cost of service application to the NSUARB early in 2024. If approved, the updated cost of service manual will be used to support future rate adjustments.

Operating Budget Key Assumptions

Revenue budgets have been developed based on the approved rate increases effective April 1, 2023. Consumption is projected to remain the same in 2023/24 as decreasing consumption from existing customers is projected to offset increases caused by growth. Halifax Water is budgeting for 680 new water customer connections and 640 new wastewater customer connections, on par with the prior year.

Halifax's Consumer Price Index (CPI) is currently at 7.30%. The increase in Halifax Water's total operating expenditures is slightly less than this. Specific assumptions regarding some of Halifax Water's most significant expenses are shown in the table below.

Significant Operational Expenditures	Estimated Cost Increase Assumptions
Chemicals	5.00%
Electricity	10.37%
Furnace oil	15.00%
Natural gas	15.00%
Salaries	1.75-2.50%**
** Halifax Water has three employee groups governed by two collective agreements and one compensation policy. This range provides an allowance for step increases as employees move through various salary bands.	

The budgets for depreciation and non-operating expenses, such as debt servicing and the dividend/grant in lieu of taxes paid to the municipality, are developed based on capital spending and additions to utility plant in service.

PERFORMANCE MEASUREMENT

At the end of the 2023/24 fiscal year, Halifax Water's overall performance will be assessed against the Corporate Balanced Scorecard (CBS). Halifax Water has been utilizing a CBS to measure utility performance since 2001. Each year the Halifax Water Board sets organizational indicators and reviews performance results. The CBS targets for 2023/24 will be presented for approval at the March 2023 meeting of the Halifax Water Board.

There are eight Critical Success Factors (CSFs) derived from Halifax Water's vision statement. Under each of the CSFs, there are organizational indicators to track performance and allow for the establishment of targets. This year the eight critical success factors will be organized based on the four pillars:

People	Health, Safety & Environment
<ul style="list-style-type: none"> • The average number of days of absenteeism • % of grievances resulting in arbitration • % of jobs filled with internal candidates • Customer satisfaction about water quality - % from customer survey • Customer satisfaction with service - % from customer survey 	<ul style="list-style-type: none"> • The average score on internal safety audits • Lost time accidents - # of accidents resulting in lost time per 100 employees • Safe driving - # of traffic accidents per 1,000,000 km driven • Training - # of employees trained or re-certified before the due date • % of completed safety talks • # of IC&I properties inspected by Pollution Prevention each year • Energy management kWh/m³ reduction associated with capital projects • Adherence with Water Quality Master Plan - % of sites achieving targets • Bacteriological tests - % free from total coliform Bio-solids residual handling - % of sludge meeting bio-solids concentration targets
Financial & Regulatory Accountability	Operational Excellence
<ul style="list-style-type: none"> • Operating expense/revenue ratio • percentage Annual cost per customer connection – Annual water cost per customer connection – wastewater • Capital budget expenditures - % of budget spent by the end of fiscal year • Department of Labour, Skills (DLS&I) and Immigration compliance - # of incidents with written compliance orders • % of public health and environmental regulatory infractions resulting in an environmental warning report, summary offence ticket, ministerial order, or prosecution • % of WWTFs complying with NSECC approval permits 	<ul style="list-style-type: none"> • Water leakage control – target leakage allowance of 160 litres per service connection per day • I&I reduction - # of inspections on private property for discharge of stormwater into the wastewater system • Peak flow reduction from wet weather management capital projects • Hours of unplanned outages in GIS and Cityworks Water service outages - # of connection hours/1000 customers • Wastewater service outages – # of connection hours/1000 customers • The average speed of answer – % of calls answered within 20 seconds

HALIFAX WATER ORGANIZATIONAL STRUCTURE



SERVICE OVERVIEW

Operations

The Operations Department provides water, wastewater, and stormwater services. While respectfully managing the system to ensure each is independently financed based on the user pay model, all activities are organized through a “one team, one water” approach that makes it more seamless for customers.

Water Services

The Water Services division’s mandate is to ensure a safe supply of water to Halifax Water’s customers from “Source to Tap.” The activities include operating and maintaining various systems:

- *Source Water Protection:* responsible for managing and protecting watershed land, developing and maintaining source water plans, enforcement of Protected Water Areas and other relevant source water regulations, source water community relations including working with and developing watershed advisory boards, real property maintenance of source water lands, and forestry management of watershed lands.
- *Water Quality Management:* responsible for water quality planning, water quality monitoring, process support to treatment plants, customer inquiries and investigations, water quality support to capital projects, policy development, research, and collaboration with Dalhousie University in Natural Sciences and Engineering Research Council’s (NSERC) Alliance Grant Program at Dalhousie University.
- *Water Supply Plant Operations:* responsible for operation and maintenance of three large water supply plants (JD Kline/Pockwock, Lake Major and Bennery Lake), six small systems, six dams, two emergency water supplies and 35 chlorine monitoring devices and re-chlorination stations.
- *Distribution System Operations:* responsible for operating and maintaining the water distribution and transmission systems. The system is managed according to three geographic regions responsible for over 1,574 km of transmission and distribution mains, 8,500 fire hydrants, 86,500 service connections, 143 pressure control/flow metering facilities, 20 pumping stations, 16,000 valves and 19 water storage facilities. This also includes responding to third-party requests for buried infrastructure locates.

Wastewater Services

The Wastewater and Stormwater Services division’s activities include operating and maintaining municipal systems. In this regard, the Wastewater and Stormwater Services division has the mandate to protect the environment while providing essential collection and treatment services to its customers. These essential services are delivered in sections responsible for stormwater and wastewater activities in three regions and 14 treatment facilities.

Wastewater Services strives to provide uninterrupted delivery of the following services:

- *Wastewater Treatment Facility Operations:* responsible for operation and maintenance of 14 WWTFs and associated infrastructure, regulatory reporting, and implementing and

coordinating capital upgrades with other Halifax Water departments. These facilities treat approximately 75 million cubic meters of wastewater annually. The department also operates four additional small treatment facilities under contract from HRM and the province.

- *Biosolids Processing:* responsible for liquid transport, dewatering and processing of sludge, operation, and maintenance of various dewatering equipment at WWTFs, administering trucking contracts for dewatered biosolids and BPF operations contract, and processing of biosolids from on-site septic systems. The BPF, located at the Aerotech Industrial Park, produces a soil amendment for beneficial use in agriculture.
- *Collection System Operations:* responsible for the operation, repair and maintenance of the wastewater collection and trunk sewer system. The system is managed according to three geographic regions responsible for over 1,425 km of collection pipes, 165 pump stations, 21 CSO facilities, and 83,000 service connections.
- *Septage Treatment Services:* This is an unregulated activity for Halifax Water, but it provides an essential service to residents who do not have a centralized wastewater service. The septage from septic hauling companies is treated at the Aerotech WWTF.
- *Facilities, Fleet & Logistics Services:* responsible for supplying, maintaining, and repairing approximately 270 pieces of mobile equipment and vehicles ranging from trailers and small utility service vehicles to large excavation, construction, and transportation equipment. Responsible for replacing vehicles and equipment on a life cycle costing basis, vehicle records management, and regulatory compliance. This section also operates and maintains corporate facilities at the Cowie Hill campus and provides logistical and services support to operations and treatment facilities to facilitate efficient operations.

Stormwater Services

The Stormwater Services division operates and maintains stormwater infrastructure within the public right-of-way and easements. This service has undergone significant changes over the past few years and continues to progress to achieve a higher LOS.

- *Collection System Operations* provides operation, repair and maintenance of the stormwater collection and trunk sewer system. Shared crews manage the system within the three geographic regions with responsibility for approximately 900 km of stormwater collection pipes, 46 stormwater retention facilities, over 1,200 km of ditches, 3,288 cross culverts and 16,700 driveway culverts. This section provides proactive maintenance of the pipes, ditches, and other systems to ensure uninterrupted flow within Halifax Water infrastructure. Staff also replace driveway and cross culverts on a priority basis to manage the infrastructure with sound asset management practices. In June 2022, Halifax Water became responsible for providing stormwater in new areas that include parts of the communities of Boutiliers Point, Ingramport, Head of St Margaret's Bay, Lewis Lake, Hubley and Upper Tantallon, East Preston, Lake Echo, Mineville, and Lawrencetown.

Service Review: supports the Stormwater Engineer within the Regulatory Services department, conducts drainage investigations, stormwater billing exemption requests, and supports other areas of the Operations Department.

Engineering and Technology Services

The Engineering and Technology Services (ETS) Department provides engineering and asset management services for planning, designing, constructing, and maintaining water, wastewater, and stormwater infrastructure. It is also responsible for all of Halifax Water's digital infrastructure services, including information management, geographic information systems, and operational technology.

The ETS Department has six specific operational sections delivering programs.

- *Asset Management*: responsible for developing the Asset Management (AM) Program, including the overall strategy, inventories, condition and performance assessments, and the development and delivery of the annual Asset Management Plan. This section is also responsible for flow modelling and monitoring, developing and long-term infrastructure master planning, including implementing the IRP and developing the five-year and one-year capital budget.
- *Infrastructure Planning*: responsible for planning and scheduling significant Halifax Water asset construction and replacement projects. They are also responsible for planning the development of water and wastewater networks and establishing Halifax Water design standards for Halifax Water infrastructure.
- *Capital Project Delivery*: responsible for the design, construction and commissioning of most Halifax Water capital projects. They are also responsible for monitoring and reporting on capital project performance and establishing and training staff in capital project management methodology and construction management and administration.
- *Energy Management & Business Development*: responsible for projects involving resource recovery or energy generation, developing energy sales and servicing customers for these services. They are also responsible for engineering services related to energy efficiency and GHG emission reduction, strategic energy planning and climate change mitigation.
- *Strategic Projects*: Responsible for managing and executing Halifax Water projects and programs deemed strategic due to their cost, risk or technical complexity. They are responsible for their projects' strategic procurement and risk management plans.
 - Information and Technology Services consisting of:
 - i. *Engineering Information*: responsible for the corporate GIS, including maintaining and distributing digital records relevant to our infrastructure. The section is responsible for ongoing GIS development, including desktop and mobile GIS applications and supports capital projects and other initiatives through Computer Aided Drafting (CAD) and map production.
 - ii. *Information Services (IS)*: responsible for the administration of services relating to network resources (storage, servers, printers, etc.), users, access control and network security, server hardware and operating systems, all computer equipment (including desktops, laptops, monitors, printers, and servers), corporate desktop software, and updating and delivery of the Information Technology (IT) Strategic Plan including all IT project delivery services. *Technical Services*: responsible for operation and maintenance of the SCADA system, the process communications network, and the AMI collection network; implementation of the SCADA master plan, process control, cyber security,

instrumentation maintenance, electrical maintenance, water pumping stations, and operation and development of the process data warehouse.

Regulatory Services

The Regulatory Services Department supports the utility through the following sections; Environmental Engineering, Engineering Approvals, Regulatory Compliance, Safety and Security, Stormwater Engineering and EMS.

- *Environmental Engineering*: responsible for two key programs, Pollution Prevention and the private side I&I reduction. The section also supports updating NSECC permits to operate and withdraw water and oversee projects related to contaminated sites and impacts on Halifax Water's infrastructure.
 - *Pollution Prevention*: responsible for promoting compliance of waste discharges with Halifax Water's Rules and Regulations through education and inspections.
 - *Inflow and Infiltration*: assist the Wet Weather Management Program in locating and addressing private side sources of I&I.
 - *Regulatory Compliance*: responsible for sampling the water treatment and distribution systems for bacteria and residual chlorine, ensuring compliance with Canadian Drinking Water Guidelines and operational permits issued by NSECC. Similar sampling is completed for wastewater effluent parameters for compliance with permits issued by NSECC, consistent with federal regulations. The group is also tasked with compiling and submitting reports associated with the sampling results to NSECC. Regulatory Compliance is completing work with the Water Quality Management section to implement new permit tracking, data management, and reporting software as part of the IT Strategic Program.
 - *NSECC Permits*: coordinates permit renewals and amendments.
- *Engineering Approvals*: responsible for ensuring connections to and expansions of our system adhere to the Halifax Water Design Specifications, the Supplementary Standard Specification, and the Halifax Water Regulations. In addition, the group oversees the administration of the Backflow Prevention Program, which provides a layer of protection to the water distribution system from potential contamination events (cross-connections) from medium to high-risk customers. The group also administers new service connections, including inspecting new services and renewals and administering Regional Development Charges and Capital Cost Contribution Charges.
- *Safety & Security*: responsible for providing overall support and delivery of Halifax Water's safety program and oversight of the security systems and programs to protect Halifax Water's critical infrastructure.
- *Stormwater Engineering*: responsible for conducting drainage investigations, stormwater billing exemption requests, and operations support. Drainage investigations may be triggered by a customer inquiry on private property or an operational issue on Halifax Water-owned infrastructure. The Stormwater Engineering team reviews the drainage issues and renders a

position which may involve an operational fix or a capital improvement. Complaints stemming from stormwater billing are vetted through the Stormwater Engineer, and a decision is provided to the customer.

- *Environmental Management System (EMS)*: provides a system of procedures, records, and processes to manage environmental issues and assist with regulatory compliance. It also makes day-to-day operations more sustainable and engages employees in these operational activities. The EMS program can be audited against ISO 14001 standards and, if found to comply, receives certification through ISO. The ISO standard focuses on organizational leadership and identifying risks and the associated influences, both internal and external, on an organization.

Corporate Services

The Corporate Services Department consists of five sections, serving internal and external customers.

- *Finance*: responsible for developing operating budgets, funding plans for the capital budget, rate applications and financial modelling for business plans. This group assists in preparing the capital budgets and confirms the availability of funding sources. The group is responsible for forecasting revenues and expenditures, including associated trend analysis, administering the pension plan, internal control testing, and quality assurance activities around financial transactions, including payroll.
- *Accounting*: responsible for timely and accurate financial reporting, financial accounting, fixed asset accounting, financial analyses, and preparing financial statements. This group is also responsible for revenue; budgeting and forecasting; predicting cash flows; developing and implementing accounting procedures; internal controls; managing the billing and collection of non-customer charges; and coordinating and supporting the annual external financial statement audit. Accounting also assists in preparing capital budgets.
- *Procurement*: responsible for planning and delivering procurement services to the organization, ensuring compliance with corporate policies, legislation, and trade agreements. This section develops and implements reporting and monitoring systems, programs and procedures for inventory and procurement. Procurement also supports and guides internal departments in acquiring goods, services, and construction to meet Halifax Water's objectives and capital programs.
- *Customer Care*: responsible for managing customer contacts, establishing corporate customer service standards, goals, and objectives, and coordinating the improvement of business processes in Customer Care and other departments.
- *Metering and Billing*: responsible for installing, maintaining, reading, sampling, and testing meters, establishing standards and billing customers for Water, Wastewater and Stormwater Services in a timely and accurate manner.

Administration

- *General Manager's Office*: responsible for the overall administration of the utility. Some initiatives led by the General Manager's Office include governance, business planning, public and

stakeholder relationships, and employee relations. Communications, Governance, and Human Resources fall directly under the General Manager's Office.

- *Communications*: responsible for external and internal communications, maintaining the internet and intranet sites, media relations, and social media, and providing support to operations and capital delivery to ensure the public is kept informed of significant projects, service disruptions, and initiatives.
- *Governance and Human Resources*: responsible for legal functions, corporate records management, FOIPOP administration, and land administration. The General Counsel acts as the Corporate Secretary to the Halifax Water Board and helps ensure that board governance processes function smoothly. Also responsible for delivering all human resource initiatives, including effective workforce planning, organizational change and development, recruitment functions, disability management, health and wellness initiatives, labour/employee relations, compensation and benefits functions, pension administration, and employment equity.

Unregulated Business

Halifax Water conducts some lines of business that are ancillary to the core water, wastewater, and stormwater services. These activities constitute approximately 1% of the utility's business. They include leasing land for telecommunications, cell phone and radio towers, and some energy-related initiatives such as leasing land for wind turbines and generating electricity through in-line turbines in the water system. The most material lines of un-regulated business are the treatment of septage from waste haulers dealing with private septic systems and the treatment of airline effluent. Halifax Water can also provide some services such as contract operations, consulting or leak detecting on a fee-for-service basis. Halifax Water offers consulting services to the Atlantic First Nations Water Authority. Unregulated business is conducted for the benefit of the regulated rate base.

Appendix B: 2023/24 Capital Budget

HALIFAX WATER

Capital Budget 2023/24

Summary

Asset Category	Project Costs
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<i>Water - Land -- T O T A L</i>	\$125,000
<i>Water - Transmission -- T O T A L</i>	\$17,935,000
<i>Water - Distribution -- T O T A L</i>	\$9,900,000
<i>Water - Structures -- T O T A L</i>	\$8,640,000
<i>Water - Treatment Facilities -- T O T A L</i>	\$13,980,000
<i>Water - Energy -- T O T A L</i>	\$200,000
<i>Water - Security -- T O T A L</i>	\$75,000
<i>Water - Equipment -- T O T A L</i>	\$310,000
<i>Water - Corporate Projects - T O T A L</i>	\$11,052,000
TOTAL - Water	\$62,217,000

<i>Wastewater - Collection System -- T O T A L</i>	\$17,940,000
<i>Wastewater - Force mains -- T O T A L</i>	\$6,850,000
<i>Wastewater Structures -- T O T A L</i>	\$13,825,000
<i>Wastewater - Treatment Facility -- T O T A L</i>	\$21,255,000
<i>Wastewater - Energy -- T O T A L</i>	\$600,000
<i>Wastewater - Security -- T O T A L</i>	\$50,000
<i>Wastewater - Equipment -- T O T A L</i>	\$1,292,000
<i>Wastewater - Corporate Projects -- T O T A L</i>	\$12,015,600
TOTAL - Wastewater	\$73,827,600

HALIFAX WATER
Capital Budget 2023/24
Summary

Asset Category	Project Costs
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<i>Stormwater - Pipes -- T O T A L</i>	\$5,291,000
<i>Stormwater - Culverts -- T O T A L</i>	\$2,465,000
<i>Stormwater - Corporate Projects -- T O T A L</i>	\$2,891,400
TOTAL - Stormwater	\$10,647,400

GRANDTOTAL	\$146,692,000
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HALIFAX WATER
Capital Budget 2023/24
Water

Project Number	Project Name	Project Cost
Water - Land		
3.033	Watershed Land Acquisition	\$125,000
Water - Land -- T O T A L		\$125,000
Water - Transmission		
3.042	Critical Valve Replacement Program	\$250,000
3.587	Prince Albert Road Transmission Main / PRV Replacement	\$150,000
3.722	Cowie Reservoir Control Chamber - Pipework Optimization Study	\$75,000
3.571	Highway 118 Crossing - Shubie Park to Dartmouth Crossing	\$8,000,000
3.553	Peninsula Intermediate Looping - Quinpool Road to Young St (Windsor St 2023) ***	\$500,000
3.399	Cogswell Interchange - Water Transmission Main Realignment	\$2,560,000
3.658	Bedford to Burnside Transmission Main Phase 1 Remainder of TM Pipework	\$5,700,000
3.653	Bedford to Burnside Transmission Main Phase 3 - Rock Trench Preparations	\$640,000
3.232	MacIntosh Run Estates -Transmission Main Oversizing	\$60,000
Water - Transmission -- T O T A L		\$17,935,000
Water - Distribution		
3.022	Water Distribution - Main Renewal Program	\$6,200,000
3.067	~ Valves Renewals	\$200,000
3.068	~ Hydrants Renewals	\$75,000
3.069	~ Service Lines Renewals	\$100,000
3.39	Lead Service Line Replacement Program	\$2,000,000
3.738	Water Quality Lab Infrastructure	\$40,000
3.296	Water Sampling Station Relocation Program	\$40,000
3.294	Automated Flushing Program	\$30,000
3.696	Tower Road CN Bridge - Watermain Replacement	\$60,000
3.697	Herring Cove Road Watermain Renewal - HRM Integrated Project	\$120,000
3.699	Raymond St / Lakecrest Drive Storm Sewer Replacement - Watermain	\$150,000
3.704	Windsor Street Exchange Redevelopment - Water Infrastructure	\$170,000
3.735	Cathedral Lane Sewer Separation - Watermain Replacement	\$415,000
3.578	New Woodside Industrial Park Feed ***	\$300,000
Water - Distribution -- T O T A L		\$9,900,000
Water - Structures		
3.601	Control Chamber Valve Replacement Program	\$125,000
3.602	Control Chamber - Electrical Panel Replacement Program	\$60,000
3.263	District Metered Areas (DMA) Program	\$125,000
3.455	Reservoir Mixing and Residuals Management Upgrade Program	\$150,000
3.623	Booster Station - Building Envelope - Capital Upgrade Program	\$30,000
3.606	Highway #7 Booster Station - Fire Pump Replacement	\$600,000
3.698	Robie Control Chamber Upgrades	\$400,000
3.700	Robie Emergency Pump Station - Pump Upgrade	\$150,000
3.705	Esson Road PRV Replacement	\$615,000
3.706	Mount Edward Control Chamber - CSE Retrofit	\$20,000
3.707	Albro Lake PRV - CSE Retrofit	\$100,000
3.708	Gordon Avenue PRV Chamber - CSE Retrofit	\$135,000
3.709	White Hills Meter Chamber Replacement	\$25,000
3.713	Waverley Control Chamber - CSE Retrofit	\$115,000
3.712	Mount Edward Reservoir #1 Replacement	\$200,000
3.701	Leaman Dr. Emergency Booster Station	\$200,000
3.714	North Preston Reservoir Building Replacement	\$60,000
3.716	Robie Reservoir Gatehouse - Inlet Outlet Control Upgrades	\$230,000
3.717	Geizer 158 Dump Valve Chamber - Control Valve Replacement	\$50,000
3.718	Hollis St Meter Replacement	\$20,000
3.666	Lake Major Dam - Little Salmon River - DFO Offsetting Requirements	\$410,000
3.719	Geizer 158 - New Reservoir	\$400,000
3.664	Robie 2 PRV Chamber Valve Replacement	\$50,000
3.477	Aerotech Boosted System - Capital Upgrades	\$550,000
3.589	Aerotech Booster Station Replacement	\$1,800,000
3.508	Beaver Bank Reservoir Rehabilitation	\$800,000
3.641	Dam Safety Review - Chain Lake Dam - Capital Work	\$750,000
3.642	Dam Safety Review - Pockwock Lake Dam - Capital Work	\$320,000
3.580	Lyle Emergency Booster Upgrades	\$150,000
Water - Structures -- T O T A L		\$8,640,000

HALIFAX WATER
Capital Budget 2023/24
Wastewater

Project Number	Project Name	Project Cost
<u>Wastewater - Collection System</u>		
2.168	Wastewater System - Trenchless Rehabilitation Program	\$2,500,000
2.839	Eastern Passage Gravity Pressure Sewer	\$700,000
2.103	Herring Cove Road Wastewater Stormwater Renewal - HRM Integrated Project	\$120,000
2.103	Winston Drive Sewer Main Repair	\$95,000
2.357	Manhole Renewals WW	\$60,000
2.358	Lateral Replacements WW (non-tree roots)	\$1,820,000
2.563	Lateral Replacements WW (tree roots)	\$585,000
2.223	Wet Weather Management Program	\$350,000
2.074	Bedford West Collection System CCC	\$25,000
2.052	Integrated Wastewater Projects - Program	\$2,500,000
2.905	Windsor Street Exchange	\$150,000
2.692	Cogswell Redevelopment - Sewer Relocation	\$2,580,000
2.939	York's Lane PS Elimination	\$350,000
2.675	Bayers Road Phase 1 - Sewer Separation	\$1,200,000
2.674	South Park Street - Sewer Separation	\$350,000
2.982	Young Street Pocket - Sewer Separation - Route to Harbour	\$500,000
2.830	Eastern Passage RDII Reduction Program FMZ24 - Lake Loon	\$805,000
2.831	Eastern Passage RDII Reduction Program FMZ37 - Eastern Passage	\$250,000
2.832	Mill Cove RDII Reduction Program FMZ07 & FMZ40 - Lower Sackville	\$3,000,000
Wastewater - Collection System -- T O T A L		\$17,940,000
<u>Wastewater - Forcemains</u>		
2.993	Dingle FM Replacement & Twinning	\$850,000
2.945	390 Waverley Road Forcemain Upgrades	\$5,500,000
2.823	Akerley Blvd Forcemain Replacement	\$500,000
Wastewater - Forcemains -- T O T A L		\$6,850,000
<u>Wastewater - Structures</u>		
2.420	Emergency Pumping Station Pump Replacements	\$300,000
2.442	Wastewater Pumping Station Component Replacement Program - West Region	\$200,000
2.443	Wastewater Pumping Station Component Replacement Program - East Region	\$200,000
2.444	Wastewater Pumping Station Component Replacement Program - Central Region	\$275,000
2.1014	Main Street Pumping Station (Golf View Drive) Upgrade	\$1,350,000
2.66	Bissett PS Component Upgrade	\$2,650,000
2.665	CSO Upgrade Program	\$300,000
2.1004	Pier A Pumping Station VFD Replacement	\$150,000
2.1030	Duffus Street Pumping Station - Mechanical & Electrical Upgrades	\$300,000
2.821	Duffus Street PS Flow Meter Replacement	\$520,000
2.1031	Electrical & Controls Assessment - Wastewater Structures	\$100,000
2.1037	Valleyford Holding Tank - Retaining Wall Replacement	\$70,000
2.846	Quigley Corner Pumping Station Upgrade	\$4,000,000
2.654	PS Control Panel / Electrical Replacement	\$860,000
2.005	Autoport Pleasant Street PS Replacement	\$2,550,000
Wastewater Structures -- T O T A L		\$13,825,000

HALIFAX WATER
Capital Budget 2023/24
Wastewater

Project Number	Project Name	Project Cost
<u>Wastewater - Treatment Facility</u>		
2.056	Plant Optimization Program	\$125,000
2.522	Emergency Wastewater Treatment Facility equipment replacements	\$550,000
2.668	Wastewater Treatment Research Program Pilot Plant	\$100,000
2.1023	HHSPs - Critical Spares	\$250,000
Halifax WWTF		
2.765	Halifax WWTF - Raw Water Pump Refurbishment	\$60,000
2.774	Halifax WWTF - UV Disinfection System - New Modules and PLC Upgrade	\$1,000,000
2.1024	Halifax WWTF - Replace Garage Bay Doors	\$125,000
2.552	Halifax WWTF - MCC Ventilation Upgrades	\$50,000
2.1025	Halifax WWTF - Coarse Screen Room - Regrade Floor Inside Berm	\$50,000
2.1026	Halifax WWTF - Replace Alum Fill Tank Piping	\$50,000
2.103	Halifax WWTF - Replace Hypo Fill Line	\$75,000
Dartmouth WWTF		
2.876	Dartmouth WWTF - Raw Water Pump Refurbishment Program	\$30,000
2.788	Dartmouth WWTF - UV Disinfection System - New Modules and PLC Upgrade	\$775,000
NEW	Dartmouth WWTF - Replace Workshop Bay Door	\$30,000
NEW	Dartmouth WWTF - OCS Damper Actuators	\$50,000
NEW	Dartmouth WWTF - Repair Exterior Door Thresholds	\$25,000
NEW	Dartmouth WWTF - OCS - Carbon Cannister Replacements	\$200,000
NEW	Dartmouth WWTF - Instrumentation Sensors	\$65,000
NEW	Dartmouth WWTF - VFD Replacements	\$100,000
2.871	Dartmouth WWTF - SS Pipe Work Replacement Program	\$200,000
Herring Cove WWTF		
NEW	Herring Cove WWTF - Industrial Water Strainer	\$25,000
NEW	Herring Cove WWTF - Epoxy Coat Floor	\$15,000
NEW	Herring Cove WWTF - Walk Behind Floor Scrubber	\$15,000
NEW	Herring Cove WWTF - Replace Exterior Rear Doors	\$10,000
NEW	Herring Cove WWTF - Roof Replacement	\$500,000
Mill Cove WWTF		
2.903	Mill Cove WWTF - Dewatering - Centrifuge Rebuild Program	\$30,000
2.640	Mill Cove WWTF - Process Upgrades - Preliminary + Detailed Design	\$1,000,000
2.817	Mill Cove WWTF - Plant Upgrade - Design and Contract Admin	\$9,000,000
NEW	Mill Cove WWTF - Pipe Replacement Program	\$250,000
NEW	Mill Cove WWTF - UV AC Unit Replacements	\$25,000
NEW	Mill Cove WWTF - MCC 1 - Replace Ten Buckets	\$150,000
NEW	Mill Cove WWTF - Air Actuated Pumps/Compressors	\$30,000
Eastern Passage WWTF		
2.907	Eastern Passage WWTF - Centrifuge Rebuild	\$50,000
2.908	Eastern Passage WWTF - UV Bank Rebuilds	\$15,000
NEW	Eastern Passage WWTF - VFD Replacements	\$60,000
NEW	Eastern Passage WWTF - Secondary Clarifier Refits	\$150,000
NEW	Eastern Passage WWTF - Centrifuge Rebuild	\$50,000
Aerotech WWTF		
2.913	Aerotech WWTF - Dewatering - Centrifuge Rebuild	\$50,000
2.915	Aerotech WWTF - Lagoon - Building Repairs	\$75,000
NEW	Aerotech WWTF - Aerotech Drive Road Repairs	\$25,000
Timberlea WWTF		
2.509	Timberlea WWTF - Asset Renewal Program	\$150,000
NEW	Timberlea WWTF - RBC Air Scour Blower - VFD Replacement	\$10,000
NEW	Timberlea WWTF - Headworks - Epoxy Floor Coating	\$20,000
NEW	Timberlea WWTF - New Forklift	\$40,000
Community WWTFs		
2.918	Frame WWTF - New Membranes	\$35,000
NEW	Fall River WWTF - Replace Sand Filter Media	\$100,000
Biosolids Processing Facility		
2.737	Biosolids Processing Facility - Scissor Lift Replacement	\$25,000
2.926	Biosolids Processing Facility - Loader Replacement	\$300,000
2.927	Biosolids Processing Facility - LBB #1 Auger Replacement	\$125,000
2.931	Biosolids Processing Facility - Facility Upgrade - RFQ/RFP/Tender/Construction/Commissioning/Assessment	\$5,000,000
2.919	Biosolids Processing Facility - Gas Sensor Upgrade Program	\$15,000
Wastewater - Treatment Facility -- T O T A L		\$21,255,000

HALIFAX WATER
Capital Budget 2023/24
Wastewater

Project Number	Project Name	Project Cost
	<u>Wastewater - Energy</u>	
2.362	Energy Management Capital Program (Wastewater)	\$500,000
2.491	Pump Station HVAC Retro-Commissioning Program	\$100,000
	<u>Wastewater - Energy -- T O T A L</u>	\$600,000
	<u>Wastewater - Security</u>	
4.008	Security Upgrade Program (WW)	\$50,000
	<u>Wastewater - Security -- T O T A L</u>	\$50,000
	<u>Wastewater - Equipment</u>	
2.161	I&I Reduction (SIR) Program Flow Meters and Related Equipment	\$25,000
2.1039	New Bump Station	\$10,000
2.1040	New Pole Camera	\$35,000
2.1041	Two new fridge / sampling units	\$10,000
2.1042	Mobile Bypass Pump	\$215,000
2.451	Miscellaneous Equipment Replacement (WW)	\$120,000
2.1019	Mobile Generator Purchase	\$140,000
2.1020	Lateral Cutter	\$245,000
2.1021	Lateral Lining Equipment	\$320,000
2.1022	Push Camera	\$27,000
2.1029	Wet Well Wizard	\$145,000
	<u>Wastewater - Equipment -- T O T A L</u>	\$1,292,000
	<u>Wastewater - Corporate Projects -- T O T A L</u>	\$12,015,600
	<u>GRAND TOTAL - WASTEWATER</u>	\$73,827,600

HALIFAX WATER
Capital Budget 2023/24
Stormwater

Project Number	Project Name	Project Cost
Stormwater - Pipes		
1.038	Integrated Stormwater Projects - Program	\$1,200,000
1.102	Manhole Renewals SW Program	\$16,000
1.103	Catchbasin Renewals SW Program	\$65,000
1.135	Lateral Replacements SW Program	\$25,000
1.204	National Disaster Mitigation Program	\$50,000
1.145	Sullivan's Pond Storm Sewer System Replacement - Phase 2 Irishtown Rd to Harbour	\$500,000
1.246	Oathill Lake Stormwater System Renewal	\$260,000
1.188	Cogswell Redevelopment - SW Sewer Relocation	\$2,710,000
1.301	Rosedale Stormwater Sewer Renewal	\$100,000
1.302	Willett Street and Sybil Court Storm System Upgrade - Preliminary Engineering	\$100,000
1.303	Dartmouth Northwest Stormwater Renewal Program - Preliminary Engineering	\$265,000
Stormwater - Pipes -- T O T A L		\$5,291,000
Stormwater - Culverts/Ditches		
1.104	Driveway Culvert Replacement Program	\$1,200,000
1.279	Cross Road Culvert Replacement Program - Field discovery and operations construction	\$100,000
1.288	Cross Road Culvert Replacement Program - Engineering	\$100,000
1.289	Culvert Extension 20 French Mast Lane	\$100,000
1.221	Culvert Replacement - Murray Rd at Caldwell Rd	\$75,000
1.305	Culvert Replacement - Canterbury Lane (Near Civic 2)	\$55,000
1.306	Culvert Replacement - Dolomite Court, near civic 7	\$85,000
1.307	Culvert Replacement - Foster Avenue, near civic 45	\$100,000
1.308	Culvert Replacement - Philip Drive, near civic 196	\$55,000
1.309	Culvert Replacement - Robinson Drive, near civic 77	\$60,000
1.310	Culvert Replacement - Gold Lane, near civic 5	\$70,000
1.290	Culvert Replacement - Grant Line Road, near civic 2	\$60,000
1.311	Culvert Replacement - Lakecrest Drive, near civic 82	\$60,000
1.312	Culvert Replacement - Rising Sun Trail, near civic 4	\$95,000
1.313	Culvert Replacement - Highway 2, near civic 2774	\$55,000
1.316	Culvert Replacement - Glenwood Drive, near civic 120	\$65,000
1.315	Culvert Replacement - Glenwood Drive, near civic 80	\$65,000
1.314	Culvert Replacement - Glenwood Drive, near civic 50	\$65,000
Stormwater - Culverts/Ditches -- T O T A L		\$2,465,000
Stormwater - Corporate Projects -- T O T A L		\$2,891,400
GRAND TOTAL - STORMWATER		\$10,647,400

HALIFAX WATER
Capital Budget 2023/24
Corporate Projects

Project Number	Project Name	Project Cost
<u>Corporate - Information Technology</u>		
4.151	Capital Planning	\$450,000
4.105	Cityworks Upgrade	\$200,000
4.011	Computer Replacement Program	\$400,000
4.206	Cayenta Upgrades	\$200,000
4.255	General IT System Upgrades	\$300,000
4.207	Pension Implementation	\$425,000
4.208	DA3 – Program & Project	\$2,300,000
4.215	EE - Retention, Succession and Attraction I&T Plan	\$250,000
4.216	EE - New AMI Ert Read System - Neptune 360	\$250,000
4.217	EE- Equipment	\$250,000
4.218	EE- ITSM Process	\$250,000
4.219	EE - Electrical Safety Program	\$250,000
4.222	CS - Case Mgmt	\$200,000
4.226	ES - AMI Battery Replacement	\$350,000
4.228	QSC - Enterprise Architecture	\$250,000
4.229	QSC - Detection Equipment CSO-SSO	\$800,000
4.231	QSC - Detection Equipment SCADA Wan Update	\$150,000
4.232	QSC - Strategic Planning Business Cases	\$150,000
4.239	QSC - TS Work Tracking	\$250,000
4.258	Project Process Enhancements	\$250,000
4.259	Health and Safety	\$500,000
4.012	Network Upgrades	\$280,000
4.107	Customer Portal	\$200,000
4.243	Security Awareness (Cyber Awareness)	\$146,000
4.244	Incident Response	\$290,000
4.246	Vulnerability and Patch Management	\$487,000
4.25	Asset and Configuration Management (Asset Management)	\$161,000
4.252	MAG Remediation	\$300,000
4.195	New Service Account Compliance Program	\$200,000
4.189	Central Spread Spectrum Radio Network Replacement Program	\$100,000
4.191	ICS Cyber-Security Enhancements 2022-2023	\$200,000
4.192	PI System Enhancements 2022-2023	\$400,000
4.193	AMI Communications Upgrade 2022/2023	\$200,000
4.19	SCADA Equipment Renewals 2022-2023	\$200,000
<i>Corporate - Information Technology -- T O T A L</i>		\$11,589,000
<u>Corporate - GIS</u>		
4.040	GIS Data Program	\$250,000
4.039	GIS FORMS Project	\$150,000
4.105	GIS/Cityworks Upgrade Program	\$200,000
4.059	GIS Data Model (Utility Network Readiness)	\$250,000
4.155	Stormwater Billing Imagery Acquisition and Analysis	\$250,000
4.01	Service Gap Project	\$250,000
<i>Corporate - GIS -- T O T A L</i>		\$1,350,000

HALIFAX WATER
Capital Budget 2023/24
Corporate Projects

Project Number	Project Name	Project Cost
<u>Corporate - Asset Management</u>		
4.156	Asset Management Program Roadmap Update – Implementation	\$150,000
2.872	Wastewater Sewer Condition Assessment	\$445,000
1.254	Storm Sewer Condition Assessment	\$195,000
2.043	Corporate Flow Monitoring Program	\$1,200,000
4.158	Condition Assessment Program	\$500,000
4.163	Annual Asset Management Plan Update	\$20,000
4.168	Model Enhancements	\$70,000
4.113	Climate Change Management Program	\$200,000
4.169	Infrastructure Master Plan Update	\$1,500,000
4.256	Fairview Stormwater Model	\$75,000
4.257	Halifax Peninsula Combined Sewer Model Verification	\$50,000
Corporate - Asset Management -- T O T A L		\$4,405,000
<u>Corporate - Facility</u>		
4.187	Burnside Operations Centre	\$4,300,000
4.077	Building Capital Improvements	\$375,000
3.221	Energy Management Capital Program	\$100,000
Corporate - Facility -- T O T A L		\$4,775,000
<u>Corporate - SCADA & Other Equipment</u>		
4.154	Customer Meters - New and Replacement	\$400,000
Corporate - SCADA & Other Equipment -- T O T A L		\$400,000
<u>Corporate - Fleet</u>		
4.006	Fleet Upgrade Program Stormwater	\$508,000
4.006	Fleet Upgrade Program Wastewater	\$2,032,000
4.007	Fleet Upgrade Program Water	\$900,000
Corporate - Fleet -- T O T A L		\$3,440,000
GRAND TOTAL - Corporate Projects		\$25,959,000

<u>ALLOCATION BREAKDOWN:</u>		
Water - Corporate Projects - T O T A L		\$11,052,000
Wastewater - Corporate Projects -- T O T A L		\$12,015,600
Stormwater - Corporate Projects -- T O T A L		\$2,891,400
GRAND TOTAL - Corporate Projects		\$25,959,000

HALIFAX WATER

Capital Budget 2023/24

Summary of Routine Capital Expenditures included within Capital Budget

Project Number	Project Name	Project Cost	Asset Class
3.067	~ Valves Renewals	\$200,000	Water
3.068	~ Hydrants Renewals	\$75,000	Water
3.069	~ Service Lines Renewals	\$100,000	Water
3.39	Lead Service Line Replacement Program	\$2,000,000	Water
3.101	Miscellaneous Equipment Replacement (Water)	\$60,000	Water
4.007	Fleet Upgrade Program Water	\$900,000	Water
2.357	Manhole Renewals WW	\$60,000	Wastewater
2.358	Lateral Replacements WW (non-tree roots)	\$1,820,000	Wastewater
2.563	Lateral Replacements WW (tree roots)	\$585,000	Wastewater
2.451	Miscellaneous Equipment Replacement (WW)	\$120,000	Wastewater
4.006	Fleet Upgrade Program Wastewater	\$2,032,000	Wastewater
1.102	Manhole Renewals SW Program	\$16,000	Stormwater
1.103	Catchbasin Renewals SW Program	\$65,000	Stormwater
1.135	Lateral Replacements SW Program	\$25,000	Stormwater
4.006	Fleet Upgrade Program Stormwater	\$508,000	Stormwater
4.154	Customer Meters - New and Replacement	\$400,000	Corporate
4.012	Network Upgrades	\$280,000	Corporate
4.011	Computer Replacement Program	\$400,000	Corporate
GRAND TOTAL - Routine Capital Projects		\$9,646,000	

Appendix C: 2023/24 Operating Budget

HALIFAX WATER
STATEMENT OF EARNINGS - ALL SERVICES - NSUARB
PROPOSED OPERATING BUDGET
APRIL 1, 2023 to MARCH 31, 2024
(in thousands)

	APPROVED BUDGET APR 1/22 MAR 31/23	PROPOSED BUDGET APR 1/23 MAR 31/24
Operating revenues	\$ 152,765	\$ 168,896
Operating expenditures	<u>128,788</u>	<u>135,949</u>
Earnings from operations before financial and other revenues and expenditures	<u>23,977</u>	<u>32,947</u>
Financial and other revenues		
Interest	105	324
Other	<u>628</u>	<u>627</u>
	<u>733</u>	<u>951</u>
Financial and other expenditures		
Interest on long term debt	6,669	7,050
Repayment on long term debt	21,846	22,191
Amortization of debt discount	233	201
Dividend/grant in lieu of taxes	6,804	6,589
Other	<u>46</u>	<u>175</u>
	<u>35,598</u>	<u>36,207</u>
Loss for the year	<u>\$ (10,888)</u>	<u>\$ (2,309)</u>

HALIFAX WATER
STATEMENT OF EARNINGS - WATER - NSUARB
PROPOSED OPERATING BUDGET
APRIL 1, 2023 to MARCH 31, 2024
(in thousands)

	APPROVED BUDGET APR 1/22 MAR 31/23	PROPOSED BUDGET APR 1/23 MAR 31/24
Operating revenues		
Water	\$ 48,771	\$ 53,669
Public fire protection	7,628	8,083
Private fire protection	1,335	1,652
Bulk water stations	334	338
Late payment and other connection fees	264	252
Miscellaneous	296	258
	<u>58,629</u>	<u>64,252</u>
Operating expenditures		
Water supply and treatment	11,246	12,621
Water transmission and distribution	12,441	13,203
Engineering and technology services	4,667	4,703
Regulatory services	1,465	1,521
Corporate services	3,985	4,172
Administration	2,986	3,157
Depreciation and amortization	12,171	12,594
	<u>48,961</u>	<u>51,972</u>
Earnings from operations before financial and other revenues and expenditures	<u>9,667</u>	<u>12,281</u>
Financial and other revenues		
Interest	72	259
Other	473	465
	<u>545</u>	<u>724</u>
Financial and other expenditures		
Interest on long term debt	2,306	2,767
Repayment on long term debt	6,063	6,077
Amortization of debt discount	84	79
Dividend/grant in lieu of taxes	5,918	5,664
Other	16	130
	<u>14,387</u>	<u>14,717</u>
Loss for the year	<u>\$ (4,175)</u>	<u>\$ (1,712)</u>

**HALIFAX WATER
STATEMENT OF EARNINGS - WASTEWATER - NSUARB
PROPOSED OPERATING BUDGET
APRIL 1, 2023 to MARCH 31, 2024
(in thousands)**

	APPROVED BUDGET APR 1/22 MAR 31/23	PROPOSED BUDGET APR 1/23 MAR 31/24
Operating revenues		
Wastewater	\$ 81,608	\$ 87,450
Leachate and other contract revenue	491	494
Septage tipping fees	475	535
Overstrength surcharge	0	0
Airplane effluent	76	105
Late payment and other connection fees	247	234
Miscellaneous	253	223
	<u>83,149</u>	<u>89,040</u>
Operating expenditures		
Wastewater collection	13,096	13,554
Wastewater treatment	23,395	25,065
Engineering and technology services	7,109	7,096
Regulatory services	1,674	1,733
Corporate services	3,480	3,640
Administration	2,582	2,730
Depreciation and amortization	16,093	17,310
	<u>67,429</u>	<u>71,128</u>
Earnings from operations before financial and other revenues and expenditures	<u>15,721</u>	<u>17,912</u>
Financial and other revenues		
Interest	21	104
Other	155	162
	<u>176</u>	<u>266</u>
Financial and other expenditures		
Interest on long term debt	3,639	3,385
Repayment on long term debt	13,635	13,790
Amortization of debt discount	127	99
Dividend/grant in lieu of taxes	736	786
Other	30	45
	<u>18,167</u>	<u>18,104</u>
Earnings (loss) for the year	<u>\$ (2,270)</u>	<u>\$ 73</u>

HALIFAX WATER
STATEMENT OF EARNINGS - STORMWATER - NSUARB
PROPOSED OPERATING BUDGET
APRIL 1, 2023 to MARCH 31, 2024
(in thousands)

	APPROVED BUDGET APR 1/22 MAR 31/23	PROPOSED BUDGET APR 1/23 MAR 31/24
Operating revenues		
Stormwater site generated service	\$ 6,790	\$ 8,873
Stormwater right of way service	3,996	6,515
Late payment and other connection fees	104	141
Miscellaneous	97	75
	<u>10,987</u>	<u>15,604</u>
Operating expenditures		
Stormwater collection	5,281	5,382
Engineering and technology services	2,165	2,210
Regulatory services	1,727	1,806
Corporate services	349	368
Administration	287	303
Depreciation and amortization	2,588	2,780
	<u>12,398</u>	<u>12,849</u>
Earnings from operations before financial and other revenues and expenditures	<u>(1,411)</u>	<u>2,755</u>
Financial and other revenues		
Interest	12	(39)
Other	0	0
	<u>12</u>	<u>(39)</u>
Financial and other expenditures		
Interest on long term debt	723	899
Repayment on long term debt	2,148	2,324
Amortization of debt discount	22	24
Dividend/grant in lieu of taxes	149	139
Other	0	0
	<u>3,043</u>	<u>3,386</u>
Loss for the year	<u>\$ (4,442)</u>	<u>\$ (670)</u>

HALIFAX WATER
STATEMENT OF EARNINGS - REGULATED AND UNREGULATED ACTIVITIES - NSUARB
PROPOSED OPERATING BUDGET
APRIL 1, 2023 to MARCH 31, 2024
(in thousands)

	APPROVED BUDGET APR 1/22 MAR 31/23	PROPOSED BUDGET APR 1/23 MAR 31/24
REGULATED ACTIVITIES		
Operating revenues		
Water	\$ 48,771	\$ 53,669
Wastewater	81,608	87,450
Stormwater	10,785	15,388
Public fire protection	7,628	8,083
Private fire protection	1,335	1,652
Other	1,557	1,520
	<u>151,684</u>	<u>167,762</u>
Operating expenditures		
Water supply and treatment	11,214	12,615
Water transmission and distribution	12,441	13,203
Wastewater collection	13,014	13,458
Stormwater collection	5,281	5,382
Wastewater treatment	22,681	24,250
Engineering and technology services	13,942	14,001
Regulatory services	4,866	5,060
Corporate services	7,800	8,168
Administration	5,685	6,041
Depreciation and amortization	30,834	32,666
	<u>127,759</u>	<u>134,844</u>
Earnings from operations before financial and other revenues and expenditures	<u>23,925</u>	<u>32,918</u>
Financial and other revenues		
Interest	105	324
Other	32	30
	<u>137</u>	<u>354</u>
Financial and other expenditures		
Interest on long term debt	6,669	7,050
Repayment on long term debt	21,846	22,191
Amortization of debt discount	233	201
Dividend/grant in lieu of taxes	6,804	6,589
Other	0	129
	<u>35,552</u>	<u>36,161</u>
Loss for the year	<u>\$ (11,489)</u>	<u>\$ (2,888)</u>

	APPROVED BUDGET APR 1/22 MAR 31/23	PROPOSED BUDGET APR 1/23 MAR 31/24
UNREGULATED ACTIVITIES		
Operating revenues		
Septage tipping fees	\$ 475	\$ 535
Leachate and other contract revenue	491	494
Airplane effluent	76	105
Miscellaneous	38	0
	<u>1,080</u>	<u>1,134</u>
Operating expenditures		
Water supply and treatment	32	6
Wastewater collection	82	96
Wastewater treatment	714	815
Sponsorships and donations	73	73
Depreciation and amortization	18	18
Administration	110	98
	<u>1,029</u>	<u>1,105</u>
Earnings from operations before financial and other revenues and expenditures	<u>51</u>	<u>28</u>
Financial and other revenues		
Other	596	597
Financial and other expenditures		
Other	46	46
	<u>46</u>	<u>46</u>
Earnings for the year	<u>\$ 601</u>	<u>\$ 579</u>

Appendix D: 2023/24 Business Plan on a Page



2023/24 Business Plan



Our Purpose

Our purpose is to supply and safeguard sustainable, high-quality water services.

Our Vision

We will provide our customers with high quality water, wastewater, and stormwater services. Through adoption of best practices, we will place the highest value on public health, customer service, fiscal responsibility, workplace safety and security, asset management, regulatory compliance, and stewardship of the environment. We will fully engage employees through teamwork, innovation, and professional development.

Our Values

Relationships

We nurture relationships with our customers, our team members and the environment. We are engaged in the neighbourhoods we serve and we support continual learning across our team.

Innovation

We are among the top utilities across the continent and we are known on the global stage. We always ask, "how can we improve efficiency, sustainability, creativity and the customer experience?"

Accountability

We refuse to cut corners. We check in with our excellence standards regularly and look to one another for support. Safety steers our decision-making. We are driven to make our policies, decisions and projects as clear as our drinking water.

Protection

Halifax Water protects the health and well-being of our population. We exist to guard natural resources, finding ways to sustain our communities and environment.

Our Goals



People

We attract and retain high-quality team members in an inclusive and respectful work environment. We are committed to our customers and the communities where we live and work, determined to provide a high level of service and sustainable future through ongoing engagement.

- Increase institutional capacity by filling new and vacant positions critical to achieving utility objectives.
- Continue to implement Document Management System.
- Proactive and Constructive Approach to Labour Management.
- Continue to increase engagement with stakeholders and customers.
- Complete the year-two activities of the Diversity, Equity, and Inclusion Framework.



Health, Safety & Environment

The health and safety of our employees, contractors, and the public is our top priority. We are focused on a safety-first culture, working to provide healthy, safe, sustainable, and reliable services for our community.

- Adopt standards for psychological health and safe workplaces to continue to build a safe work culture.
- Develop a Climate Action Plan.
- Enhance wastewater modelling and develop a strategy to consistently meet regulatory reporting requirements regarding CSOs and SSOs.
- Finalize and implement the Water Safety Plan.
- Gain approvals, execute the contract, and start the design of the new Biosolids Processing Facility.
- Continue to advance the Water Supply Enhancement Program.



Financial & Regulatory Accountability

It is fundamental to ensure that Halifax Water has capacity to fund existing and future infrastructure. We prudently manage assets and operate our business by balancing value and customer service.

- Develop the next Five-Year Business Plan, including a long-term funding strategy for operating and capital budgets.
- Develop the detailed design for Cogswell District Energy System.
- Successfully implement the new Enterprise Resource Planning System (ERP) and Capital Management and Planning Information System.
- Develop and finalize an updated HRM-Halifax Water Service Level agreement.
- Develop a revised rate design and file required rate applications.



Operational Excellence

We are committed to service, reliability, and quality for our customers. Focused on safely and efficiently building, operating, and maintaining our critical infrastructure, we ensure a more sustainable community.

- Develop and Implement the Comprehensive Emergency Management Program.
- Keep significant capital projects and planning studies on track through regular monitoring and reporting.
- Enhance all capital-related areas (approval, budgeting, project planning and delivery).
- Develop the five-year Information & Technology Services Road Map and continue to improve cyber security.
- Develop dashboards and metrics to measure and support operational excellence and the level of service to our customers.



Proposed Halifax Water 23/24 Meeting dates

Board (all meetings at 9:00 a.m. except as noted):

- June 22, 2023
- July 13, 2023 – AGM (time and location TBD)
- September 28, 2023
- November 23, 2023
- January 25, 2024
- March 28, 2024

Board Workshops (full day meetings)

- April 28, 2023
- December 8, 2023

Board Executive (all meetings at 3:00 p.m.)

- June 2, 2023
- September 1, 2023
- November 3, 2023
- January 5, 2024
- March 1, 2024

Enterprise Risk Management (all meetings at 2:00 p.m.)

- June 7, 2023
- September 6, 2023
- November 8, 2023
- January 10, 2024
- March 6, 2024
- One meeting to be chosen for workshop

Audit and Finance (all meetings at 10:00 a.m.)

- June 8, 2023
- September 7, 2023
- November 9, 2023
- January 11, 2024
- March 7, 2024
- One meeting to be chosen for workshop

Environment, Health and Safety (all meetings at 2:00 p.m.)

- June 8, 2023
- September 7, 2023
- November 9, 2023
- January 11, 2024
- March 7, 2024
- One meeting to be chosen for workshop

TO: Colleen Rollings, P.Eng., PMP., Chair, and Members of the Halifax Regional Water Commission Board

SUBMITTED BY: Susheel Arora

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Susheel Arora
Date: 2023.01.20
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Susheel Arora, M.A.Sc., P.Eng. Director, Operations
Kenda
Signature

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Signature
Date: 2023.01.20
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Kenda MacKenzie, P.Eng. Director, Regulatory Services
Heidi
Schedler

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Date: 2023.01.20
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Heidi Schedler, K.C., Director, Governance and Human Resources

APPROVED:



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de Montbrun
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Louis de Montbrun, CPA, CA, Acting General Manager and CEO

SUBJECT: **Operational Performance Information Report**

INFORMATION REPORT

ORIGIN:

Regular update.

This report provides a high level overview of operational performance for the utility. The safety statistics results are first, followed by indicators and statistics for water and wastewater.

SAFETY STATISTICS – October 1, 2022 to December 31, 2022 (unless stated otherwise)

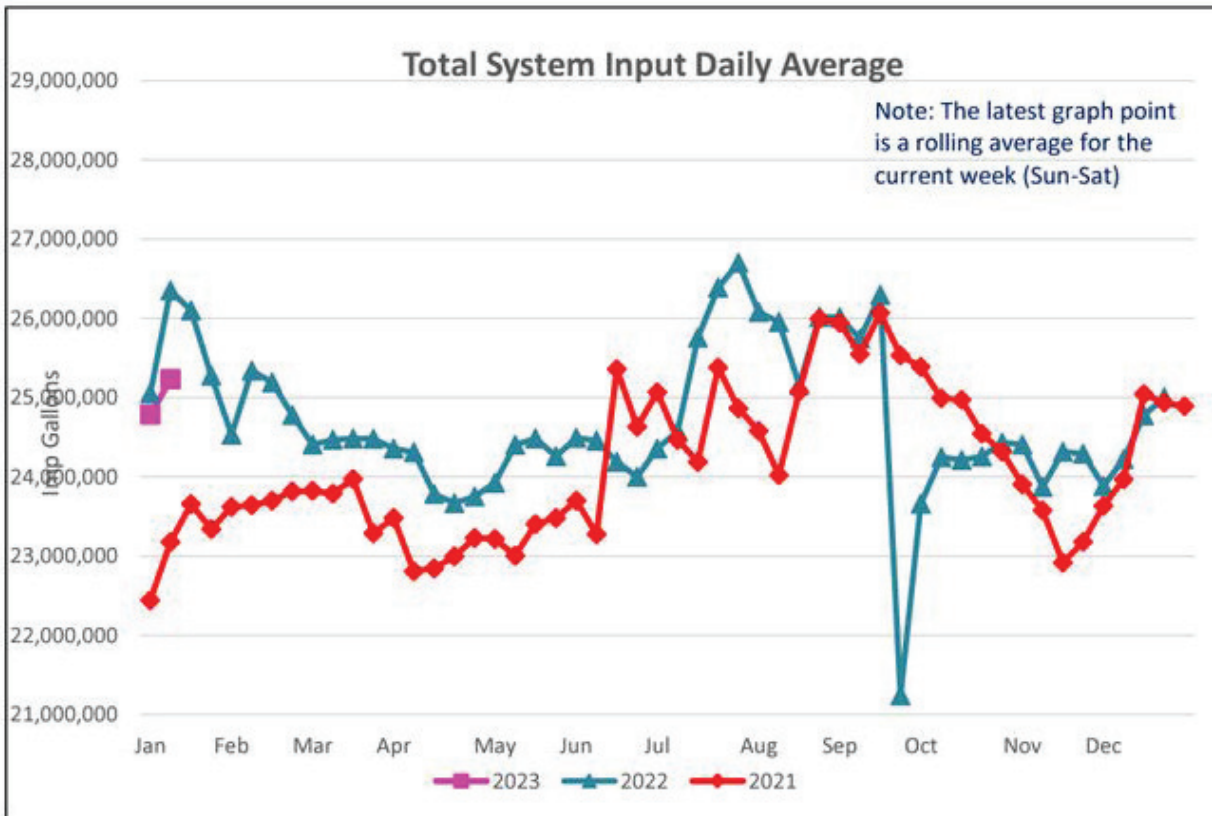
Organizational Metrics	Results	CBS 2022/23 Target
Lost Time Incident Reporting (LTIR) (Lost Time Cases x 200,000 / Total Employee Hours Worked)	0.61	3.5
Safe Driving (Year to Date) (Number of traffic accidents per 1,000,000 km driven)	3.76	4
Workplace inspections conducted **	64	not measured
Safety Talks conducted (reported at the end of each quarter)	58%	80-90%
High Potential/Near Miss	23	N/A
Employees on accommodation or gradual return to work	11	N/A
WCB claims	5	N/A
Work refusals	0	N/A
Incidents with written compliance orders	0	0-2
Employees trained or recertified before due date*** (courses taken: 586)	265	80-90%

* Percentage Data generated at year end due to variants in system data (i.e., multiple certifications required for one employee)

** The Corporate Balance Scorecard measures the average score on internal safety audits with a target of 85 - 95%. During the year, Halifax Water reports the number of workplace inspections conducted.

*** During the year, Halifax Water reports the number of employees trained or recertified before due date. The information is converted to a percentage at year-end.

AVERAGE DAILY WATER PRODUCTION



* The decrease from the end of September/beginning of October 2022 is due to the system being out for a significant amount of time during Fiona resulting in data gaps.

Regional Water Main Break/Leak Data		
Year	Total Breaks/Leaks	Current 12 Month Rolling Total (up to December 2022)
2021/22	232	203
2020/21	179	
2019/20	191	
2018/19	226	
2017/18	206	
Total	1034	
Yr. Avg.	206.8	

Water Accountability
Losses per Service Connection/Day (International Water Association Standard)
<i>Period Ending December 31, 2022</i>
Real Losses: 183 litres
CBS Target: 160 - 170

Water Safety Plan Objectives 2022-2023 Q3				
Objective	Total Sites	% Sites Achieving Target	All Sites: 90th Percentile < 15 µg/L	CBSC Awarded Points
Disinfection	65	100%	---	20
Total Trihalomethanes	25	80%	---	3
Haloacetic Acids	21	100%	---	20
Particle Removal	5	100%	---	20
Corrosion Control	101	---	2.8	20
Summary Total				83

Score: 83/100

Bacteriological Results (% Samples absent of Total Coliforms)

99.94%

ITEM # 1-I

Page 5 of 7
Halifax Water Board
January 26, 2023

specified in its Approval to Operate.

Wastewater Treatment Facility	Wastewater Treatment Facility Monthly Compliance Summary																								
	October-22								November-22								December-22								Toxicity
	CBOD ₅ (mg/L)		TSS (mg/L)		E. coli (counts/ 100mL)		pH		CBOD ₅ (mg/L)		TSS (mg/L)		E. coli (counts/ 100mL)		pH		CBOD ₅ (mg/L)		TSS (mg/L)		E. coli (counts/ 100mL)		pH		
	NSECC Limit	Avg.	NSECC Limit	Avg.	NSECC Limit	Avg.	NSECC Limit	Avg.	NSECC Limit	Avg.	NSECC Limit	Avg.	NSECC Limit	Avg.	NSECC Limit	Avg.	NSECC Limit	Avg.	NSECC Limit	Avg.	NSECC Limit	Avg.	NSECC Limit	Avg.	
Halifax	50	41	40	21	5000	7,068	6-9	6.6	50	39	40	22	5000	0	6-9	6.7	50	38	40	28	5000	0*	6-9	6.7	Not acutely lethal
Dartmouth	50	49	40	43	5000	264	6-9	6.6	50	42	40	29	5000	0	6-9	6.7	50	44	40	48	5000	0*	6-9	6.6	Not acutely lethal
Herring Cove	50	34	40	27	5000	242	6-9	6.8	50	19	40	18	5000	0	6-9	6.9	50	13	40	19	5000	18*	6-9	6.3	Not acutely lethal
Eastern Passage	25	8	25	6	200	20	6-9	6.8	25	7	25	6	200	0	6-9	6.8	25	6	25	11	200	0*	6-9	6.7	Not acutely lethal
Mill Cove	25	11	25	11	200	14	6-9	6.5	25	13	25	15	200	19	6-9	6.6	25	6	25	6	200	23	6-9	6.9	Not acutely lethal

* E.coli is not measured during Seasonal Disinfection November 1 to April 30 (except HCWWTF December 25 to January 2).

Wastewater Treatment Facility	Wastewater Treatment Facility Quarterly Compliance Summary																
	Q4 - October, November, December 2022																
	CBOD ₅ (mg/L)		TSS (mg/L)		E. coli (counts/100mL)		pH		Ammonia (mg/L)		Phosphorous (mg/L)		TRC (mg/L)		Dissolved Oxygen (mg/L)		Toxicity
NSECC Limit	Avg.	NSECC Limit	Avg.	NSECC Limit	Avg.	NSECC Limit	Avg.	NSECC Limit	Avg.	NSECC Limit	Avg.	NSECC Limit	Avg.	NSECC Limit	Avg.		
Springfield	20	4	20	5	200	44	6-9	6.6	-		-		-		-		-
Frame	20	4	20	1	200	10	6-9	7.3	-		-		-		-		-
Middle Musq.	20	7	20	5	200	31	6-9	7.1	-		-		-		-		-
Uplands	20	7	20	9	200	10	6-9	7.0	-		-		-		-		-
Aerotech	5	3	5	1	200	10	6-9	7.1	5.7 W 1.2 S	0.1	0.13	0.05	-		6.5	8.1	Not acutely lethal
North Preston	10	5	10	20	200	10	6-9	6.6	3	0.3	1.5	1.2	-		-		-
Lockview	20	5	20	6	200	34	6.5-9	6.5	8.0 S	2.9	1.2 S	0.3	-		-		-
Steeves (Wellington)	20	2	20	14	200	10	6.5-9	7.3	14.4 S	0.1	1.0 S	0.5	-		-		-
BLT	15	5	20	16	200	34	6-9	7.1	5 W 3 S	2	3 W 1 S	1	0.02 *	0.10	-		Not acutely lethal

NOTES & ACRONYMS:

CBOD₅ - Carbonaceous 5-Day Biochemical Oxygen Demand

TSS - Total Suspended Solids

* TRC - Total Residual Chlorine - Bureau Veritas can only measure 0.10 mg/L residual; results of 0.1 mg/L are compliant

BDL - Below Detection Limit

W / S - Winter / Summer compliance limits

NSECC requires monthly averages be less than the NSECC Compliance Limit for each parameter at Dartmouth, En Passage, Halifax, Herring Cove, Mill Cove

NSECC requires quarterly averages be less than the NSECC Compliance Limit for each parameter at Aerotech, Lockview, Middle Musquodoboit, Frame, BLT,

Uplands and Springfield Lake

NSECC requires annual averages be less than the NSECC Compliance Limit for each parameter at North Preston and Steeves

NON-COMPLIANCE EXPLANATIONS:

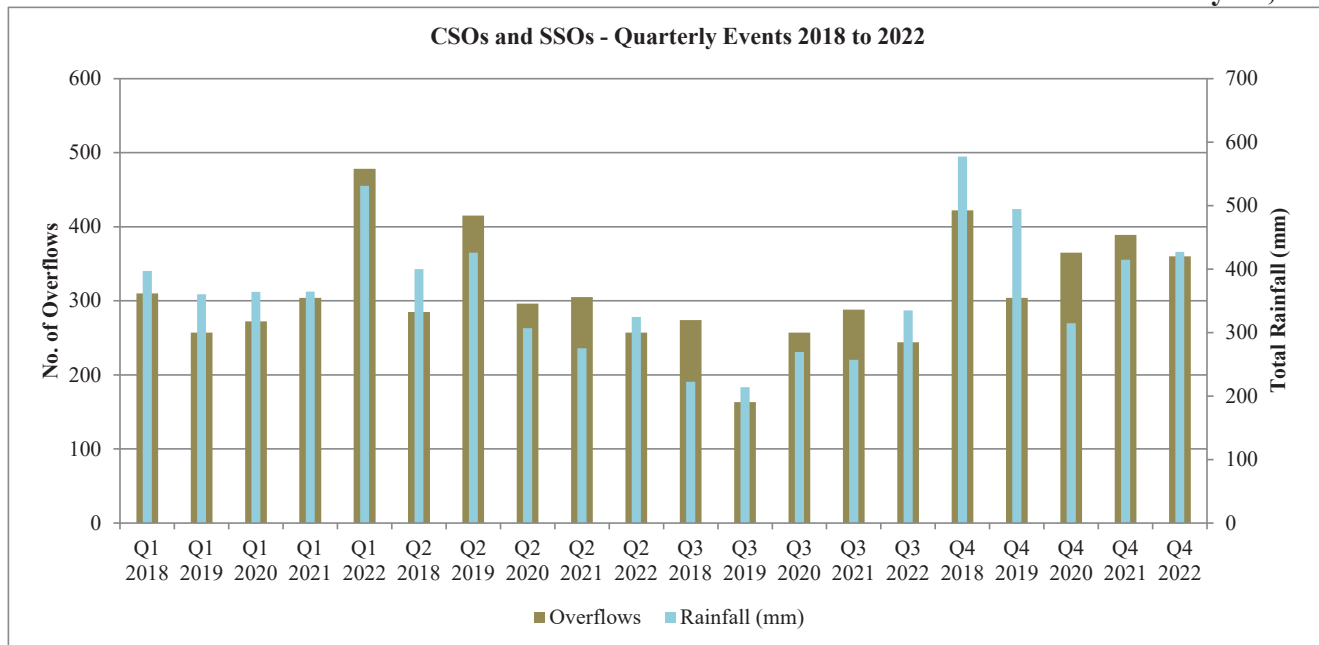
Halifax WWTF: Low flow, septic conditions in collection system along with high conductivity in influent.

Dartmouth WWTF: High influent flow events created operational difficulty.

North Preston WWTF: Post-weather event samples reflected treatment plant difficulties. Annual Average is compliant.

LEGEND

	NSECC Compliant
	NSECC Non-Compliant



NOTES & ACRONYMS: CSO - Combined Sewer Overflow SSO - Sanitary Sewer Overflow

Rainfall data is from Halifax Water's rain gauge at the Halifax WWTF.

There were thirty-seven overflows in Q4 beginning on days when there was no recorded rainfall, as follows:


1. October 2: The Combined Sewer Overflow (CSO) at Duffus St. Pump Station (PS) was due to a maintenance procedure at the Halifax WWTF.
2. October 7: The CSOs at Jamieson St. PS & CSO and Maitland St PS & CSO were due to rain on the previous day.
3. October 21: The CSOs at Maitland St. PS & CSO and Sackville St CSO were due to blockages caused by debris.
4. October 23: The CSO at Maitland St. PS & CSO was due to a blockage caused by debris.
5. October 30: The CSO at Duffus St. PS was due to rain on a previous day.
6. November 2: The CSO at Chain Rock PS & CSO was due to a shutdown of the pumps AST PS.
7. November 15: The CSO at Duffus St. PS was due to rain on a previous day. The CSO at Sackville St. CSO was due to a blockage caused by debris.
8. November 17: The CSOs at Sackville St. CSO and Young St. CSO were due to blockages caused by debris. The CSOs at Jamieson St. PS & CSO and Maitland St. PS were due to rain on the previous day.
9. November 21: The CSO at Cuisack St. CSO was due to a blockage caused by debris.
10. November 27: The CSO at Maitland St. PS & CSO was due to a blockage caused by debris.
11. November 29: The CSO at Melva St. PS & CSO was due to a power outage.
12. November 30: The Sewer System Overflow (SSO) at Mill Cove Surge Tank was due to rain on a previous day.

13. December 5: The SSO at Mill Cove Surge Tank was due to rain on the previous day.
14. December 6: The SSOs at Mill Cove Surge Tank were due to rain on a previous day. The CSO at Sackville St. CSO was due to rainfall.
15. December 11: The SSO at Mill Cove Surge Tank was due to rain on a previous day. The SSO at Beaver Crescent PS was due to a forcemain break on Caldwell Road. All flows were diverted.
16. December 12: The CSO at Jamieson St. PS & CSO was due to a combination of tidal influence and valves temporarily blocked by debris.
17. December 14: The SSO at Beaver Crescent PS was due to a forcemain break on Caldwell Road. All flows were diverted. The CSO at Sackville St. CSO was due to a blockage caused by debris.
18. December 15: The SSO at Beaver Crescent PS was due to a forcemain break on Caldwell Road. All flows were diverted. The CSO at Sackville St. CSO and the CSO at Chain Rock PS & CSO were due to blockages caused by debris.
19. December 16: The CSO at Lyle St. CSO was due to a blockage caused by debris.
20. December 27: The CSO at Melva St. PS & CSO was due to a blockage caused by debris.

Halifax Water Compliance Statement
Quarterly Certification


For the period of October 1, 2022 to December 31, 2022

We hereby certify that the Halifax Regional Water Commission is current in making all statutory remittances for payroll taxes, Harmonized Sales Tax and other remittances as required under the laws of the Government of Canada and its Provinces (the significant remittances are noted in the appendix) and that all significant legal claims have been disclosed.


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de Montbrun
Date: 2023.01.20
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Louis de Montbrun, CPA, CA
Acting General Manager/CEO

**Alicia
Scallion**


Digitally signed by Alicia
Scallion
Date: 2023.01.20
08:52:21 -04'00'

Alicia Scallion, CPA, CA
Acting Director, Corporate
Services/CFO

**Heidi
Schedler**


Digitally signed by Heidi
Schedler
Date: 2023.01.20
09:54:29 -04'00'

Heidi Schedler
Director, Governance and Human Resources

Dated:

January 20, 2023

Halifax Water Compliance Statement
Quarterly Certification
Appendix I

Significant statutory remittances for payroll taxes, Harmonized Sales Tax and other remittances as required under the laws of the Government of Canada and its Provinces for the Halifax Regional Water Commission.

Statutory Payroll Remittances

- **Canada Revenue Agency (CRA)** - Statutory employee payroll deductions and employer related contributions for:
 - Income Tax
 - Canada Pension Plan (CPP)
 - Employment Insurance (EI)
- **Workers' Compensation Board of Nova Scotia (WCB)** – Employer remittance based on employee payroll

Other Payroll Remittances

- **Northern Trust** - Employee payroll deductions and employer contributions to Halifax Water and HRM defined benefit pension plans
- **Industrial Alliance** – employer and employee contributions to defined contribution pension plan
- **Medavie Blue Cross & SSQ** – employee payroll deductions and employer related contributions for Health & dental, LTD, and Life benefit coverage, and payroll deductions for AD&D
- **Canadian Union of Public Employees** – Employee payroll deductions of union dues
 - CUPE Local 227
 - CUPE Local 1431

HST and Other Remittances

- **Canada Revenue Agency (CRA)** - Harmonized Sales Tax (HST) is filed online and a refund issued as HST paid is greater than HST collected
- **Workers' Compensation Board of Nova Scotia (WCB)** – Remittance for sub-contractors

Quarterly Remittance Certification
Appendix II

Period: October to December 2022

<u>Vendor</u>	<u>Vendor #</u>	<u>Items Remitted</u>	<u>Total remitted</u>	<u>Exceptions</u>
Statutory Payroll Remittances				
CRA	174	Tax, CPP, EI, WCB	<u>\$3,184,543.58</u>	<u></u>
Other Payroll				
Northern Trust	1215	HW Pension Plan	<u>\$ 1,801,214.32</u>	<u></u>
Northern Trust	1216	HRM Pension Plan	<u>\$ 238,685.90</u>	<u></u>
Manulife Financial	1171	Bedford Pension Plan	<u>\$ 2,153.26</u>	<u></u>
Industrial Alliance	2971	DCPP	<u>\$ 19,682.56</u>	<u></u>
Medavie Blue Cross	340, 3101	Health, Dental, Life, LTD	<u>\$ 961,272.32</u>	<u></u>
SSQ Insurance	429	AD&D	<u>\$ 5,429.06</u>	<u></u>
CUPE	160	Union Dues 1431	<u>\$ 38,013.31</u>	<u></u>
CUPE	3517	Union Dues 227	<u>\$ 59,487.14</u>	<u></u>

Other payroll items remitted in accordance with stated requirements:

United Way, Credit Union, Garnishments (WCB, CRA, Family Court, Sherriff's Office),
Water for People, Salvation Army, Racially Visible Caucus

HST and Other


CRA	N/A	HST (refunds)	<u>\$ 4,213,396.30</u>	<u></u>
Receiver General	210	WCB subcontractors	<u>\$ 109.04</u>	<u></u>

Exceptions, errors and/or late remittances

TO: Colleen Rollings, P.Eng., PMP, Chair, and Members of the Halifax Regional Water Commission Board as Trustees of the Halifax Regional Water Commission Employees' Pension Plan

SUBMITTED BY: Alicia Scallion
Digitally signed by Alicia Scallion
Date: 2023.01.20 08:49:52 -04'00'

Alicia Scallion, CPA, CA, Acting Director, Corporate Services / CFO

APPROVED: 
Digitally signed by Louis de Montbrun
Date: 2023.01.20 11:57:44 -04'00'

Louis de Montbrun, CPA, CA, Acting General Manager

DATE: January 3, 2023

SUBJECT: **Halifax Regional Municipality Master Trust Investment Performance, Third Quarter, 2023**

INFORMATION REPORT

ORIGIN

The Halifax Regional Municipality Master Trust (the "Master Trust") investment performance is reported to the Halifax Regional Water Commission Board as Trustees of the Halifax Regional Water Commission Employees' Pension Plan periodically throughout the year.

BACKGROUND

None

DISCUSSION

The tables below and the attached Investment Report provide a performance update for the Third Quarter of 2022 (January to September) for the Master Trust, of which Halifax Regional Water Commission Employees' Pension Plan (the "Plan") is a part. The fair value of the investment in the Master Trust is determined and updated at year-end, and the Plan's share in the Master Trust at December 31, 2021 was 6.5%, totaling \$173.0 million.

The Master Trust earned 1.50% in the Third Quarter, which outperformed the Third Quarter policy benchmark of 0.29% by 1.21%. The return for the 1-year period ended September 30, 2022, is

-0.77%, outperforming the 1-year policy benchmark of -5.75% by 4.98%. Other historical returns are provided in Table 1 below.

Table 1 – Returns

	Current				Since
	Quarter		3 - Year	4 - Year	Inception
	(Jul to Sep)	1-Year	Annualized	Annualized	(Oct 1999)
Fund Return	1.50%	-0.77%	5.89%	6.17%	6.91%
Policy Benchmark	0.29%	-5.75%	2.81%	3.38%	5.26%
Excess Return	1.21%	4.98%	3.08%	2.79%	1.65%

The total fund returns are subject to investment management fees and plan expenses.

As at September 30, 2022, the Master Trust was in compliance with the Statement of Investment Policies and Procedures (SIP&P), and a summary of the asset mix is provided in Table 2 below:

Table 2– Asset Mix, as at September 30, 2022

Asset:	Actual	Policy Benchmark
Cash & Equivalents	0.3%	0.0%
Canadian Equity	3.7%	3.7%
Global Equity	30.9%	36.2%
Fixed Income	19.6%	25.0%
Public Market Alternatives	4.7%	4.1%
Private Investments	40.8%	31.0%

ATTACHMENT

2022 Third Quarter Halifax Regional Municipality Master Trust Investment Report

Report Prepared by:

**Heather
Britten**

Digitally signed by
Heather Britten
Date: 2023.01.20
12:05:15 -04'00'

Heather S. Britten, Quality Assurance Officer (902) 201- 6132



Investment Report

Q3 2022

Executive Summary

Compliance

- As at September 30, 2022, the Master Trust (MT) was in compliance with the SIP&P.

Funded Status

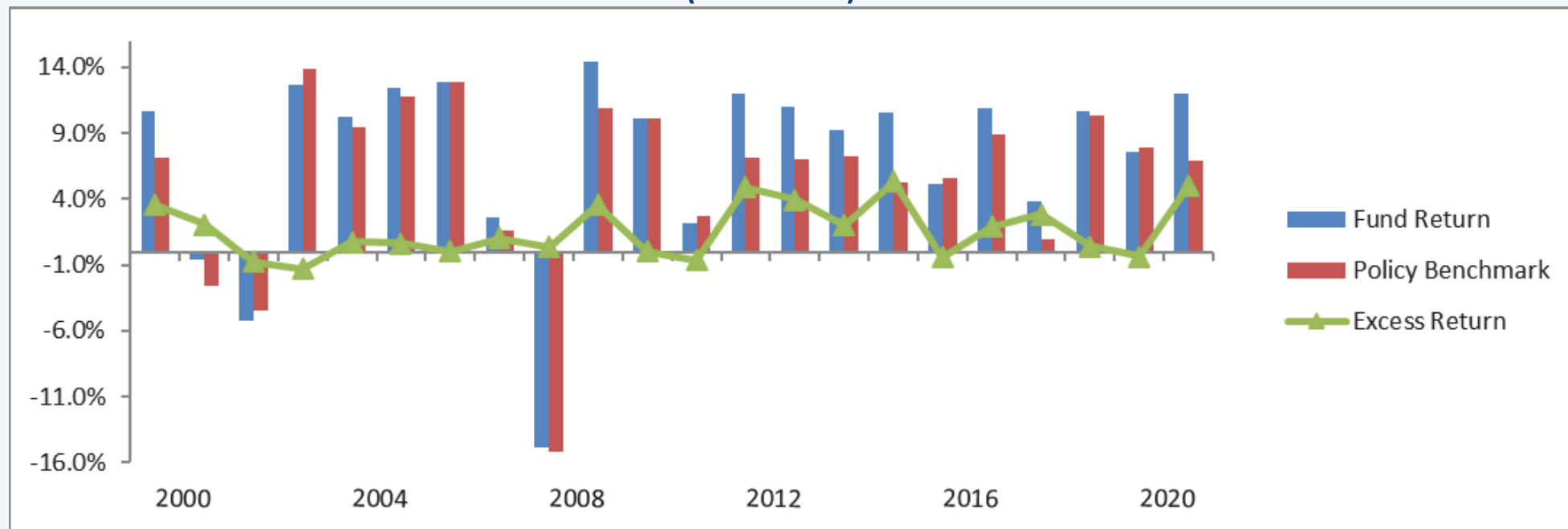
- As at December 31, 2021, the going concern funded ratio and transfer ratio are 99.3% and 71.2% respectively.

Master Trust Performance (net of fees)

- In Q3, the MT earned 1.50%, outperforming the policy benchmark return by 1.21%.
- For the one-year period ending September 30, 2022, the MT earned -0.77% outperforming the policy benchmark by 4.98%.
- The MT earned an annualized return of 6.17% over the 4-year period ending September 30, 2022, outperforming the policy benchmark by 2.79% annualized.
- Since inception (October 1999), the MT earned 6.91% annualized, outperforming the Plan's discount rate of 6.45%. The table on the next slide summarizes the calendar year returns for the MT.

Executive Summary – Cont.

Calendar Returns
(net of fees)



	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Fund Return	10.71%	-0.56%	-5.21%	12.60%	10.27%	12.38%	12.88%	2.60%	-14.83%	14.47%	10.12%	2.11%	12.01%	10.94%	9.27%	10.59%	5.13%	10.85%	3.81%	10.69%	7.59%	11.98%
Policy Benchmark	7.12%	-2.64%	-4.50%	13.91%	9.50%	11.76%	12.85%	1.58%	-15.20%	10.92%	10.08%	2.71%	7.12%	7.01%	7.24%	5.27%	5.55%	8.91%	0.96%	10.28%	7.92%	6.90%
Excess Return	3.59%	2.08%	-0.71%	-1.31%	0.77%	0.62%	0.03%	1.02%	0.37%	3.55%	0.04%	-0.60%	4.89%	3.93%	2.03%	5.32%	-0.42%	1.94%	2.85%	0.41%	-0.33%	5.08%

Executive Summary – Cont.

Added Value

- In Q3 of 2022, the MT outperformed its policy benchmark by 1.21%.

Attribution: Private Investments +1.10%, Emerging Market Equity +0.22%, International Equity +0.13%, EAFE Equity +0.03%, Global Credit +0.01%, Canadian Equity -0.02%, Global Small Cap Equity -0.02%, Universe Bonds -0.03%, World Equity -0.04%, US Equity -0.05%, Public Market Alternatives -0.06%, and Cash Equivalents -0.06%.

Total Fund Net Returns

As of September 30, 2022

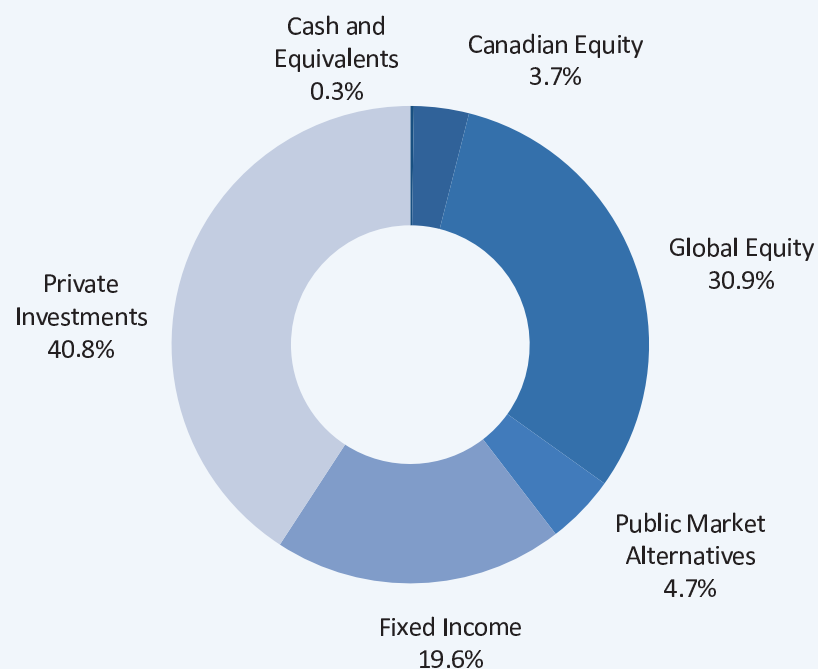
	Q3	1-Year	3-Year Annualized	4-Year Annualized	Since Inception (Oct 1999)
Fund Return	1.50%	-0.77%	5.89%	6.17%	6.91%
Policy Benchmark*	0.29%	-5.75%	2.81%	3.38%	5.26%
Excess Return	1.21%	4.98%	3.08%	2.79%	1.65%

* Effective September 30, 2022, the Policy Benchmark is 3.7% S&P/TSX Index + 7.5% S&P 500 (\$CAD) + 2.9% MSCI EAFE Index (\$CAN) + 3.3% MSCI Emerging Markets (\$CAN) + 10.9% MSCI World (\$CAN) + 15.7% FTSE TMX Canada Universe Bond + 5.8% 3 Month Bankers Acceptance + 31.0% Private Investments + 3.7% MSCI ACWI ex USA (\$CAD) + 4.8% MSCI ACWI (\$CAD) + 3.1% MSCI World Small Cap (\$CAD) + 4.1% 3 Month Bankers Acceptance+3% + 3.50% Global Credit Custom BM

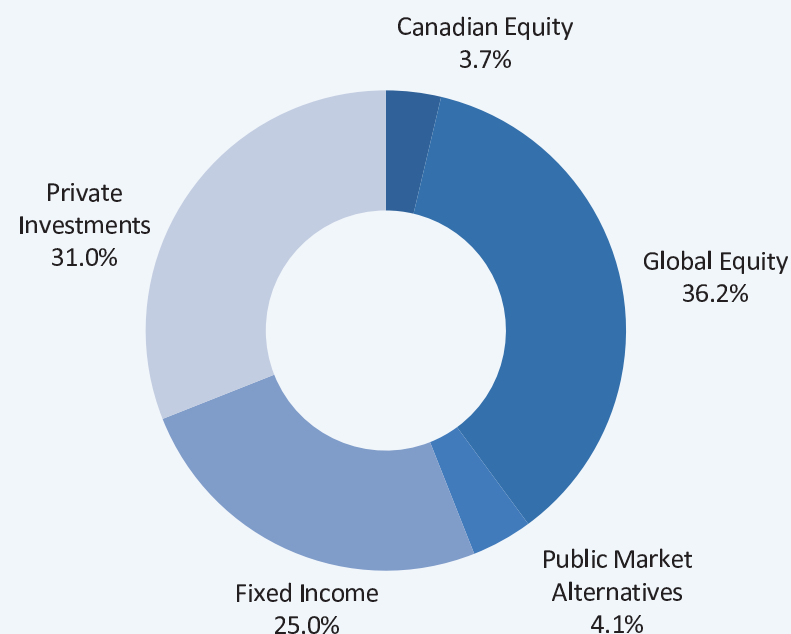
Fund returns are shown net of fees and expenses

Asset Mix

Asset Mix
As of September 30, 2022



Asset Mix Policy
As of September 30, 2022



* Effective September 30, 2022, the Policy Benchmark is 3.7% S&P/TSX Index + 7.5% S&P 500 (\$CAD) + 2.9% MSCI EAFE Index (\$CAN) + 3.3% MSCI Emerging Markets (\$CAN) + 10.9% MSCI World (\$CAN) + 15.7% FTSE TMX Canada Universe Bond + 5.8% 3 Month Bankers Acceptance + 31.0% Private Investments + 3.7% MSCI ACWI ex USA (\$CAD) + 4.8% MSCI ACWI (\$CAD) + 3.1% MSCI World Small Cap (\$CAD) + 4.1% 3 Month Bankers Acceptance+3% + 3.50% Global Credit Custom BM

Fund returns are shown net of fees and expenses

Equity Market Returns

As of September 30, 2022

Index	Q3	1-Year	3-Year Annualized	4-Year Annualized
Canadian Equity (S&P/TSX Composite Index)	-1.41%	-5.39%	6.59%	6.71%
US Equity (S&P 500 C\$)	1.32%	-8.32%	9.51%	8.82%
EAFE Equity (MSCI EAFE C\$)	-3.45%	-18.80%	-0.61%	-0.20%
Emerging Markets (MSCI EM C\$)	-5.81%	-22.03%	-0.85%	-0.55%
World Equity (MSCI World C\$)	-0.07%	-12.83%	5.86%	5.47%
International Equity (MSCI ACWI ex US C\$)	-4.03%	-18.83%	-0.29%	0.07%
ACWI Equity (MSCI ACWI C\$)	-0.74%	-13.95%	5.04%	4.74%
Global Small Cap Equity (MSCI World Small Cap C\$)	0.90%	-18.67%	3.90%	2.10%

*Source: Northern Trust

Public Equity – Q3 Summary

- The MT's Equity portfolio returned -0.32% during the quarter, outperforming the equity policy benchmark return of -1.01% by 0.69%, primarily due to performance of Emerging and International equities.

As of September 30, 2022 (C\$ returns)

Equity Mandate	Q3			One year		
	Plan	Benchmark	Relative Performance	Plan	Benchmark	Relative Performance
Canadian Equity	-1.62%	-1.41%	-0.21%	-5.99%	-5.39%	-0.60%
US Equity	0.97%	1.32%	-0.35%	-7.37%	-8.92%	1.55%
EAFE Equity	-3.13%	-3.45%	0.32%	-20.41%	-18.80%	-1.61%
Emerging Equity	0.90%	-5.81%	6.71%	-20.97%	-22.03%	1.06%
World Equity	-0.36%	-0.07%	-0.29%	-12.23%	-12.83%	0.60%
International Equity	-0.81%	-4.03%	3.22%	-21.73%	-18.83%	-2.90%
Global Small Cap Equity	0.61%	0.90%	-0.29%	-17.97%	-18.67%	0.70%
ACWI Equity	-0.73%	-0.74%	0.01%	-11.57%	-13.95%	2.38%
Total	-0.32%	-1.01%	0.69%	-13.47%	-14.09%	0.62%

*Source: Northern Trust.

Bond Market Returns

As of September 30, 2022

Index	Q3	1-Year	3-Year Annualized	4-Year Annualized
Canadian Universe Bonds (FTSE TMX Canada Universe Bond)	0.52%	-10.48%	-2.51%	0.41%
Canadian Government Bonds (FTSE TMX Canada Universe Government)	0.62%	-10.73%	-2.91%	0.17%
Canadian Corporate Bonds (FTSE TMX Canada Universe Corporate)	0.23%	-9.80%	-1.42%	1.07%

- Government bonds have outperformed Corporate bonds and the broader Universe over the Q3 period.
- Corporate bonds have outperformed Government bonds and the broader Universe over 1-year periods, 3-year periods and 4-year periods.

*Source: Northern Trust

Public Fixed Income – Q3 Summary

- The MT's diversified Fixed Income portfolio earned 0.25%, which underperformed its benchmark return of 0.34% by 0.09%.

As of September 30, 2022 (C\$ returns)

	Q3			One year		
	Plan	Benchmark	Relative Performance	Plan	Benchmark	Relative Performance
Cash & Cash Equivalents	1.60%	0.96%	0.64%	2.58%	1.91%	0.67%
North American Credit	0.50%	0.23%	0.27%	-3.39%	-9.80%	6.41%
Canadian Government Bonds	0.58%	0.62%	-0.04%	-10.04%	-10.73%	0.69%
Global Bonds	-1.56%	-1.96%	0.40%	-7.10%	-4.00%	-3.10%
Total	0.25%	0.34%	-0.09%	-5.47%	-6.25%	0.78%

*Source: Northern Trust

Private Investments – Q3 Summary

- Private Investments returned 4.13% in Q3, versus a benchmark of 1.61%, outperforming by 2.52%.

As of September 30, 2022 (C\$ returns)

	Q3	1-Year	3-Year Annualized	4-Year Annualized	Since Inception (Oct 1999)
Private Investments	4.13%	19.78%	14.15%	13.49%	12.90%
Policy Benchmark	1.61%	6.45%	6.36%	6.30%	6.47%
Excess Return	2.52%	13.33%	7.79%	7.19%	6.43%

The policy benchmark for the private investment portfolio is the Going Concern Discount rate. The 2022 and 2021 rate is 6.45%, 2020 rate is 6.25%, 2019 is 6.1%, 2018 is 6.2%, 2017 is 6.4%, 2016 is 6.5%, 2015 is 6.55%, 2014 is 6.5%, 2013 is 6.25%, 2007-2012 is 6.75% and prior to 2007 is 7.4% respectively.

Liquidity

	Estimated 2022 Amounts (\$ mln)
Contributions**	\$ 101.50
Dividend & Distribution Income**	\$ 9.00
Interest Income**	\$ 10.10
Other Income**	\$ 0.20
Benefit Payments**	\$ (128.70)
Expenses**	\$ (9.50)
Total Annual Net CF	\$ (17.40)
Liquid Investments*	\$ 1,284.20
Actual Net Distributions	\$ 87.40
Projected Net Distributions***	\$ 41.00
Actual Net Capital Calls	\$ (151.40)
Projected Net Capital Calls***	\$ (55.00)
Total CF + Liquid Investments + Private Sales – Capital Calls	\$ 1,188.80

* Liquid investments as at November 7, 2022. Includes all publicly traded equity and fixed income investments


** Contributions, Benefit Payments, Income, and Expense estimates based on actual amounts from January to September 2022, annualized for full year

***Forecasted based on 2022 actuals

TO: Colleen Rollings, P. Eng., PMP, Chair and Members of the Halifax Regional Water Commission Board, as Trustees of the Halifax Regional Water Commission Employees' Pension Plan

SUBMITTED BY: **Heather**
p.p. Britten Digitally signed by
Heather Britten
Date: 2023.01.20
12:07:34 -04'00'

Gary McPherson, Chair and Members of the Pension and Benefits Advisory Committee

APPROVED:  Digitally signed by Louis
de Montbrun
Date: 2023.01.20
12:02:01 -04'00'

Louis de Montbrun, CPA, CA, Acting General Manager and CEO

DATE: January 4, 2023

SUBJECT: **2022 Annual Report - Pension and Benefits Advisory Committee**

ORIGIN

Activities of the Pension and Benefits Advisory Committee (the "Committee") are reported to the Halifax Regional Water Commission Board of Commissioners (the "Administrator") annually, in accordance with the Terms of Reference of the Committee.

RECOMMENDATION

None

BACKGROUND

As defined in the Terms of Reference of the Committee, its objectives and responsibilities include:

- Monitor the administration of the pension and benefits plans (the "Plans") to ensure that the Plans are conducted in a manner consistent with the provisions of the official pension plan documents, group insurance and other benefit plan documents, and governing legislation
- Make recommendations to the Administrator respecting the administration of the Plans
- Promote awareness and understanding of the Plans on the part of members, and persons receiving pension or other benefits under the Plans

- Assist with the monitoring of the Plans activities, and provide input in this regard, through review of audited financial statements, actuarial valuations, key contracts and agreements, reports on investment performance and other performance metrics
- Review annual communication plans to all stakeholders, which minimally will include a plan for:
 - ✓ Annual pension statements
 - ✓ Newsletters and articles in the Pipeline Post
 - ✓ Annual general meeting for pension plan members, and
 - ✓ Educational sessions for pre-retirement.

The purpose of this report is to provide a summary of the Committee's activities during 2022.

DISCUSSION

The Committee met as follows during 2022:

- | | |
|---------------------|---------|
| • January 11, 2022 | 2:00 pm |
| • March 18, 2022 | 9:00 am |
| • May 11, 2022 | 2:00 pm |
| • December 20, 2022 | 1:00 pm |

All meetings were held virtually via MS Teams.

Table 1 below provides a summary of attendance at Committee meetings held during 2022.

Table 1

Pension and Benefits Advisory Committee Attendance Report - 2022					
		January 11	March 18	May 11	December 20
Representatives:					
Gary McPherson, Chair	Local 227	✓	✓	✓	✓
Allan Campbell, Vice Chair	Non-Union	✓	✓	✓	n/a
Martin Austin	Local 227	✓	✓	✓	✓
Paul Taylor	Local 1431	✓	✓	✓	✓
Chris McNeil	Local 1431	-	✓	✓	n/a
Anna McCarron	Local 1431	n/a	n/a	n/a	✓
Cathie O'Toole	Management	✓	✓	✓	-
Louis de Montbrun	Management	✓	-	✓	✓
Heather Britten	Non-Union	✓	-	✓	✓
Karen Kearney	Non-Union	n/a	n/a	✓	✓
Cheryl Little	Pensioners	✓	✓	✓	-
Alternates:					
John Legge	Local 227	✓	✓	-	✓
Anna McCarron	Local 1431	✓	-	✓	n/a
Joel Haley	Non-Union	n/a	n/a	n/a	✓
Blaine Rooney	Pensioners	n/a	n/a	✓	✓
Observers:					
Rochelle Bellemare	Manager, HR	✓	✓	✓	✓
Administration Support					
Amanda Joudrey		✓	✓	✓	-
Legend:		✓	- Present		
		-	- Absent		
		n/a	- Not a Member of the Committee / not in that position, at that time		

Key issues the Committee addressed during the year included:

- Life, Dependent Life and Long-term Disability (LTD) insurance renewals.
- Proposed enhancements to health benefits including:
 - ✓ Increase in coverage for mental health
 - ✓ Short Term Disability
 - ✓ Increase dental coverage for preventative care and major restorative care
- Benefit renewals for health and dental.
- Continuing education for Committee members.
- Review and discussion regarding the proposed assumptions for the Actuarial Valuation, January 1, 2022.

- Review the Actuarial Valuation results as at January 1, 2022 and based on the results recommended a decrease in the employee and employer contribution rate from 10.34% to 9.60% effective January 1, 2022.
- Additional optional benefits including Critical Illness Insurance

Main accomplishments of the Committee for the year were:

1. Through Mercer, Halifax Water was able to successfully negotiate benefit renewals for health and dental, with increases of 8.6% and 10.1% respectively. The renewals became effective June 1, 2021.
2. Through Mercer, Halifax Water was able to successfully negotiate Life, Dependent Life and LTD insurance renewals. There were decreases to both Life and Dependent Life rates of 4.3% each. LTD rates increased by 13.8%. These rates became effective April 1, 2022.
3. The review of various pension and benefit communication initiatives during the year prepared by Halifax Water staff such as, various articles of interest, the annual Pension Plan budget, and the Pension Plan financial reports that go to the Administrator quarterly. The purpose of these initiatives was to provide members:
 - i. Updated information regarding the financial health of the Pension Plan.
 - ii. Overview of the Pension Plan.
 - iii. Overview of health, dental and other benefits accessible to members.

SUBSEQUENT EVENTS AND FUTURE INITIATIVES

- Review and provide recommendations as required relating to benefit plan enhancements
- Continuing education for Committee members, including guest speakers at scheduled meetings

FORMAL MOTIONS TO THE ADMINISTRATOR


At the meeting of May 11, 2022, a motion was unanimously passed whereby the Committee recommends that the Administrator approve the results of the January 1, 2022, Actuarial Valuation resulting in a contribution rate change from 10.34% to 9.60%.

Report Prepared by:	Heather Britten	<small>Digitally signed by Heather Britten Date: 2023.01.20 12:07:58 -04'00'</small>
<hr style="border: 0; border-top: 1px solid black; margin: 5px 0;"/> Heather Britten, B. Comm. Quality Assurance Officer (902) 201- 6132		

TO: Colleen Rollings, P.Eng., PMP., Chair and Members of the Halifax Regional Water Commission Board

SUBMITTED BY: Alicia Scallion
Digitally signed by Alicia Scallion
Date: 2023.01.20 09:59:14 -04'00'

Alicia Scallion, CPA, CA
Acting Director, Corporate Services/CFO

APPROVED: 
Digitally signed by Louis de Montbrun
Date: 2023.01.20 12:04:42 -04'00'

Louis de Montbrun, CPA, CA
Acting General Manager and CEO

DATE: January 20, 2023

SUBJECT: 2022/23 Cost Containment Initiatives Update

INFORMATION REPORT

ORIGIN

- The Cost Containment Process as approved by the Halifax Regional Water Commission (Halifax Water) Board, October 3, 2013.
- April 14, 2015, Nova Scotia Utility and Review Board (NSUARB) Decision - Halifax Regional Water Commission General Rate Application (M06540).

BACKGROUND

The process for cost containment as approved by the Halifax Water Board on October 3, 2013, called for the implementation of a number of recommended actions that would assist Halifax Water in addressing the Nova Scotia Utility and Review Board's (NSUARB) request for a more rigorous approach to cost containment. One key recommendation was the establishment of a reporting structure whereby, *“on a quarterly basis, the monthly financial report of the HRWC Board will also include an update on Cost Containment Initiatives”*.

In the decision on the 2015 rate hearing, the NSUARB directed Halifax Water to file annual reports on its efforts to contain operating costs of the utility, with this report to be filed no later than June 30 of each year.

DISCUSSION

A Summary Report - Cost Containment Initiatives for 2022/23 is attached, with updated information as at December 31, 2022. This report shows the cost containment initiatives effecting operations for 2022/23 as a result of new initiatives implemented during the year and ongoing initiatives from fiscal years 2013/14 to 2021/22 inclusive. The inclusion of initiatives and amounts from prior years reflects an intentional focus on sustainable results over the long term. Estimated cost savings for 2022/23 are \$6.8 million as outlined by category in Figure #1 below:

Figure #1

Procurement Strategies	\$1,165,242	17.0%
Human Resource Strategies	\$2,897,926	42.4%
Information Technology Strategies	\$108,700	1.6%
Facilities/Process Strategies	\$2,510,343	36.7%
Reduce Paper and Printing Costs	\$33,611	0.5%
Technology and Business Process Changes	\$124,138	1.8%
	<u>\$6,839,960</u>	<u>100.0%</u>

As shown above, cost containment initiatives are impacted mostly in the areas of Human Resource, and Facilities/Process and Procurement Strategies. Under Human Resource Strategies, the effects of pension plan re-design initiated in 2015/16 is one of the main contributors to cost containment savings in the current year. Annual savings related to pension plan re-design approximates \$1.7 million, which represents 58.7% of the savings within Human Resource Strategies and 24.9% of the total projected cost savings for 2022/23. In addition, effective January 1, 2022, the contribution rate for the pension plan decreased from 10.34% to 9.60% resulting in annual cost savings of approximately \$0.3 million.

Facilities/Process Strategies contain initiatives of varying nature, however one of the main contributors in this category is Halifax Water's Energy Efficiency Program. Projects under this Program account for approximately \$1.4 million of projected savings for the current year, representing 54.4% of savings within the category and 19.9% of the total projected savings for 2022/23.

New cost containment initiatives implemented thus far during the 2022/23 fiscal year result in projected cost savings of approximating \$0.6 million and are highlighted for ease of reference on the Summary Report - Cost Containment Initiatives attached. Cost savings from these initiatives are of a one-time or on-going nature, and fall within the following categories:

- Procurement Strategies,

- Human Resource Strategies,
- Facilities/ Process Strategies, and
- Technology and Business Process Changes.


Procurement strategies from a capital perspective have led to other cost savings realized in the current year. For example, two valves were replaced using internal staff instead of a contractor resulting in savings of \$0.1 million, which is recognized through cost savings associated with depreciation expense of approximately \$0.01 million annually. In addition, the capital budget for 2021/22 included \$0.8 million for the supply and installation of a new mechanical bar screen for the Jamieson Street Pumping Station. Three bar screens were replaced at the Dartmouth Wastewater treatment facility (DWWTF) and two of these units were re-constructed to form one single screen suitable for Jamieson Street. Halifax Water staff engineered the modifications and hired a contractor to fabricate and install the repurposed screens and compactor from the DWWTF at a cost of \$0.2 million (budgeted at \$0.8 million) resulting in cost savings of \$0.6 million, which is recognized through cost savings associated with depreciation expense of approximately \$0.03 million annually.

BUDGET IMPLICATIONS

Available information on cost containment initiatives were taken into consideration in developing the 2022/23 budget. Initiatives that impact future fiscal periods will be incorporated into budget cycles and processes of these future periods as those implementing the cost containment measures will ensure they are captured when completing their budgets.

ATTACHMENTS

Summary Report – Cost Containment Initiatives

Report Prepared by:	<div style="display: flex; align-items: center;"><div style="margin-right: 10px;">Alicia Scallion</div><div style="font-size: 0.8em; color: #ccc;"> Digitally signed by Alicia Scallion Date: 2023.01.20 10:00:07 -04'00'</div></div> <div style="margin-top: 10px;">Alicia Scallion, CPA, CA Acting Director Corporate Services/CFO, (902) 497-9785</div>	
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Halifax Water
Summary Report - Cost Containment Initiatives
2022/2023
Fiscal Year

#	Initiative	Comments	Year Initiated	2022/23 Cost Savings
1 General Budget Strategies				
Sub-total				\$0
2 Procurement Strategies				
	Customer account collections	Coordination of collection services related to closed customer accounts in conjunction with the Provincial Public Procurement Act, rather than outsourcing to private organizations.	2014/15	\$10,000
	Lab Testing	Savings as a result of contract tendering.	2013/14	\$60,000
	NSPI rate reclassification	Eastern Passage Wastewater Treatment Facility (WWTF).	2014/15	\$16,000
	NSPI rate reclassification	Duffus Street Pumping Station.	2015/16	\$15,000
	Chemical purchasing	Able to purchase a corrosion inhibitor with a higher concentration of active ingredient, thus foregoing additional costs that would have resulted under current dosage requirements.	2015/16	\$400,000
	Garbage collection - JD Kline Plant	A request for proposal (RFP) was put out to consolidate the garbage collection, which resulted in a cost savings with respect to internal staff hours and use of HW vehicles.	2016/17	\$1,370
	Utilizing HW staff to setup excavations sites	Using trained HW staff as TWS for job sites, unless outside traffic control personal are required.	2016/17	\$50,000
	RFP for biosolids transport	As a result of a RFP, there is expected to be an approximate 33% cost reduction related to transporting biosolids from the Halifax, Dartmouth, Herring Cove and Eastern Passage WWTF.	2017/18	\$220,000
	Equipment calibration	Internal staff are now able to calibrate fixed gas detectors instead of outsourcing this to a MSA technician service provider.	2019/20	\$3,000
	In-house training	Developed in-house method to purge primary sludge discharge line from primary gallery to the sludge holding tank. As a result an external contractor is no longer required to perform this work. This is on a 3-year cycle.	2019/20	\$4,500
	Reduction in sampling	Reduced the amount of lab testing over the year as greater reliance and confidence was placed on the new, in-line analyzers.	2019/20	\$5,000
	Elimination of a customer satisfaction survey	HW performs 2 customer surveys annually, the Forth Quarter Urban Report and the Atlantic Quarterly Survey. Upon review it was determined there was a redundancy in question asked between the 2 surveys therefore, it was decided to consolidate the questioning into the Forth Quarter Urban Report.	2020/21	\$5,319
	Reduction in fleet repair costs	Savings associated with the removal of 16 units from the fleet as a direct result of the Municipal Auditor General's audit of fleet in 2019, and subsequent action taken by Fleet Utilization Management for Halifax Water, for units that did not meet the minimum fleet utilization standards.	2020/21	\$41,500
	Reduction in depreciation costs related to Fleet	As recommended in the 2019 MAG Fleet Use Audit, the Fleet Upgrade Capital Program was reduced in 2021/22 by \$1.1 million resulting in savings associated with depreciation costs over the next 5-years estimated at \$0.2 million per year.	2021/22	\$218,000
	Reduction in depreciation costs related to discounted meter purchase	As the AMI metering project was concluding, an opportunity to purchase AMI meters in bulk became available, to take advantage of significant price savings from a capital perspective.	2021/22	\$1,254
	Reduction in depreciation costs related to Fleet	An adjustment was made to the Sewer Jet Replacement Program whereby, rather than replace an existing unit, it was decided to replace the truck chassis along with a complete rebuild of the tank, pumps and body assembly. Cost of a new unit would approximate \$0.55 million compared to a budgeted cost of \$0.28 million for the alternative chosen.	2021/22	\$55,000
	Operational cost savings related to purchase of a single axle, hydro excavation unit	After an successful pilot with a single axle, hydro excavation unit, it was decided to purchase the rental unit. It is expected the savings as a result of purchasing the unit versus outsourcing the work will be in the range of \$28-\$42 thousand per year, over a 7-year period.	2021/22	\$28,000
	Procurement of annual audit fees	Reduction in the annual audit fees through a request for proposal (RFP) process. The contract term is for a 5-year period, and assuming an inflation factor of 2% over fees of the prior year, potential savings over the term could approximate \$41 thousand.	2021/22	\$6,300
	Reduction in license fees	Renewal of AutoCAD license contract for 3 years to avoid annual increases of 2.5% per year for a savings of \$12k over the three years. Also dropped two more expensive licenses for an immediate savings of \$21 thousand. These actions result in cost savings of \$25 thousand in 2022/23 and \$4 thousand in subsequent two years.	2022/23	\$25,000
Sub-total				\$1,165,243

Halifax Water
Summary Report - Cost Containment Initiatives
2022/2023
Fiscal Year

#	Initiative	Comments	Year Initiated	2022/23 Cost Savings
3	Human Resource Strategies			
	Heavy Truck and Equipment Service	The addition of a new Heavy Equipment Technician provides in-house maintenance service capabilities for the HW fleet.	2013/14	\$100,000
	Beeper Pay	Elimination of an inconsistency between Water and Wastewater Services, as Water Services staff do not receive beeper pay. This involves 10 non-union staff in total.	2013/14	\$75,000
	Workload, labor force assessment	A reduction in number of staff in Development Approvals. The volume of work did not warrant 6 planning technologists, and as a result this number has been reduced to 4.	2015/16	\$140,000
	Pension plan re-design	Through the collective bargaining process, HW was able to negotiate pension plan re-design to make the plan more sustainable. It is estimated the employer's share contributions will decrease from the current 12.95% to 9.85% effective January 1, 2015.	2015/16	\$1,700,000
	Re-structuring within the organization to create a new "Corporate Services" sector	January 1, 2016 saw the elimination of two (2) full time positions and a re-design of several other jobs.	2015/16	\$35,000
	Workload, labor force assessment	January 1, 2016 saw the elimination of the administrative assistant within Regulatory Services.	2015/16	\$57,000
	Workload, labor force assessment	November, 2016 saw the elimination of a Compliance Sampling position as a result of a reduction in sampling requirements.	2016/17	\$81,966
	Overtime reductions	Overtime has been reduced at the Harbour Solutions Plants with respect to sick leaves, vacation, etc. when weather conditions allow and operational needs are met. Also, Halifax WWTF staff are responding to after hours calls at the Dartmouth and Herring Cove facilities in an effort to minimize the need for overtime call-outs.	2016/17	\$40,000
	Modifications to the Pre-Retirement Leave Program	In June 2019, employees were given the opportunity to withdraw their accrued benefit under the Pre-Retirement Leave Program in the form of a lump-sum payment, rather than continuing to accrue a benefit under a modified program. The Pre-Retirement Leave Program had been closed to new, non-union employees hired after March 31, 2018, and is now effectively closed for all other employees hired after June 7, 2018.	2019/20	\$260,000
	Pension plan contribution rate	Through the 2022 actuarial valuation, the pension plan contribution rate decreased from 10.34% to 9.60% effective January 1, 2022.	2022/23	\$250,000
	Re-structuring within Wastewater Treatment	Due to the reorganization of the Wastewater Treatment section of the Operations department, one full time Supervisor position was eliminated. One supervisor is now responsible for the management of two plants (Herring Cove and Timberlea).	2022/23	\$95,000
	Hiring deferral	Hiring of the Office Assistant in Human Resources was delayed. Savings of salary and benefits were realized..	2022/23	\$13,000
	Reduction in the number of staff with Corporate Services	Reduction of a collection specialist.	2022/23	\$50,960
Sub-total				\$2,897,926
4	Information Technology Strategies			
	Xerox managed print solutions	Rationalization and replacement of photocopiers and printers	2013/14	\$20,000
	Network	Change in cost model by Eastlink, giving HW the new pricing	2013/14	\$80,000
	Telephone land lines	Rationalization of services and eliminate duplication of resources as required	2013/14	\$8,700
Sub-total				\$108,700
5	Facilities/Process Strategies			
	Chlorine Utilization - Pockwock	Discontinuation of the pre-chlorination process	2013/14	\$40,000
	Lab Testing	Price benefits from purchasing product from a different source mainly affecting the Harbour Solution Plants	2013/14	\$105,000
	Pumper Truck Utilization	Pilot project to be scheduled initially for stormwater customers only as a test	2013/14	\$130,000
	Waste oil boiler system - Herring Cove WWTF	New system to allow the use of waste oil from Metro Transit as an alternative heating source	2014/15	\$13,250
	System sampling for HPC's	Sampling was reduced from weekly to monthly	2014/15	\$8,025
	Decommissioning of the Bedford South pumping station	The developer driven system expansion will permit the use of gravity and pressure reduction rather than the pumping station	2014/15	\$15,000
	Lighting upgrades - Bennery Lake WSP		2014/15	\$4,793
	Insulation upgrades - Bennery Lake WSP		2014/15	\$36,000
	Lighting upgrades - Eastern Passage WWTF		2014/15	\$7,880
	Lighting upgrades - Dartmouth WWTF		2014/15	\$22,542
	Lighting upgrades - Herring Cove WWTF		2014/15	\$13,744
	Lighting upgrades - Halifax WWTF		2014/15	\$29,845
	Lighting upgrades - Aerotech BPF		2014/15	\$19,109
	HVAC upgrades - Eastern Passage WWTF		2014/15	\$20,711

Halifax Water
Summary Report - Cost Containment Initiatives
2022/2023
Fiscal Year

#	Initiative	Comments	Year Initiated	2022/23 Cost Savings
	HVAC upgrades - Roach's Pond pumping station		2014/15	\$13,500
	MCC 190 cooling and heat recovery - Halifax WWTF		2014/15	\$13,164
	Aeration system upgrades - Eastern Passage WWTF		2014/15	\$76,382
	Orchard Park in-line turbine project		2014/15	\$24,479
	Wind farm - Pockwock WSP		2014/15	\$130,399
	Biogas CHP system - Mill Cove		2014/15	\$86,000
	Disposal of water treatment plant solid residual material	A new location for the disposal of the residual material was found	2014/15	\$36,000
	Advanced investigative tool for leaks and structural condition of pipes	The current program has been halted as a cost containment initiative and as a result of the information received.	2014/15	\$150,000
	E-delivery	Transitioning from traditional billing methods to e-delivery	2014/15	\$20,000
	Change in Recycling Pickups	By changing the schedule for recycling pickups from bi-weekly to every three (3) weeks, the anticipated annual savings will range from \$2,500 to \$2,700.	2015/16	\$2,700
	Highway #7 Booster Station Upgrade	Expected energy savings	2015/16	\$14,300
	Dartmouth WWTF - UV Channel Isolation	Expected energy savings	2015/16	\$59,460
	Halifax WWTF - Fixed Compressed Air Leaks	Expected energy savings	2015/16	\$2,293
	Halifax WWTF - UV Channel Isolation	Expected energy savings	2015/16	\$62,115
	Herring Cove WWTF - MCC 190 Cooling/Heat Recovery	Expected energy savings	2015/16	\$8,496
	Sampling	Using internal staff at the Mill Cove facility to perform the required daily sampling at the facility, rather than the compliance staff, limiting their site visits to once a week.	2015/16	\$4,160
	Process alternative	A centrifuge was rented for the Mill Cove WWTF (with the option to purchase) on a trial basis to dewater liquid sludge that typically would be transported to the Aerotech WWTF. The transport of the liquid sludge resulted in lower overtime costs, as well as reducing the time available for HW truck to service other facilities. This process assisted the Aerotech WWTF in reaching its compliance goals and reduced overtime costs by an estimated 50%. This equipment will enable HW to proceed with a digester clean out project, which would otherwise be sub-contracted at a cost of \$200,000.	2015/16	\$40,000
	Process change	It was decided that flanges for meter sizes greater than 2" would be the responsibility of the customer, since when meters are replaced, the flanges are not replaced.	2015/16	\$4,854
	UV disinfection shutdown - HHSP and Eastern Passage WWTFs	Annual shutdown of UV disinfection system resulted in cost savings associated with electrical energy savings, peak demand reduction,	2016/17	\$234,268
	Halifax WWTF - Carbon Scrubber By-Pass		2016/17	\$59,386
	Tools developed internally	Tools developed internally to install new operating nuts on buried valves. Previously nuts were lost on buried valves resulting in a need to excavate the valve and install new nuts. Cost savings are achieved regarding excavation and reinstatement.	2016/17	\$20,000
	Spruce Hill transmission main	Two long term leaks were discovered in the transmission main resulting in cost savings from the perspective of water loss control.	2016/17	\$3,000
	Utilization of industrial water	A new filter system was installed at the Eastern Passage WWTF that provides the capability to use the current industrial water system rather than potable water to deliver water to the polymer feed systems.	2016/17	\$26,000
	Cost reductions (material transport)	Modifications to the screening/grit skip eliminated the need to purchase 2 new screening compactors, which also resulted in the amount of material transported of approximately 28 metric tonnes.	2017/18	\$2,000
	Herring Cove WWTF - Carbon Scrubber By-Pass		2017/18	\$12,177
	Servicing oxygen monitors in-house	Technical Service staff have been trained by the manufacturer to service the fleet of personal gas monitors in-house, specifically the replacement of the oxygen sensor. These monitors, 165 in total, are used by all operation and treatment departments throughout the organization.	2018/19	\$30,000
	Pumping Station Starters (4160V)	The pumping station starters were upgraded to vacuum starters, thus eliminating the need for annual servicing of the starters to be outsourced. Any maintenance can now be handled by in-house industrial electricians.	2018/19	\$1,500
	Automated Flushing Stations	Automated flushing stations are now used to ensure the proper chorine residuals are achieved in all areas of the transmission and distribution system. Previously this operation was performed manually on a daily basis from approximately June to September. As a result labor and vehicle costs have been reduced accordingly.	2018/19	\$8,000
	Corrosion Sampling	Corrosion sampling in the distribution system was reduced from bi-weekly to monthly in June, 2018, since enough baseline data has been collected and there are no immediate plans to change corrosion control in the near future.	2018/19	\$12,600
	Alternative product	An alternative timing belt was introduced to replace the normal v-belt/sheave configuration, which reduced slippage between the v-belts and sheaves resulting in a reduction in power demand. The product has been installed at both the Halifax and Herring Cove WWTF, with the expectation of implementation at other wastewater and water facilities.	2018/19	\$40,000

Halifax Water
Summary Report - Cost Containment Initiatives
2022/2023
Fiscal Year

#	Initiative	Comments	Year Initiated	2022/23 Cost Savings
	Dosage Optimization	Desiccant filters were fitted to the polymer totes to prevent warm, moist air from contaminating the polymer dosed to thicken centrifuge and drum thickener solids. The polymer no longer reacts early with water before being dosed, thus allowing the optimization of the dose and preventing polymer waste, leading to reduced consumption.	2019/20	\$20,000
	Building maintenance	Installed new weather stripping in the overhead door in the truck bay at the AeroTech plant to reduce heating costs	2019/20	\$1,500
	Polymer optimization	Began polymer optimization in an effort to ensure good quality biosolids as well as a good quality centrate without having excess amounts of polymer. Were able to reduce the feed rate from 60% to 21%.	2019/20	\$15,000
	Improvements to aeration train	Installed a curtain in the aeration train to enable better mixing of the microorganisms with the chemical, thereby reducing chemical costs and providing better quality treatment.	2019/20	\$15,000
	Optimization of polymer dosing (Mill Cove)	By implementing daily jar testing to determine the startup dose setpoint, polymer dosing was optimized.	2019/20	\$14,000
	Belt drive change-out (Mill Cove)	Replacing the belt drive with a synchronous chain drive on a 30 horsepower blower resulted in a cost savings associated with energy consumption.	2019/20	\$1,275
	Upgrading equipment (Mill Cove)	Upgrading the water flow meter used in the dilution of polymer resulted in lowering water usage in the process by approximately 20,000 litres per day.	2019/20	\$12,000
	Fan belt/ pulley replacements - Mill Cove WWTF	Expected energy savings - based on 12,750 kWh	2019/20	\$1,300
	Fan belt/ pulley replacements - Dartmouth WWTF	Expected energy savings - based on 177,980 kWh	2019/20	\$20,000
	Preventative maintenance program established	A preventative maintenance program was created in conjunction with HW operations staff to clean centrifuge centrate lines weekly at a cost of \$235. Clogging of centrate in the centrate lines were being experienced resulting in a backup in the centrifuge drum and bio-solids bin. Every 2-3 weeks it was costing approximately \$1,000 to remove obstructions by an outside contractor, in addition to internal staff time and equipment.	2020/21	\$10,000
	Centrifuge adjustments	Adjustments to the weir plate on both centrifuges at the dewatering facility allows more water to escape during the dewatering process, resulting in a product that is 6% dryer on average. Having a more compacted product results in fewer trucks going to the N-Viro facility saving on tipping fees. In addition, solids in the resulting product is now over 28% which is subject to a reduced rate, a savings of approximately \$12/ tonne.	2020/21	\$15,000
	Chemical substitution	Carbon source (Micro C) is a proprietary compound used as a food supply for micro-organisms in the denitrification process at the Aerotech WWTF, which is effective but quite expensive. HW has been able to source beer wort from a local brewery as a substitute for Micro C. Beer wort is a waste product in brewing beer which is high in carbon.	2020/21	\$85,000
	Reduction in heating fuel costs	The installation of a 18,000 BTU heat pump in the admin area of the Leachate Facility, coupled with repairs to an existing unit in the lab area, resulted in heating fuel savings.	2020/21	\$5,000
	Solar PV - COMFIT/ Renewable Energy Generation	Operational at the Halifax WWTF.	2020/21	\$28,593
	Fan belt/ pulley replacements - Eastern Passage WWTF	Expected energy savings - based on 118,348 kWh	2020/21	\$13,366
	Harbour Solution Plants - Ventilation Air Heat Recovery	Expected energy savings for the Halifax, Dartmouth and Herring Cove WWTF	2015/16	\$92,358
	Utilizing alternative assets to perform similar duties	Rather than using vacuum trucks to get loads of digested waste from Mill Cove on days when they are unable to centrifuge, the 2 new dump trucks from Aerotech are used. This will be done initially during long weekends and holidays when no dumping is available through the RE Group, at an estimated daily savings of \$750.	2021/22	\$8,250
	The production of biogas used to heat the digesters, and all facility buildings	Both the Mill Cove and Timberlea WWTF's have anaerobic digesters which produce biogas or renewable natural gas (RNG) which is used to heat the digesters as well as all the facility buildings.	2021/22	\$256,569
	Reduction in the usage of caustic	The pH set point was reduced from 7.1 to 6.8 in order to reduce the amount of caustic soda consumed, while still enduring nitrification in the bioreactors. Usage was monitored over a 6-week period, and the savings are estimated to be in the range of 30%	2021/22	\$30,000
	Reduction in hydrant part costs	The estimate of \$278,000 for hydrant parts in the 2022/23 operational budget was based on previous year's expenditures to convert the internal components of old Number 2 hydrants to the modern M67 hydrant. Now that this conversion program is complete, the demand for expensive hydrant parts has dropped. Therefore the expected expenditure for hydrant parts was reduced to \$100,000.	2022/23	\$178,000
	Deferral of reservoir painting	In the 2022/23 West Water Operations operating budget, \$25,000 was identified to paint the Charles Road Reservoir. Painting the reservoir would be for aesthetic purposes only. The intent to paint the reservoir was not based on any community driven complaints about the state of the reservoir.	2022/23	\$25,000
Sub-total				\$2,510,343


Halifax Water
Summary Report - Cost Containment Initiatives
2022/2023
Fiscal Year

#	Initiative	Comments	Year Initiated	2022/23 Cost Savings
6	Reduce Paper and Printing Costs			
	Electronic HRWC Board Packages	Send Board packages out electronically rather than issuing hard copies	2013/14	\$7,500
	Stewardship Report	The Stewardship Report will be published electronically only, with no hard copies	2013/14	\$3,000
	Changes to document archiving	Transitioning file storage from outside contractor to public resources	2013/14	\$3,175
	Changes to document archiving	Transitioning file storage from outside contractor to public resources	2016/17	\$9,000
	Cost reduction associated with off-site storage	There has been an effort to reduce the number of boxes (documents) stored in facilities such as Iron Mountain, by sorting and purging documents in accordance with the document retention policy of the Commission.	2018/19	\$10,000
	Cost reduction associated with the Annual Report (General Manager's office)	The annual report for the year ended March 31, 2019 saw the number of copies produced drop from 275 copies in the previous year to 150 copies. This represents not only a cost savings but also an environmental benefit associated with paper reduction.	2019/20	\$936
Sub-total				\$33,611
7	Technology and Business Process Changes			
	Workload, labor force assessment	Through the utilization of technology, such as a Customer Relationship Management (CRM) system, a budgeted addition (customer service representative) has been removed.	2015/16	\$47,605
	Workload, labor force assessment	Re-structuring by management within the advanced metering infrastructure (AMI) project as a result of technological efficiencies anticipated.	2015/16	\$64,533
	Cost Reduction for Dispute Resolution Officer	Reduction in costs resulting from efficiency gains from process enhancement and strong financial management relating to the Dispute Resolution Officer.	2022/23	\$12,000
Sub-total				\$124,138
				\$6,839,960

TO: Colleen Rollings, Chair and Members of the Halifax Regional Water Commission Board

SUBMITTED BY: E. Jeff Myrick
Digitally signed by E. Jeff Myrick
Date: 2023.01.20 14:11:08 -04'00'

Jeff Myrick, Manager of Communications and Public Affairs

APPROVED: 
Digitally signed by Louis de Montbrun
Date: 2023.01.20 14:15:08 -04'00'

Louis de Montbrun, CPA, CA, Acting General Manager/CEO

DATE: January 20, 2022

SUBJECT: 2022 Annual Customer Survey

INFORMATION REPORT

ORIGIN

Operational Requirement, Corporate Balanced Scorecard (CBS) Performance Measurement

BACKGROUND

Since 2000, Halifax Water has engaged an external research firm to compile information on a number of topics critical to the operation of the utility as it relates to public confidence and perception. The questions generally focus on customer satisfaction with services and products provided for water, wastewater and stormwater service delivery.

Information from the Halifax Urban Report is based on telephone interviews conducted from November 8 to November 20, 2022. The overall results are based on 400 interviews with individuals from the Halifax Municipality population. A sample of 400 respondents would be expected to provide accurate results within plus or minus 4.9 percentage points in 95 out of 100 samples.

DISCUSSION

Satisfaction with Halifax Water's overall service delivery remains high at 97%, which is up 1% from the last four years. Similarly, satisfaction with Halifax Water's products and services remains high, with 92% of customers satisfied, up slightly by 2% from 2021.

Overall, customer satisfaction with various service metrics is consistent with 2021. Results this year across key survey categories indicate that residents continue to rate Halifax Water's performance highly across a multitude of categories, with a high proportion of customers surveyed providing very positive ratings for the indicators related to Water Quality and Service Excellence.

Two of our Critical Success Factors outlined in the Corporate Balanced Scorecard are: **High-Quality Drinking Water** and **Service Excellence**. In these two categories, the target for organizational indicators is set high. Our target is 85% of customers rating drinking water as either good or excellent and 95% of customers satisfied or very satisfied with overall service from Halifax Water. The target for satisfaction with overall service was increased from 90% last year to 95% in 2021/22.

This year's results indicate that 88% of customers perceive water quality as good or excellent, compared to 89% in 2021. A sub-category surveyed under drinking water quality is Water Safety. In this category, Halifax Water came in with 97% of customers rating our water as safe or very safe, compared to 96% in 2021. These consistently excellent numbers show that our customers continue to place a high value on the overall quality and safety of our water across the region.

For Service Excellence, two categories address this broader topic, Satisfaction with Halifax Water's Products & Services and Satisfaction with Halifax Water's Overall Service Delivery. In these categories, the results remain high at 92% and 97%, respectively.

The overall Customer Service Index score has increased to 80.5% from 79.5% in 2021. Following are some additional highlights from the survey:

- Less than half of those surveyed (42%) could identify that treated wastewater from their property would flow to Halifax Harbour, Bedford Basin or the Atlantic Ocean.
- Just under half (48%) of respondents reported receiving stormwater service, and 84% of those were satisfied with the service.
- Awareness of the Customer Connect Portal remained low at 16%, up 1% from last year.
- Interest amongst customers about using the customer portal remains modest at 42%. Primarily interested in monitoring water consumption, managing account information and paying bills online.
- There continues to be interest in paperless billing, with 68% of respondents indicating that they would definitely/probably, sign up for Paperless Billing
- Awareness of the lead service line replacement program remains low, down 9% from 2021, returning to levels recorded in 2020.
- Awareness of the emergency assistance program (H2O Fund) has decreased slightly (two percent) but remains low.

Strong customer support is critical as the utility makes short and long-term investments in critical infrastructure, adapts to and mitigates climate change impacts, maintains compliance in an ever-evolving regulatory environment, and fulfills its core mandate of protection of public health and the environment.

Survey results this year continue to show that Halifax Water is on the right path in many key categories. Still, staff across the organization must continue to engage customers in a courteous, efficient, timely manner and work to promote the value of the water, wastewater and stormwater services we provide.

For the benefit of all staff, the survey has been placed on the Halifax Water Intranet.

Staff will be encouraged to take the time to read the survey results and provide any comments or suggestions they might have.

ATTACHMENT

1. Narrative Research 2022 Quality of Service Study – Infographic
2. Narrative Research 2022 Quality of Service Study - Final Report

Report Prepared by:

E. Jeff Myrick

Digitally signed by E. Jeff
Myrick
Date: 2023.01.20
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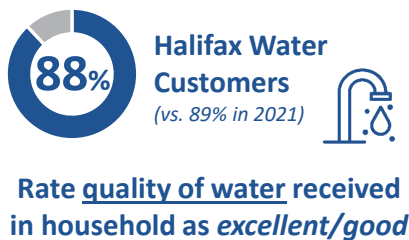
Jeff Myrick, Manager, Communications and Public Affairs,
902-490-4604

Halifax Water

2022 Quality of Service

Key Highlights

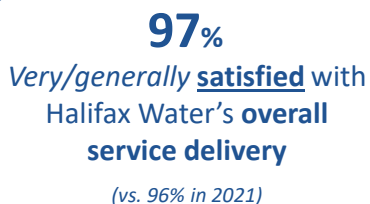
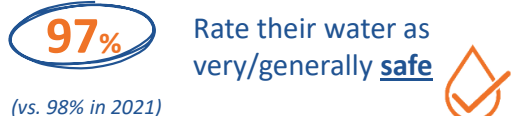
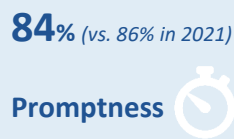
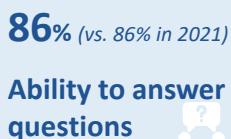
Methodology: 332 telephone surveys with Halifax Residents (310 Water Customers, 198 Stormwater Customers, and 227 Wastewater Customers)
Data Collection: November 8 – 20, 2022



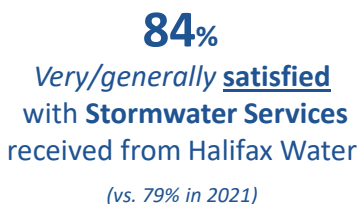
Among Water Customers

Very/generally satisfied with Halifax Water staff's...

(Among those who have had a service interaction)



(Among those who receive Water Services)



(Among those who receive Stormwater Services)



(Among those who receive Wastewater Services)

Most Preferred Method for Accessing Information Related to Halifax Water's Programs and Services (Key Mentions)



Internet (general)

49%

(vs. 55% in 2021)

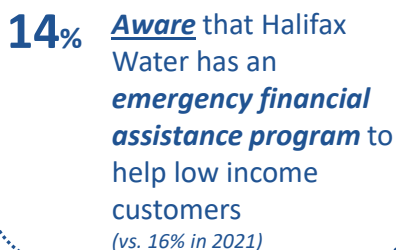
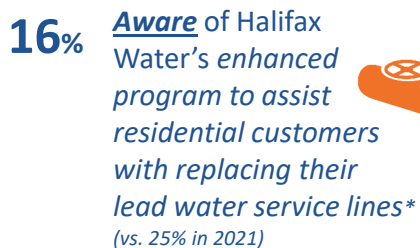


Halifax Water website

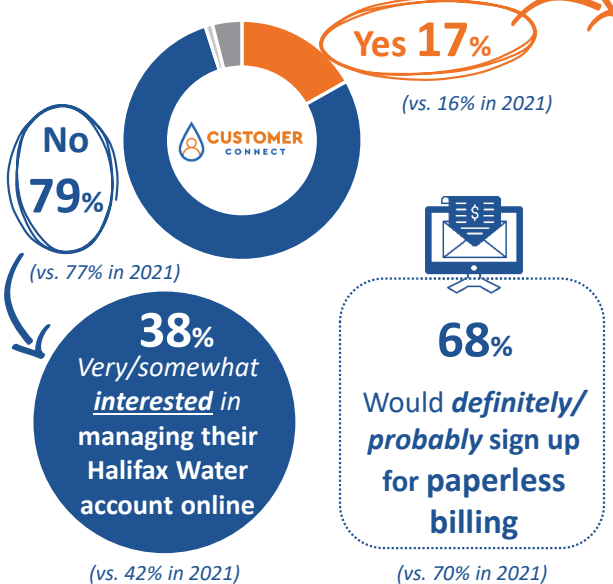
22%

(vs. 20% in 2021)

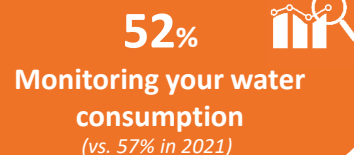
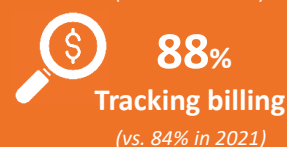
Program Awareness



Currently Using Customer Connect Portal



Online Services Used on Customer Connect Portal





NARRATIVE
RESEARCH



Atlantic Quarterly

Commissioned Results
Autumn (Q4) 2022

November 2022

Prepared for:
Halifax Water





- Data was collected via a random telephone survey with **400 adults in HRM** aged 18+ years. Of these, 310 received water services, 198 received storm water services, and 227 received wastewater services from Halifax Water. Altogether, 332 respondents received at least one of the above services.



- Data collection dates: November 8 – November 20, 2022.



- Margin of error: (percentage points, 19 times out of 20) are as follows:
 - Total sample: $n=400 - \pm 4.9$
 - Halifax Water water customers: $n=310 - \pm 5.6$
 - Halifax Water stormwater services customers: $n=198 - \pm 7.0$
 - Halifax Water wastewater service customers: $n=227 - \pm 6.5$
 - Total Halifax Water customers: $n=332 - \pm 5.4$



- Current results are compared with tracking data from previous Atlantic Quarterly/Halifax Urban Report surveys conducted from 2000 to 2021
- Results may not equal 100 percent due to rounding.



Summary

Results from Halifax Water's commissioned research reveals considerable stability with the preceding year. Both **water quality** and **water safety** continue to receive very robust overall assessments. From a customer service standpoint, results indicate that Halifax Water continues to deliver strong customer service. **Overall satisfaction** is very high, as is satisfaction with **overall service delivery**. Examining individual elements of customer service indicates that water customers continue to have extremely positive views of **reliability**, **politeness**, **accessibility**, **ability to answer questions**, and **promptness**. Those receiving **stormwater** and **wastewater** services also provide very positive assessments of those services.

There is opportunity to enhance awareness on a number of fronts. Awareness of the **primary source of municipal tap water**, as well as **where wastewater goes** remains limited. Awareness of **Halifax Water's enhanced program to replace lead water service lines** remains low and has returned to preceding levels after an improvement last year. Awareness of Halifax Water's **emergency financial assistance program** for low income customers also remains limited. Interest in the lead replacement program among those in the target segment is moderately strong.

In terms of communications, there is clearly an opportunity to promote the Halifax Water **website**. About one in three have visited the website. Positively, those doing so are generally satisfied with it. Perhaps more of a challenge is getting customers to think of the website as the first line of information. The Internet in general is most cited as the preferred source of information about Halifax Water's programs and services, cited more than twice as often as the Halifax Water website.

The past year has not seen growth in use of the **Customer Connect Portal**. This appears to be in part due to lack of awareness as most of those not using it have not heard about it. It also appears partly due to lack of interest. It is of note that there is some disconnect in terms of anticipated benefits and actual use. The main benefit expected of those interested in using it is to check how much water they are using. However, actual use indicates managing account information and tracking billing are more prevalent uses than monitoring water consumption. If there is a goal to grow the use of the portal there is a merit in better understanding the motivators and barriers to its use, and to avail of that insight to develop a targeted campaign.

There continues to be significant interest in **paperless billing** from Halifax Water, should it become available. In fact, one-half of customers indicated they would **definitely** sign up for it, if it were to be available. A preference for a hard copy is the key contributor to reluctance to sign up.

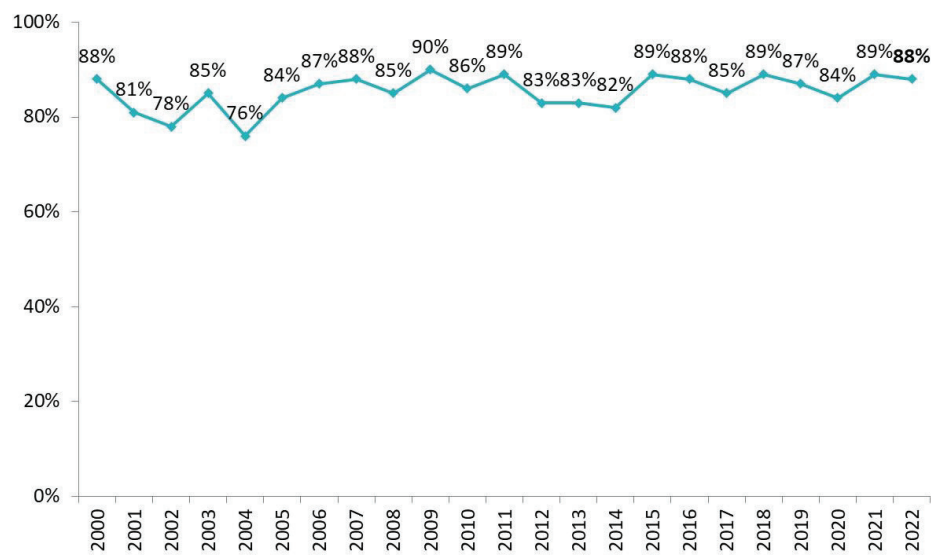


Water Assessment



Water Quality Assessment

Water Quality Assessment
% Saying 'Excellent/Good'; Among Halifax Water Customers



Q.W1: Overall, how would you rate the quality of water you receive in your household? Would you say it is excellent, good, only fair, or poor? (n=310)

A vast majority of Halifax Water customers indicate that the quality of the water they receive is excellent or good.

Nine in ten (88%) Halifax Water customers affirm that the quality of the water in their household is **excellent** or **good**, on par with the proceeding year.

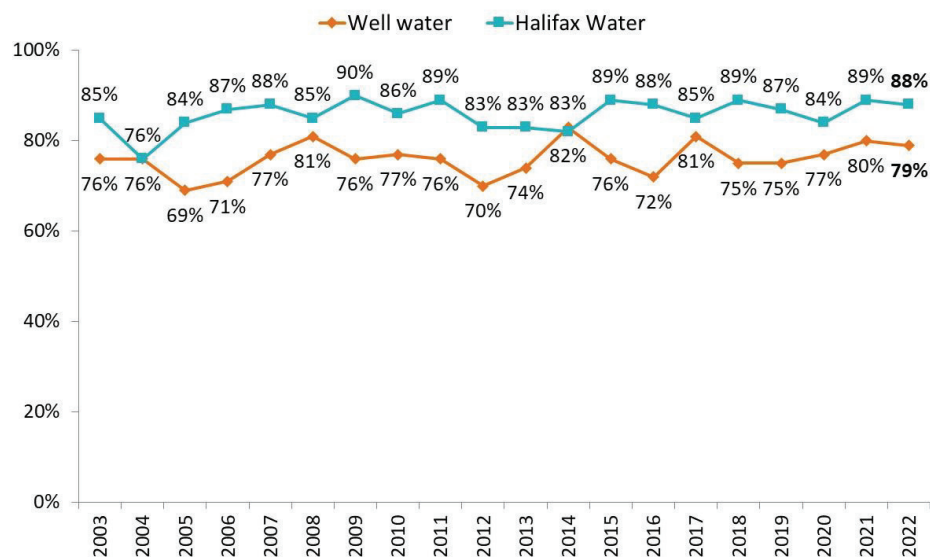
Four in ten (38%) Halifax Water customers state that the quality of their water is **excellent**, down slightly from 49% last year.



Water Quality Assessment

Water Quality Assessment

Excellent/Good



Q.W1: Overall, how would you rate the quality of water you receive in your household? Would you say it is excellent, good, only fair, or poor? (Halifax Water n=310, Well n=83) *Note: In 2008, HRWC became Halifax Water.*

Halifax Water customers are more likely to rate the quality of their water as excellent/good compared to those who source water from a well.

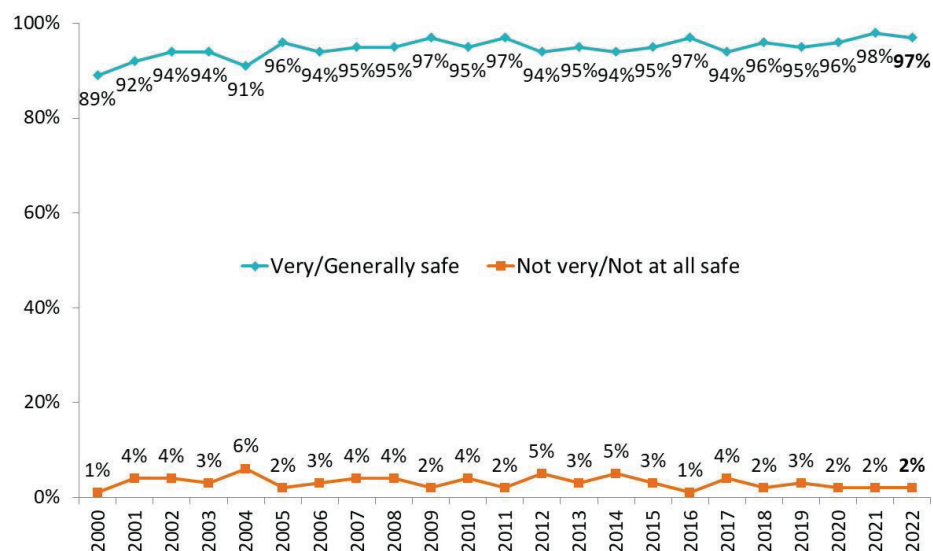
While both customers of Halifax Water and those who receive water from a well give high ratings to the quality of the water they receive, there is once again a nine percentage point difference in assessments of water quality, with Halifax Water customers being more likely to rate the quality of their water as higher.

Ratings of water quality are also more positive among those with higher household incomes and completed post secondary education.



Water Safety Assessment

Water Safety Assessment Among Halifax Water Customers



Q.W2: Overall, how safe would you say your water is? Would you say it is very safe, generally safe, not very safe, or not at all safe? (n=310)

Virtually all Halifax Water customers feel that their water is very or generally safe.

Positively, ninety-seven percent of Halifax Water customers state that their water is **very** or **generally safe**, showing results that are stable with those observed last year. Those with well water are comparably less positive (88%) albeit, it is still a strong rating.

Six in ten (58%) Halifax Water customers rate their water as *very safe*, compared with 64% a year ago.

Those with household incomes of \$50,000 or less are more critical in their assessment of water safety.



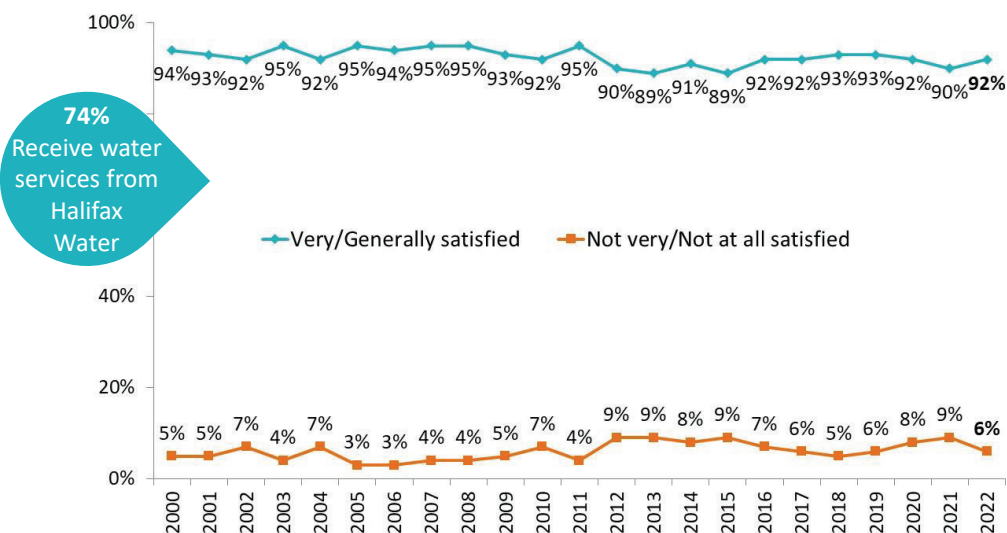
Water Services



Customer Satisfaction

Satisfaction with Halifax Water's Products and Services

Among Halifax Water Customers



Q.W5: [IF 'YES, RECEIVE WATER FROM HALIFAX WATER' IN Q.W4] All things considered, would you say you are very satisfied, generally satisfied, not very satisfied, or not at all satisfied with the products and services you receive from Halifax Water? (n=310)

Satisfaction with Halifax Water's products and services remains very robust and on par with previous results.

Nine in ten (92%) customers report being *very or generally satisfied* with the **products and services** received from Halifax Water, stable with recent previous years. Overall satisfaction is robust across region and demographic subgroups.

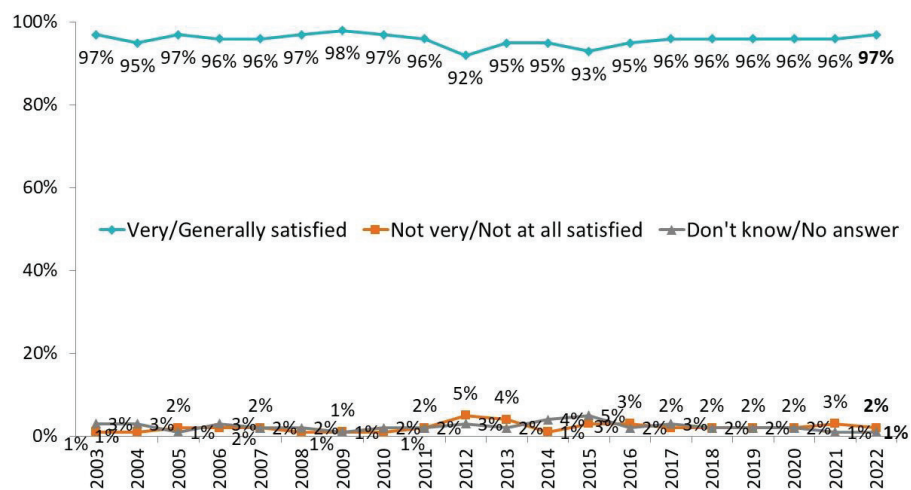
The proportion reporting they are very satisfied is higher among women and older residents. (Table W5)



Customer Satisfaction

Satisfaction with Halifax Water's Overall Service Delivery

Among Halifax Water Customers



Q.W6a: [IF 'YES, RECEIVE WATER FROM HALIFAX WATER' IN Q.W4] For each of the following, please tell me whether you are very satisfied, generally satisfied, not very satisfied, or not at all satisfied with the service you have received from Halifax Water: Overall service delivery – How well Halifax Water delivers its services to you? (n=302)

Note: The 2020, 2021, and 2022 responses for 'Have not used this Halifax Water service' and 'Have not had any service interaction with Halifax Water Staff' have been removed from this table.

Satisfaction with Halifax Water's produces and services remains very robust and on par with previous results.

Satisfaction with Halifax Water's **overall delivery of service** remains widespread and is relatively stable compared with previous findings. Specifically, 97 percent of residents offer a rating of *very* or *generally satisfied*, consistent with previous years. Satisfaction in this regard is widespread regionally and across the population. (Table W6a)



Customer Satisfaction

Satisfaction with various aspects of Halifax Water's service remains robust and on par with the preceding year.

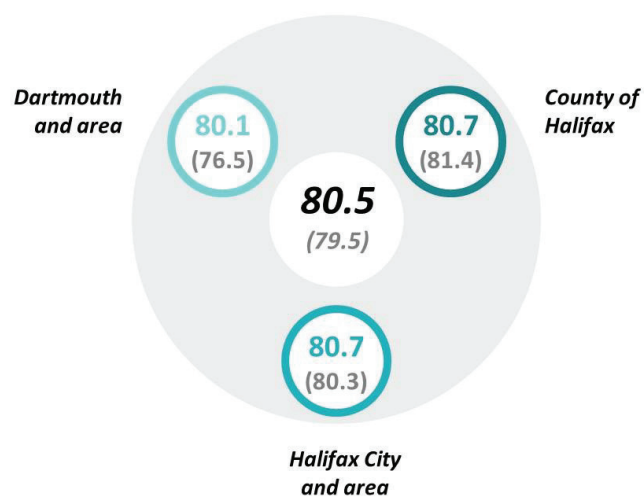
Almost all residents are satisfied with the **reliability of Halifax Water's service**, as well as with the **politeness** of staff. Just under nine in ten are satisfied with staff **accessibility**, **ability to answer questions**, and **promptness**. (Tables W6b-f)

Satisfaction with Halifax Water's Service Among Halifax Water Customers Very/Generally Satisfied																				
	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Reliability	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	97%	93%	98%
Politeness	86%	88%	90%	85%	86%	87%	80%	84%	82%	78%	74%	81%	79%	77%	82%	79%	83%	91%	92%	94%
Ability to answer questions	84%	85%	90%	83%	80%	84%	80%	83%	78%	72%	67%	74%	72%	74%	74%	72%	77%	86%	86%	86%
Staff accessibility	85%	88%	91%	83%	84%	87%	84%	91%	84%	75%	72%	83%	76%	78%	80%	77%	81%	89%	87%	85%
Staff promptness	85%	86%	90%	81%	82%	83%	82%	87%	80%	73%	67%	77%	73%	76%	76%	72%	78%	83%	86%	84%

Q.W6b-f: [ASK ONLY IF 'YES, RECEIVE WATER FROM HALIFAX WATER' IN Q.W4] For each of the following, please tell me whether you are very satisfied, generally satisfied, not very satisfied, or not at all satisfied with the service you have received from Halifax Water. (2022 n=183-302) *Note: The 2020, 2021, and 2022 responses for 'Have not used this Halifax Water service' and 'Have not had any service interaction with Halifax Water Staff' have been removed from this table*



2022 Customer Service Index



Halifax Water's Customer Service Index reflects a strong customer experience.

Once again, this year, Narrative Research is pleased to present Halifax Water with a Customer Service Index (CSI). To provide an overall assessment of Halifax Water's service performance, the CSI this year was calculated based on customers' ratings on seven service-focused questions, namely:

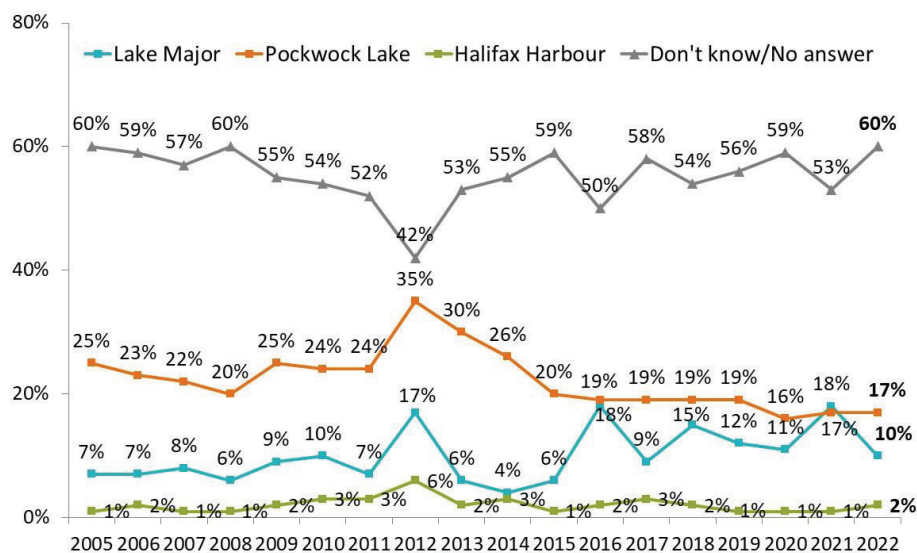
- Overall satisfaction with the Halifax Water (QW5);
- Satisfaction with overall service delivery (QW6a);
- Satisfaction with accessibility of Halifax Water staff (QW6b);
- Satisfaction with promptness of Halifax Water in responding to questions (QW6c);
- Satisfaction with Halifax Water's ability to answer questions (QW6d);
- Satisfaction with the politeness of Halifax Water staff (QW6e); and
- Satisfaction with the reliability of Halifax Water (QW6f).

In calculating Index scores, ratings on these seven questions were averaged and transformed into a scale ranging from a low of 0 to a high of 100. Thus, the maximum possible score on the CSI is 100, while the minimum is 0. Any question to which a customer who has had a service interaction with Halifax Water did not respond was eliminated from the calculation, with the Index score for that customer being calculated on the remaining questions.

The Customer Service Index stands at **80.5** this year, not appreciably different from the preceding year. Results are similar across areas of HRM.

Primary Source of Municipal Tap Water

Total Top Mentions, Among Halifax Water Customers



Q.W9: [IF 'YES, RECEIVE WATER FROM HALIFAX WATER' IN Q.W4] To the best of your knowledge, which body of water is the primary source of your tap water supplied by Halifax Water? Any other sources? (n=310)

There continues to be uncertainty regarding Halifax area residents' knowledge of the source of their municipal tap water.

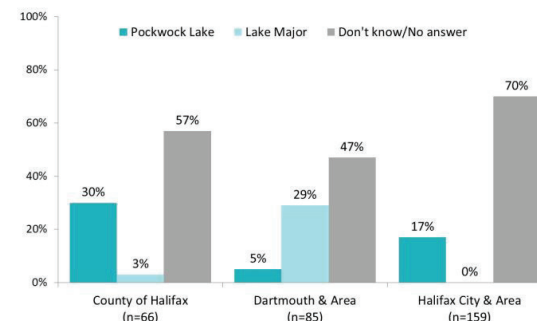
Six in ten Halifax Water customers (60%, up from 53% last year) **cannot name the source** of their tap water.

The top mentions are **Pockwock Lake** (17%) and **Lake Major** (10%).

Across the population, younger customers, and those with annual household income of \$100,000 or less are more likely than others to be unsure of the source of their tap water. Regionally, those in the Halifax City area are more inclined to be uncertain (70%), whereas Dartmouth area residents are most aware and are most likely to identify Lake Major (29%), while those in the outlying area are most inclined to identify Pockwock Lake (30%). (Table W9)

Primary Source of Municipal Tap Water

Key Mentions by Area, Among Halifax Water Customers

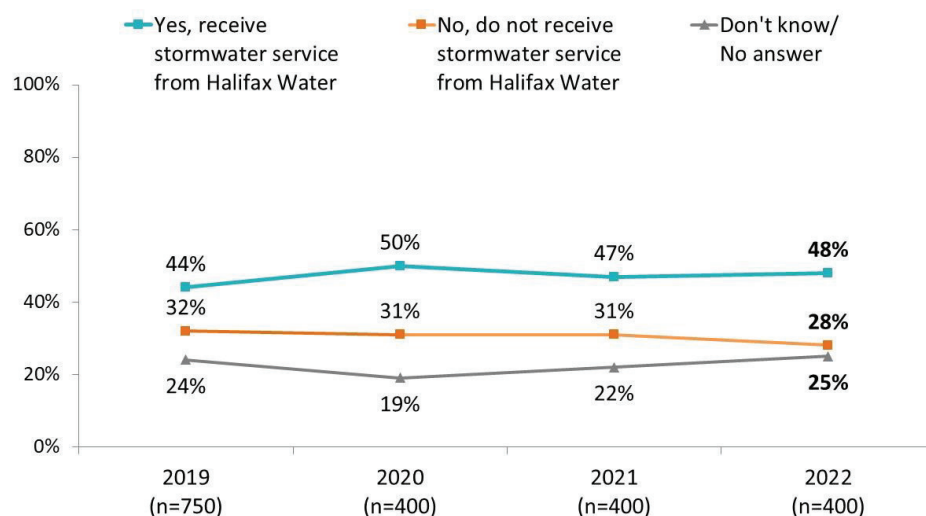


Q.W9: [IF 'YES, RECEIVE WATER FROM HALIFAX WATER' IN Q.W4] To the best of your knowledge, which body of water is the primary source of your tap water supplied by Halifax Water? Any other sources?



Stormwater Services

Household Receives Stormwater Service From Halifax Water



Q.W40: Stormwater service includes the maintenance of flow ditches and culverts in rural and suburban areas, and underground pipes and pumping systems in urban areas. Does your household receive stormwater service from Halifax Water?

Approximately, half of residents receive stormwater services from Halifax Water.

Again, this year, residents were asked if their household receives stormwater service from Halifax Water. One-half of residents reported receiving this service from Halifax Water (48% compared 47% last year), while three in ten (28%) residents indicated they did not. Similar to preceding years, one-quarter of residents were unsure in this regard (25%).

The likelihood of confirming they receive their stormwater services from Halifax Water is higher among residents 35 or older, those with post secondary education completed and those with higher household incomes. This may be in part due to familiarity.

Regionally, Dartmouth and area residents are most inclined to report they receive stormwater services from Halifax Water. (Table W40)

Receive Stormwater Service from Halifax Water by Area

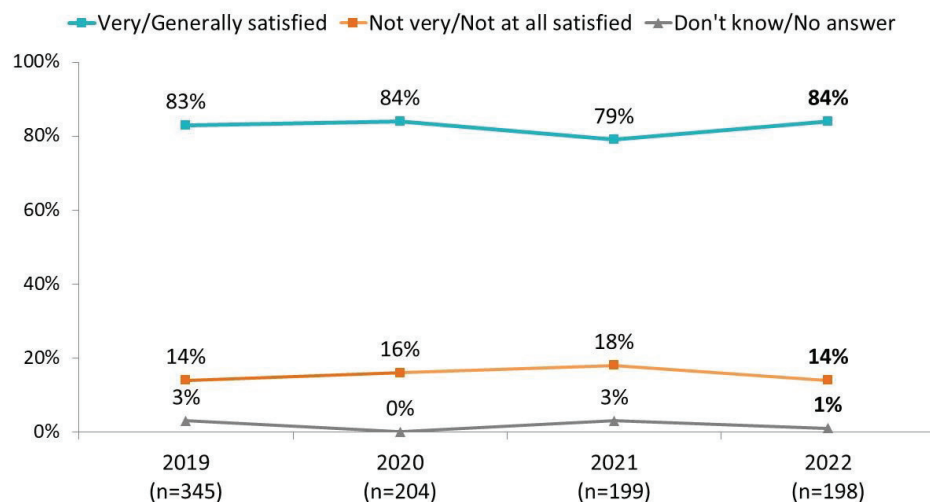
Dartmouth and area (n=90)	61%
Halifax City and area (n=171)	45%
County of Halifax (n=139)	42%



Stormwater Services

Opinion of Stormwater Service

Among Those Who Receive Stormwater Service From Halifax Water



Q.W41: [IF 'YES, RECEIVE STORMWATER SERVICE FROM HALIFAX WATER' IN Q.W40] All things considered, would you say you are very satisfied, generally satisfied, not very satisfied, or not at all satisfied with the stormwater service you receive from Halifax Water?

Satisfaction with stormwater services remains strong and stable.

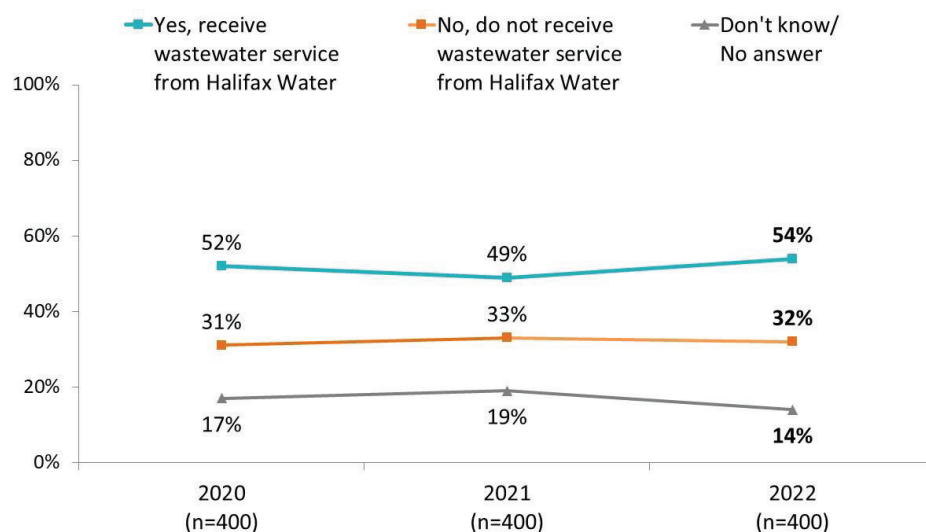
Among those who receive stormwater service from Halifax Water, a solid majority (84%) are either **very** or **generally satisfied** with the service. Results are similar to preceding years.

Regionally, residents of Dartmouth area (90%) and Halifax (96%), are more satisfied than those in the surrounding Halifax County area (70%). (Table W41)



Wastewater Services

Household Receives Wastewater Service From Halifax Water



Q.W49: Wastewater service includes the maintenance and operation of wastewater/sewer collection pipes, pumping stations, and treatment plants. Does your household receive wastewater service from Halifax Water?

Just over half of residents receive wastewater services from Halifax Water.

Just over one-half of residents (54%) report receiving this service from Halifax Water, similar to preceding years. A small segment are once again not certain if they do. Residents in the County outside Halifax and Dartmouth areas are less inclined to report they receive wastewater service from Halifax Water. (Table W49)

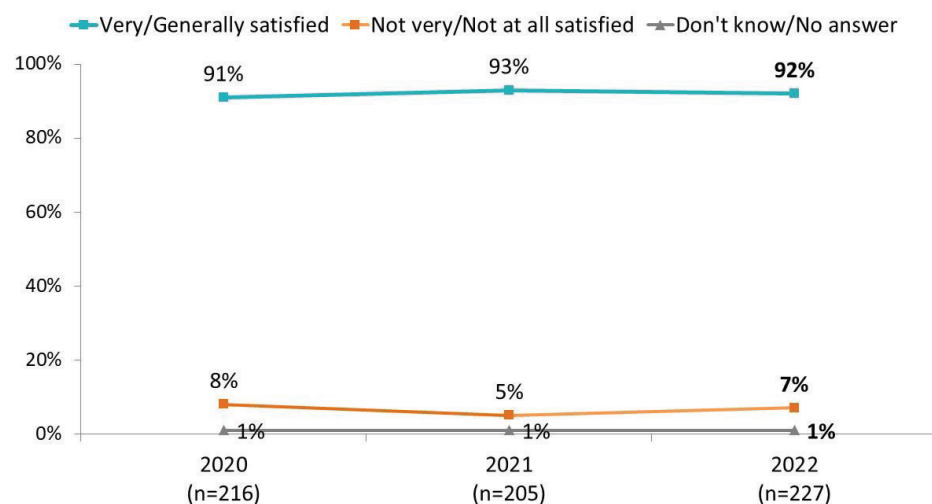
Receive Wastewater Service from Halifax Water by Area	
Dartmouth and area (n=90)	71%
Halifax City and area (n=171)	65%
County of Halifax (n=139)	36%



Wastewater Services

Opinion of Wastewater Service

Among Those Who Receive Wastewater Service From Halifax Water



Q.W50: [IF 'YES, RECEIVE WASTEWATER SERVICE FROM HALIFAX WATER' IN Q.W49] All things considered, would you say you are very satisfied, generally satisfied, not very satisfied, or not at all satisfied with the wastewater service you receive from Halifax Water?

Satisfaction with wastewater services remains high.

More than nine in ten (92%) wastewater customers are either **very** or **generally satisfied** with the service, consistent with preceding years. Satisfaction is robust across customers. (Table W50)

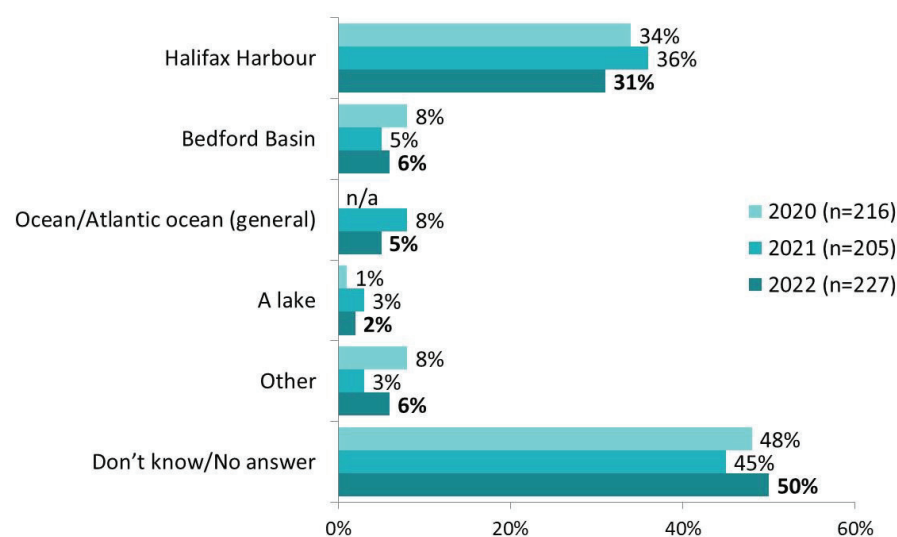


Wastewater Services

Water Body Which Receives Treated Wastewater

Among Those Who Receive Wastewater Service From Halifax Water

Total Unaided Mentions



Q.W51: [IF 'YES, RECEIVE WASTEWATER SERVICE FROM HALIFAX WATER' IN Q.W49] To the best of your knowledge, which water body eventually receives the treated wastewater from your property?

Awareness of which body of water receives treated wastewater remains limited.

Residents who receive wastewater services from Halifax Water were asked which water body eventually receives the treated wastewater from their property. Similar to last year one-half (50%) **did not know** or could not provide a definite response. Three in ten (31%) mentioned **Halifax Harbour** as the water body that receives the treated wastewater from their property.

Women and residents 18 to 34 years old are less likely to be certain of the body of water that receives treated wastewater. (Table W51)



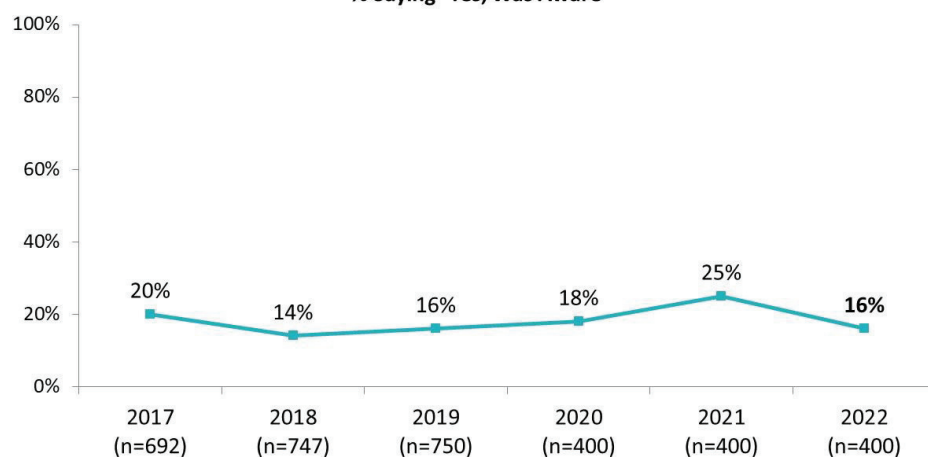
Lead Replacement Program



Lead Replacement Program

Aware of Halifax Water's Enhanced Program to Replace Lead Water Service Lines

% Saying 'Yes, Was Aware'



Q.W33: Halifax Water offers a lead service line replacement program for residential customers wanting to replace their lead water service lines that connect the water main in the street to a customer's home. The enhanced program will see Halifax Water replace the full lead service line, which includes both the public and the private section of the service line at Halifax Water's expense. Prior to today, were you aware of this enhanced program? *Note: Slight change of question wording in 2019, 2020, and 2022.*

Awareness of Halifax Water's enhanced lead service line replacement program has returned to 2020 levels, after peaking last year.

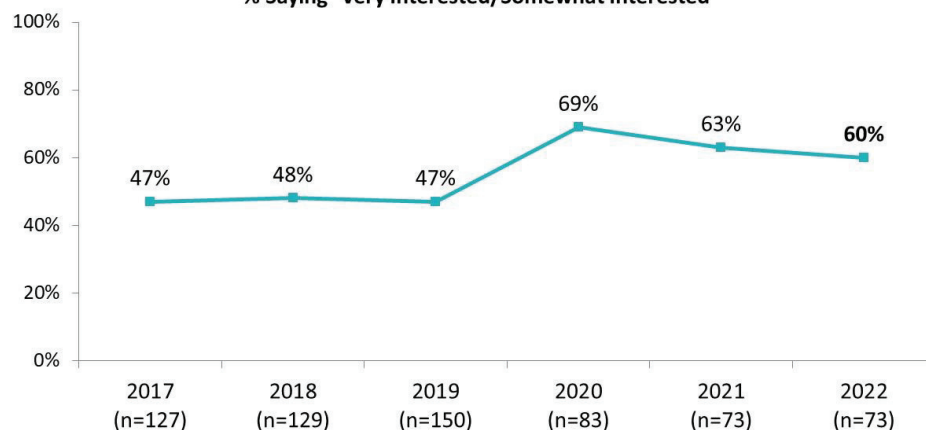
Just sixteen percent of residents are aware of this program, down nine percentage points from a year ago. The proportion of residents who are aware of this program is similar across HRM. Those with completed post secondary education are more inclined than those without to report awareness of the program. (Table W33)



Lead Replacement Program

Interest in Using Halifax Water Funded Lead Service Line Replacement Program within Next Few Years

Among Those Who Have a Home Constructed Prior to the 1960s
% Saying 'Very Interested/Somewhat Interested'



Q.W35: [IF 'YES' IN Q.W34] Lead can enter water through contact with lead water service lines and possibly internal plumbing fixtures such as taps, brass fittings, and lead or tin solder. High levels of lead can lead to serious health issues. Knowing this, are you very interested, somewhat interested, not very interested, or not at all interested in using this Halifax Water funded lead service line replacement program within the next few years? **Due to rounding. Note: Slight change of question wording in 2019 and 2020.*

Interest in the program among those in the target segment remains moderately strong.

Residents with a home constructed prior to the 1960s within peninsular Halifax and a section of downtown Dartmouth (16%) were asked if they would be interested in using the lead service line replacement program. A majority (60%) are **interested**, including 33 percent of residents who are **very interested**. Results are similar to a year ago.

Women are notably more likely to be interested than men (80% versus 43%). (Tables W34 and W35)

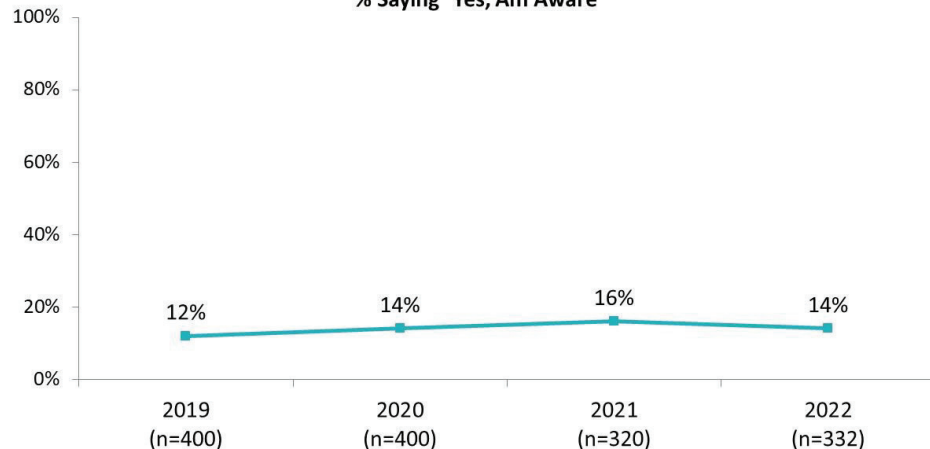
Have Home Constructed Prior to the 1960s by Area	
Overall (n=400)	16%
Halifax City and area (n=171)	28%
Dartmouth and area (n=90)	14%
County of Halifax (n=139)	7%



Emergency Financial Assistance

Aware Halifax Water Has Emergency Financial Assistance Program to Help Low Income Customers

Among Halifax Water Customers
% Saying 'Yes, Am Aware'



Q.W38: [IF Q.W4=1 'RECEIVE WATER FROM HALIFAX WATER' OR IF Q.W40=1 'RECEIVE WASTEWATER SERVICE FROM HALIFAX WATER' OR Q.W49=1 'RECEIVE STORMWATER SERVICE FROM HALIFAX WATER'] Are you aware that Halifax Water has an emergency financial assistance program to help low income customers? *Note: In 2021 and 2022 question only posed of Halifax Water customers.*

Awareness of Halifax Water's emergency financial assistance program for low income customers remains limited.

The vast majority of residents are unaware that Halifax Water has such a program. One in seven residents (14%) confirmed being aware of the emergency financial assistance program. (Table W38)



Communications



Information Sources

There remains an opportunity to further promote the Halifax Water website as a specific source of information.

One-half of customers (49%, compared with 55% a year ago) indicate the **Internet (in general)** is their preferred source of information on Halifax Water's programs and services. This is notably higher than the two in ten (22%) mentioning **Halifax Water's website** – this proportion is unchanged from a year ago.

One in ten (12%) would contact Halifax Water via **phone**, while one in ten prefer **email** (9%).

The internet in general is the referred source across segments, although it is mentioned most often among 35 to 54 year olds. The likelihood of calling Halifax Water increases with age. (Table W26)

Preferred Method for Accessing Information About Halifax Water's Programs and Services Among Halifax Water Customers Key Mentions From Total Unaided Mentions															
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Internet (general)	48%	53%	52%	51%	50%	54%	63%	58%	59%	52%	41%	56%	48%	55%	49%
Halifax Water website	1%	1%	4%	3%	3%	3%	3%	6%	7%	6%	15%	10%	16%	20%	22%
Phone/Would call them	3%	2%	2%	4%	13%	3%	8%	1%	7%	7%	5%	6%	11%	7%	12%
Email	--	--	--	--	--	--	--	--	--	--	--	--	6%	5%	9%
Mail (flyers, newsletters)	6%	10%	7%	7%	12%	9%	5%	8%	6%	7%	2%	5%	3%	4%	7%
On the bill	--	--	--	--	--	--	--	--	--	--	--	--	5%	4%	4%

Q.W26: [IF Q.W4=1 'RECEIVE WATER FROM HALIFAX WATER' OR IF Q.W40=1 'RECEIVE WASTEWATER SERVICE FROM HALIFAX WATER' OR Q.W49=1 'RECEIVE STORMWATER SERVICE FROM HALIFAX WATER'] What is your most preferred method for accessing information related to Halifax Water's programs and services? Any others? (n=332) *Note: in 2021 and 2022 question only posed of Halifax Water customers.*



Portal Use

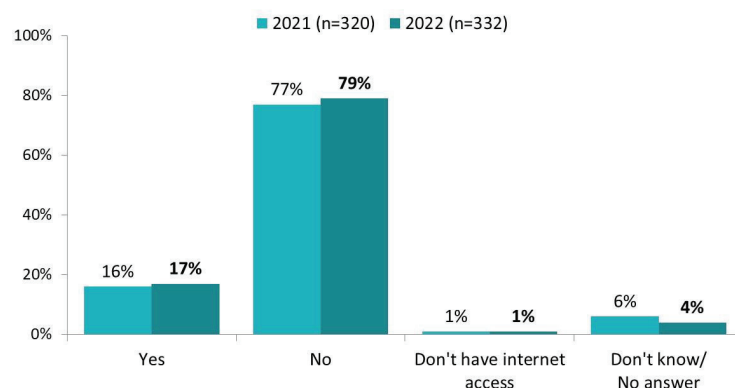
One in six customers are using the Customer Connect Portal, similar to a year ago.

This year, 17% of customers report using the Customer Connect Portal. Use of the portal increases notably with household income. Regionally, it is higher outside the Halifax city area.

Among those that use it, most use it for **managing their account information** (92%) and **tracking their billing** (88%), while fewer use it to **monitor their water consumption** (57%), a pattern similar to last year. (Tables W18, W46 a-c)

Currently Using Customer Connect Portal?

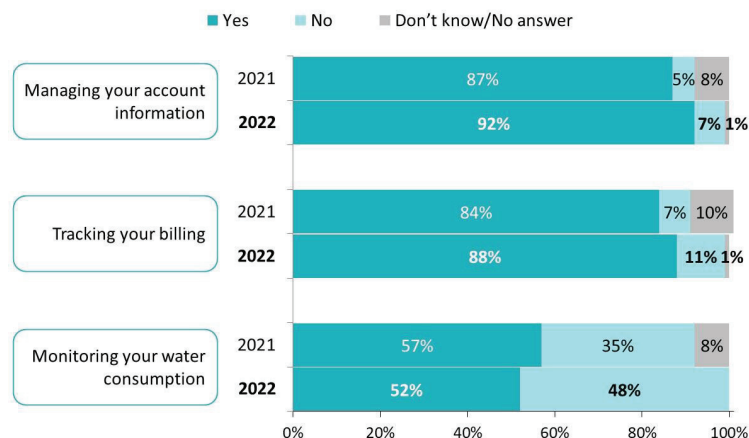
Among Halifax Water Customers



Q.W18: [POSE ONLY IF Q.W4=1 (RECEIVE WATER FROM HALIFAX WATER) OR IF Q.W40=1 (RECEIVE WASTEWATER SERVICE FROM HALIFAX WATER) OR Q.W49-1 (RECEIVE STORMWATER SERVICE FROM HALIFAX WATER)] Halifax Water launched a new Customer Connect Portal last year that allows customers to manage their account online. Customers are able to monitor their water consumption and manage their account information. Are you currently using the Customer Connect Portal? *Note: New question in 2021.*

Online Services Used

Among Customers Currently Using the Portal



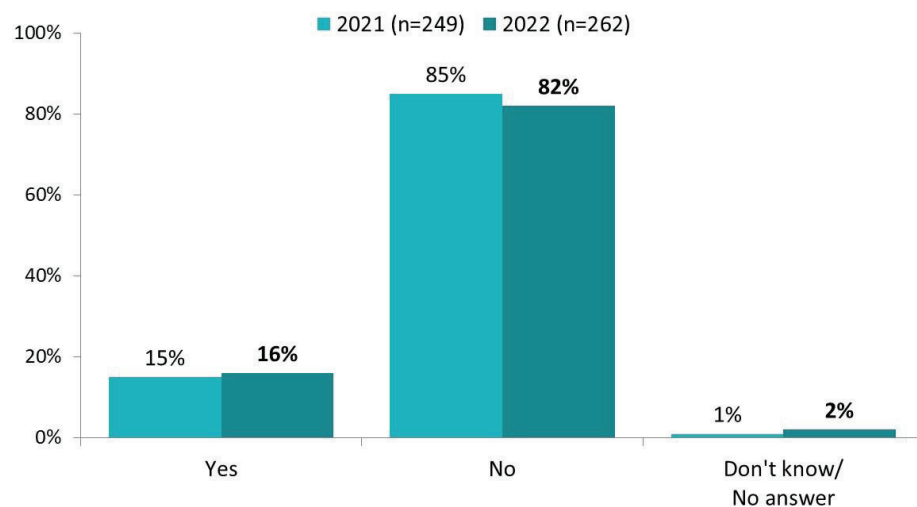
Q.W46a-c: [IF 'YES' IN Q.W18] While using the customer connect portal, which of the following online services are you using... (2021 n=50, 2022 n=54) *Note: New question in 2021.*



Portal Awareness

Seen or Heard Information Related to the Customer Connect Portal?

Among Customers Not Currently Using the Portal



Q.W47: [IF 'NO' IN Q.W18] Prior to today, have you heard or seen any information related to the Customer Connect Portal?

Note: New question in 2021.

Among customers not using the portal already, few have information about it, with results unchanged from last year.

Among customers not using the portal, only 16 percent indicated they had heard or seen information related to the portal. Awareness is elevated among 35 to 54 year olds and those with household incomes of \$100K or higher. (Table W47)



Portal Interest

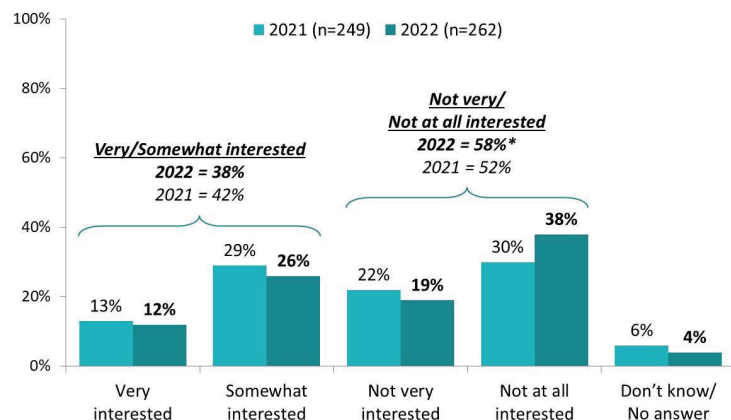
Interest in using the Customer Connect Portal remains modest.

Among customers not using the portal, four in ten (38%, compared with 42% last year) are either **very interested** or **somewhat interested** in using the portal to manage their Halifax Water account online. Interest is higher among residents under 55 years of age and increases with household income. (Table W48)

Among those very or somewhat interested, the primary benefit once again seen to using the portal is **checking how much water they are using online** (48%). Other mentions include **convenience** (22%), **managing information** (19%), **access to information/staying up to date** (18%) and **paying their bill online** (17%). (Table W52)

Interest in Managing Halifax Water Account Online

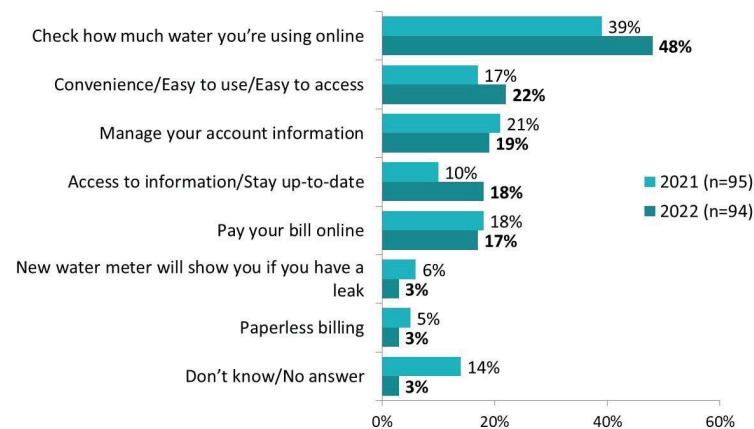
Among Customers Not Currently Using the Portal



Q.W48: [IF 'NO' IN Q.W18; DO NOT POSE IF 'NO INTERNET ACCESS' IN Q.W18] Are you very interested, somewhat interested, not very interested, or not at all interested in managing your Halifax Water account online? *Note: New question in 2021.*

Main Benefit of Using Customer Portal

Among Customers Not Currently Using But Interested
Key Unaided Mentions



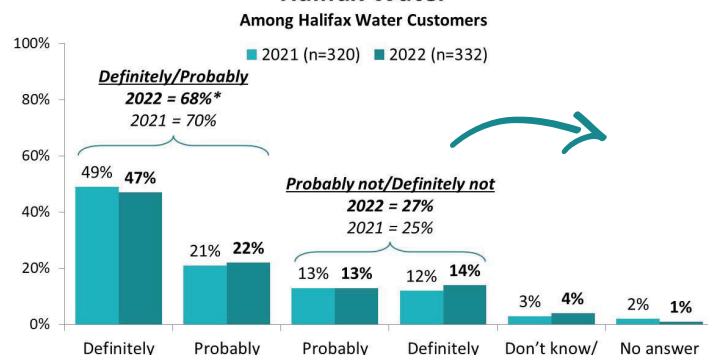
Q.W52: [IF 'VERY INTERESTED' OR 'SOMEWHAT INTERESTED' IN Q.W48] For your household, what would be the main benefit of using the Customer Connect Portal? Anything else? *Note: New question in 2021.*

There continues to be significant interest in paperless billing from Halifax Water, should it become available.

Similar to last year, one-half (47%) of Halifax Water customers say they would **definitely** sign up for paperless billing from Halifax Water, while another two in ten (22%) say they would **probably** do so. Interest is notably higher among younger than older customers (71% of 18-34, 51% of 35-54 and 24% of 55+ say definitely). It is also higher in Halifax city area (55%) than in Dartmouth and area (38%) or the rest of the county (43%). (Table W53)

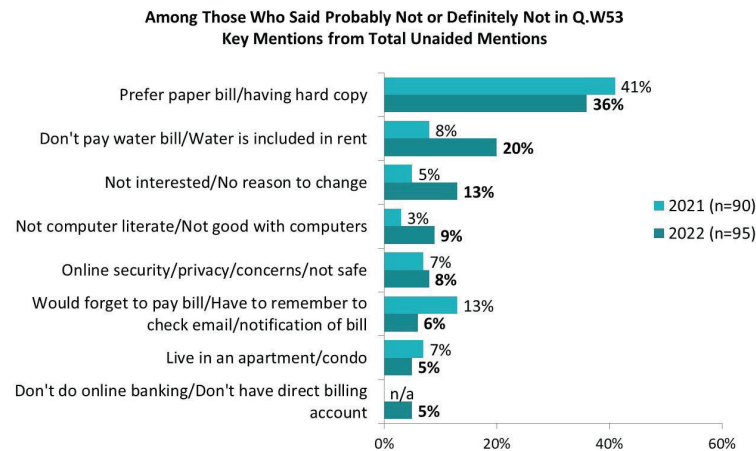
Among those who said they would probably not or definitely not sign up, the primary reason given was a **preference for a hard copy** (36%). (Table W54)

Likelihood of Signing Up for Paperless Billing with Halifax Water



Q.W53: [IF Q.W4=1 (RECEIVE WATER FROM HALIFAX WATER) OR IF Q.W40=1 (RECEIVE WASTEWATER SERVICE FROM HALIFAX WATER) OR Q.W49=1 (RECEIVE STORMWATER SERVICE FROM HALIFAX WATER)] Paperless billing is used by many utilities to be more environmentally friendly. Instead of receiving a paper bill in the mail, a customer would receive the bill notification by email and can login to their account to see and pay the bill online. If available, would you definitely, probably, probably not, or definitely not sign up for paperless billing with Halifax Water? *Due to rounding. Note: New question in 2021.

Reason for Not Signing Up For Paperless Billing with Halifax Water



Q.W54: [IF 'PROBABLY NOT' OR 'DEFINITELY NOT' IN Q.W53] What is the main reason you would [Probably not/Definitely not] sign up for paperless billing with Halifax Water. Any other reasons? Note: New question in 2021.

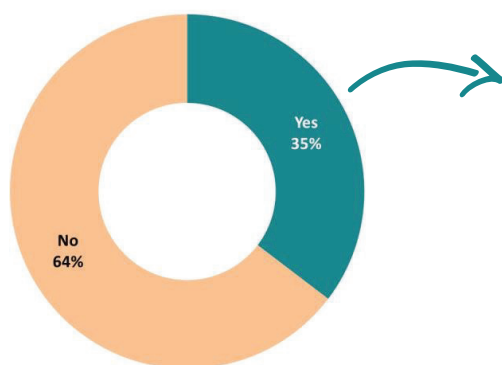
One-third of Haligonians confirm visiting the Halifax Water website.

One in three residents have visited the Halifax Water website, a proportion that rises to over one-half (53%) of those 35 to 54 years old (with 21% of those 55+ and 30% of those 18-34 having done so). The likelihood of doing so also higher among those with completed post secondary education and those with higher household incomes. As would be expected, it is also higher among Halifax Water customers, compared with non-customers, albeit one-quarter of those on well have visited the website. (Table W55)

The recency of the visit varies. That said, one-quarter have visited within the *last three months*, and another one-fifth have done so in the *past year*. (Table W56)

Satisfaction with the website is strong, with four in five (83%) indicating they are *very* or *somewhat satisfied*. (Table 57).

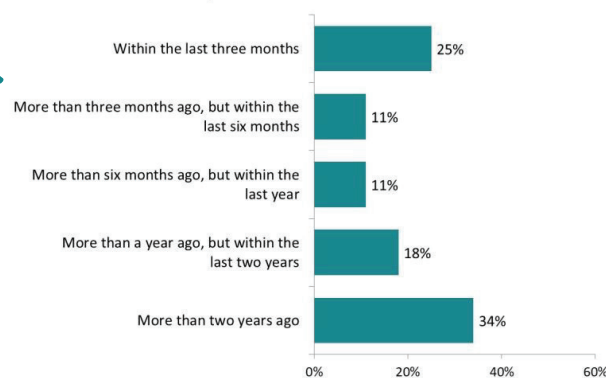
Visited Halifax Water's Website?



Q.W55: Have you ever visited the Halifax Water website? (n=400) *Note: New question in 2022.*

Last Time Visited Halifax Water's Website

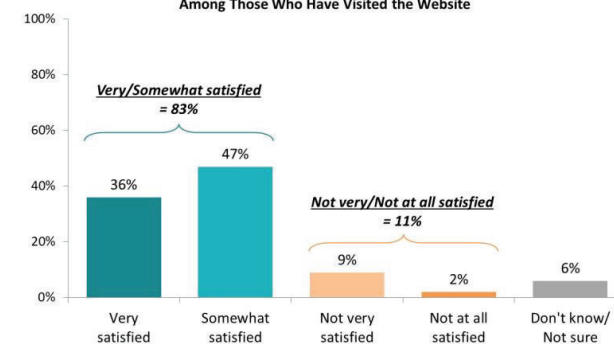
Among Those Who Have Visited the Website



Q.W56: [IF 'YES' IN Q.W55] When was the last time you visited the Halifax Water website? Was it: (n=138) *Note: New question in 2022.*

Satisfaction with Accessing Information on Last Visit to Halifax Water's Website

Among Those Who Have Visited the Website



Q.W57: [IF 'YES' IN Q.W55] Were you very satisfied, somewhat satisfied, not very satisfied, or not at all satisfied with your experience accessing or finding the relevant information you were seeking on your last visit to the Halifax Water website? (n=138) *Note: New question in 2022.*

every insight tells a story.

