

**VILLAGE OF SAYWARD
COMMITTEE OF THE WHOLE MEETING AGENDA
March 19, 2025 – 7pm
COUNCIL CHAMBERS**

The Village of Sayward respectfully acknowledges that the land we gather on is on the unceded territory of the K'ómoks First Nation, the traditional keepers of this land.

1. Call to Order

2. Public Input (Maximum of 2 minutes per speaker, 15 minutes total)

Mayor: “Public input is for the purpose of permitting people in the gallery to provide feedback and shall be no longer than 15 minutes unless approved by majority vote of Council; each speaker may provide respectful comment on any topic they deem appropriate and not necessarily on the topics on the agenda of the meeting. Each speaker may not speak for longer than 2 minutes but may have a second opportunity if time permits. Each speaker must not be allowed to speak regarding a bylaw in respect of which a public hearing has been held. For the record, please state your name and address.”

3. Introduction of Late Items

4. Approval of Agenda

Recommended Resolution:

THAT the agenda for the Committee of the Whole Meeting of Council for Wednesday March 19, 2025, be approved [as presented or as amended].

5. Petitions and Delegation - None

6. Correspondence - None

7. Council Reports - None

8. Reports of Committees - None

9. Mayor's Report- None

10. Unfinished Business - None

11. Staff Reports

a.) Kelsey Centre Financials

Recommendation:

THAT Council receives this report for information.

b.) SRD's Kelsey Centre Review Committee

Requests – for Discussion:

1. THAT the Village of Sayward Council be requested to clarify to the Kelsey Centre Review Committee specifically what they want from the SRD.

2. THAT staff provide a report with a description of the Kelsey Centre Facility.

3. THAT the Village of Sayward Council be requested to provide to the Kelsey Centre Review Committee an update as to the current status of the operability of the facility including boiler repairs, hot tub leaks, and any other known problems and furthermore:

- An accounting of secured and appropriated grants for the Kelsey Centre including an itemized list of what these grants will be spent on.
- An Accounting of Village reserve funds appropriated for the Kelsey Centre including an itemized list of what these appropriated reserves will be spent on.
- a copy of their 2025-2029 financial plan.

4. THAT the Village of Sayward Council be requested to provide to the Kelsey Centre Review Committee an up-to-date asset management report for the Kelsey Centre which details needed maintenance and upgrades with cost estimates. And furthermore:

- The approved schedule for these maintenance and repair items to be undertaken,
- Any reports regarding long-term planning for the pool area including its anticipated lifespan,
- the most recent inspection results for earthquake resilience and code compliance, with special regard to potential liability issues.

5. THAT the Village of Sayward Council be requested to provide to the Kelsey Centre Review Committee usage statistics for Village and Area A residents separately and by age category.

6. THAT the Kelsey Centre Review Committee schedule a site visit of the Kelsey Centre.

Recommendation:

THAT Council receives this report for information.

12. New Business

13. Public Question Period (maximum 15 minutes)

Mayor: “The purpose of the public question period is to enable citizens to ask questions of Council about issues that are important to the citizen asking the question. Speakers are asked to limit their questions to one each and, if time permits after everyone has had an opportunity to ask questions, speakers may ask a second question. Citizens will be asked to state their name and address.”

14. In Camera – None

15. Adjournment



Disclaimer

- The content of this presentation is for information and discussion purposes only as the Village prepares its 5-year financial plan.
- Figures are based on information available to staff and have been built using historical data and projected revenues and expenditures.
- The information within is not the final budget and is subject to change based on the direction of Council.

Description	Regular Operations (Centre and pool open as normal)	Scenario 1 - Annual revenues & expenditures for Kelsey Centre if pool is CLOSED	Scenario 2 - Annual revenues & expenditures for Kelsey Centre if Centre is CLOSED
RECREATION CENTRE			
Revenue			
Grants - Recreation	5,000	5,000	-
Kelsey Centre Gift Certificates	100	100	-
Age Friendly Program Revenue	900	900	-
Swim Lesson Fees	3,003	-	-
Ten Pack	5,018	3,513	-
Single User - Pool	2,500	-	-
Single User - Gymnasium	400	400	-
Drop In Fitness Fees	400	400	-
Drop In Weight Room Fees	400	400	-
Monthly Passes	2,000	1,400	-
After School Program/Day Care Fees	2,750	2,750	-
Concession Sales	5,500	5,500	-
Pool Rental	3,300	-	-
Gym Rental	2,600	2,600	-
Room Rental	1,500	1,500	-
Rentals - Tables and Chairs	165	165	-
Birthday Party/Event Revenue	3,000	3,000	-
Revenue - Other	-	-	-
Kelsey Centre Van Donations	2,500	2,500	2,500
Special Event Revenue/Donations	4,950	4,950	-
Afterschool Program Donations	2,500	2,500	-
Teen Program Donations	4,000	4,000	-
Total Recreation Centre Revenue	52,486	41,578	2,500
Expenditure			
Operating Expenses			
Salaries - Admin	47,335	47,335	4,734
Wages - Recreation	39,629	29,722	-
Wages - Custodian	5,274	5,274	264
Wages - Lifeguards & Pool Maintenance	30,755	1,193	1,193

Description	Regular Operations (Centre and pool open as normal)	Scenario 1 - Annual revenues & expenditures for Kelsey Centre if pool is CLOSED	Scenario 2 - Annual revenues & expenditures for Kelsey Centre if Centre is CLOSED
Payroll Costs: Admin & PW	25,022	16,841	3,085
Travel & Education - Recreation	4,000	2,000	
Advertising	750	750	-
Information Technology	3,500	3,500	3,500
Bank Charges, Fees & Interest	600	600	-
Dues, Memberships & Subscriptions	1,000	1,000	-
Afterschool Supplies/Expenses	1,500	1,500	-
Concession	3,000	3,000	-
Seniors Special Events	250	250	-
Special Events Expense	4,000	4,000	-
Teen Program Expenses	4,000	4,000	-
Swim Lesson Expenses	350	-	-
M & R, Gas & Oil - Age Friendly Van	5,000	5,000	5,000
Office Supplies	2,000	2,000	150
Chemicals & Maintenance - Pool	13,500	2,025	2,025
Rec Centre Supplies	1,200	1,200	200
Business Travel/Meetings	650	650	-
Equipment - Recreation Centre	3,750	3,500	500
Telephone & Internet	2,861	2,861	
Sub Total Operating Expenses	199,926	138,202	20,650
Building Expenses			
Salaries - Public Works	11,979	7,187	3,594
Insurance - Building	14,829	14,829	14,829
Insurance - Liability	1,597	1,597	1,597
Maintenance & Repairs - Recreation	26,000	19,500	13,000
Cleaning Supplies	1,000	850	200
Heating Fuel	32,000	25,813	6,400
Utilities	25,000	23,125	5,000
Sub Total Building Expenses	112,404	92,901	44,619
Total Recreation Centre Expenditure	312,331	231,103	65,269
Net Recreation Centre	(259,845)	(189,525)	(62,769)

Description	Regular Operations (Centre and pool open as normal)	Scenario 1 - Annual revenues & expenditures for Kelsey Centre if pool is CLOSED	Scenario 2 - Annual revenues & expenditures for Kelsey Centre if Centre is CLOSED
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Scenario 1 assumptions:

Continuation of all other recreation programming

Scenario 2 assumptions:

No programming

No staff training costs

Cancellation of phone, internet, Moneris (debit) machine

Cancellation of all recreation related dues & subscriptions

Scenario 1 - Annual revenues & expenditures for Kelsey Centre if pool is CLOSED

Description	2025 Budget	2026 Budget	2027 Budget	2028 Budget	2029 Budget	Notes
RECREATION CENTRE						
Revenue						
Grants - Recreation	5,000	5,000	5,000	5,000	5,000	
Kelsey Centre Gift Certificates	100	-	-	-	-	
Age Friendly Program Revenue	900	900	900	900	900	
Swim Lesson Fees	-	-	-	-	-	
Ten Pack	3,513	3,513	3,513	3,513	3,513	70% of total
Single User - Pool	-	-	-	-	-	
Single User - Gymnasium	400	400	400	400	400	
Drop In Fitness Fees	400	400	400	400	400	
Drop In Weight Room Fees	400	400	400	400	400	
Monthly Passes	1,400	1,400	1,400	1,400	1,400	70% of total
After School Program/Day Care Fees	2,750	2,805	2,861	2,918	2,977	
Concession Sales	5,500	5,500	5,500	5,500	5,500	
Pool Rental	-	-	-	-	-	
Gym Rental	2,600	2,600	2,600	2,600	2,600	
Room Rental	1,500	1,500	1,500	1,500	1,500	
Rentals - Tables and Chairs	165	165	165	165	165	
Birthday Party/Event Revenue	3,000	3,000	3,000	3,000	3,000	
Revenue - Other	-	-	-	-	-	
Kelsey Centre Van Donations	2,500	2,500	2,500	2,500	2,500	
Special Event Revenue/Donations	4,950	4,950	4,950	4,950	4,950	
Afterschool Program Donations	2,500	2,500	2,500	2,500	2,500	
Teen Program Donations	4,000	4,000	4,000	4,000	4,000	
Total Recreation Centre Revenue	41,578	41,533	41,589	41,646	41,704	
Expenditure						
Operating Expenses						
Salaries - Admin	47,335	48,282	49,248	50,233	51,237	
Wages - Recreation	29,722	30,316	30,922	31,541	32,172	75% based on timesheets
Wages - Custodian	5,274	5,380	5,487	5,597	5,709	
Wages - Lifeguards & Pool Maintenance	1,193	1,193	1,193	1,193	1,193	
Payroll Costs: Admin & PW	16,841	17,174	17,514	17,861	18,215	15% of wages (Rec and PW)
Travel & Education - Recreation	2,000	2,000	2,000	2,000	2,000	

Description	2025 Budget	2026 Budget	2027 Budget	2028 Budget	2029 Budget
Advertising	750	750	750	750	750
Information Technology	3,500	3,500	3,500	3,500	3,500
Bank Charges, Fees & Interest	600	600	600	600	600
Dues, Memberships & Subscriptions	1,000	1,000	1,000	1,000	1,000
Afterschool Supplies/Expenses	1,500	1,000	1,000	1,000	1,000
Concession	3,000	3,000	3,000	3,000	3,000
Seniors Special Events	250	500	500	500	500
Special Events Expense	4,000	4,000	4,000	4,000	4,000
Teen Program Expenses	4,000	4,000	4,000	4,000	4,000
Swim Lesson Expenses	-	-	-	-	-
M & R, Gas & Oil - Age Friendly Van	5,000	5,000	5,000	5,000	5,000
Office Supplies	2,000	1,500	1,500	1,500	1,500
Chemicals & Maintenance - Pool	2,025	2,025	2,025	2,025	2,025
Rec Centre Supplies	1,200	1,200	1,200	1,200	1,200
Business Travel/Meetings	650	650	650	650	650
Equipment - Recreation Centre	3,500	3,500	3,500	3,500	3,500
Telephone & Internet	2,861	2,918	2,977	3,036	3,097
Sub Total Operating Expenses	138,202	139,489	141,567	143,686	145,848
Building Expenses					
Salaries - Public Works	7,187	7,331	7,478	7,627	7,780
Insurance - Building	14,829	16,312	17,943	19,737	21,711
Insurance - Liability	1,597	1,756	1,932	2,125	2,338
Maintenance & Repairs - Recreation	19,500	19,500	19,500	19,500	19,500
Cleaning Supplies	850	850	850	850	850
Heating Fuel	25,813	27,125	27,668	28,220	28,785
Utilities	23,125	23,818	24,534	25,269	26,027
Sub Total Building Expenses	92,901	96,692	99,905	103,329	106,990
Total Recreation Centre Expenditure	231,103	236,181	241,471	247,015	252,838
Net Recreation Centre	(189,525)	(194,648)	(199,883)	(205,369)	(211,134)

Notes

15% of total - minimal chemicals required

60% of total (based on timesheets)

Scenario 2 - Annual revenues & expenditures for Kelsey Centre if Centre is CLOSED

Description	2025 Budget	2026 Budget	2027 Budget	2028 Budget	2029 Budget	Notes
RECREATION CENTRE						
Revenue						
Kelsey Centre Van Donations	2,500	2,500	2,500	2,500	2,500	
Total Recreation Centre Revenue	2,500	2,500	2,500	2,500	2,500	
Expenditure						
Operating Expenses						
Salaries - Admin	4,734	4,828	4,925	5,023	5,124	
Wages - Recreation	-	-	-	-	-	
Wages - Custodian	264	269	274	280	285	5% of total
Wages - Lifeguards & Pool Maintenance	1,193	1,193	1,193	1,193	1,193	
Payroll Costs: Admin & PW	3,085	3,143	3,202	3,263	3,324	15% of wages (Rec and PW)
Travel & Education - Recreation						
Advertising	-	-	-	-	-	
Information Technology	3,500	3,500	3,500	3,500	3,500	Emails, cloud, computers
Bank Charges, Fees & Interest	-	-	-	-	-	
Dues, Memberships & Subscriptions	-	-	-	-	-	
Afterschool Supplies/Expenses	-	-	-	-	-	
Concession	-	-	-	-	-	
Seniors Special Events	-	-	-	-	-	
Special Events Expense	-	-	-	-	-	
Teen Program Expenses	-	-	-	-	-	
Swim Lesson Expenses	-	-	-	-	-	
M & R, Gas & Oil - Age Friendly Van	5,000	5,000	5,000	5,000	5,000	
Office Supplies	150	150	150	150	150	
Chemicals & Maintenance - Pool	2,025	2,025	2,025	2,025	2,025	15% of total - minimal chemicals required
Rec Centre Supplies	200	200	200	200	200	
Business Travel/Meetings	-	-	-	-	-	
Equipment - Recreation Centre	500	500	500	500	500	
Telephone & Internet						
Sub Total Operating Expenses	20,650	20,809	20,970	21,134	21,302	
Building Expenses						
Salaries - Public Works	3,594	3,666	3,739	3,814	3,890	30% of total

Description	2025 Budget	2026 Budget	2027 Budget	2028 Budget	2029 Budget
Insurance - Building	14,829	16,312	17,943	19,737	21,711
Insurance - Liability	1,597	1,756	1,932	2,125	2,338
Maintenance & Repairs - Recreation	13,000	13,000	13,000	13,000	13,000
Cleaning Supplies	200	200	200	200	200
Heating Fuel	6,400	7,000	7,140	7,283	7,428
Utilities	5,000	5,150	5,305	5,464	5,628
Sub Total Building Expenses	44,619	47,084	49,258	51,622	54,194
Total Recreation Centre Expenditure	65,270	67,892	70,228	72,757	75,496
Net Recreation Centre	(62,770)	(65,392)	(67,728)	(70,257)	(72,996)

Notes

50% of total

20% of total, minimal heat for pool, gym, saunas, MPR, kitchen

20% of total, minimal heat and electricity

Assumptions:

No programming

No staff training costs

Cancellation of phone, internet, Moneris (debit) machine

Cancellation of all Rec Centre related Dues & Subscriptions

Annual revenues & expenditures for pool

Description	2025 Budget	2026 Budget	2027 Budget	2028 Budget	2029 Budget	Notes
POOL						
Revenue						
Swim Lesson Fees	3,003	3,003	3,003	3,003	3,003	
Ten Pack	1,505	1,505	1,505	1,505	1,505	30% of total
Single User - Pool	2,500	2,500	2,500	2,500	2,500	
Monthly Passes	600	600	600	600	600	30% of total
Pool Rental	3,300	3,300	3,300	3,300	3,300	
Total Pool Revenue - Annual	10,908	10,908	10,908	10,908	10,908	
Total Pool Revenue - Monthly	1,212	1,212	1,212	1,212	1,212	
Expenditure						
Annual operating costs for 9 months of the year - Jan-Jun, Oct-Dec						
Operating Expenses						
Wages - Recreation	9,907	10,105	10,307	10,514	10,724	25% of total (based on timesheets)
Wages - Custodian	1,319	1,345	1,372	1,399	1,427	25% of total (based on timesheets)
Wages - Lifeguards & Pool Maintenance	30,755	31,370	31,998	32,637	33,290	
Payroll Costs: Admin & PW	8,453	8,622	8,795	8,971	9,150	15% of wages (Rec and PW)
Travel & Education - Pool	2,600	2,600	2,600	2,600	2,600	65% of total (based on GL history)
Dues, Memberships & Subscriptions	500	500	500	500	500	Island Health permits
Swim Lesson Expenses	350	550	550	550	550	
Chemicals & Maintenance - Pool	13,500	13,500	13,500	13,500	13,500	
Equipment - Pool	1,500	1,500	1,500	1,500	1,500	40% of total (based on GL history)
Sub Total Pool Expenses	68,884	70,093	71,122	72,171	73,242	
Building Expenses						
Salaries - Public Works	4,792	4,887	4,985	5,085	5,187	40% of total (based on timesheets)
Insurance - Building	4,449	4,893	5,383	5,921	6,513	30% of total (building footprint for pool and boiler room, SOV's)
Insurance - Liability	383	422	464	510	561	24% of total (based on pooled claims data from MIABC)
Maintenance & Repairs - Pool	9,100	9,100	9,100	9,100	9,100	35% of total (based on GL history)
Cleaning Supplies	200	200	200	200	200	20% of total (information from Custodian) - wait for Sarah to reply
Heating Fuel	8,000	8,750	8,925	9,104	9,286	25% of total (information from PW department - propane for heat exchangers for pool and hot tub)
Utilities	3,750	3,863	3,978	4,098	4,221	15% of total (information from PW department - pool pump, heat exchanger pump, dehumidifier, pool vacuum)
Sub Total Building Expenses (Pool)	30,673	32,115	33,035	34,017	35,067	
Total Expenditure - Annual	99,558	102,208	104,157	106,188	108,309	
Total Expenditure - Monthly	8,296	11,356	11,573	11,799	12,034	
Net - Annual	(88,649)	(91,299)	(93,248)	(95,280)	(97,400)	
Net - Monthly	(7,387)	(7,608)	(7,771)	(7,940)	(8,117)	

Annual expenditures for pool if pool is CLOSED

Description	2025 Budget	2026 Budget	2027 Budget	2028 Budget	2029 Budget	Notes
POOL						
Revenue						
Total Pool Revenue - Annual	-	-	-	-	-	
Total Pool Revenue - Monthly						
Expenditure						
Operating Expenses						
Wages - Admin	793	808	825	841	858	
Wages - Custodian	264	269	274	280	285	
Wages - Pool Maintenance	1,193	1,193	1,193	1,193	1,193	15% - minimal maintenance by Pool Operator
Payroll Costs: Admin & PW	2,384	2,408	2,433	2,457	2,483	15% of wages
Travel & Education - Pool	600	600	600	600	600	Certifications/Dues
Dues, Memberships & Subscriptions	500	500	500	500	500	Island Health permits
Swim Lesson Expenses	-	-	-	-	-	
Chemicals & Maintenance - Pool	2,025	2,025	2,025	2,025	2,025	15% of total - minimal chemicals required
Equipment - Pool	188	188	188	188	188	
Sub Total Pool Expenses	7,947	7,992	8,037	8,084	8,132	
Building Expenses						
Salaries - Public Works	898	916	935	953	972	7.5% of total (based on timesheets)
Insurance - Building	4,449	4,893	5,383	5,921	6,513	30% of total (building footprint for pool and boiler room, SOV's)
Insurance - Liability	383	422	464	510	561	24% of total (based on pooled claims data from MIABC)
Maintenance & Repairs - Pool	2,600	2,600	2,600	2,600	2,600	10% of total
Cleaning Supplies	50	50	50	50	50	5% of total (information from Custodian)
Heating Fuel	800	875	893	910	929	2.5% of total (information from PW department - propane for heat exchangers for pool and hot tub)
Utilities	1,875	1,931	1,989	2,049	2,110	7.5% of total (information from PW department - pool pump, heat exchanger pump, dehumidifier, pool vacuum)
Sub Total Building Expenses - Pool	11,055	11,688	12,313	12,994	13,736	
Total Expenditure - Annual	19,002	19,679	20,350	21,078	21,868	
Total Expenditure - Monthly	1,583	2,187	2,261	2,342	2,430	
Net - Annual	(19,002)	(19,679)	(20,350)	(21,078)	(21,868)	
Net - Monthly	(1,583)	(1,640)	(1,696)	(1,756)	(1,822)	

Description	2017 Actual	2018 Actual	2019 Actual	2020 Actual	2021 Actual	2022 Actual	2023 Actual	2024 Actual	2025 Budget	2026 Budget	2027 Budget	2028 Budget
RECREATION CENTRE												
Revenue												
Grants - Recreation	-	-	-	-	-	7,978	-	5,000	5,000	5,000	5,000	5,000
Kelsey Centre Gift Certificates	-	-	24	-	-		30	120	100	-	-	-
Age Friendly Program Revenue	12,491	845	-	55	-	1,030	1,011	722	900	900	900	900
Swim Lesson Fees	-	-	1,195	-	-	1,210	4,250	4,024	3,003	3,003	3,003	3,003
Ten Pack	4,371	6,145	3,645	1,204	1,360	2,645	6,480	6,107	5,018	5,018	5,018	5,018
Single User - Pool	5,166	4,642	3,996	1,448	962	1,086	3,113	2,475	2,500	2,500	2,500	2,500
Single User - Gymnasium	574	297	288	308	104	535	176	583	400	400	400	400
Drop In Fitness Fees	359	156	116	38	5	131	886	143	400	400	400	400
Drop In Weight Room Fees	525	406	220	32	54	332	221	348	400	400	400	400
Monthly Passes	834	766	160	190	-	171	1,229	1,826	2,000	2,000	2,000	2,000
After School Program/Day Care Fees	3,524	4,292	3,390	-	257	1,395	1,423	2,837	2,750	2,805	2,861	2,918
Concession Sales	4,274	5,303	3,376	1,290	905	2,235	4,404	5,709	5,500	5,500	5,500	5,500
Pool Rental	75	444	-	-	-	109	6,111	1,905	3,300	3,300	3,300	3,300
Gym Rental	150	953	3,544	417	1,587	2,673	1,714	2,635	2,600	2,600	2,600	2,600
Room Rental	274	95	502	-	-	114	4,006	1,252	1,500	1,500	1,500	1,500
Rentals - Tables and Chairs	457	678	165	58	-	485	314	-	165	165	165	165
Birthday Party/Event Revenue	343	630	458	219	128	2,023	2,480	2,749	3,000	3,000	3,000	3,000
Revenue - Other	-	-	-	-	-	902	-	399	-	-	-	-
Kelsey Centre Van Donations	3,662	2,821	3,634	2,314	2,904	5,244	1,335	3,194	2,500	2,500	2,500	2,500
Special Event Revenue/Donations	1,690	1,986	1,358	899	256	1,396	9,817	3,191	4,950	4,950	4,950	4,950
Afterschool Program Donations	2,450	130	204	-	-	156	30	1,250	2,500	2,500	2,500	2,500
Teen Program Donations	-	-	-	-	-			3,350	4,000	4,000	4,000	4,000
Transfer from Reserves					16,000	27,850	-	-	-	-	-	-
Total Recreation Centre Revenue	41,219	30,589	26,275	8,472	24,522	59,701	49,031	49,819	52,486	52,441	52,497	52,554
Expenditure												
Operating Expenses												
Salaries - Admin	37,393	38,000	32,823	31,029	30,644	40,998	38,104	47,050	47,335	48,282	49,248	50,233
Wages - Recreation	38,430	37,739	23,424	13,287	15,769	35,276	45,685	56,176	39,629	40,421	41,230	42,054
Wages - Custodian	9,812	8,118	4,593	7,031	4,079	8,289	4,879	7,046	5,274	5,380	5,487	5,597
Wages - Lifeguards	25,660	30,558	19,041	8,914	10,013	12,531	38,636	25,947	30,755	31,370	31,998	32,637
Payroll Costs: Admin & PW	24,862	21,196	18,911	14,964	15,161	16,957	20,490	26,200	25,022	25,522	26,033	26,553
Travel & Education - Recreation	2,953	2,526	2,461	692	1,251	7,887	594	3,843	4,000	4,000	4,000	4,000

Description	2017 Actual	2018 Actual	2019 Actual	2020 Actual	2021 Actual	2022 Actual	2023 Actual	2024 Actual	2025 Budget	2026 Budget	2027 Budget	2028 Budget
Advertising	-	250	-	-	250	868	-	-	750	750	750	750
Information Technology	-	-	-	-	-	1,554	2,640	3,330	3,500	3,500	3,500	3,500
Bank Charges, Fees & Interest	-	-	-	-	46	457	530	597	600	600	600	600
Dues, Memberships & Subscriptions	262	452	262	288	274	387	1,186	966	1,000	1,000	1,000	1,000
Afterschool Supplies/Expenses	-	-	275	-	336	944	1,279	1,568	1,500	1,000	1,000	1,000
Concession	2,576	2,940	1,505	944	677	1,432	2,621	3,839	3,000	3,000	3,000	3,000
Seniors Special Events	7,973	2,315	1,154	-	-	13	199	60	250	500	500	500
Special Events Expense	4,075	5,486	3,858	899	1,756	2,896	7,163	6,238	4,000	4,000	4,000	4,000
Teen Program Expenses	-	-	-	-	-			4,440	4,000	4,000	4,000	4,000
Swim Lesson Expenses	-	-	41	-	-	709	349	506	350	550	550	550
M & R, Gas & Oil - Age Friendly Van	3,652	2,821	3,634	2,314	2,904	5,244	4,095	5,377	5,000	5,000	5,000	5,000
Office Supplies	1,012	984	1,103	367	1,290	1,497	1,982	2,540	2,000	1,500	1,500	1,500
Chemicals & Maintenance - Pool	4,560	3,721	3,525	3,198	1,518	7,044	10,916	13,070	13,500	13,500	13,500	13,500
Rec Centre Supplies	2,535	2,855	1,873	1,758	1,308	944	1,085	971	1,200	1,200	1,200	1,200
Business Travel/Meetings	-	-	-	176	360	382	195	-	650	650	650	650
Equipment - Recreation Centre	3,430	3,458	3,015	1,263	1,245	7,062	6,750	2,955	3,750	3,750	3,750	3,750
Telephone & Internet	2,691	2,794	2,633	2,981	2,027	1,856	2,773	2,190	2,861	2,918	2,977	3,036
Sub Total Operating Expenses	171,876	166,213	124,131	90,105	90,908	155,478	192,206	214,928	199,926	202,394	205,472	208,611
Building Expenses												
Salaries - Public Works	-	-	11,262	5,986	9,018	10,576	14,061	11,812	11,979	12,219	12,463	12,712
Insurance - Building	8,601	13,081	13,683	12,189	10,852	10,541	10,882	13,481	14,829	16,312	17,943	19,737
Insurance - Liability	4,878	784	772	794	959	1,376	1,424	1,452	1,597	1,756	1,932	2,125
Maintenance & Repairs - Recreation	37,163	15,596	13,029	8,752	17,498	19,786	25,446	13,295	26,000	26,000	26,000	26,000
Cleaning Supplies	583	1,492	676	1,986	1,254	1,256	1,174	1,528	1,000	1,000	1,000	1,000
Heating Fuel	25,465	32,455	27,125	20,301	32,933	42,153	24,439	43,063	32,000	35,000	35,700	36,414
Utilities	19,954	19,970	16,789	13,980	12,918	15,254	27,048	18,684	25,000	25,750	26,523	27,318
Sub Total Building Expenses	96,644	83,378	83,336	63,988	85,432	100,944	104,474	103,314	112,404	118,037	121,560	125,307
Total Recreation Centre Expenditure	268,520	249,591	207,467	154,093	176,340	256,421	296,679	318,242	312,331	320,431	327,032	333,918
Net Recreation Centre	(227,301)	(219,002)	(181,192)	(145,621)	(151,818)	(196,720)	(247,649)	(268,424)	(259,845)	(267,990)	(274,535)	(281,364)

Description	Account Codes	2017 Actual	2018 Actual	2019 Actual	2020 Actual	2021 Actual	2022 Actual	2023 Actual	2024 Actual	2025 Budget	2026 Budget	2027 Budget	2028 Budget	2029 Budget
RECREATION CENTRE														
Revenue														
Grants - Recreation	01-01-06-0140	-	-	-	-	-	7,978	-	5,000	5,000	5,000	5,000	5,000	5,000
Kelsey Centre Gift Certificates	01-01-06-0167	-	-	24	-	-	-	30	120	100	-	-	-	-
Age Friendly Program Revenue	01-01-06-0168	12,491	845	-	55	-	1,030	1,011	722	900	900	900	900	900
Swim Lesson Fees	01-01-06-0169	-	-	1,195	-	-	1,210	4,250	4,024	3,003	3,003	3,003	3,003	3,003
Ten Pack	01-01-06-0171	4,371	6,145	3,645	1,204	1,360	2,645	6,480	6,107	5,018	5,018	5,018	5,018	5,018
Single User - Pool	01-01-06-0173	5,166	4,642	3,996	1,448	962	1,086	3,113	2,475	2,500	2,500	2,500	2,500	2,500
Single User - Gymnasium	01-01-06-0174	574	297	288	308	104	535	176	583	400	400	400	400	400
Drop In Fitness Fees	01-01-06-0177	359	156	116	38	5	131	886	143	400	400	400	400	400
Drop In Weight Room Fees	01-01-06-0178	525	406	220	32	54	332	221	348	400	400	400	400	400
Monthly Passes	01-01-06-0179	834	766	160	190	-	171	1,229	1,826	2,000	2,000	2,000	2,000	2,000
After School Program/Day Care Fees	01-01-06-0182	3,524	4,292	3,390	-	257	1,395	1,423	2,837	2,750	2,805	2,861	2,918	2,977
Concession Sales	01-01-06-0183	4,274	5,303	3,376	1,290	905	2,235	4,404	5,709	5,500	5,500	5,500	5,500	5,500
Pool Rental	01-01-06-0185	75	444	-	-	-	109	6,111	1,905	3,300	3,300	3,300	3,300	3,300
Gym Rental	01-01-06-0186	150	953	3,544	417	1,587	2,673	1,714	2,635	2,600	2,600	2,600	2,600	2,600
Room Rental	01-01-06-0187	274	95	502	-	-	114	4,006	1,252	1,500	1,500	1,500	1,500	1,500
Rentals - Tables and Chairs	01-01-06-0188	457	678	165	58	-	485	314	-	165	165	165	165	165
Birthday Party/Event Revenue	01-01-06-0189	343	630	458	219	128	2,023	2,480	2,749	3,000	3,000	3,000	3,000	3,000
Revenue - Other	01-01-06-0192	-	-	-	-	-	902	-	399	-	-	-	-	-
Kelsey Centre Van Donations	01-01-06-0270	3,662	2,821	3,634	2,314	2,904	5,244	1,335	3,194	2,500	2,500	2,500	2,500	2,500
Special Event Revenue/Donations	01-01-06-0271	1,690	1,986	1,358	899	256	1,396	9,817	3,191	4,950	4,950	4,950	4,950	4,950
Afterschool Program Donations	01-01-06-0272	2,450	130	204	-	-	156	30	1,250	2,500	2,500	2,500	2,500	2,500
Teen Program Donations	01-01-06-0274	-	-	-	-	-	-	-	3,350	4,000	4,000	4,000	4,000	4,000
Transfer from Reserves						16,000	27,850	-	-	-	-	-	-	-
Total Recreation Centre Revenue		41,219	30,589	26,275	8,472	24,522	59,701	49,031	49,819	52,486	52,441	52,497	52,554	52,613
Expenditure														
Operating Expenses														
Salaries - Admin	01-02-06-0350	37,393	38,000	32,823	31,029	30,644	40,998	38,104	47,050	47,335	48,282	49,248	50,233	51,237
Wages - Recreation	01-02-06-0352	38,430	37,739	23,424	13,287	15,769	35,276	45,685	56,176	39,629	40,421	41,230	42,054	42,895
Wages - Custodian	01-02-06-0353	9,812	8,118	4,593	7,031	4,079	8,289	4,879	7,046	5,274	5,380	5,487	5,597	5,709
Wages - Lifeguards	01-02-06-0354	25,660	30,558	19,041	8,914	10,013	12,531	38,636	25,947	30,755	31,370	31,998	32,637	33,290
Payroll Costs: Admin & PW	01-02-06-0370	24,862	21,196	18,911	14,964	15,161	16,957	20,490	26,200	25,022	25,522	26,033	26,553	27,085
Travel & Education - Recreation	01-02-06-0380	2,953	2,526	2,461	692	1,251	7,887	594	3,843	4,000	4,000	4,000	4,000	4,000
Advertising	01-02-06-0400	-	250	-	-	250	868	-	-	750	750	750	750	750
Information Technology	01-02-06-0414	-	-	-	-	-	1,554	2,640	3,330	3,500	3,500	3,500	3,500	3,500
Bank Charges, Fees & Interest	01-02-06-0420	-	-	-	-	46	457	530	597	600	600	600	600	600
Dues, Memberships & Subscriptions	01-02-06-0435	262	452	262	288	274	387	1,186	966	1,000	1,000	1,000	1,000	1,000
Afterschool Supplies/Expenses	01-02-06-0437	-	-	275	-	336	944	1,279	1,568	1,500	1,000	1,000	1,000	1,000
Concession	01-02-06-0438	2,576	2,940	1,505	944	677	1,432	2,621	3,839	3,000	3,000	3,000	3,000	3,000
Seniors Special Events	01-02-06-0439	7,973	2,315	1,154	-	-	13	199	60	250	500	500	500	500
Special Events Expense	01-02-06-0440	4,075	5,486	3,858	899	1,756	2,896	7,163	6,238	4,000	4,000	4,000	4,000	4,000
Teen Program Expenses	01-02-06-0441	-	-	-	-	-	-	-	4,440	4,000	4,000	4,000	4,000	4,000
Swim Lesson Expenses	01-02-06-0442	-	-	41	-	-	709	349	506	350	550	550	550	550
M & R, Gas & Oil - Age Friendly Van	01-02-06-0480	3,652	2,821	3,634	2,314	2,904	5,244	4,095	5,377	5,000	5,000	5,000	5,000	5,000
Office Supplies	01-02-06-0510	1,012	984	1,103	367	1,290	1,497	1,982	2,540	2,000	1,500	1,500	1,500	1,500
Chemicals & Maintenance - Pool	01-02-06-0515	4,560	3,721	3,525	3,198	1,518	7,044	10,916	13,070	9,500	13,500	13,500	13,500	13,500
Rec Centre Supplies	01-02-06-0516	2,535	2,855	1,873	1,758	1,308	944	1,085	971	1,200	1,200	1,200	1,200	1,200
Business Travel/Meetings	01-02-06-0518	-	-	-	176	360	382	195	-	650	650	650	650	650
Equipment - Recreation Centre	01-02-06-0529	3,430	3,458	3,015	1,263	1,245	7,062	6,750	2,955	3,750	3,750	3,750	3,750	3,750
Telephone & Internet	01-02-06-0540	2,691	2,794	2,633	2,981	2,027	1,856	2,773	2,190	2,861	2,918	2,977	3,036	3,097
Sub Total Operating Expenses		171,876	166,213	124,131	90,105	90,908	155,478	192,206	214,928	195,926	202,394	205,472	208,611	211,814
Building Expenses														
Salaries - Public Works	01-02-06-0360	-	-	11,262	5,986	9,018	10,576	14,061	11,812	11,979	12,219	12,463	12,712	12,966
Insurance - Building	01-02-06-0445	8,601	13,081	13,683	12,189	10,852	10,541	10,882	13,481	14,829	16,312	17,943	19,737	21,711
Insurance - Liability	01-02-06-0447	4,878	784	772	794	959	1,376	1,424	1,452	1,597	1,756	1,932	2,125	2,338
Maintenance & Repairs - Recreation	01-02-06-0450	37,163	15,596	13,029	8,752	17,498	19,786	25,446	13,295	26,000	26,000	26,000	26,000	26,000
Cleaning Supplies	01-02-06-0454	583	1,492	676	1,986	1,254	1,256	1,174	1,528	1,000	1,000	1,000	1,000	1,000
Heating Fuel	01-02-06-0550	25,465	32,455	27,125	20,301	32,933	42,153	24,439	43,063	27,500	35,000	35,700	36,414	37,142
Utilities	01-02-06-0555	19,954	19,970	16,789	13,980	12,918	15,254	27,048	18,684	25,000	25,750	26,523	27,318	28,138
Sub Total Building Expenses		96,644	83,378	83,336	63,988	85,432	100,944	104,474	103,314	107,904	118,037	121,560	125,307	129,295
Total Recreation Centre Expenditure		268,520	249,591	207,467	154,093	176,340	256,421	296,679	318,242	303,831	320,431	327,032	333,918	341,108
Net Recreation Centre		-227,301	-219,002	-181,192	-145,621	-151,818	-196,720	-247,649	-268,424	-251,345	-267,990	-274,535	-281,364	-288,496

Notes

Total - 2017 to 2024

-1,637,727

Total - 2017 to 2029

-3,001,455

Kelsey Centre Asset Life Cycle

Asset	Service Life	Age	%of SL	LiOF	Cof	Risk	Priority Class	Scheduled Replacement Year	Scheduled Second Replacement	Replacement Cost
Kelsey Centre / Municipal Hall 1	70	49	70%	200%	2	4	3	2044	2114	\$ 852,000.00
Kelsey Centre / Municipal Hall 2	70	49	70%	200%	2	4	3	2044	2114	\$ 633,000.00
Kelsey Centre / Municipal Hall 3	70	49	70%	200%	2	4	3	2044	2114	\$ 1,680,000.00
Kelsey Centre / Municipal Hall 4	70	49	70%	200%	2	4	3	2044	2114	\$ 1,256,000.00
									Total	\$ 4,421,000.00

DATE: April 25, 2023
TO: Keir Gervais, Village of Sayward
CC: Lisa Clark, Tony Leggat, Village of Sayward
FROM: Steven Olson, Urban Systems
FILE: 2906.0008.01
SUBJECT: Infrastructure Risk Assessment Criteria and Framework – Draft For Discussion

1.0 INTRODUCTION

This memorandum outlines findings through the asset inventory and risk assessment process that constitutes phase one of the development of an updated asset management program for the Village of Sayward. Urban Systems has undertaken a review of available inventory data for the Village to compile and confirm the asset inventory as well as define asset classes as a basis for the formulation of risk assessment criteria and framework. The resulting consequence and likelihood of failure assessment have for primary objective in supporting and refining a prioritized capital project list and capital planning that will take place in phase two of the project.

1.1 BACKGROUND

In 2016, the Village of Sayward completed an Asset Management Program including a strategy and policy for roads, linear water, sanitary sewer, and storm drainage infrastructure that was adopted the following year by Village Council. Several next steps were later identified by staff and Council members to help the strategy to become more implementable and capable of guiding decision-making processes for prioritizing capital project planning.

Urban System subsequently helped the Village put together a successful application with the Federation of Canadian Municipalities for a grant under the Municipal Asset Management Program (MAMP) to develop these next steps. The asset management implementation program for the Village of Sayward was devised to address key challenges faced by the Village such as infrastructure funding shortfalls from a small tax base, aging infrastructures, and staff turnover and limited internal capacity. The proposal for the initial phase includes updating the current asset inventory listings and associated GIS maps to develop a methodology for ranking assets classes using a risk and consequences framework. The resulting score cards seek to:

- provide a roadmap linking infrastructure investment decisions to service outcomes,
- Provide guidance on the financial needs of an infrastructure renewal model
- developing realistic and implementable tools for successful service delivery options; and
- Provide a tool to support financial decisions with respect to infrastructure renewal (I.e: helping decide where to focus current funding dollars).

2.0 METHODOLOGY

2.1 INFORMATION GATHERING

Asset inventory is the critical component of asset management planning. Urban Systems reviewed all available inventory listings from the Village office and existing database from the Strathcona Regional District GIS

database. These steps provided an opportunity to verify and update existing assets and elaborate the following asset classes:

- Water distribution system
- Sanitary sewer collection system
- Storm sewer collection system
- Road systems
- Buildings
- Vehicles
- Equipment

These updated asset classes were used to develop a standardized rating system to describe and confirm the needed attention of the asset conditions. A GIS base mapping system was also developed for the asset classes at this stage and is included as Appendix A of this memo.

2.2 ASSUMPTION AND DATA GAPS

To complete the project, an in-depth review of the Village's GIS data was completed and found that the data was good with minor data gaps requiring assumptions to be made. The data gaps included missing asset information such as asset sizes, material, and installation years.

To address the data gaps, the following assumptions were made:

- Sanitary and watermain pipes missing diameters were assigned a diameter of 200mm
- Stormwater pipes missing diameters were assigned a diameter of 250mm
- Mains missing installation date was assumed to be 1968
- Mains missing material type were assumed to have a life expectancy of 60 years

Ditching infrastructure was also not included in the village's GIS data. All ditches that are attached to roadways were assumed to be a part of the roadway structure and not separated out. Ditches not attached to the roadway, like through the central park were added as assets and assigned age and condition values manually with the specific details to be confirmed. The village also has a limited record of piping breaks or failure history, and to accurately classify the condition of the infrastructure, the age is the main factor to determine the condition.

2.3 STANDARD RATING SYSTEM

Determining the risk of the infrastructure is a way of defining which assets should be replaced. Asset rating can be broken out into two categories, one being the likelihood of failure, and the other being the consequence of failure, explained in detail below.

2.3.1 Service Life – Likelihood of Failure

The likelihood of failure is intended to provide guidance on when a specific asset has reached its service life and would be expected to need replacement. While reaching the service life does not guarantee failure, it has been documented that assets who have reached their service life are more likely to start to require more effort and

cost to maintain and should be considered high priority for replacement. Based on observations from similar asset inventory condition assessments on Vancouver Island the following service life values have been proposed (Table 1). This asset type service table should be a living document in the future and updated as information is learned or adjusted based on operating experience.

Table 1 – Material Service Life Estimates

Pipe Materials	Service Life	Sanitary Systems	Service Life	Road Systems	Service Life
Asbestos	60	Sanitary Lift Station	50	Loose (Gravel)	10
Cement					
PVC	85	Pumps	25	Rough (Paved)	25
Concrete	60	Piping	50	Paved	50
HDPE	100	Controls	25		
Ductile Iron	110	Chamber and structures	50		
CMP (Corrugated Metal Pipe)	50				

These values have been added to a risk matrix to provide a relative condition of each asset item as a percentage point of the service life.

Linear asset classes were evaluated based on a set of criteria for quantifying the likelihood of failure by assigning a score from one (least likely) up to five for the most likely to fail. The percentage of service life accrued at the time of assessment based on the pipe network material was one of the bases for classification. To create more texture to the assessment and to capture specific circumstances in the local networks, breakage history or observed pipe conditions could also be used in the future to further inform ranking criterion. Table 2 shows the ranking scheme for a typical linear structure such as watermain.

Table 2 – Likelihood of Failure

Likelihood of failure	% of Service Life (SL)		Break History Count
5	Asset more than 150% of SL	OR	3
4	Asset age 110% to 150% of SL	OR	2
3	Asset age 90% to 110% of SL	OR	1
2	Asset age 50% to 90% of SL	OR	
1	Asset age <50% of SL	OR	

2.3.2 Consequence of Failure

The second consideration to determine the asset risk score is to evaluate the consequence of failure for the asset. For the village, the consequences can be judged by using a mixed criteria of financial, environmental, and social impacts which are also referred to as the triple bottom line. Financial impacts could include collateral damages caused by the failure, legal costs, and costs resulting from shutting down or limiting operations. Environmental impacts could include contamination to the environment, violations and fines, and loss of habitat or impacts to

wildlife. Social impacts could include impacts to public health and safety, community resources, and public image.

The below figure was used to assist in assigning the village's assets. This table is meant to be general enough so that different asset categories could all be assessed under a single ranking category.

Table 3: Consequence of Failure Ratings

Consequence of Failure	Description	Example
5	Health and safety or public is at risk from asset failure. Exceedance of permit limits	Sewage treatment plant, water treatment plant and reservoirs, sewage lift stations.
4	Major damage to major assets or private property Potential to negatively harm the environment Potential to cause impacts to wildlife	Major water and sewer trunk mains, major roadways.
3	Disruption to businesses Disruption to staff and operations Repair requires working within private lots and remediation	Secondary larger water and sewer mains.
2	Disruption to less than 15% of serviced lots	Local roads and local water and sewer mains.
1	No identifiable consequences Disruption to less than 5% of serviced lots	Services and lanes

The consequence score can be adjusted based on local priorities. If community priorities change, the above table can be adjusted or revised to determine which assets would be most consequential to the village's operations, and thus, be brought forward as a priority for replacement programs. This also applies for the consequence rankings of the assets and the assigned values are meant to be updated throughout time.

2.3.3 Condition Risk Score

Using both the consequence and likelihood scores from the above sections, they are then multiplied together for each asset to provide an overall risk score as shown in Table 4. The overall risk score is a tool that can be used to justify or determine which assets would require replacement before other assets or to understand the overall health of the system and support long term replacement programs.

Table 4 – Condition Risk Score Matrix

5	5	10	15	20	25
4	4	8	12	16	20
3	3	6	9	12	15
2	2	4	6	8	10
1	1	2	3	4	5
	1	2	3	4	5

LIKELIHOOD OF FAILURE

These risk scores can then be broken down into priority categories where sections of projects can be put into replacement programs and investigated in further depth. The categories would be from Priority 1 (highest) to Priority 3 (lowest) and are described in further below.

- Priority 1:
 - o Assets under this category are considered high priority from a risk perspective and should be put into the 5-year replacement project list.
 - o Defined as having a condition risk score of 15 or greater.
- Priority 2:
 - o Assets under this category are lower risk and should be put into a 5-15 year replacement project list.
 - o Defined as having a condition risk score of 8 to 12.
- Priority 3:
 - o Assets under this category should be considered low risk and likely not be considered on a replacement list until reaching a priority 2 level. The value for replacement should be considered for the village's operation budget and planning.
 - o Defined as having a condition risk score of 1 to 7.

2.3.4 Capacity considerations

While this report starts to paint a picture of asset replacement based on age and risk what it cannot do is help understand infrastructure needs from a capacity perspective. Typically, most municipal assets have been historically replaced due to capacity constraints rather than condition. We understand the Village may be undertaking water and sewer master plans that will help support decisions from this perspective. This report should be reviewed in conjunction with other known areas of concerns such as infrastructure capacity or drainage issues that are documented.

3.0 RESULTS

Below are the summary tables for the village's infrastructure broken down into the priority categories and the associated replacement values for each of the major asset classes. The full list of priority 1 and priority 2 assets are included in Appendix B which include a summary of individual assets, their age, attributes, and individual replacement costs.

3.1 ROADWAY INFRASTRUCTURE

It was found that there were no priority 1 and 2 roadway systems with the town in comparison to the risk associated with the other asset classes like sewer and water. Roadways also typically benefit from on the ground condition inspections. While the age of a roadway's indicative of its service life we know that roads will see different condition factors and will degrade at different level in the field. Roadway condition scores will be discussed further in this program. As noted above based on service life and risk there are no major road upgrades expected with the next 5 years which may not reflect the actual road conditions in the village.

With roadways, it may also be considered to align roadway replacements to the underground infrastructure replacement programs.

Table 5 – Replacement Costs based on Priority Rankings for Roads

Roadways	Length (m)	Replacement Cost
Priority 1 (5 Year)	-	\$0
Priority 2 (5-15 Year)	-	\$0
Priority 3	16,843	\$14,086,000

3.2 SEWER INFRASTRUCTURE

Sewer systems include all items required with transportation and disposal of the wastewater system which are:

- Gravity sewer mains and manholes
- Lift stations and force mains
- Wastewater Treatment plant

Through the risk assessment, it was determined that there was the lift station at 560 Kelsey Road that was classified as a priority 1 asset. This is due to lift stations having a high consequence of failure, and the age of the lift station being more than 55 years old. As a budgetary estimate, the value of the lift station for replacement is totaled at \$500,000 but could be addressed with maintenance activities or upgrades to lengthen the service life of the asset.

Looking ahead further to priority 2 projects, there are a large amount of sewer mains (2,848m) that are reaching their estimated service life in 2028. They are largely made up of 150-200mm AC sewer mains located along Kelsey

Way, MacMillan Drive and Sayward Road. These mains are a higher risk subset of a large group of sewer mains that were installed in 1968. Table 6 below outlines the breakdown between the priority classes along with estimated costs and asset count information.

Table 6 – Replacement Costs based on Priority Rankings for Sewer

Sewer	Main Length (m)	Individual Assets	Replacement Cost
Priority 1 (5 Year)	-	1	\$500,000
Priority 2 (5-15 Year)	2,848	2	\$3,799,000
Priority 3	14,972	2	\$8,043,000

3.3 WATER INFRASTRUCTURE

Water infrastructures include all items required for the distribution and supply of drinking water and fire supply which are:

- Water reservoir and disinfection equipment
- Linear mains, fittings, valves, and services
- Fire hydrants and other connection points

Through the risk assessment, it was determined that is a single section of watermain that was classified as a priority 1 asset, being a 102m length 200mm AC pipe installed in 1968 that was a large part of the water distribution for the entire village of Sayward which is located near 570 MacMillan Drive. Based on the risk assessment It is recommended that this section of watermain would be the number 1 priority for replacement or provide a secondary redundant water feed line to the village.

Priority 2 assets identified are a mix of 150 and 200mm AC mains also installed in 1968 and service a large portion of the village's critical infrastructure. These should be planned for replacement within the next 5 years. Table 7 below outlines the breakdown between the priority classes along with estimated costs and asset count information.

Table 7 – Replacement Costs based on Priority Rankings for Water

Water	Length (m)	Replacement Cost
Priority 1 (5 Year)	102	\$89,000
Priority 2 (5-15 Year)	523	\$427,000
Priority 3	5,669	\$8,043,000

3.4 STORMWATER INFRASTRUCTURE

Stormwater infrastructures include all items required for the distribution and movement of rain and groundwater which are:

- Culverts, manholes and piping

- Catch basins and service leads
- Ditching and headwalls

Through the risk assessment, it was determined that there were no priority 1 or 2 mains based on condition and risk alone. This would be to say, stormwater infrastructure should not be the leading reason for replacement programs. However, we do know that the Village needs upgrades due to flooding and drainage concerns at several locations. These upgrades have been identified based on flooding and other concerns brought forward through studies and on the ground experience.

Table 8 below outlines the breakdown between the priority classes along with estimated costs and asset count information.

Table 8 – Replacement Costs based on Priority Rankings for Storm

Storm	Length (m)	Replacement Cost
Priority 1 (5 Year)	-	\$0
Priority 2 (5-15 Year)	-	\$0
Priority 3	3189	\$4,817,000

3.5 BUILDING INFRASTRUCTURE

Building infrastructure includes all buildings and shelters that are owned and operated by the village. Building assets and condition assessments have been previously compiled as part of the previous asset management work completed in 2019. The age of buildings alone is not able to determine condition or priorities as buildings typically have gone through renovations and upgrades from time to time that can drastically change the needs and overall condition of a building. Similarly, buildings are rarely completely replaced but rather upgraded or expanded.

Referring to the building condition assessments completed in 2019, they outline detailed items like; fire protection system, plumbing fixtures, hot water heating fixtures, etc., which provide a better understanding of the needs.

3.6 EQUIPMENT AND VEHICLES

Equipment and vehicles are a broad category that includes:

- Fire protection vehicles and village vehicles
- Operational equipment like mowers and tractors
- Park features such as baseball diamonds and tennis courts
- Village electronic equipment such as generators and computers

Through the risk assessment, it was determined that there was a priority 1 asset which was the fire rescue vehicle #33. It is currently past its service life and should be re-assessed to determine if the service life should be extended, upgrades made, or planned for replacement. The priority 2 assets that were found were the fire rescue vehicle #3

and breathing apparatuses for fire protection. These priority 1 and 2 assets are identified due to the consequence of failure, relating to fire safety, to the village and are identified as important assets. Table 10 below outlines the breakdown between the priority classes along with estimated costs and asset count information.

Table 9 – Replacement Costs based on Priority Rankings for Equipment

Equipment	Number of Assets	Replacement Cost
Priority 1 (5 Year)	1	\$287,500
Priority 2 (5-15 Year)	2	\$587,000
Priority 3	22	\$2,472,500

*Individual Assets are defined as buildings, vehicles, equipment.

The above noted Priority 1 vehicle corresponds to rescue vehicle #33. This vehicle has been identified based on the age of the vehicle and the risk associated with it.

3.7 SAMPLE PROJECTS

For the purposes of understanding the scope of what a Priority 1 project would be, 3 selected projects have been identified in Table 10. When a high-risk project is identified, parallel infrastructure, roadway length and reinstatement is included in the project costs.

Table 90 – Sample Projects determined from Condition Risk Scoring

Project Name	Description	Cost
Rescue Vehicle (#33)	Replacement value of the firetruck*. To confirm if truck should be replaced with a similar or different model based on Village's needs.	\$287,500
Lift Station Replacement	560 Kelsey Way Lift station Include 200mm AC forcemain attached to lift station Include 200mm AC watermain running parallel to force main Include Roadway resurfacing for Kelsey Way	\$1,670,000
Watermain	101m of 200mm AC pipe that acts as the distribution main for the entire village – upgrade to DI or other material with longer service life 100m of 300mm CMP culvert running parallel to watermain – upgrade to HDPE or other materials with longer service life	\$219,095

* Based on the estimate from Onsite Engineering in 2019 with inflation rates since purchase date.

3.8 COST TO REPLACE THE ASSETS

The replacement costs for linear assets were determined using unit rates developed from actual construction costs from the mid island area and represent 2023 dollars. These rates include a 15% allowance for engineering, and a 25% contingency. These rates assume a standard construction method involving open trench excavation and reinstatement. It does not consider rehabilitation methods like pipe relining as the current pipe conditions are not known and would need to be assessed at the time of replacement planning and design.

Values for the building, vehicles, and equipment were taken from the Village's Tangible Capital Assets (TCA) spreadsheet and required adjustments due to inflation as the prices recorded are based on the commissioning date.

3.9 HOW MUCH MONEY NEEDS TO BE INVESTED ANNUALLY

Along with identifying priority projects, this program aims to determine the annual investment that is required to operate and maintain the Villages existing assets. The below graphs are based on the assets being replaced once the service life has been reached. It does not consider repairs, upgrades or maintenance that may be able to extend the service life. Individual assets should be looked at in closer detail for ways to be able to prolong the service life. These graphs are meant to be used to estimate the average annual investment value to be able to plan for the future.

In the case of the linear infrastructure, there is a large amount of piping that was installed in 1968 that will be reaching its service life in 2028. Based on the above risk assessments, these will not all fail at the same time and do not need to be replaced in that year but should be planned for replacement, spread over the upcoming years. The 30-year average annual investment for linear infrastructure was estimated to be \$333,000, and individual assets of \$468,000. That is to say that an average investment of approximately \$800,000 would be required moving into the future to plan for future infrastructure replacement needs.

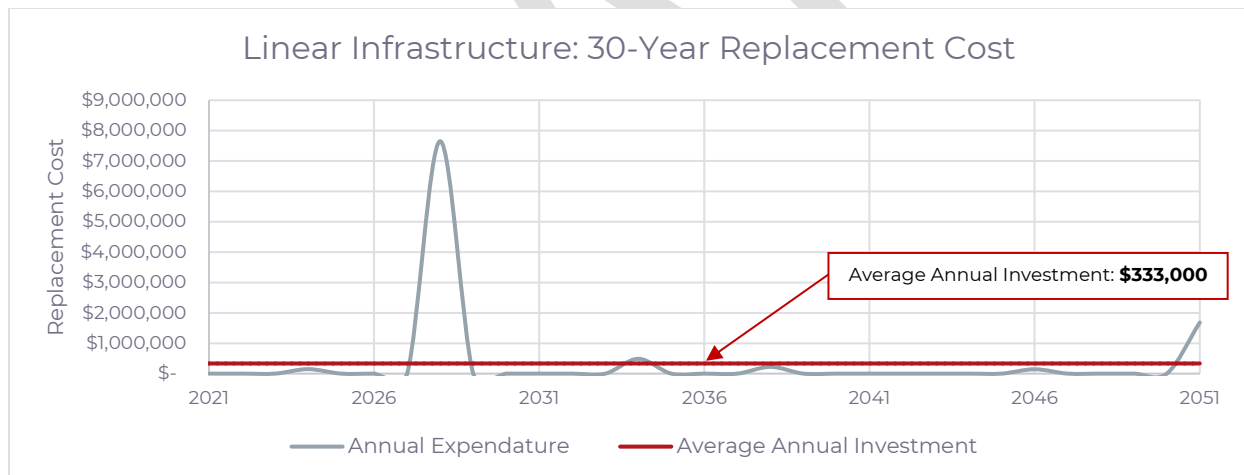


Figure 1: Linear Infrastructure replacement Costs

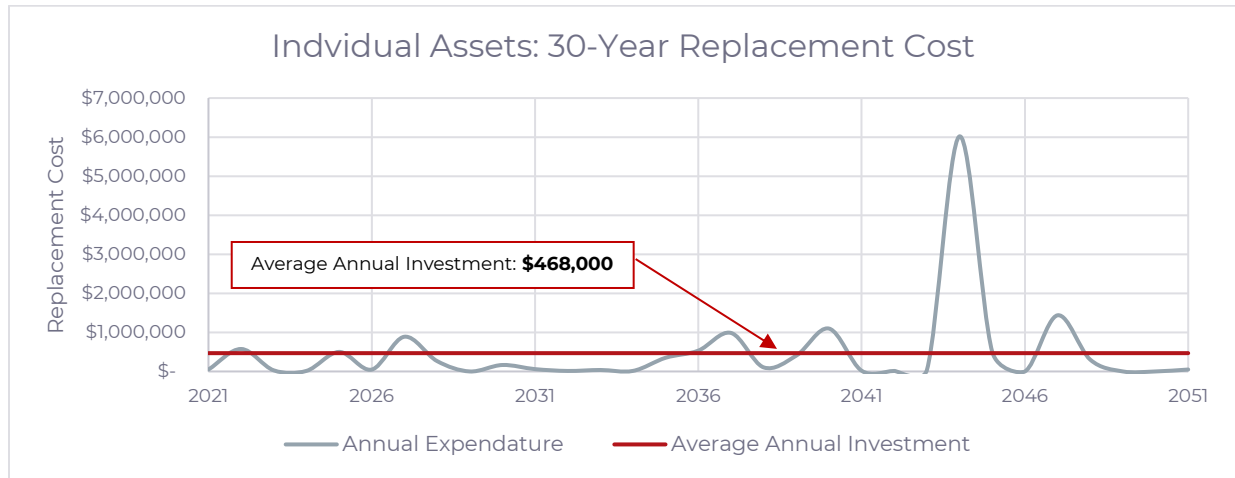


Figure 2: Individual Infrastructure replacement Costs

4.0 CLIMATE CHANGE ADAPTATION

Assets affected by climate change may be:

- Drainage sizing due to changing weather patterns
- Fire safety in dry months
- Droughts affecting the water supply system for the village

A way that climate change adaptation can be integrated into the village's asset inventory would be to add the infrastructure capacity information to the subject category. In the example of stormwater systems, a drainage study may be used to determine the current estimated capacities. Then using climate change modelling for increased rainfall events can be inputted into the capacity model and review if there is any inadequate infrastructure. Accounting for climate change is a way through mitigation and preparedness that the village can prepare for storm events while also repairing or replacing their existing and aging infrastructure.

DATE: April 20, 2023
FILE: 2906.0008.01
SUBJECT: Infrastructure Risk Assessment Criteria and Framework – Draft For Discussion

PAGE: 12 of 12

5.0 CLOSURE

As noted above, the goal of this memo was to provide a summary of the findings regarding the asset inventory, risk assessment and considerations for climate change adaptation. Further discussion with the village should take place to confirm missing asset information. The village staff should be consulted to confirm condition priorities or preferred service objectives and priorities.

Sincerely,

URBAN SYSTEMS LTD.

Steven Olson, EIT
Project Engineer

Eric Sears, P.Eng
Municipal Engineer

cc: Sydney Rankmore, Community Planner – Urban Systems

/Rt/So

Enclosure:

Appendix A – Village Utility Asset Map
Appendix B – Risk Table – Priority 1 and 2

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Village of
Sayward

200

Metres

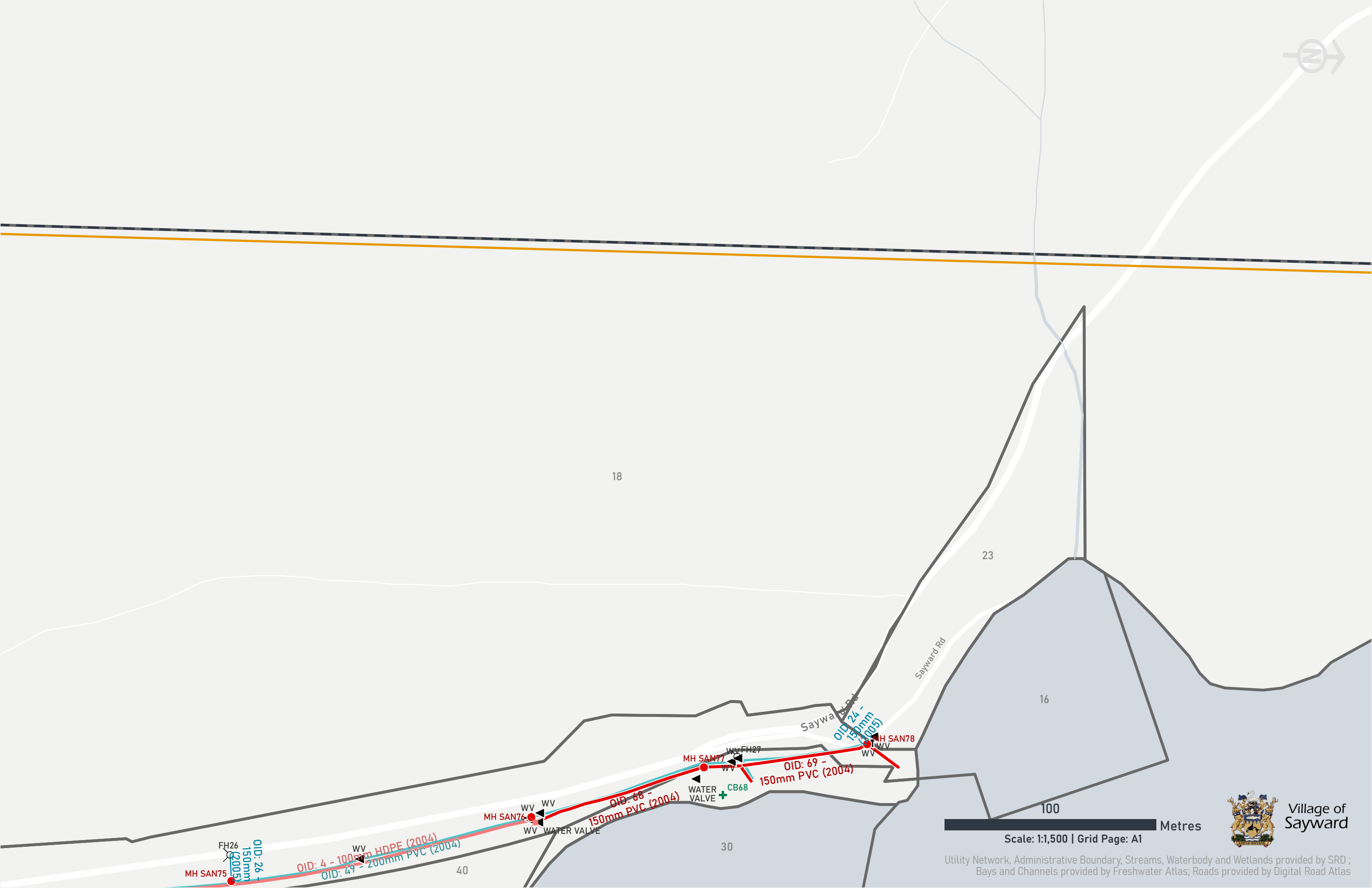


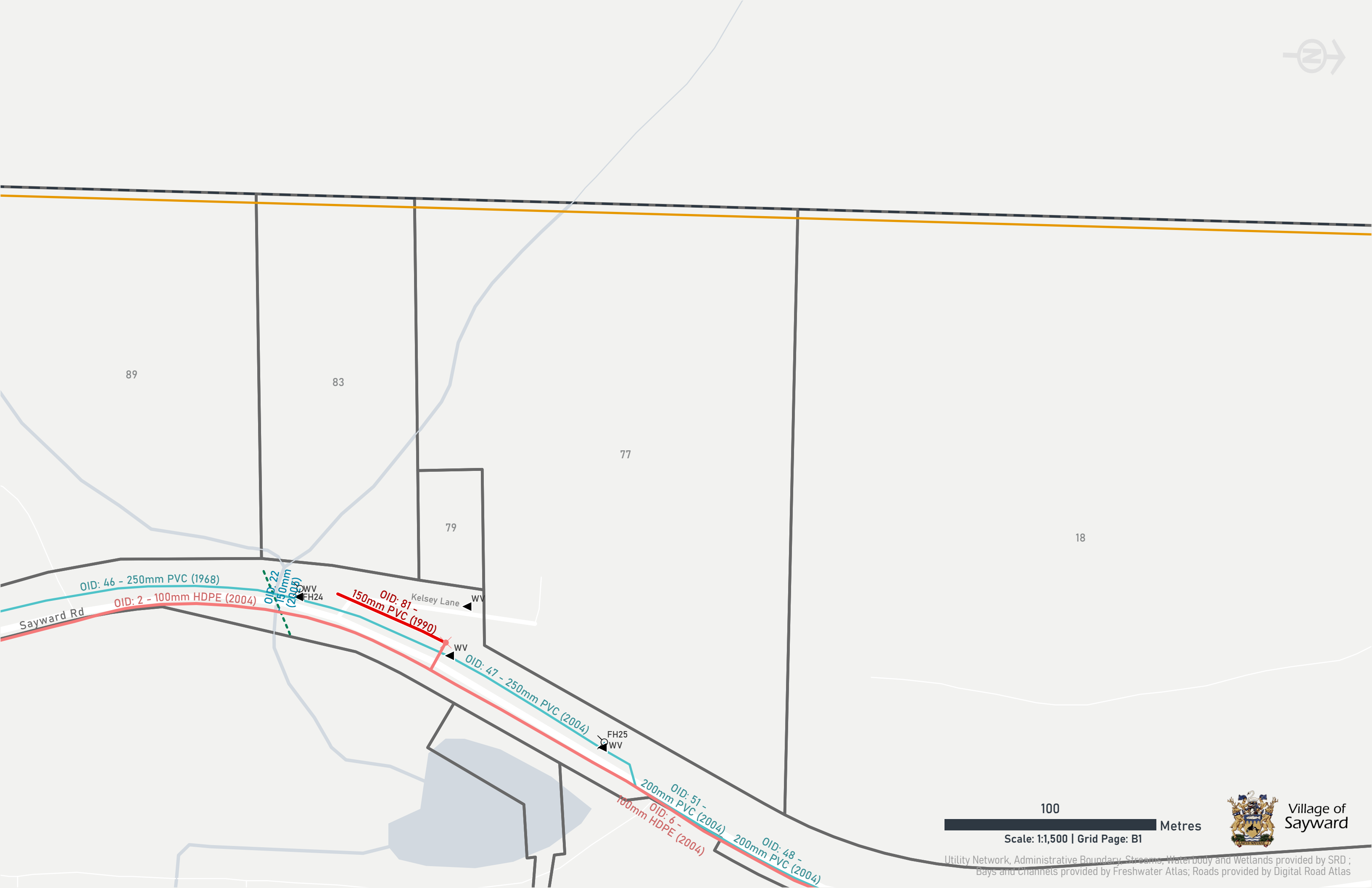
15

km

Johnstone Strait

SALMON RIVER
1 (K'OMOKS)
Village of
Sayward





89

83

77

79

18

OID: 46 - 250mm PVC (1968)

OID: 2 - 100mm HDPE (2004)

OID: 22 - 150mm PVC (2004)

OID: 81 - 150mm PVC (1990)

WV

WV

FH25

WV

OID: 51 - 200mm PVC (2004)

OID: 6 - 100mm HDPE (2004)

OID: 48 - 200mm PVC (2004)

Sayward Rd

Kelsey Lane

100

Metres

Scale: 1:1,500 | Grid Page: B1



Village of Sayward

Utility Network, Administrative Boundary, Streams, Waterbody and Wetlands provided by SRD ;
Bays and Channels provided by Freshwater Atlas; Roads provided by Digital Road Atlas



WATER
PRESS
VALVE

MH SAN74

OID: 3 - 100mm HDPE (2004)

FH28

OID: 27 - 150mm (2005)

Sayward Rd

OID: 48 - 200mm PVC (2004)



80

OID: 0 - 200mm PVC (1995)

100

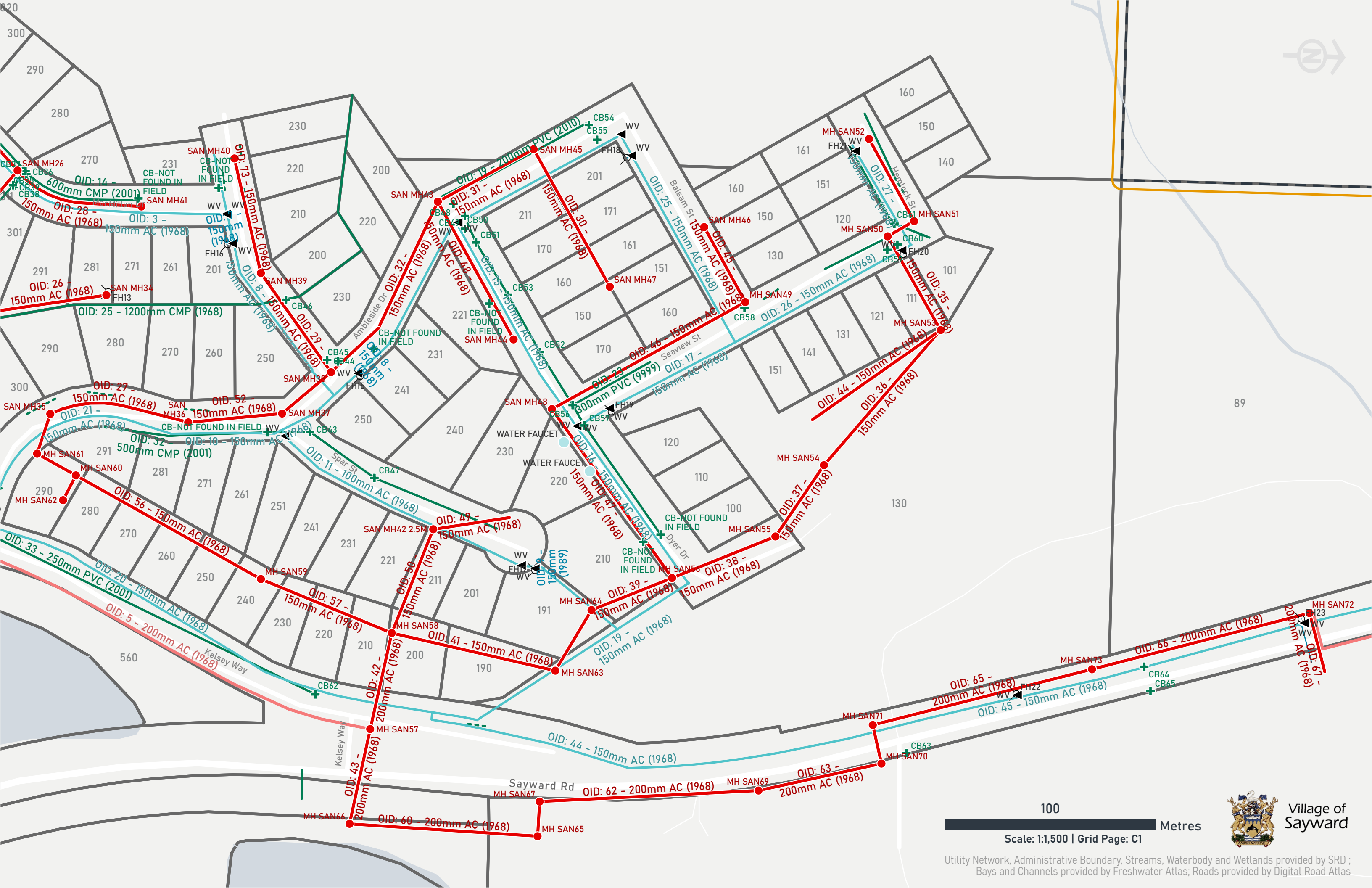
Metres

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Village of
Sayward

Utility Network, Administrative Boundary, Streams, Waterbody and Wetlands provided by SRD;
Bays and Channels provided by Freshwater Atlas; Roads provided by Digital Road Atlas



100
Metres
Scale: 1:1,500 | Grid Page: C1



Utility Network, Administrative Boundary, Streams, Waterbody and Wetlands provided by SRD ;
Bays and Channels provided by Freshwater Atlas; Roads provided by Digital Road Atlas



MH SAN68

OID: 0 - 200mm PVC (1995)

100

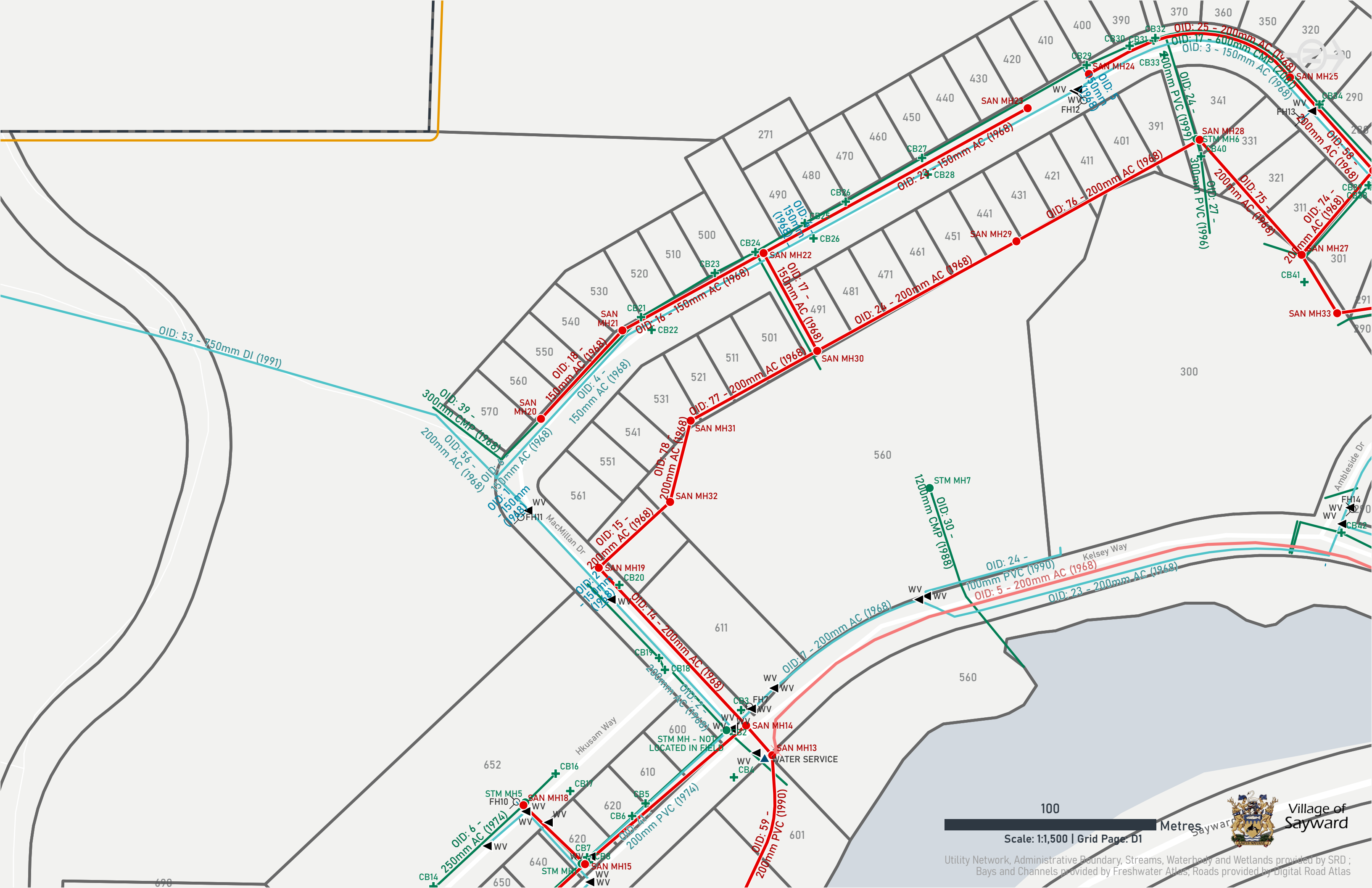
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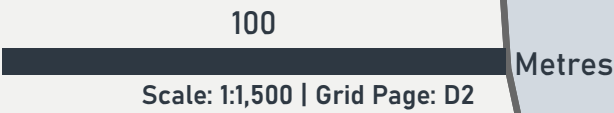
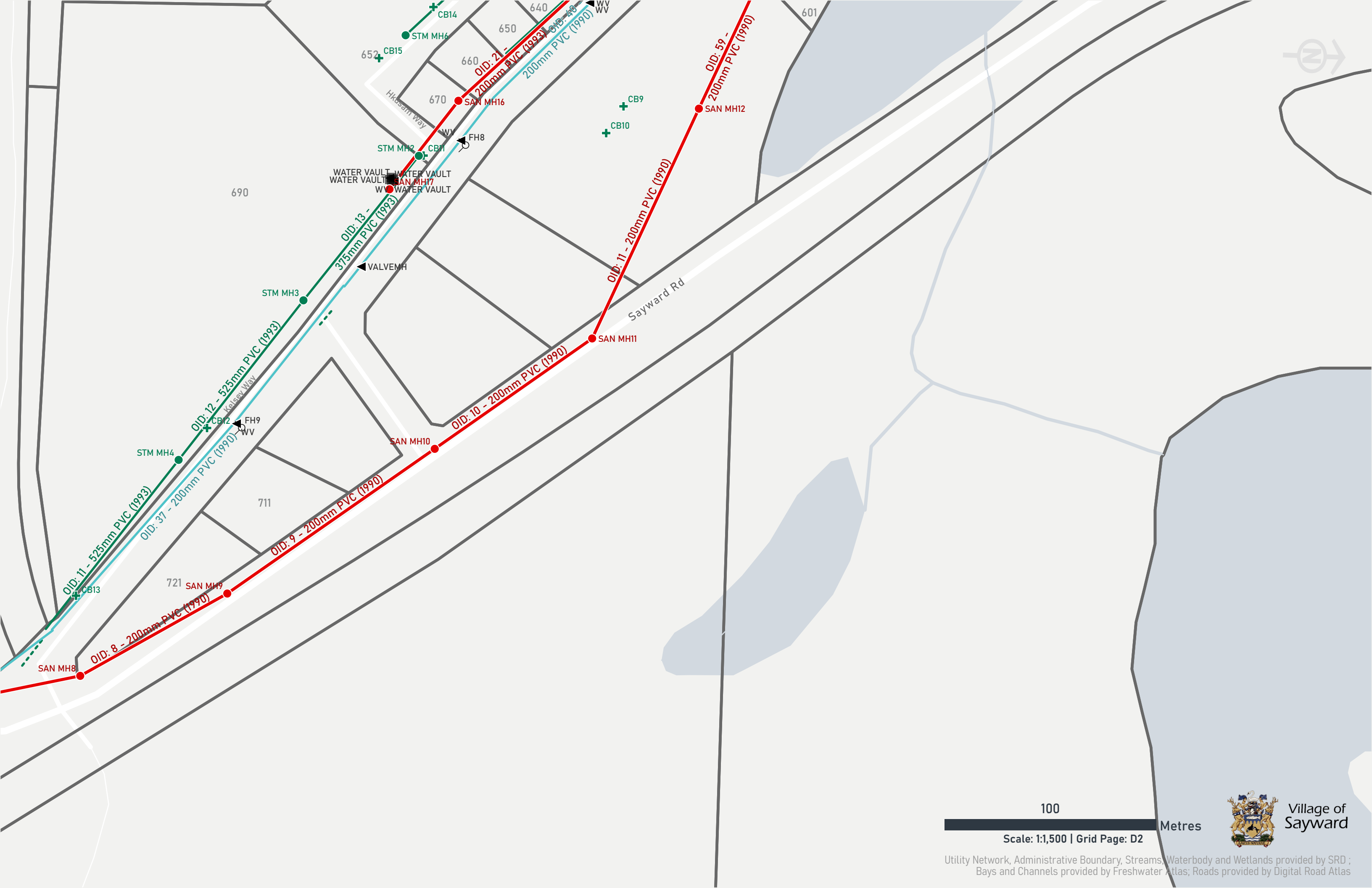
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Village of
Sayward

Utility Network, Administrative Boundary, Streams, Waterbody and Wetlands provided by SRD ;
Bays and Channels provided by Freshwater Atlas; Roads provided by Digital Road Atlas





Village of Sayward

Utility Network, Administrative Boundary, Streams, Waterbody and Wetlands provided by SRD ;
Bays and Channels provided by Freshwater Atlas; Roads provided by Digital Road Atlas



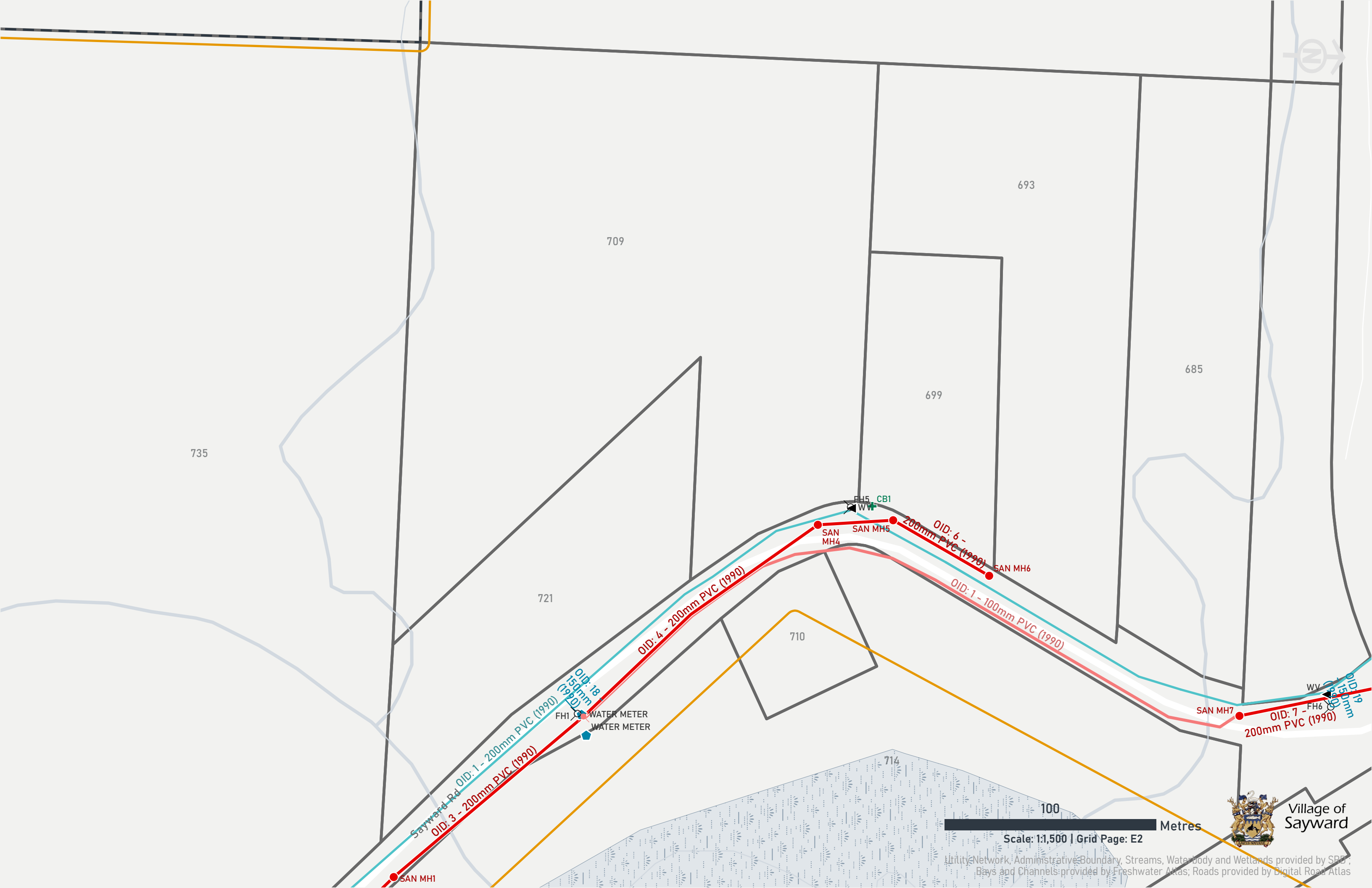
Old: 53 - 750mm DI (1997)

100 Metres
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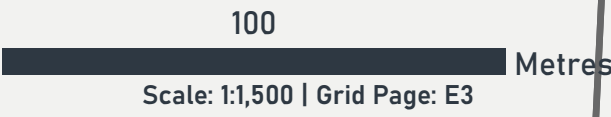
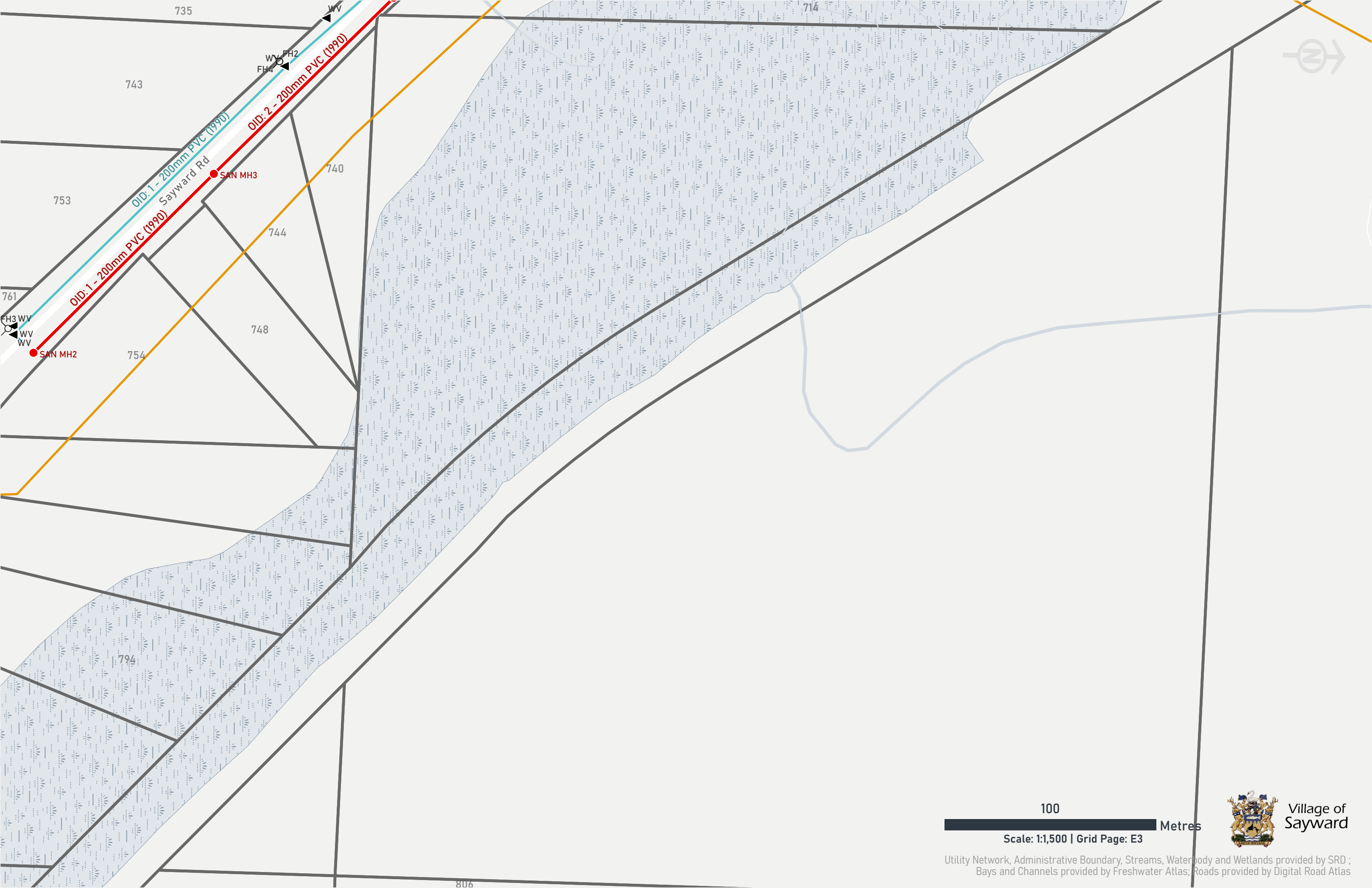
Village of Sayward

Utility Network, Administrative Boundary, Streams, Waterbody and Wetlands provided by SRD ;
Bays and Channels provided by Freshwater Atlas; Roads provided by Digital Road Atlas



Village of Sayward

Utility Network, Administrative Boundary, Streams, Waterbody and Wetlands provided by SRB; Bays and Channels provided by Freshwater Atlas; Roads provided by Digital Road Atlas



Utility Network, Administrative Boundary, Streams, Waterbody and Wetlands provided by SRD ;
Bays and Channels provided by Freshwater Atlas; Roads provided by Digital Road Atlas

FID	Category	Diameter	Material	Length	RoadName	Location	Description	Service Life	Age	% of SL	LiOF	Cof	Risk	Priority Class	Scheduled Replacement Years	Scheduled Second Replacement	Total Cost To Replace
1	Lift Station					560 Kelsey - Campground Pumpstation		50	55	110%	4	5	20	1	2025	2068	\$ 500,000.00
9	Vehicles						Rescue vehicle (Rescue #33)	25	33	132%	4	4	16	1	2015	2040	\$ 287,500.00
56	Watermain	200 AC		101.85				60	55	92%	3	5	15	1	2028	2088	\$ 89,000.00
12	Sewer Main	200 AC		2.88				60	55	92%	3	4	12	2	2028	2088	\$ 4,000.00
13	Sewer Main	200 AC		18.69	Kelsey Way			60	55	92%	3	4	12	2	2028	2088	\$ 23,000.00
15	Sewer Main	200 AC		45.82	MacMillan Dr			60	55	92%	3	4	12	2	2028	2088	\$ 56,000.00
17	Sewer Main	150 AC		52.67	MacMillan Dr			60	55	92%	3	4	12	2	2028	2088	\$ 61,000.00
42	Sewer Main	200 AC		46.46	Kelsey Way			60	55	92%	3	4	12	2	2028	2088	\$ 57,000.00
43	Sewer Main	200 AC		45.76	Sayward Rd			60	55	92%	3	4	12	2	2028	2088	\$ 56,000.00
50	Sewer Main	150 AC		52.75	Spar St			60	55	92%	3	4	12	2	2028	2088	\$ 61,000.00
57	Sewer Main	150 AC		66.82				60	55	92%	3	4	12	2	2028	2088	\$ 77,000.00
74	Sewer Main	200 AC		52.21	MacMillan Dr			60	55	92%	3	4	12	2	2028	2088	\$ 64,000.00
8	Vehicles						Fire truck (Engine #3)	25	26	104%	3	4	12	2	2022	2047	\$ 575,000.00
12	Equipment						Z Seven SCBA	10	10	100%	3	4	12	2	2023	2033	\$ 12,000.00
2	Lift Station					WWTP Pumpstation		50	28	56%	2	5	10	2	2045	2095	\$ 500,000.00
4	Lift Station					South Side - Sayward Road Pumpstation		50	33	66%	2	5	10	2	2040	2090	\$ 500,000.00
31	Building						PW Shed - 2	25	54	216%	5	2	10	2	1994	2019	\$ 45,000.00
32	Building						PW Shed - 3	20	54	270%	5	2	10	2	1989	2009	\$ 62,000.00
33	Building						PW Shed - 4	20	54	270%	5	2	10	2	1989	2009	\$ 36,000.00
36	Building						PW Storage - 2	25	54	216%	5	2	10	2	1994	2019	\$ 40,000.00
37	Building						PW Storage - 3	20	54	270%	5	2	10	2	1989	2009	\$ 89,000.00
38	Building						PW Storage - 4	20	54	270%	5	2	10	2	1989	2009	\$ 52,000.00
45	Building						PW Shop - 3	20	35	175%	5	2	10	2	2008	2028	\$ 43,000.00
46	Building						PW Shop - 4	20	35	175%	5	2	10	2	2008	2028	\$ 25,000.00
2	Watermain	200 AC		98.13	MacMillan Dr			60	55	92%	3	3	9	2	2028	2088	\$ 86,000.00
43	Watermain	150 AC		17.49	Kelsey Way			60	55	92%	3	3	9	2	2028	2088	\$ 14,000.00
44	Watermain	150 AC		151.10	Sayward Rd			60	55	92%	3	3	9	2	2028	2088	\$ 121,000.00
45	Watermain	150 AC		256.67	Sayward Rd			60	55	92%	3	3	9	2	2028	2088	\$ 206,000.00
14	Sewer Main	200 AC		101.85	Kelsey Way			60	55	92%	3	3	9	2	2028	2088	\$ 124,000.00
24	Sewer Main	200 AC		107.33				60	55	92%	3	3	9	2	2028	2088	\$ 131,000.00
26	Sewer Main	150 AC		59.56				60	55	92%	3	3	9	2	2028	2088	\$ 69,000.00
27	Sewer Main	150 AC		66.96	Ambleside Dr			60	55	92%	3	3	9	2	2028	2088	\$ 77,000.00
39	Sewer Main	150 AC		40.92	Dyer Dr			60	55	92%	3	3	9	2	2028	2088	\$ 47,000.00
40	Sewer Main	150 AC		33.33				60	55	92%	3	3	9	2	2028	2088	\$ 39,000.00
41	Sewer Main	150 AC		79.23				60	55	92%	3	3	9	2	2028	2088	\$ 91,000.00
53	Sewer Main	150 AC		19.75	Ambleside Dr			60	55	92%	3	3	9	2	2028	2088	\$ 23,000.00
54	Sewer Main	150 AC		20.97	Ambleside Dr			60	55	92%	3	3	9	2	2028	2088	\$ 25,000.00
56	Sewer Main	150 AC		100.11				60	55	92%	3	3	9	2	2028	2088	\$ 115,000.00
60	Sewer Main	200 AC		88.95				60	55	92%	3	3	9	2	2028	2088	\$ 109,000.00
61	Sewer Main	200 AC		16.39	Sayward Rd			60	55	92%	3	3	9	2	2028	2088	\$ 20,000.00
62	Sewer Main	200 AC		103.43	Sayward Rd			60	55	92%	3	3	9	2	2028	2088	\$ 126,000.00
63	Sewer Main	200 AC		59.42	Sayward Rd			60	55	92%	3	3	9	2	2028	2088	\$ 73,000.00
64	Sewer Main	200 AC		18.66	Sayward Rd			60	55	92%	3	3	9	2	2028	2088	\$ 23,000.00
65	Sewer Main	200 AC		106.78				60	55	92%	3	3	9	2	2028	2088	\$ 130,000.00
66	Sewer Main	200 AC		106.08				60	55	92%	3	3	9	2	2028	2088	\$ 129,000.00
67	Sewer Main	200 AC		28.53	Sayward Rd			60	55	92%	3	3	9	2	2028	2088	\$ 35,000.00
75	Sewer Main	200 AC		72.61				60	55	92%	3	3	9	2	2028	2088	\$ 89,000.00
76	Sewer Main	200 AC		98.86				60	55	92%	3	3	9	2	2028	2088	\$ 121,000.00
77	Sewer Main	200 AC		68.20				60	55	92%	3	3	9	2	2028	2088	\$ 83,000.00
78	Sewer Main	200 AC		39.59				60	55	92%	3	3	9	2	2028	2088	\$ 49,000.00
5	Forcemain	200 AC		502.90	Kelsey Way			60	55	92%	3	3	9	2	2028	2088	\$ 612,000.00

DATE: March 31, 2024
TO: Keir Gervais, Village of Sayward
CC: Colin Read, Village of Sayward
FROM: Steven Olson, Urban Systems
FILE: 2906.0008.01
SUBJECT: Capital Priority Plan

1.0 INTRODUCTION

This memorandum will outline the Village of Sayward's priority assets as a part of the Asset Management Implementation Program. It will outline recommended projects for the Village to focus on, given varying factors such as cost, urgency, and variation. This document will also discuss the reasoning behind the chosen assets, current budget strategies, and the feasibility of replacing chosen assets given the current Village financial capability. Urban Systems has undertaken a review of the current assets and spoke with members of the Village of Sayward to influence this report.

1.1 BACKGROUND

In 2016, the Village of Sayward completed an Asset Management Program including a strategy and policy for roads, linear water, sanitary sewer, storm, buildings, equipment, and vehicles that was adopted the following year by Village Council.

Several next steps were later identified by staff and Council members including developing a Long-Term Asset Management Financial Plan and updating the Asset Management Strategy every four years. This was done to help the strategy become more implementable and capable of guiding decision-making processes for prioritizing capital project planning.

Following the completion of Phase 1 of the Asset Management Implementation Program where the Village of Sayward's assets were identified and sequential risks were assessed Phase 2 began. The ultimate goal of Phase 2 is to update the Asset Management Plan with the first stage being to meet with the Village staff to recognize asset priorities. This visit was completed by Urban Systems in February 2024. The next stage involves this document, the Capital Priority Plan.

2.0 ASSET SUMMARY

The village maintains numerous assets throughout the community for the purpose of providing services for its members. To simplify the extensive list of assets they have been grouped into the following infrastructure asset categories:

- Roads
- Water
- Stormwater
- Sanitary Sewer
- Buildings (including parks)
- Equipment (including vehicles)

The most recent asset inventory was completed in 2023 and 2024 utilizing existing records, location information, and Village staff knowledge. Table 1 summarizes the current existing assets within the Village of Sayward and Appendix A contains a complete comprehensive list of all assets.

Table 1: Asset Inventory Summary

Asset Categories and Types	Quantity (ea or m)
Roads	16,850 m
Water Mains	6300 m
Stormwater Mains	3200 m
Sewer	
Force mains	1850 m
Mains	6600 m
Lift Stations	5 ea.
Buildings/ Parks	12 ea.
Equipment/ Vehicles	30 ea.

An estimation for asset replacement was calculated for each investigated asset. The total cost to replace all assets is approximately **\$51 million** dollars and is broken down in Figure 1 below.

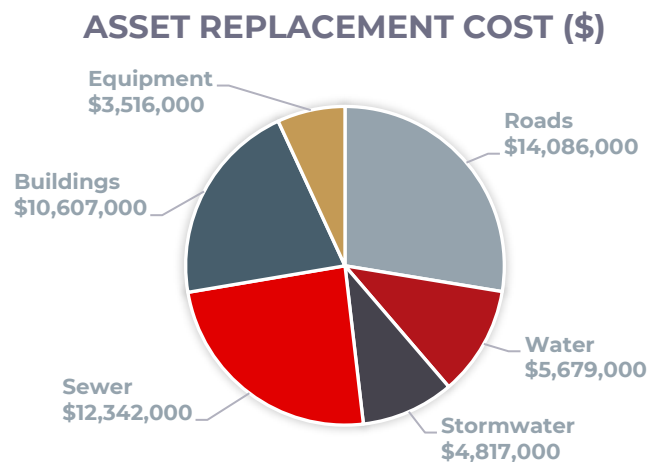


Figure 1: Asset Replacement Cost

2.1 FEASIBILITY OF PRIORITY ASSETS

To assist in understanding the priority assets, the annual investment required to operate and maintain the existing assets was determined. The average annual lifecycle investment (AALCI) is a common metric to assess financial sustainability. It is calculated by using the total estimated replacement value of the asset divided by its expected service life, expressed as dollars per year (\$/year). This makes the amount of funds that needs to be set aside annually apparent to obtain sufficient capital funding at time of replacement.

The graph provided below is based on the assets being replaced once the service life has been reached. It does not consider repairs, upgrades or maintenance that may be able to extend the service life. This graph is able to estimate the approximate annual investment to sustainably plan for the future. The graph shows how **\$811,355** needs to be additionally invested annually to align with the asset service life.

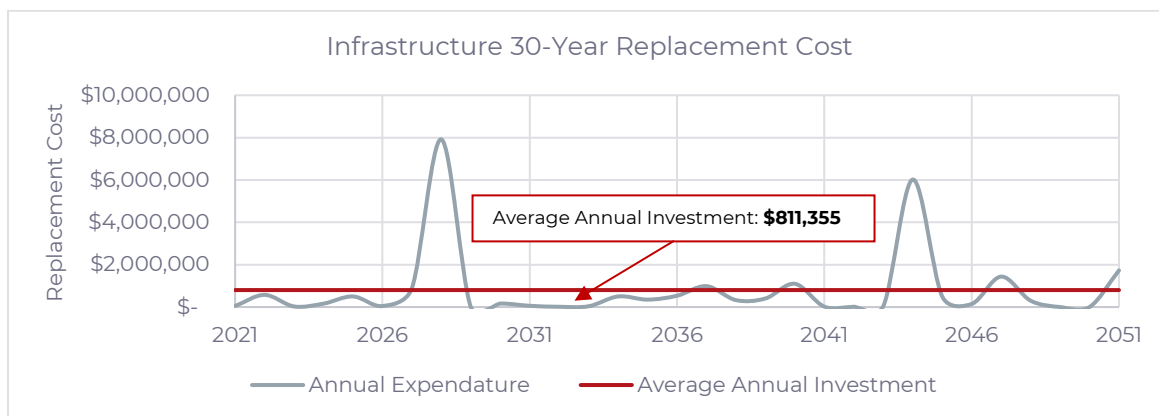


Figure 2: Infrastructure Replacement Costs

2.2 CURRENT FINANCES

With information gathered from the Village of Sayward 2022 Financial Statements the following was determined. The Village received **\$1.43 million** in revenue in 2022 and spent **\$1.65 million** in expenditures. Therefore, the village drew approximately \$220,000 from reserve funds.

With respect to water, sewer and general infrastructure funding the currently financial position of the Village allows for a limited value to be put towards replacement projects. The Village does report an accumulated surplus that is segregated into three categories, General, Sewer and water which are broken out into table 2 below. It should be assessed with the Village Staff what an acceptable level of reserves are necessary for emergency operation.

Table 2: Accumulated Surplus

Surplus Category	2022 Amount (\$)	2021 Amount (\$)	% Change
General	250,634	336,564	-26%
Sewer	123,356	219,480	-44%
Water	83,309	167,840	-50%
Reserves	282,780	511,598	-45%

By interpreting the values contained within the table, an overall decrease in the surplus and reserves are noted, potentially indicating a need for additional funding to be able to support the Villages infrastructure and operations.

3.0 PRIORITY ASSETS

To understand village priorities the Village of Sayward and a representative of Urban Systems met to understand the important considerations. This meeting made apparent the primary assets that should be focussed on over the next decades of improvements. The following list are the top five areas that would take priority when required, as identified by the village staff.

1. Water Treatment Plant (Public Health)
2. Fire Safety (Public Safety)

- 3. Sewer Lift Stations (Public/Environmental Health)
- 4. Kelsey Centre
- 5. Sewer Treatment Plant (Environment)

Utilizing the information provided above, risk calculations, and age of assets a priority list of projects were created. As some of the identified priorities listed above will not require improvements in the next 10 years, their respective category may not appear in the identified projects. It is also to note that fire vehicles and equipment will not be included in the asset priority plan as fire operations have been taken over by the Strathcona Regional District.

3.1 CONDITION RISK SCORE

Each identified asset in the asset inventory was given a condition risk score. The risk is determined by multiplying the consequence and likelihood of failure for each asset as shown in Table 3. The overall risk score is a tool that can be used to justify or determine which assets would require replacement before other assets or to understand the overall health of the system and support long term replacement programs.

Table 3: Condition Risk Score Matrix

LIKELIHOOD	5	5	10	15	20	25
	4	4	8	12	16	20
	3	3	6	9	12	15
	2	2	4	6	8	10
	1	1	2	3	4	5
		1	2	3	4	5
		CONSEQUENCE				

3.2 PRIORITY PROJECTS

Applying the information received from the Village of Sayward and calculated risk scores in the Risk Assessment Memo dated April 20, 2023, ten projects were identified as priorities in the next 10 years of infrastructure development. These risk scores are shown in Table 4 below in the right had column. These projects offer a range of pricing and categories to provide a balance of improvements which can be found in Table 4 below.

Table 4: Asset Infrastructure Sample Priority Projects

#	Project Name	Category	Year of Install	% of SL	Description	Risk	Value
1	Lift Station Replacement	Sewer	1968	110%	560 Kelsey Way Lift station Include 200mm AC force main attached to lift station. Include 200mm AC watermain running parallel to force main. Include Roadway resurfacing for Kelsey Way	16	\$1,722,100
2	Watermain Upgrade (MacMillan Dr.)	Water	1968	92%	101m of 200mm AC pipe that acts as the distribution main for the entire village – upgrade to DI or other material with longer service life 45m of 300mm CMP culvert running parallel to watermain – upgrade to HDPE or other materials with longer service life	15	\$158,970
3	Sanitary Sewer Replacement (Sayward Rd. to Spar St.)	Sewer	1968	92%	Replace 215m of 150mm or 200mm AC piping to respective size of PVC piping. Include roadway resurface where necessary.	12	\$296,918
4	PW Shed Improvements	Buildings	1969	77%	Update building as required due to aging.	10	\$143,000
5	Sanitary Sewer Replacements (MacMillan Dr.)	Sewer	1968	92%	Replace 600m of 150mm or 200mm AC piping to respective size of PVC piping. Include roadway resurfacing for MacMillan Drive.	9/12	\$733,070
6	Watermain Upgrade (Sayward Rd.)	Water	1968	92%	Replace 410m of 150mm AC watermain with 150mm PVC watermain. Include roadway resurfacing where necessary.	9	\$689,210
7	Storm Main Replacement (Sayward Hts.)	Storm	1968	110%	Replace 265m of 1200mm of CMP piping on Sayward Hts.	6	\$424,000
8	Kubota Mower Upgrade	Equipment	2001	220%	Replace current mower with a new upgraded Kubota mower. (13 years past scheduled replacement date.)	5	\$49,000
9	Playground Apparatus Upgrade	Equipment	1983	133%	Upgrade existing playground (add location) (11 years past scheduled replacement date.)	4	\$40,000
10	Clinic Building Upgrades	Buildings	1967	80%	Update building as required due to aging.	4	\$739,000
						Total	\$4,995,268

To visualize the projects listed above a map of the village outlining the priority project boundaries has been included in Appendix B.

The replacement costs for linear assets were determined using unit rates developed from actual construction costs from the mid island area and represent 2023 dollars. These rates include a 15% allowance for engineering, and a 25% contingency. These rates assume a standard construction method involving open trench excavation and reinstatement. It does not consider rehabilitation methods like pipe relining as the current pipe conditions are not known and would need to be assessed at the time of replacement planning and design.

Values for the building, vehicles, and equipment were taken from the Village's Tangible Capital Assets (TCA) spreadsheet and required adjustments due to inflation were applied as the prices recorded are based on the commissioning date.

3.2.1 Alternatives to Full Replacement

The values outlined in table 4 represent the estimated replacement costs of the specific asset which give an approximate magnitude of replacement for planning purposes. Using the lift station as an example project, this is a multi component system with specific attributes that have varying conditions. The following table is hypothetical condition assessment example and adjusted component replacement. This shows a more cost-effective way of managing the Village's infrastructure.

Table 5: Sample condition assessment and reduced replacement costs

Component	Qualified Inspector's Report	Action	Cost
Pumps	Pump impeller worn	Overhaul and maintain existing pumps	\$25,000
Process Piping and Valves	Gate valve not holding pressure	Replace Valve	\$10,000
Electrical Control System	Good Condition		Reuse
Wet Well or Dry Well	Good condition		Reuse
Total		Estimated service life extended to 25 years based on inspections	\$35,000

Other assets like linear infrastructure can benefit from specific inspection like sewer condition assessments where video cameras are sent down the pipes. This will allow the Village to inspect the highest risk sections of pipe and determine if replacement is needed or service life can be extended.

4.0 OPERATIONAL BUDGET

This section provides information about potential investments needed for sustainable service delivery, how these compare to current available budget levels, and how this translates to increasing taxation. When considered alongside the rest of the information in this document, this financial information can be used to inform decisions around future funding targets and requests.

Replacement cost serves as a high-level indication of the financial value of the Village's assets. The total replacement cost of Sayward's existing assets is approximately **\$51 million** dollars. The break down of the cost was previously shown in Figure 1.

4.1 PROPOSED INCREASE IN TAXES – SCENARIOS

To appropriately plan for the asset service lives, in the Village of Sayward, an increase in taxes or additional funding would need to occur. As discussed in the section above, an additional **\$811,355** needs to be invested annually. This would increase the expenditure budget to approximately \$2.46 million dollars. Assuming all the extra investment will come from taxation and user fees an increase of **123%** will need to occur. Using the Village of Sayward's Tax Rates from 2023, a baseline was established to estimate growth. The residential tax rate in 2023 was approximately 4.37 per thousand dollars of worth. With the 123% increase, a typical single-family residence (worth \$500,000) will see a tax increase from \$2,184.07 to \$4,870.48. The summary of this increase is found in Table 6 below.

Table 6: Infrastructure Service Life Taxation Increase

	Current (2022)	Proposed Increase (2024)	% Increase
Expenditures	\$ 1,650,924.00	\$ 2,462,278.84	49%
Taxation Revenue & User Fees	\$ 657,211.00	\$ 1,468,565.84	123%
Residential Tax Rate (single family)	\$ 2,184.07	\$ 4,870.48	123%

The calculations above are based on the industry service life of each asset, however in practice many communities find that their infrastructure assets last longer than the expected service life. If the values determined above are pursued and an asset extends beyond the infrastructure service life the Village will be able to save or utilize that money in another area. To better plan for the possibility of extended service life, Table 7 examines the same parameters assuming all assets are replaced on a cycle that is 50% longer than their industry standard expected service life. This assumption lowers the annual investment to **\$540,903** and lowers the residential tax rate increase to **82%**.

Table 7: Infrastructure Service Life +50% Taxation Increase

	Current (2022)	Proposed Increase (2024)	% Increase
Expenditures	\$ 1,650,924.00	\$ 2,191,827.23	33%
Taxation Revenue & User Fees	\$ 657,211.00	\$ 1,198,114.23	82%
Residential Tax Rate (single family)	\$ 2,184.07	\$ 3,975.01	82%

Realizing the cost implications of replacing the asset infrastructure at even 50% past the expected service life we have decided to show a more realistic scenario of the Village being able to source an increase in taxation and user fees by 20%. Table 8 below shows the projected revenue with a tax increase of 20% (\$ 788,653.20) and the difference in revenue between the target revenue and a 20% increase (\$ 521,491.91).

Table 8: Infrastructure Service Life +20% Taxation Increase

Taxation & User Fees	
Current Revenue in Tax and User Fees (2022)	\$ 657,211.00
Revenue with 20% Increase in Tax and User Fees	\$ 788,653.20
Funds Allocated for replacement projects	\$ 131,442.20

4.2 ALTERNATIVE FUNDING SOURCES

To assist in funding the difference listed above, a series of grants may be available. Grants can offer partial or full coverage of required service projects but should not be relied upon as a consistent source of funding.

For example, the Investing in Canada Infrastructure Program (ICIP) that was open in 2020-2022 was offering funding up to 100% (60% Government of Canada, 40% Province of British Columbia) for local governments with a population less than 5,000 to fund projects that improve Environmental Quality or Resilience and Disaster mitigation. Another past funding opportunity that would have applied to Sayward's infrastructure updates is the Disaster Mitigation and Adaption Fund (DMAF) which closed in 2023. This grant offered funding from the Government of Canada for projects that are at risk of natural disasters and align with the municipality's strategic plans. Grant opportunities similar to these ones create instances where overlooked projects can be completed with provided funding.

It is encouraged that the Village of Sayward apply for Union of BC Municipalities (UBCM) Asset Management Planning Program in Summer 2024. This grant has the potential to fund 50% of a qualified project, up to \$25,000. The project has to be related to planning of transportation and water networks, sewage collection and treatment systems, information technology, vehicle and equipment fleets, parks, or civic facilities. This grant could allow the Village of Sayward to complete CCTV footage of existing pipes to recognize pipes that need replacement and ones that can extend past the recommended service life.

A combination of grant funding and a moderate tax increase would put the Village of Sayward in a better position to fund the priority projects previously discussed improving mitigation of any future disasters.

DATE: March 31, 2024
SUBJECT: Capital Priority Plan

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5.0 CONCLUSION

Asset management is a continuous improvement process for making informed decisions that support sustainable service delivery. This Capital Priority Plan has provided an overview of the Village of Sayward's current assets and their worth. This plan has also identified priority projects that should be prioritized in the next decade and additionally provided realistic increases in annual investment to sustainably complete asset infrastructure replacement. Further discussion with the village should take place to confirm current asset investment and missing asset information.

Sincerely,

URBAN SYSTEMS LTD.

Steven Olson, EIT
Project Engineer

Eric Sears, P.Eng
Municipal Engineer

cc:
/So
Enclosure:

Appendix A – Village Assets
Appendix B – Priority Project Map

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The preparation of this project was carried out with assistance from the Government of Canada and the Federation of Canadian Municipalities. Notwithstanding this support, the views expressed are the personal views of the authors, and the Federation of Canadian Municipalities and the Government of Canada accept no responsibility for them.”

FID	Category	Diameter	Material	Length	RoadName	Location	Description	Service Life	Age	% of SL	LIOF	Cof	Risk	Priority Class	Scheduled Replacement Years	Scheduled Second Replacement	Total Cost To Replace
1	Lift Station					560 Kelsey - Campground Pumpstation		50	55	110%	400%	5	20	1	2025		\$ 500,000.00
9	Vehicles						Rescue vehicle (Rescue #33)	25	33	132%	400%	4	16	1	2015	2068	\$ 287,500.00
56	Watermain	200	AC	101.85				60	55	92%	300%	5	15	1	2028	2088	\$ 89,000.00
12	Sewer Main	200	AC	2.88				60	55	92%	300%	4	12	2	2028	2088	\$ 4,000.00
13	Sewer Main	200	AC	18.69	Kelsey Way			60	55	92%	300%	4	12	2	2028	2088	\$ 23,000.00
15	Sewer Main	200	AC	45.82	MacMillan Dr			60	55	92%	300%	4	12	2	2028	2088	\$ 50,000.00
17	Sewer Main	150	AC	52.67	MacMillan Dr			60	55	92%	300%	4	12	2	2028	2088	\$ 61,000.00
42	Sewer Main	200	AC	46.46	Kelsey Way			60	55	92%	300%	4	12	2	2028	2088	\$ 57,000.00
43	Sewer Main	200	AC	45.76	Sawward Rd			60	55	92%	300%	4	12	2	2028	2088	\$ 56,000.00
50	Sewer Main	150	AC	52.75	Spar St			60	55	92%	300%	4	12	2	2028	2088	\$ 61,000.00
57	Sewer Main	150	AC	66.82				60	55	92%	300%	4	12	2	2028	2088	\$ 77,000.00
74	Sewer Main	200	AC	52.21	MacMillan Dr			60	55	92%	300%	4	12	2	2028	2088	\$ 64,000.00
8	Vehicles						Fire truck (Engine #3)	25	26	104%	300%	4	12	2	2022	2047	\$ 575,000.00
12	Equipment						Z Seven SCBA	10	10	100%	300%	4	12	2	2023	2033	\$ 12,000.00
2	Lift Station					WWTP Pumpstation		50	28	56%	200%	5	10	2	2045	2095	\$ 500,000.00
4	Lift Station					South Side - Sayward Road Pumpstation		50	33	66%	200%	5	10	2	2040	2090	\$ 500,000.00
1	Building						PW Shed - 2	25	54	216%	500%	2	10	2	1994	2019	\$ 45,000.00
1	Building						PW Shed - 3	20	54	270%	500%	2	10	2	1989	2009	\$ 62,000.00
1	Building						PW Shed - 4	20	54	270%	500%	2	10	2	1989	2009	\$ 36,000.00
1	Building						PW Storage - 2	25	54	216%	500%	2	10	2	1994	2019	\$ 40,000.00
1	Building						PW Storage - 3	20	54	270%	500%	2	10	2	1989	2009	\$ 89,000.00
1	Building						PW Storage - 4	20	54	270%	500%	2	10	2	1989	2009	\$ 52,000.00
1	Building						PW Shop - 3	20	35	175%	500%	2	10	2	2008	2028	\$ 43,000.00
1	Building						PW Shop - 4	20	35	175%	500%	2	10	2	2008	2028	\$ 25,000.00
2	Watermain	200	AC	98.13	MacMillan Dr			60	55	92%	300%	3	9	2	2028	2088	\$ 86,000.00
43	Watermain	150	AC	17.49	Kelsey Way			60	55	92%	300%	3	9	2	2028	2088	\$ 14,000.00
44	Watermain	150	AC	151.10	Sawward Rd			60	55	92%	300%	3	9	2	2028	2088	\$ 127,000.00
45	Watermain	150	AC	256.67	Sawward Rd			60	55	92%	300%	3	9	2	2028	2088	\$ 206,000.00
14	Sewer Main	200	AC	101.85	Kelsey Way			60	55	92%	300%	3	9	2	2028	2088	\$ 124,000.00
24	Sewer Main	200	AC	107.33				60	55	92%	300%	3	9	2	2028	2088	\$ 131,000.00
26	Sewer Main	150	AC	59.56				60	55	92%	300%	3	9	2	2028	2088	\$ 69,000.00
27	Sewer Main	150	AC	65.96	Ambleside Dr			60	55	92%	300%	3	9	2	2028	2088	\$ 77,000.00
39	Sewer Main	150	AC	40.92	Dyer Dr			60	55	92%	300%	3	9	2	2028	2088	\$ 47,000.00
40	Sewer Main	150	AC	33.33				60	55	92%	300%	3	9	2	2028	2088	\$ 39,000.00
41	Sewer Main	150	AC	79.23				60	55	92%	300%	3	9	2	2028	2088	\$ 91,000.00
53	Sewer Main	150	AC	19.75	Ambleside Dr			60	55	92%	300%	3	9	2	2028	2088	\$ 23,000.00
54	Sewer Main	150	AC	20.97	Ambleside Dr			60	55	92%	300%	3	9	2	2028	2088	\$ 25,000.00
56	Sewer Main	150	AC	100.11				60	55	92%	300%	3	9	2	2028	2088	\$ 115,000.00
60	Sewer Main	200	AC	88.95				60	55	92%	300%	3	9	2	2028	2088	\$ 109,000.00
61	Sewer Main	200	AC	16.39	Sawward Rd			60	55	92%	300%	3	9	2	2028	2088	\$ 20,000.00
62	Sewer Main	200	AC	103.43	Sawward Rd			60	55	92%	300%	3	9	2	2028	2088	\$ 126,000.00
63	Sewer Main	200	AC	59.42	Sawward Rd			60	55	92%	300%	3	9	2	2028	2088	\$ 73,000.00
64	Sewer Main	200	AC	18.66	Sawward Rd			60	55	92%	300%	3	9	2	2028	2088	\$ 23,000.00
65	Sewer Main	200	AC	106.78				60	55	92%	300%	3	9	2	2028	2088	\$ 130,000.00
66	Sewer Main	200	AC	106.08				60	55	92%	300%	3	9	2	2028	2088	\$ 129,000.00
67	Sewer Main	200	AC	28.53	Sawward Rd			60	55	92%	300%	3	9	2	2028	2088	\$ 35,000.00
75	Sewer Main	200	AC	72.63				60	55	92%	300%	3	9	2	2028	2088	\$ 80,000.00
76	Sewer Main	200	AC	98.86				60	55	92%	300%	3	9	2	2028	2088	\$ 121,000.00
77	Sewer Main	200	AC	68.20				60	55	92%	300%	3	9	2	2028	2088	\$ 83,000.00
78	Sewer Main	200	AC	39.59				60	55	92%	300%	3	9	2	2028	2088	\$ 49,000.00
5	Forcemain	200	AC	502.99	Kelsey Way			60	55	92%	300%	3	9	2	2028	2088	\$ 612,000.00
4	Storm Main	900	CMP	74.47	MacMillan Dr			60	27	54%	200%	4	8	3	2046	2096	\$ 144,000.00
25	Storm Main	1200	CMP	265.13	Sawward Hts			50	55	110%	400%	2	8	3	2018	2068	\$ 605,000.00
39	Storm Main	300	CMP	175.26	MacMillan Dr			50	55	110%	400%	2	8	3	2018	2068	\$ 228,000.00
1	Building						PW Shop - 2	25	35	140%	400%	2	8	3	2013	2038	\$ 16,000.00
11	Vehicles						Fire truck (Engine #4) SRD	20	16	80%	200%	4	8	3	2027	2047	\$ 862,500.00
25	Equipment						Emergency Generator on Trailer	30	33	110%	400%	2	8	3	2020	2050	\$ 51,000.00
26	Equipment						Wallenstein Wood Chipper	25	15	60%	200%	4	8	3	2033	2058	\$ 25,000.00
3	Roads	paved		208.37	Sawward Rd			50					8	3			\$ 272,000.00
8	Roads	paved		5.44	Sawward Rd			50					8	3			\$ 8,000.00
9	Roads	paved		173.08	Sawward Rd			50					8	3			\$ 228,000.00
12	Roads	paved		125.58	Sawward Rd			50					8	3			\$ 164,000.00
13	Roads	loose		142.14	Sawward Rd			10					8	3			\$ 103,000.00
23	Roads	paved		258.10	Sawward Rd			50					8	3			\$ 337,000.00
24	Roads	paved		671.69	Sawward Rd			50					8	3			\$ 876,000.00
25	Roads	paved		679.94	Sawward Rd			50					8	3			\$ 887,000.00
26	Roads	paved		82.79	Sawward Rd			50					8	3			\$ 108,000.00
29	Roads	paved		13.90	Sawward Rd			50					8	3			\$ 19,000.00
30	Roads	paved		111.18	Sawward Rd			50					8	3			\$ 145,000.00
31	Roads	paved		469.25	Sawward Rd			50					8	3			\$ 612,000.00
36	Roads	paved		140.15	Sawward Rd			50					8	3			\$ 183,000.00
42	Roads	paved		166.50	Sawward Rd			50					8	3			\$ 218,000.00
51	Roads	loose		195.52	Sawward Rd			10					8	3			\$ 141,000.00
61	Roads	paved		1311.66	Sawward Rd			50					8	3			\$ 1,711,000.00
68	Roads	paved		62.93	Sawward Rd			50					8	3			\$ 83,000.00
77	Roads	paved		32.05	Sawward Rd			50					8	3			\$ 42,000.00
3	Watermain	150	AC	518.31	MacMillan Dr			60	55	92%	300%	2	6	3	2028	2088	\$ 414,000.00
4	Watermain	150	AC	56.75	MacMillan Dr			60	55	92%	300%	2	6	3	2028	2088	\$ 46,000.00
5	Watermain	200	AC	101.85	MacMillan Dr			60	55	92%	300%	2	6	3	2028	2088	\$ 89,000.00
6	Watermain	150	AC	34.18	MacMillan Dr			60	55	92%	300%	2	6	3	2028	2088	\$ 28,000.00
7	Watermain	200	AC	108.53	Kelsey Way			60	55	92%	300%	2	6	3	2028	2088	\$ 95,000.00
8	Watermain	150	AC	114.42	MacMillan Dr			60	55	92%	300%	2	6	3	2028	2088	\$ 97,000.00
9	Watermain	150	AC	203.79	Sawward Hts			60	55	92%	300%	2	6	3	2028	2088	\$ 164,000.00
10	Watermain	150	AC	89.82	Spar St			60	55	92%	300%	2	6	3	2028	2088	\$ 72,000.00
11	Watermain	100	AC	128.13	Spar St			60	55	92%	300%	2	6	3	2028	2088	\$ 85,000.00
12	Watermain	100	AC	2.83	Spar St			60	55	92%	300%	2	6	3	2028	2088	\$ 2,000.00
15	Watermain	150	AC	81.08	Ambleside Dr			60	55	92%	300%	2	6	3	2028	2088	\$ 68,000.00
16	Watermain	150	AC	121.76	Dyer Dr			60	55	92%	300%	2	6	3	2028	2088	\$ 98,000.00
17	Watermain	150	AC	70.69	Seaview St			60	55	92%	300%	2	6	3	2028	2088	\$ 57,000.00
18	Watermain	150	AC	13.03	Seaview St			60	55	92%	300%	2	6	3	2028	2088	\$ 11,000.00
19	Watermain	150	AC	119.18	Dyer Dr			60	55	92%	300%	2	6	3	2028	2088	\$ 96,000.00
20	Watermain	150	AC	252.85	Kelsey Way			60	55	92%	300%						

54	Watermain	150	AC	35.94	Hkusam Way	60	49	82%	200%	3	6	3	2034	2094	\$	29,000.00
55	Watermain	150	AC	24.50	Hkusam Way	60	49	82%	200%	3	6	3	2034	2094	\$	20,000.00
9	Storm Main	900	RC	38.40	Kelsey Way	50	49	98%	300%	2	6	3	2024	2074	\$	75,000.00
10	Storm Main	900	CMP	36.87	Kelsey Way	50	49	98%	300%	2	6	3	2024	2074	\$	72,000.00
37	Storm Main	200	AC	125.81	Hkusam Way	60	55	92%	300%	2	6	3	2028	2088	\$	146,000.00
40	Storm Main	200	AC	125.81	MacMillan Dr	60	55	92%	300%	2	6	3	2028	2088	\$	146,000.00
19	Sewer Main	200	AC	100.32	Kelsey Way	60	49	82%	200%	3	6	3	2034	2094	\$	122,000.00
32	Sewer Main	150	AC	65.94	Ambleside Dr	60	55	92%	300%	2	6	3	2028	2088	\$	76,000.00
36	Sewer Main	150	AC	84.24	-	60	55	92%	300%	2	6	3	2028	2088	\$	97,000.00
37	Sewer Main	150	AC	40.71	Dyer Dr	60	55	92%	300%	2	6	3	2028	2088	\$	47,000.00
38	Sewer Main	150	AC	52.58	Dyer Dr	60	55	92%	300%	2	6	3	2028	2088	\$	61,000.00
51	Sewer Main	150	AC	30.22	Spar St	60	55	92%	300%	2	6	3	2028	2088	\$	35,000.00
52	Sewer Main	150	AC	44.53	Spar St	60	55	92%	300%	2	6	3	2028	2088	\$	51,000.00
72	Sewer Main	150	AC	30.54	Sayward Hts	60	55	92%	300%	2	6	3	2028	2088	\$	35,000.00
53	Watermain	750	DI	401.38	-	80	32	40%	100%	5	5	3	2071	2151	\$	743,000.00
3	Lift Station				North Side - Sayward Road Pumpstation	50	18	36%	100%	5	5	3	2055	2105	\$	500,000.00
5	Lift Station				Kelsey Lane Pumpstation	50	18	36%	100%	5	5	3	2055	2105	\$	500,000.00
19	Machinery				Kubota Mower	10	23	230%	500%	1	5	3	2010	2020	\$	49,000.00
3	Storm Main	450	CMP	15.80	Ambleside Dr	50	55	110%	400%	1	4	3	2018	2068	\$	23,000.00
6	Storm Main	250	AC	75.90	Hkusam Way	60	49	82%	200%	2	4	3	2034	2094	\$	94,000.00
7	Storm Main	300	AC	38.91	Hkusam Way	60	49	82%	200%	2	4	3	2034	2094	\$	51,000.00
8	Storm Main	350	AC	92.98	Kelsey Way	60	49	82%	200%	2	4	3	2034	2094	\$	124,000.00
28	Storm Main	900	CMP	63.17	MacMillan Dr	50	22	44%	100%	4	4	3	2051	2101	\$	122,000.00
34	Storm Main	300	UNKNOWN	13.55	Sayward Rd	50	55	110%	400%	1	4	3	2018	2068	\$	16,000.00
20	Sewer Main	150	AC	40.24	Hkusam Way	60	49	82%	200%	2	4	3	2034	2094	\$	47,000.00
82	Sewer Main	200	PVC	1370.79	-	85	28	33%	100%	4	4	3	2080	2165	\$	1,666,000.00
1	Building				Clinic building - 1	70	56	80%	200%	2	4	3	2037	2107	\$	449,000.00
1	Building				Clinic building - 2	70	56	80%	200%	2	4	3	2037	2107	\$	77,000.00
1	Building				Clinic building - 3	70	56	80%	200%	2	4	3	2037	2107	\$	134,000.00
1	Building				Clinic building - 4	70	56	80%	200%	2	4	3	2037	2107	\$	79,000.00
1	Building				Kelsey Centre/Municipal Hall - 1	70	49	70%	200%	2	4	3	2044	2114	\$	852,000.00
1	Building				Kelsey Centre/Municipal Hall - 2	70	49	70%	200%	2	4	3	2044	2114	\$	633,000.00
1	Building				Kelsey Centre/Municipal Hall - 3	70	49	70%	200%	2	4	3	2044	2114	\$	1,680,000.00
1	Building				Kelsey Centre/Municipal Hall - 4	70	49	70%	200%	2	4	3	2044	2114	\$	1,256,000.00
1	Building				Fire Hall #1 - 1	70	49	70%	200%	2	4	3	2044	2114	\$	356,000.00
1	Building				Fire Hall #1 - 2	70	49	70%	200%	2	4	3	2044	2114	\$	68,000.00
1	Building				Fire Hall #1 - 3	70	49	70%	200%	2	4	3	2044	2114	\$	202,000.00
1	Building				Fire Hall #1 - 4	70	49	70%	200%	2	4	3	2044	2114	\$	119,000.00
1	Building				RCMP building - 1	70	49	70%	200%	2	4	3	2044	2114	\$	280,000.00
1	Building				RCMP building - 2	70	49	70%	200%	2	4	3	2044	2114	\$	93,000.00
1	Building				RCMP building - 3	70	49	70%	200%	2	4	3	2044	2114	\$	216,000.00
1	Building				RCMP building - 4	70	49	70%	200%	2	4	3	2044	2114	\$	127,000.00
1	Building				Chlorine Bldg - 1	70	23	33%	100%	4	4	3	2070	2140	\$	82,000.00
1	Building				Chlorine Bldg - 2	70	23	33%	100%	4	4	3	2070	2140	\$	16,000.00
1	Building				Chlorine Bldg - 3	70	23	33%	100%	4	4	3	2070	2140	\$	25,000.00
1	Building				Chlorine Bldg - 4	70	23	33%	100%	4	4	3	2070	2140	\$	15,000.00
1	Building				Water Treatment Plant Building	50	3	6%	100%	4	4	3	2070	2120	\$	1,685,000.00
1	Building				Water Treatment Plant Fencing	15	2	13%	100%	4	4	3	2036	2051	\$	49,000.00
1	Building				Water Treatment Plant Generator	10	3	30%	100%	4	4	3	2030	2040	\$	50,000.00
1	Building				PW Shed - 1	70	54	77%	200%	2	4	3	2039	2109	\$	162,000.00
1	Building				PW Storage - 1	70	54	77%	200%	2	4	3	2039	2109	\$	224,000.00
1	Building				PW Shop - 1	70	35	50%	200%	2	4	3	2058	2128	\$	116,000.00
10	Vehicles				Rescue vehicle (Rescue #22)	20	8	40%	100%	4	4	3	2035	2055	\$	267,500.00
13	Equipment				Ball Diamond	25	37	148%	400%	1	4	3	2011	2036	\$	484,000.00
14	Equipment				Ball Diamond	25	36	144%	400%	1	4	3	2012	2037	\$	106,000.00
15	Equipment				Playground Apparatus	30	40	133%	400%	1	4	3	2013	2043	\$	40,000.00
22	Machinery				Portable Generator	30	18	60%	200%	2	4	3	2035	2065	\$	44,000.00
23	Vehicles				Public Works Truck Toyota Tundra long box	10	5	50%	200%	2	4	3	2028	2038	\$	89,500.00
29	Vehicles				Dodge 5500, Dump box, Snow plow, Sander	10	8	80%	200%	2	4	3	2025	2035	\$	111,000.00
1	Roads	loose		412.98	-	10					4	3			\$	226,000.00
2	Roads	loose		23.86	unsigned	10					4	3			\$	14,000.00
4	Roads	paved		358.04	-	50					4	3			\$	316,000.00
5	Roads	loose		197.05	-	50					4	3			\$	108,000.00
6	Roads	paved		41.19	-	50					4	3			\$	37,000.00
7	Roads	paved		131.06	Spar St	50					4	3			\$	116,000.00
10	Roads	paved		93.75	Kelsey Way	50					4	3			\$	83,000.00
11	Roads	paved		146.67	Dyer Dr	50					4	3			\$	130,000.00
14	Roads	loose		207.41	-	10					4	3			\$	114,000.00
15	Roads	paved		591.61	MacMillan Dr	50					4	3			\$	522,000.00
16	Roads	loose		806.31	-	10					4	3			\$	440,000.00
17	Roads	loose		102.83	Sayward Rd	10					4	3			\$	57,000.00
18	Roads	loose		108.27	-	10					4	3			\$	60,000.00
19	Roads	paved		26.40	-	50					4	3			\$	24,000.00
20	Roads	loose		22.63	unsigned	10					4	3			\$	13,000.00
21	Roads	paved		70.26	Kelsey Way	50					4	3			\$	62,000.00
22	Roads	paved		92.81	Sayward Hts	50					4	3			\$	82,000.00
27	Roads	paved		27.04	Kelsey Way	50					4	3			\$	24,000.00
28	Roads	paved		227.65	Kelsey Way	50					4	3			\$	201,000.00
32	Roads	rough		671.34	-	25					4	3			\$	364,000.00
33	Roads	paved		94.98	Ambleside Dr	50					4	3			\$	84,000.00
34	Roads	loose		88.36	unsigned	10					4	3			\$	49,000.00
35	Roads	paved		132.45	MacMillan Dr	50					4	3			\$	117,000.00
37	Roads	paved		92.56	Seaview St	50					4	3			\$	82,000.00
38	Roads	paved		31.55	-	50					4	3			\$	28,000.00
39	Roads	loose		131.42	-	10					4	3			\$	72,000.00
40	Roads	paved		178.95	Ambleside Dr	50					4	3			\$	158,000.00
41	Roads	paved		252.54	Hkusam Way	50					4	3			\$	223,000.00
43	Roads	loose		114.77	-	10					4	3			\$	63,000.00
44	Roads	loose		167.63	-	10					4	3			\$	92,000.00
45	Roads	paved		212.87	Kelsey Way	50					4	3			\$	188,000.00
46	Roads	paved		112.54	Dyer Dr	50					4	3			\$	100,000.00
47	Roads	rough		577.61	-	25					4	3			\$	315,000.00
48	Roads	rough		931.68	-	25					4	3			\$	508,000.00
49	Roads	paved		198.95	Kelsey Way	50					4	3			\$	176,000.00
50	Roads	paved		96.69	Kelsey Way	50					4	3			\$	86,000.00
52	Roads	paved		97.50	Ambleside Dr	50					4	3			\$	86,000.00
53	Roads	loose		22.31	-	10					4	3			\$	13,000.00
54	Roads	loose		270.49	-	10					4	3			\$	148,000.00
55	Roads	loose		136.70	-	10					4	3			\$	78,000.00
56	Roads	paved		31.20	Ambleside Dr	50					4	3			\$	28,000.00
57	Roads	paved		99.26	Kelsey Lane	50					4	3			\$	88,000.00
58	Roads	paved		202.68	Kelsey Way	50					4	3			\$	179,000.00
59	Roads	paved		51.09	Hemlock St											

62	Roads	rough	812.36	-	25			4	3			\$	443,000.00
63	Roads	loose	311.68	-	10			4	3			\$	170,000.00
64	Roads	paved	92.81	Seaview St	50			4	3			\$	62,000.00
65	Roads	loose	306.18	-	10			4	3			\$	168,000.00
66	Roads	loose	521.82	-	10			4	3			\$	285,000.00
67	Roads	paved	25.77	-	50			4	3			\$	23,000.00
69	Roads	paved	84.75	Sawward Rd	50			4	3			\$	75,000.00
70	Roads	paved	43.57	MacMillan Dr	50			4	3			\$	39,000.00
71	Roads	paved	19.30	-	50			4	3			\$	18,000.00
72	Roads	loose	50.06	unsigned	10			4	3			\$	28,000.00
73	Roads	loose	271.38	-	10			4	3			\$	148,000.00
74	Roads	paved	112.58	Balsam St	50			4	3			\$	100,000.00
75	Roads	paved	46.55	Sayward Hts	50			4	3			\$	42,000.00
76	Roads	loose	375.61	-	10			4	3			\$	205,000.00
1	Watermain	200 PVC	592.39	Sawward Rd	85	33	39%	100%	3	3	3	2075	2160 \$ 516,000.00
29	Watermain	200 PVC	21.24	Sawward Rd	85	33	39%	100%	3	3	3	2075	2160 \$ 19,000.00
30	Watermain	200 PVC	21.24	Sawward Rd	85	33	39%	100%	3	3	3	2075	2160 \$ 19,000.00
31	Watermain	200 PVC	21.24	Sawward Rd	85	33	39%	100%	3	3	3	2075	2160 \$ 19,000.00
32	Watermain	200 PVC	21.24	Sawward Rd	85	33	39%	100%	3	3	3	2075	2160 \$ 19,000.00
33	Watermain	200 PVC	21.24	Sawward Rd	85	33	39%	100%	3	3	3	2075	2160 \$ 19,000.00
34	Watermain	200 PVC	20.65	Sawward Rd	85	33	39%	100%	3	3	3	2075	2160 \$ 18,000.00
35	Watermain	200 DI	27.52	Sawward Rd	80	33	41%	100%	3	3	3	2070	2150 \$ 24,000.00
36	Watermain	200 PVC	42.24	Sawward Rd	85	33	39%	100%	3	3	3	2075	2160 \$ 37,000.00
37	Watermain	200 PVC	212.95	Kelsey Way	85	33	39%	100%	3	3	3	2075	2160 \$ 186,000.00
38	Watermain	200 PVC	48.68	unsigned	85	33	39%	100%	3	3	3	2075	2160 \$ 43,000.00
39	Watermain	200 PVC	113.73	Kelsey Way	85	33	39%	100%	3	3	3	2075	2160 \$ 99,000.00
40	Watermain	200 PVC	63.86	Kelsey Way	85	33	39%	100%	3	3	3	2075	2160 \$ 56,000.00
47	Watermain	250 PVC	160.64	Sawward Rd	85	19	22%	100%	3	3	3	2089	2174 \$ 152,000.00
48	Watermain	200 PVC	381.04	Sawward Rd	85	19	22%	100%	3	3	3	2089	2174 \$ 332,000.00
49	Watermain	200 PVC	278.39	Sawward Rd	85	19	22%	100%	3	3	3	2089	2174 \$ 243,000.00
50	Watermain	100 PVC	10.33	Sawward Rd	85	19	22%	100%	3	3	3	2089	2174 \$ 7,000.00
51	Watermain	200 PVC	77.66	Sawward Rd	85	19	22%	100%	3	3	3	2089	2174 \$ 68,000.00
52	Watermain	100 PVC	62.31	Sawward Rd	85	19	22%	100%	3	3	3	2089	2174 \$ 42,000.00
15	Storm Main	600 CMP	42.90	MacMillan Dr	50	22	44%	100%	3	3	3	2051	2101 \$ 68,000.00
24	Storm Main	200 PVC	59.34	MacMillan Dr	85	24	28%	100%	3	3	3	2084	2169 \$ 69,000.00
27	Storm Main	300 PVC	36.40	-	85	27	32%	100%	3	3	3	2081	2166 \$ 48,000.00
16	Sewer Main	150 AC	75.98	MacMillan Dr	60	55	92%	300%	1	3	3	2028	2088 \$ 88,000.00
18	Sewer Main	150 AC	56.75	MacMillan Dr	60	55	92%	300%	1	3	3	2028	2088 \$ 65,000.00
23	Sewer Main	150 AC	142.19	MacMillan Dr	60	55	92%	300%	1	3	3	2028	2088 \$ 163,000.00
25	Sewer Main	200 AC	105.56	MacMillan Dr	60	55	92%	300%	1	3	3	2028	2088 \$ 129,000.00
28	Sewer Main	150 AC	63.14	MacMillan Dr	60	55	92%	300%	1	3	3	2028	2088 \$ 73,000.00
29	Sewer Main	150 AC	57.33	Sawward Hts	60	55	92%	300%	1	3	3	2028	2088 \$ 66,000.00
30	Sewer Main	150 AC	74.18	Ambleside Dr	60	55	92%	300%	1	3	3	2028	2088 \$ 85,000.00
31	Sewer Main	150 AC	51.56	Ambleside Dr	60	55	92%	300%	1	3	3	2028	2088 \$ 60,000.00
33	Sewer Main	150 AC	44.25	Seaview St	60	55	92%	300%	1	3	3	2028	2088 \$ 51,000.00
34	Sewer Main	150 AC	14.41	Seaview St	60	55	92%	300%	1	3	3	2028	2088 \$ 17,000.00
35	Sewer Main	150 AC	50.83	Seaview St	60	55	92%	300%	1	3	3	2028	2088 \$ 59,000.00
44	Sewer Main	150 AC	73.78	-	60	55	92%	300%	1	3	3	2028	2088 \$ 85,000.00
45	Sewer Main	150 AC	40.45	Seaview St	60	55	92%	300%	1	3	3	2028	2088 \$ 47,000.00
46	Sewer Main	150 AC	104.35	Dyer Dr	60	55	92%	300%	1	3	3	2028	2088 \$ 120,000.00
47	Sewer Main	150 AC	97.86	Dyer Dr	60	55	92%	300%	1	3	3	2028	2088 \$ 113,000.00
48	Sewer Main	150 AC	74.19	Ambleside Dr	60	55	92%	300%	1	3	3	2028	2088 \$ 85,000.00
49	Sewer Main	150 AC	36.40	Spar St	60	55	92%	300%	1	3	3	2028	2088 \$ 42,000.00
55	Sewer Main	150 AC	13.15	-	60	55	92%	300%	1	3	3	2028	2088 \$ 16,000.00
58	Sewer Main	200 AC	58.94	MacMillan Dr	60	55	92%	300%	1	3	3	2028	2088 \$ 72,000.00
73	Sewer Main	150 AC	55.54	MacMillan Dr	60	55	92%	300%	1	3	3	2028	2088 \$ 64,000.00
79	Sewer Main	150 AC	32.26	-	60	55	92%	300%	1	3	3	2028	2088 \$ 37,000.00
3	Equipment			Fob & Alarm System	5	2	40%	100%	3	3	3	2026	2031 \$ 15,000.00

- | | | |
|--|---|--|
| <ul style="list-style-type: none"> Sanitary Lift Station Sanitary Manhole Water Hydrant Water Faucet Water Meter Water Service Water Valve Water Vault Catch Basin Storm Manhole | <ul style="list-style-type: none"> Sewer Outfall Gravity Sewer Sanitary Force mains Hydrant Leads Watermain Culverts Storm Sewer Stream Wetland Waterbody | <p>Capital Projects</p> <ul style="list-style-type: none"> High Risk Low Risk Village of Sayward Administrative Boundary Service Boundary |
|--|---|--|

Capital Project: #7
\$424,000
- 1200mm CMP replacement

Capital Project: #6
\$689,210
- 150mm water main replacement

Capital Project: #5
\$733,070
- 150mm and 200mm sanitary main replacement

Capital Project: #3
\$296,918
- 150mm and 200mm sanitary main replacements

Capital Project: #2
\$158,970
- 200mm water main replacement
- 300mm CMP replacement

Capital Project: #1
\$1,722,100
- Lift station replacement
- 200mm force main replacement
- 200mm water main replacement

Strait Salmon Bay
Johnstone



Village of Sayward

200

Metres

Utility Network, Administrative Boundary, Streams, Waterbody and Wetlands provided by SRD ;
Bays and Channels provided by Freshwater Atlas; Roads provided by Digital Road Atlas

DATE: March 15, 2024
TO: Keir Gervais - Village of Sayward
CC: Colin Read - Village of Sayward
FROM: Steven Olson - Urban Systems
FILE: 2906.0008.01
SUBJECT: Asset Management Policy Update

1.0 INTRODUCTION

This memorandum has been created for the Village of Sayward to provide proposed updates to the Asset Management Policy originally approved in October 2016. The following will show the revised Sections 2.0 and 2.1 to allow for a more brief, feasible set of policy guidelines.

2.0 POLICY UPDATES

To construct a clear and concise policy the following is proposed in replacement of Section 2.0 Policy of the Asset Management Policy:

2.0 POLICY

Asset management is a broad strategic framework that encompasses many disciplines and involves the entire organization. The Village of Sayward will:

- Create a maintenance management plan for capital assets and monitor compliance;
- Manage municipal capital asset inventories to support public safety, community well-being and community goals;
- Monitor standards and service levels to ensure that they meet/support community and Council goals and objectives;
- Plan for stable long-term funding to replace and/or renew and/or decommission capital assets; and
- Report to citizens regularly on the status and performance of work related to the implementation of this asset management policy.

To construct a clear and concise policy the following is proposed in replacement of Section 2.1 Policy Principles of the Asset Management Policy:

2.1 Policy Principles

The key principles of the Municipal Asset Management Policy are outlined in the following list. The Village of Sayward shall:

- Make informed decisions, by pursuing best practices and identifying all revenues and costs (including operation, maintenance, replacement and decommission) associated with capital assets;
- Integrate corporate, financial, business, technical and budgetary planning for capital assets;
- Establish organizational accountability and responsibility by consulting with stakeholders when appropriate;

DATE: March 15, 2024
SUBJECT: Asset Management Policy Update

FILE: 2906.0008.01

PAGE: 2 of 2

- Define and articulate service, maintenance and replacement levels and outcomes minimizing the total life cycle costs;
- Consider environmental, social, and sustainability goals;
- Minimize risks to users and risks associated with failure; and
- Report the performance of its asset management program.

3.0 CONCLUSION

The goal of this memorandum was to provide guidance for updating the Village of Sayward's Asset Management Policy. Further discussion with the village will take place to ensure that all priorities have been met within the updated policy.

Sincerely,

URBAN SYSTEMS LTD.

Steven Olson, EIT
Project Engineer

Eric Sears, P.Eng
Municipal Engineer

cc: Cassidy Hemphill – Urban Systems

/Ch
Enclosure:

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The preparation of this project was carried out with assistance from the Government of Canada and the Federation of Canadian Municipalities. Notwithstanding this support, the views expressed are the personal views of the authors, and the Federation of Canadian Municipalities and the Government of Canada accept no responsibility for them.”

DATE: June 14, 2024
TO: Keir Gervais - Village of Sayward
CC: Colin Read - Village of Sayward
FROM: Steven Olson - Urban Systems
FILE: 2906.0008.01
SUBJECT: Asset Management Strategy Update

1.0 INTRODUCTION

In 2016, the Village of Sayward completed an Asset Management Program including a strategy and policy for roads, linear water, sanitary sewer, and storm drainage infrastructure that was adopted the following year by Village Council. Several next steps were later identified by staff and Council members to help the strategy become more implementable and capable of guiding decision-making processes for prioritizing capital project planning.

This memorandum has been created for the Village of Sayward to provide proposed updates to the existing Asset Management Strategy Document. The following will show the revised Section 6 to create for a more brief, feasible strategy improvement plan.

2.0 UPDATES

To construct a clear and concise improvement plan the following is proposed in replacement of Section 6.0 – Asset Management Improvement Plan:

The following table contains tasks that are needed to achieve the objectives in the updated Asset Management Policy and this Asset Management Strategy. The table also assigns the tasks to the Village of Sayward's organization to appoint responsibility.

Task #	Task	Responsibility	Timeline	Resources
1	Adopt individual asset management plans for Roads, Water, Sanitary Sewer, and Storm Drainage	Council	2023 – 2024	Consultant, CAO, Public Works Staff
2	Review and refer to prepared Capital Priority Plan when creating financial budgets and projects	CAO, Council	Ongoing Update yearly	Consultant, CAO, Council
3	Review and refer to Asset Management Policy	CAO, Council	3- 5 year intervals	Consultant, CAO
4	Update Asset Management Strategy	CAO, Council	3- 5 year intervals	Consultant, CAO
5	Create a new/ updated Maintenance Management Plan	Council	3- 5 year intervals	Consultant, CAO, Public Works Staff
6	Create a funding strategy and implementation document	CAO	June 2024	Consultant, CAO

DATE: June 14, 2024
SUBJECT: Asset Management Strategy Update

FILE: 2906.0008.01

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3.0 CONCLUSION

The goal of this memorandum was to provide guidance for updating the Village of Sayward's Asset Management Strategy. Further discussion with the village will take place to ensure that all priorities have been met within the updated table.

Sincerely,

URBAN SYSTEMS LTD.

Steven Olson, EIT
Project Engineer

Eric Sears, P.Eng
Municipal Engineer

cc: Cassidy Hemphill – Urban Systems

/Ch
Enclosure:

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Maintenance Management Plan Village of Sayward

March 2024

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Introduction

Objective

The objective of the Maintenance Management Plan (MMP) is to provide the Village of Sayward with an organized and systematic tool for the operations team leader to effectively maintain the community's capital assets, as well as:

- Reduce risk of safety and environmental hazards;
- Track completed maintenance and provide an accountability protocol for existing and future Sayward maintenance staff;
- Develop and maintain maintenance records and history;
- Provide a rationalization for establishing annual operations and maintenance budgets; and
- Extend the life of capital assets.

The amount of effort invested in maintaining an asset should be dependent on the potential consequences of premature failure or damage. The level of service for each asset is set based on a combination of factors including:

- Value of the asset
- Safety risk to the public, community members and employees, and the environment
- Aesthetic value of the asset

The Village of Sayward will be responsible for operating and maintaining the entire sanitary sewer system, water system, and storm water management system. This manual reflects the responsibilities and operational tasks that will be required to be completed to meet safety regulations and upkeep assets.

Methodology

This plan was prepared in conjunction with Village of Sayward management. Maintenance tasks were developed based on asset maintenance requirements. Estimates of task duration, recurrence interval, and manpower required were estimated from our experience with other systems of similar nature.

Components of the MMP and Implementation Instructions

This maintenance management system, which includes an activity index, task descriptions, annual wall schedule, and weekly report forms is designed as a guide to trigger the completion of tasks that will help the Village of Sayward ensure that public infrastructure is kept in a satisfactory condition.

There are two components to this system – triggering maintenance and tracking maintenance. The triggering system includes an annual schedule/calendar and a weekly form. The annual schedule shows all operations and maintenance tasks and when those tasks are scheduled during the year. The weekly form includes all the tasks that require completion during that week. The weekly form doubles as a reporting form for completed maintenance. This allows management to track maintenance that has been completed and tasks that have been postponed. Once a task is completed, the weekly form is filled out with the date of completion.

General process of implementation of the MMP:

1. Team leader to review previous week's report and transfer deferred maintenance items to current week's form.
2. Team meeting to take place so the week's tasks can be assigned to public works employees.
3. As tasks are completed, the weekly form can be updated.
4. At the end of the week the weekly report is filled out.

For every task, a sheet describing the activity, time and number of people required, and suggestions for equipment and tools is included. Every task is assigned a unique numeric "task code" which helps identify that particular task. The task sheets are intended to act as a guide for workers unfamiliar with the activity. It is intended that the task sheets be updated and revised on a regular basis to suit the needs of the workers and the Village of Sayward. For example, some task sheets only have a short general description of the work; the operator may find it useful to add detail to these sheets clarifying the tasks or outlining procedures.

The annual schedule includes weekly totals of labour requirements. These will allow the operator to formulate more accurate budgets and to assess how to utilize personnel more effectively.

Schedule is for maintenance tasks only and does not include time for training.

During busy weeks it is important to effectively prioritize the week's tasks. The order of importance when prioritizing tasks should be as follows:

1. Public health and safety
2. Safety of the environment
3. Asset life
4. Aesthetics

In light of the information contained within this plan, such as labour requirements, it is recommended that the annual operations and maintenance budget be updated to reflect the anticipated resource and equipment demands.

The MMP should be updated annually by the operator. New assets and activities must be integrated into the system to ensure its effectiveness and continued relevance.

Section 1: Task Descriptions

Village of Sayward – Sanitary/ Water/ Storm Systems

Maintenance Management Plan

ACTIVITY INDEX

001. GENERAL ADMINISTRATION**01. Weekly Work Planning**

NUMBER:	001.01
ACTIVITY:	WEEKLY WORK PLANNING – FOR ALL PUBLIC WORKS DUTIES

Task Description:	Early in the week the Public Works Foreman plans tasks, issues, and requirements. Discusses with other members of village staff when required.
Recurrence:	Once per week (Monday morning preferred)
Equipment:	None
Materials Required:	None
Time Required:	approximately 15-30 minutes
No. People Required:	Public Works Foreman
1. Take note of deferred maintenance from previous weeks with the Operations and Maintenance Team. Arrange to have deferred maintenance completed this week. 2. Take note of the weeks scheduled activities with Operations and Maintenance Team. 3. Identify material and equipment requirements for upcoming tasks. 4. Arrange sufficient man-power to ensure the week's tasks can be completed. 5. Arrange a work plan for the week to ensure completion of planned and deferred tasks. 6. Review Safety procedures and discuss issues. 7. If required, discuss relevant budget and expenditure issues. 8. If required, discuss education and training requirements as required.	

02. Weekly Report

NUMBER:	001.02
ACTIVITY:	WEEKLY REPORT

Task Description:	Completion of weekly report
Recurrence:	Once per week (preferably on Friday)
Equipment:	None
Materials Required:	None
Time Required:	30 minutes
No. People Required:	Public Works Foreman
1. During the week the foreman is to keep track of tasks completed. 2. At the end of the week, complete one weekly task form identifying all completed tasks and deferred tasks. 3. For all deferred tasks include a description of why it was postponed.	

03. Monthly Report

NUMBER:	001.03
ACTIVITY:	MONTHLY REPORT

Task Description: Completion of Monthly report.

Recurrence: Once per month (month end)

Equipment Required: Computer, printer, etc.

Materials Required: None

Time Required: 2 hours

People Required: 1 Person (Public Works Foreman)

1. Compile Monthly Report of all tasks completed, tasks deferred and reasons for deferring, note issues and concerns.

04. Monthly Budget Review

NUMBER:	001.04
ACTIVITY:	MONTHLY BUDGET REVIEW – FOR ALL PUBLIC WORKS DUTIES

Task Description:	Monthly budget review to ensure expenditures are on track
Recurrence:	Once per month
Equipment:	None
Materials Required:	None
Time Required:	1 hour
No. People Required:	Public Works Foreman

1. Review expenses and expenditures for the previous month and compare with projected budget.

05. Prepare Annual Budget

NUMBER:	001.05
ACTIVITY:	PREPARE ANNUAL BUDGET – FOR ALL PUBLIC WORKS DUTIES

Task Description: Prepare annual budget
Recurrence: Once per year
Equipment: None
Materials Required: None
Time Required: 8 hours
No. People Required: Public Works Foreman and Village of Sayward Staff Member

1. Obtain compiled detailed account of previous year's expenditures.
2. Identify projected expenses for coming year.
3. Review changes made to equipment if necessary.
4. Review and evaluate level of service provided.
5. Prepare annual work plan including schedule.
6. Update weekly sheets.
7. Prepare budget.
8. Compare last year's actual time, equipment and material costs to next year's forecasts.

002. WASTEWATER SYSTEMS**01. Gravity Sewer***01. Manhole Inspection*

NUMBER:	002.01.01
ACTIVITY:	MANHOLE INSPECTION

Task Description:	Inspect manholes
Recurrence:	Once every 3 months
Equipment:	Manhole lifter, traffic control signs etc.
Materials Required:	None
Time Required:	2 hours
No. People Required:	1 person
1. Locate manhole and place traffic control signs in position visible to all vehicles. 2. Remove manhole lid and inspect for debris and blockages. 3. Clean and flush manhole as required.	

02. Flushing of Gravity Sewers

NUMBER:	002.01.02
ACTIVITY:	FLUSHING OF GRAVITY SEWERS

Task Description: Flush gravity sewer mains

Recurrence: Once every year

Equipment: None

Materials Required: None

Time Required: 8 hours

No. People Required: 1 person

1. Hire qualified contractor to flush gravity sewers.
2. Locate manholes for Contractor.
3. Supervise sewer flushing and prepare records of completed work.

Note: Typical flushing frequency is once every 5 years; however, due to minimal sewer grades flushing is recommended annually. Flushing frequency may be reduced based on system performance observed during video inspection.

03. Video Inspection of Gravity Sewers

NUMBER:	002.01.03
ACTIVITY:	VIDEO INSPECTION OF GRAVITY SEWERS

Task Description:	Video inspection of sewers
Recurrence:	Once every year prior to sewer flushing
Equipment:	None
Materials Required:	None
Time Required:	8 hours
No. People Required:	1 person
1. Schedule qualified contractor to inspect Village of Sayward's sewers and record video of results. 2. Ensure video inspection occurs prior to sewer flushing to investigate actual sediment and solids build-up in the pipes. 3. Follow up with Contractor to obtain video inspection reports and condition assessment that has been certified by a qualified consultant.	
Note:	Typical video inspection is once every 5 years; however, due to minimal sewer grades video inspection is recommended annually.

02. Community Pump Stations

01. Inspection of Community Pump Stations

NUMBER:	002.02.01
ACTIVITY:	INSPECTION OF COMMUNITY PUMP STATIONS

Task Description:	Visually inspect each individual pump station and perform maintenance if necessary
Recurrence:	Once per year
Equipment:	Flashlight, Lid key, hose, tools
Materials Required:	None
Time Required:	16 hours
No. People Required:	1 person
1. Walk around each pump station and look for signs of problems. 2. Unlock the wet well and inspect the interior of the chamber. 3. Ensure that pumps are off during the inspection. 4. Wash down the tank and pump with hose. 5. Remove pump and inspect the pump and piping. 6. If the pump is not operating properly, consult the pump supplier for troubleshooting assistance. Refer to the Village of Sayward's Operations And Maintenance Manual for pump specifications and supplier contact information. 7. Place pump back into wet well and ensure pump operates properly. 8. Lock the pump station lid.	

003. WATER SYSTEM

01. Water Supply

01. Intake Inspection

NUMBER:	003.01.01
ACTIVITY:	WATER INTAKE INSPECTION

Task Description:	Thorough inspection of well and appurtenances.
Recurrence:	Once every ten years or if drawdown levels increase by 10%
Equipment Required:	Service Truck, CCTV Camera Equipment
Materials Required:	Miscellaneous Shop Supplies
Time Required:	8 hours
People Required:	1 Person (Operator) + Qualified Well Pump Installer
1. Contact a provincially qualified contractor to complete the inspection. 2. Ensure that the reservoir is full prior to initiating the inspection. 3. Inspect one at a time using the other well to supply the system as required. The well that is being inspected should be set to OFF. The well that is supplying the system should be set to AUTO. 4. The contractor should pull the submersible well pump and drop pipe, inspect the condition, and complete any minor repairs. 5. The contractor should inspect the intake and screen using CCTV camera equipment. 6. Ensure that the well pump, drop pipe, probe wires, etc. are reinstalled properly. 7. After the inspection is completed, run the well on manual to ensure that it is operating properly and record the well drawdown (specific capacity). 8. Repeat steps 3 to 7 for the second well. 9. Have the well contractor submit a written report of the inspection and make arrangements for any major repairs (redevelopment, pump replacement, etc.)	

02. Intake Flushing

NUMBER:	003.01.02
ACTIVITY:	INTAKE FLUSHING

Task Description:	Flush supply wells.
Recurrence:	Twice per year (or if wells have been disinfected or redeveloped)
Equipment Required:	None
Materials Required:	None
Time Required:	2 hours
People Required:	2 People (Operators)
1. Ensure that the reservoir is full prior to initiating the task. 2. Set both wells to the OFF position. 3. Close the isolation valve for the Well #1 supply line and open the corresponding valve on the Well #1 flush line. 4. Turn Well #1 to HAND and allow the well pump to run for 15 minutes. 5. Monitor the water flow from the well flush line and ensure that it is dissipating to ground or to the nearby swale. 6. Turn Well #1 to the OFF position and return the valves to their original position. 7. Repeat steps 3 to 6 for Well #2. 8. Once the flushing is complete turn both wells back to the AUTO position and ensure that all valves are in their original position.	

03. Replacement Level Transmitter Desiccant

NUMBER:	003.01.03
ACTIVITY:	REPLACE LEVEL TRANSMITTER DESICCANT

Task Description: Well and reservoir level transmitter maintenance.

Recurrence: Once per year

Equipment Required: Screwdriver, Crescent Wrench

Materials Required: None

Time Required: 2 hours

People Required: 1 Person (Operator)

1. Desiccant boxes keep the moisture out of the level transmitter. The boxes are located inside junction boxes; one at each of the well heads, and the other at the reservoir.
2. Open junction boxes, remove old desiccant box and replace with new as per suppliers instruction sheet.

02. Pumphouse

01. Daily Pumphouse Inspection

NUMBER:	003.02.01
ACTIVITY:	DAILY TREATMENT PLAN INSPECTION

Task Description:	General inspection of interior and exterior of the building.
Recurrence:	Once per week day
Equipment Required:	Broom, Dust Pan
Materials Required:	None
Time Required:	1 hour
People Required:	1 Person (Operator)
1. Walk around the exterior of the Treatment plant and confirm that all exhaust ducts, louvers, lights, etc. are intact and there are no concerns regarding the building exterior. 2. Walk through the interior of the Treatment plant and complete a general inspection of the mechanical and electrical components. 3. Ensure that the settings on the control panel are in their normal operating positions. 4. Complete a general inspection of the chlorination equipment. Ensure that there are no leaks in the system and check the level in the hypochlorite drum. 5. Sweep the floors and tidy up the facility as required. 6. Complete the daily report form.	

02. Test Safety Equipment

NUMBER:	003.02.02
ACTIVITY:	TEST SAFETY EQUIPMENT

Task Description: Confirm that safety equipment is operational.

Recurrence: Once per month

Equipment Required: None

Materials Required: None

Time Required: 1 hour

People Required: 1 Person (Operator)

1. Confirm that the fire extinguisher is in its proper location. Check the tag to confirm that the extinguisher is not due for service.
2. Confirm that the exhaust fan in the chlorination room is operational.
3. Confirm that personal protective equipment including gloves, aprons and goggles are available and accessible.
4. Confirm that the emergency eyewash and shower are operational. The water temperature should be "luke warm".
5. Confirm that there are no tripping hazards or other safety concerns inside or around the disinfection facility.

03. Chlorine Dosing System Regular Check

NUMBER:	003.02.03
ACTIVITY:	CHLORINE DOSING SYSTEM REGULAR CHECK

Task Description: Inspection of entire chlorine dosing system.

Recurrence: Once per month

Equipment Required: Torque wrench
Allen wrench

Materials Required: Dry, clean cloth (to clear surfaces)

Time Required: 1 hour

People Required: 1 Person (Operator)

1. Check the dosing performance
2. Check the strainer and clean if necessary
3. Maintain the dosing pump - Follow instructions for regular maintenance outlined in the DDA Installation and Operating Instructions manual.
4. Maintain the back pressure and pressure relief valve - Follow manual for installation and maintenance of back pressure valves and pressure relief valves.
5. Check all accessories such as pulsation dampeners and level switches to confirm proper operation.

04. Chlorine Dosing System Check & Repair

NUMBER:	003.02.04
ACTIVITY:	CHLORINE DOSING SYSTEM CHECK & REPAIR

Task Description: Inspection of entire chlorine dosing system.

Recurrence: Once per year

Equipment Required: Torque wrench
Allen wrench

Materials Required: Service kit for wearing parts (if necessary)

Time Required: 2 hours

People Required: 1 Person (Operator)

1. Check entire dosing system installation.
2. Replace gaskets, O-rings, diaphragms, and other wear parts if necessary.
3. Note that unit will signal a service requirement when replacement of wearing parts are due.
4. Follow instructions outlined in the DDA Installation and Operating Instructions manual.

05. Calibrate Chlorination System

NUMBER:	003.02.05
ACTIVITY:	CALIBRATE CHLORINATION SYSTEM

Task Description:	Calibrate chlorine metering pumps.
Recurrence:	Twice per year or as required
Equipment Required:	Stop Watch
Materials Required:	O&M Manual – Manufacturer's Instructions
Time Required:	2 hours
People Required:	1 Person (Operator)
1. Use the calibration column on the chlorination system panel to complete a 5 to 10 minute drawdown test to confirm the flow rate for the chlorine metering pumps. Refer to the O&M Manual for drawdown test procedure. 2. The injection dosing rate can be adjusted based on free chlorine residual readings throughout the distribution system. 3. If adjusting the dosing rate does not address issues regarding free chlorine residuals, contact the Circuit Rider to assist with adjusting the setting on the metering pumps. 4. If additional assistance is required, contact the supplier.	

06. Major Cleaning of Pumphouse

NUMBER:	003.02.06
ACTIVITY:	MAJOR CLEANING OF PUMPHOUSE

Task Description:	Annual major cleaning of the pumphouse building.
Recurrence:	Once per year
Equipment Required:	Pressure Washer, Steel Rake
Materials Required:	Mop and Bucket
Time Required:	4 hours
People Required:	2 people (Operators)

1. Pressure wash the exterior walls of the building.
2. Level any rough areas of the granular compound using a steel rake.
3. Scrub the interior floors of the facility.
4. Complete any other required maintenance or cleaning required.

03. Dissolved Air Flotation (DAF)

01. Daily DAF Inspection

NUMBER:	003.03.01
ACTIVITY:	DAILY DAF INSPECTION

Task Description:	General Inspection of equipment and surrounding
Recurrence:	Once per day
Equipment Required:	None
Materials Required:	
Time Required:	1 hour
People Required:	1 Person (Operator)
1. Check all control system alarms are intact and engaged. 2. Monitor the influent flow rate and effluent quality/ turbidity. 3. Clean air filter/regulator and set air flow settling in pneumatic panel. 4. Inspect system for leaks in pipes and pumps. 5. Eject sediment from drain valves and check for clogging in aeration valves. 6. Monitor skimmer system for smooth operation and correct tension. 7. Check and set chemical dosing rates and inspect chemical supply.	

02. Cleaning DAF Unit

NUMBER:	003.03.02
ACTIVITY:	CLEANING DAF UNIT

Task Description: Draining and cleaning the DAF unit

Recurrence: Once per week

Equipment Required: None

Materials Required:

Time Required: 1 hour

People Required: 1 Person (Operator)

1. Drain the DAF unit.
2. Clean the emptied unit. While emptied inspect strainers and filters and replace as necessary.
3. Inspect and clear tanks and sumps of sediment

03. Grease and Oiling

NUMBER:	003.03.03
ACTIVITY:	GREASE AND OILING

Task Description:	Grease and oiling of frequently used components
Recurrence:	Once per month
Equipment Required:	None
Materials Required:	Oil and grease
Time Required:	1 hour
People Required:	1 Person (Operator)

1. Grease all bearings
2. Apply anti-seize to frequently used threaded parts
3. Check skimmer/auger drive oil and recycle pump oil/grease

04. Alternating Pumps

NUMBER:	003.03.04
ACTIVITY:	ALTERNATING PUMPS

Task Description: Alternating pumps and motors.

Recurrence: Once per month

Equipment Required:

Materials Required:

Time Required: 1 hour

People Required: 1 Person (Operator)

1. Alternate the motors and pumps associated with the DAF system.

04. Reservoir

01. Reservoir Inspection

NUMBER:	003.04.01
ACTIVITY:	RESERVOIR INSPECTION

Task Description:	Inspect reservoir and surrounding area.
Recurrence:	Once per week
Equipment Required:	Manhole Lifter, Vegetation Clearing Equipment
Materials Required:	Flashlight
Time Required:	1 hour
People Required:	1 Person (Operator)
1.	Walk around the exterior of the reservoir and visually inspect for any vandalism, cracks, leaks, etc.
2.	Trim any vegetation that is encroaching around the reservoir or access road.
3.	Ensure that the reservoir access hatch is closed, locked and secure.
4.	Confirm that the vent pipes are clear and that the screens are intact.

02. Annual Reservoir Inspection

NUMBER:	003.04.02
ACTIVITY:	ANNUAL RESERVOIR INSPECTION

Task Description:	Annual inspect of reservoir and surrounding area.
Recurrence:	Once per year
Equipment Required:	Service Trucks, Chain Saw, Manhole Lifter, Vegetation Clearing Equipment
Materials Required:	Flashlight
Time Required:	4 hours
People Required:	1 Person (Operator)
1.	Inspect and arrange to remove all trees which can fall onto the fence, road, antenna, or reservoir site.
2.	Open reservoir hatches and shine a light onto the floor and check for sediment build up.
3.	Ensure that the reservoir access hatch is closed, locked and secure.
4.	Remove any overgrown brush from within the fenced area.
5.	Inspect the lock block retaining wall for movement.

03. Reservoir Cleaning

NUMBER: 003.04.03

ACTIVITY: RESERVOIR CLEANING

Task Description: Clean inside of reservoir structure.

Recurrence: Once every five years – confirm by inspection

Equipment Required: Valve Key, Hydrant Wrench, Pressure Sustaining Valve, Cleaning and Disinfection Equipment

Materials Required: Record Drawings, Cleaning Solution, Chlorine, Bacteriological Sample Bottles

Time Required: 24 hours each well

People Required: 2 People (Operators) + Specialized Contractor

Taking the Reservoir Offline:

1. Contact a specialized contractor that is trained and certified in confined space entry to complete this task.
2. Contact the fire department so that they are aware that the reservoir will be offline and inform the community so that they can conserve water.
3. Turn off the well pumps the day before the cleaning and allow the community to draw down the water level in the reservoir.
4. Drain the remainder of the reservoir.
5. Re-route the water from the pumphouse through the reservoir bypass by opening the reservoir bypass valve and closing the inlet and outlet valves.
6. A pressure sustaining valve (PSV) attached to a system hydrant may be required to relieve excess pressure from the well pumps.
7. While the reservoir is offline, supply the system by running one well pump on HAND mode. Any excess pressure will be discharged to atmosphere by the PSV.

Cleaning the Reservoir:

1. The contractor should clean all inside surfaces and internal components of the reservoir.
2. After the cleaning is complete, the reservoir should be disinfected in accordance with AWWA C652-02.
3. The contractor should note any issues observed with the structure or internal components (level transmitter, interior ladder, etc.)

Bringing the Reservoir Back Online:

1. Refill the reservoir by opening the inlet valve. The outlet valve should remain closed and the bypass valve should remain open so that the distribution system continues to be supplied directly from the wells.
2. Once the reservoir is full, close the inlet valve and collect water samples from the reservoir in accordance with AWWA C652-02.
3. Provided that the bacteriological testing and chlorine residuals satisfy the requirements of AWWA C652-02, the reservoir can be put back online.
4. Re-route the water from the pumphouse back through the reservoir by opening the inlet and outlet valves and closing the bypass valve.
5. Turn both well pumps back to the AUTO position.
6. Remove the pressure sustaining valve from the hydrant.
7. Monitor the system to ensure that it returns to the normal operating condition.
8. Obtain an inspection report from the contractor.

Note: Alternatively, the reservoir can be cleaned while remaining online if divers are used. For this option a detailed plan and procedure should be requested from a specialized contractor.

05. Distribution System

01. Valve Exercising

NUMBER:	003.05.01
ACTIVITY:	VALVE EXERCISING

Task Description:	Exercising isolation valves throughout distribution system.
Recurrence:	Once per year (spring)
Equipment Required:	Valve Key, High Visibility Vest, Blue Spray Paint, Metal Detector, Shovel
Materials Required:	Record Drawings
Time Required:	8 hours
People Required:	1 Person (Operator)
1. Locate all main line and hydrant isolation valves in the system and clear any debris away from the valve box covers. 2. Mark the location of the valves using blue spray paint. 3. Slowly open and close each valve several times. 4. Record the number of turns required to completely close the valve. 5. Compare to previous records to ensure full gate travel. 6. Ensure that valves are left in their normal position.	

02. Watermain Inspection

NUMBER:	003.05.02
ACTIVITY:	WATERMAIN INSPECTION

Task Description: Visual inspection of watermain alignment.

Recurrence: Once per year

Equipment Required: None

Materials Required: None

Time Required: 2 hours

People Required: 1 Person (Operator)

1. Walk the alignment of the watermain throughout the system.
2. Visually inspect for any signs of leakage (ie. wet spots, areas where grass is higher, etc.)
3. Inspect all slopes for any signs of erosion or instability.
4. If leaks, erosion, or any other concerns are observed, discuss remedial actions with the Water Leader.

03. Hydrant Inspection

NUMBER:	003.05.03
ACTIVITY:	HYDRANT INSPECTION

Task Description:	Inspection of fire hydrants.
Recurrence:	Twice per year
Equipment Required:	Hydrant Wrench, Valve Key, Diffuser, Sodium Thiosulphate Pucks
Materials Required:	Wire Brush, Paint, Paint Brush, Solvent
Time Required:	8 hours
People Required:	2 People (Operators)
1. Confirm that all hydrants are accessible, and that the surrounding area is free of debris or any other potential obstructions. 2. Ensure that each hydrant is functional and operating properly. 3. Use the diffuser and de-chlorinating pucks as required to control the discharge of the water being flushed from the hydrant. 4. If a problem with the hydrant exists, contact the Circuit Rider or a qualified contractor to service the hydrant. 5. Use a wire brush to remove any loose paint or debris from the hydrant. Clean the surface with solvent and repaint the hydrant as necessary.	

04. Hydrant Maintenance

NUMBER:	003.05.04
ACTIVITY:	HYDRANT MAINTENANCE

Task Description:	Regular hydrant maintenance.
Recurrence:	Once per year
Equipment Required:	Hydrant Wrench, Miscellaneous Tools
Materials Required:	Typical Hydrant Components (ie. gaskets)
Time Required:	8 hours
People Required:	1 Person (Operator) + Circuit Rider

1. Inspect each hydrant and correct minor deficiencies by replacing and / or lubricating parts.
2. Report any major repairs required to the Water Leader.
3. Document the hydrant maintenance activities in the weekly report.

05. Distribution System Flushing

NUMBER:	003.05.05
ACTIVITY:	DISTRIBUTION SYSTEM FLUSHING

Task Description:	Flush distribution system and hydrants.
Recurrence:	Once per year in conjunction with hydrant inspection.
Equipment Required:	Hydrant Wrench, Valve Key, Diffuser, Sodium Thiosulphate Pucks
Materials Required:	None
Time Required:	24 hours
People Required:	2 People (Operators)
1. Notify all affected water users that the system is being flushed. 2. Locate each hydrant and ensure discharged water can drain safely. Take care to avoid flooding and erosion from discharged water. 3. Use a diffuser and de-chlorinating pucks as required to control the discharge of the water being flushed from the hydrant. 4. Flush the system unidirectionally starting at the hydrant closest to the reservoir and moving to the extremities of the system. Each hydrant should be flushed for 10 minutes or until the flow runs clear. 5. Monitor the level of the reservoir. If the level drops significantly, allow the well pumps to refill the reservoir prior to resuming flushing. Do not drain down reservoirs below 50% full. 6. After flushing is completed, slowly close each fire hydrant to minimize the risk of surging the water mains. Leave cap loose until the hydrant completely drains and then secure the cap. 7. Advise community members that flushing is complete and recommend that they open their taps for a short period to ensure any materials that have been stirred up are flushed through the household plumbing system.	

06. Distribution System Swabbing

NUMBER:	003.05.06
ACTIVITY:	DISTRIBUTION SYSTEM SWABBING

Task Description:	Swab distribution system mains.
Recurrence:	Only if recommended by Engineer
Equipment Required:	Manhole Opener, Valve Key
Materials Required:	Record Drawings
Time Required:	8 hours
People Required:	1 Person (Operator) + Specialized Contractor
1. Contact a specialized contractor that is trained and certified in confined space entry to complete this task. 2. Inform the contractor of the location of the swab launch location, reservoir bypass valve, isolation valves, and hydrants. 3. Obtain a swabbing plan from the contractor and review with the engineer. 4. Notify all affected water users that the system is being swabbed. 5. Monitor the reservoir level to ensure that it does not drop too low. If necessary, pause the swabbing to allow the reservoir to refill. 6. Confirm that the water that is discharged from hydrants during the swab retrieval does not cause any erosion or other concerns. 7. Advise residents that swabbing is complete and recommend that they open their taps for a short period to ensure any materials that have been stirred up are flushed through the household plumbing system.	

06. Water Quality Testing

01. Daily Chlorine Residual Testing

NUMBER:	003.06.01
ACTIVITY:	DAILY CHLORINE RESIDUAL TESTING

Task Description:	Daily testing of free chlorine residual in the water system.
Recurrence:	Once per day
Equipment Required:	Portable Chlorine Residual Analyzer and Free Chlorine Reagent
Materials Required:	Key and Hand Pump for Eclipse Sampling Station
Time Required:	1 hour
People Required:	1 Person (Operator)

Supply Main:

1. The free chlorine residual at the end of the dedicated reservoir supply main can be measured by obtaining a sample from the sampling station.
2. Turn on the tap at the sampling station and allow the water to run for about 5 minutes.
3. Test the free chlorine residual using the portable chlorine residual analyser and record the results on the daily record sheet.
4. Compare to previous results. Note that the residual must be at least 0.2 mg/L, but will likely be slightly higher at this location.
5. If the free chlorine residual is less than 0.2 mg/L, retest to confirm results. If a low residual is confirmed, adjust the chlorine dosage at the control panel in the pumphouse.
6. Use the hand pump to drain the water from the sampling station to prevent freezing.
7. Lock the sampling station to protect from vandalism or tampering.

Distribution System:

1. Test the free chlorine residual using an outside tap at a home or building within the distribution system. The test should be completed at different locations each day so that over time a representation of the residuals throughout the system is obtained.
2. Before obtaining the sample allow the water to run for about 5 minutes.
3. Test the free chlorine residual using the portable chlorine residual analyser and record the results on the daily record sheet. Also record the location of the test.
4. If the free chlorine residual is less than 0.2 mg/L, retest to confirm results. If low residuals are consistently observed, adjust the chlorine dosage at the control panel in the pumphouse.

General:

1. Submit a summary of free chlorine residuals to the Environmental Health Officer as required.
2. If required, the total chlorine residual can be tested at any point within the system using the portable chlorine residual analyser and a total chlorine reagent package.

02. Weekly Microbiological Testing

NUMBER:	003.06.02
ACTIVITY:	WEEKLY MICROBIOLOGICAL TESTING

Task Description:	Weekly bacteriological sampling in distribution system.
Recurrence:	Once per week
Equipment Required:	Wrench
Materials Required:	Rubber Gloves, Sample Bottles, Lighter, Alcohol Swabs
Time Required:	2 hours
People Required:	1 Person (Operator)

1. Refer to the *Procedures for Collecting and Preserving Samples for Total Coliforms and E.coli* in **Appendix H** for detailed instructions regarding sample collection.
2. Obtain samples from two different locations in the distribution system to be tested for Total Coliforms and E.coli.
3. Change sampling locations from week to week to ensure that the quality of the water throughout the distribution system is being tested regularly.
4. Test samples using Colilert system.
5. Make a record of the sampling in the weekly report.

03. Quarterly Water Quality Testing

NUMBER:	003.06.03
ACTIVITY:	QUARTERLY WATER QUALITY TESTING

Task Description:	Quarterly bacteriological sampling of raw water from supply wells and disinfection by-product testing.
Recurrence:	Once every three months
Equipment Required:	None
Materials Required:	Rubber Gloves, Sample Bottles, Alcohol Swabs
Time Required:	2 hours
People Required:	1 Person (Operator) + Environmental Health Officer

Bacteriological Testing of Raw Water:

1. Refer to the attached *Procedures for Collecting and Preserving Samples for Total Coliforms and E.coli* in Appendix H for detailed instructions regarding sample collection.
2. Obtain samples from the raw water sampling tap from each well to be tested for Total Coliforms and E.coli.
3. If the well pump is not running at the time that samples are being collected, run the pump on HAND in order to ensure that a true raw water sample is obtained from each well.
4. Test each water sample collected for the following:
 - pH (on-site measurements)
 - Temperature (on-site measurements)
5. Test samples using Colilert system.
6. Make a record of the sampling in the weekly report.

Disinfection By-Product Testing:

1. Schedule a quarterly visit with the Environmental Health Officer (EHO) to obtain samples for disinfection by-product analysis.
2. Assist the EHO as required to obtain the appropriate samples throughout the water system.
3. Make a record of the sampling in the weekly report.

04. Annual Water Quality Testing

NUMBER:	003.06.04
ACTIVITY:	ANNUAL WATER QUALITY TESTING

Task Description:	Annual water quality testing completed by qualified professional.
Recurrence:	Once per year
Equipment Required:	None
Materials Required:	None
Time Required:	2 hours
People Required:	1 Person (Operator) + Environmental Health Officer
1. Schedule an annual visit with the Environmental Health Officer (EHO) to conduct annual testing of an extensive list of parameters. 2. Assist the EHO as required to obtain the appropriate samples throughout the water system. 3. Make a record of the sampling in the weekly report.	

004. STORM SYSTEM

01. Ditches and Culverts

01. Ditch and Culvert Monitoring

TASK CODE:	004.01.01
ACTIVITY:	DITCHES AND CULVERTS ONGOING MONITORING AND MAINTENANCE AS REQUIRED

Task Description:	Frequent monitoring and maintenance of ditches and culverts upstream of the detention ponds
Recurrence:	Daily, if not hourly (during peak freshet and spring events and especially after major rainfall/warming events)
Equipment Required:	Portable steamer or streaming truck, shovels, rakes, excavator (extreme circumstances), pressure washer
Materials Required:	As needed
Time Required:	Varies with amount of maintenance and snow/ice removal required
People Required:	At least 2 people, more required if removal is extensive
1. Monitor the culvert pipe openings at ditch headwalls to check for any debris that is preventing runoff to flow smoothly along ditches and through culverts. 2. Mobilize steaming equipment as required to melt any ice or snow. 3. Mobilize debris removal by shovels and rakes; in extreme circumstances, an excavator may be required to help remove larger debris. 4. File each inspection form and update the task completed on the overall maintenance log. 5. Inspect all culverts checking for blockages, excess vegetation, litter, other restrictions to water flow, or undermining. 6. Remove sand / silt blockages and any litter or debris. 7. Check that culvert inlets and outlets are clear and not undermined for all driveway and road crossings. 8. Remove excess vegetation. 9. Install rock protection and infill undermined culvert inverts, as required.	

02. Detention Ponds

01. Clearing Inlets and Outlets

TASK CODE:	004.02.01
ACTIVITY:	CLEAR DETENTION POND INLETS AND OUTLETS ONGOING MONITORING AND MAINTENANCE AS REQUIRED

Task Description:	Check to make sure all surface water is freely draining into and out of the detention pond
Recurrence:	Monthly, or daily (as needed based on precipitation intensity)
Equipment Required:	Trimmers, gloves, chain-saw (if needed), Face and Eye protection, Closed-Toed shoes
Materials Required:	Disposal bag (if needed)
Time Required:	1 hours for inspection, work as needed
People Required:	1 person (2 person if cleaning required)

1. DO NOT LEAVE ANY DEBRIS AT ENTER OF THE PIPELINE
Visually inspect the headwall and trash-rack of inlet and outlet of the retention pond
2. Identify any debris, weeds, or buildup of other organic material that may cause pooling and are preventing water from flowing into and out of the retention pond
3. Remove debris, weeds, or buildup from the headwall and trash-rack
4. Re-inspect the asset after couple of hours (or as needed for intense precipitation/high melting weather) to ensure no additional blockage
5. File each inspection form and update the task completed on the overall maintenance log.

02. Pond Monitoring and Maintenance

TASK CODE:	004.02.02
ACTIVITY:	OVERALL POND ONGOING MONITORING AND MAINTENANCE AS REQUIRED

Task Description:	Check to make sure detention pond is not overfilling
Recurrence:	Monthly, or daily (as needed based on precipitation intensity)
Equipment Required:	N/A
Materials Required:	N/A
Time Required:	1 hours for inspection, work as needed
People Required:	1 person (2 person if work required)
 1. Inspect the detention pond to ensure that it is not overfilling 2. If over-filling, then open more the outlet gate. Re-check after couple of hours (in instances of heavy precipitation) 3. File each inspection form and update the task completed on the overall maintenance log.	

03. Vegetation Control

TASK CODE:	004.02.03
ACTIVITY:	VEGETATION CONTROL

Task Description:	Trim or remove undesired vegetation
Recurrence:	Three times annually in summer, as required
Equipment Required:	Pruners, trowel, gardening gloves, garden kneeler
Materials Required:	None
Time Required:	2 hours
People Required:	1 person

1. Perform task ideally after rainfall when the ground is soft to aid in vegetation removal.
2. Collect gardening tools including pruners, trowel, gardening gloves, and kneeling cushion.
3. Identify weeds and areas of vegetation that require attention.

04. Fence Repairs

TASK CODE:	004.02.04
ACTIVITY:	REPAIR FENCE AS REQUIRED

Task Description:	Check chain link fencing around detention pond as required.
Recurrence:	Once per year
Equipment Required:	Contractor
Materials Required:	Contractor
Time Required:	4 hours
People Required:	1 person

1. Identify fencing that requires maintenance or repair.
2. Request work be completed by contractor.

05. Snow and Ice Removal from Access

TASK CODE:	004.02.05
ACTIVITY:	REMOVE ICE AND SNOW ON ACCESS ROAD

Task Description:	Remove ice and snow from access road to water treatment plant.
Recurrence:	As required in winter.
Equipment Required:	Shovel, winter gear
Materials Required:	De-icing product and/or sand
Time Required:	5 hours per person per week (average)
People Required:	2 people
1. Wear appropriate winter clothing, boots, and gear. Get shovel and de-icing product. 2. Use shovel to push snow off to the side of the driveways, sidewalks, walkways, and parking lots. 3. Spread sand or de-icing product over the entire driveway and walking paths as required (do not use excessive amounts as this may cause damage to the driveway, lawn, or drains). Ensure de-icing product is appropriate for surface (concrete, asphalt, wood, etc.)	

005. EQUIPMENT AND VEHICLES**01. Vehicles**

TASK CODE:	005.01
ACTIVITY:	VEHICLE SERVICING

Task Description:	Regular scheduled servicing all maintenance vehicles.
Recurrence:	Once every 6 months (or as required)
Equipment Required:	None
Materials Required:	None
Time Required:	8 hours
People Required:	1 person

1. Schedule appointment to have vehicles serviced.
2. Coordinate drop off and pick up of vehicle at service location.

02. Equipment

TASK CODE:	005.02
ACTIVITY:	EQUIPMENT SERVICING

Task Description: Servicing for maintenance equipment

Recurrence: Once per month

Equipment Required: None

Materials Required: None

Time Required: 1 hour

People Required: 2 people

1. Maintenance team to servicing equipment as required, including:
 - Mowers
 - Weed Wackers (Trimmers)
 - Generator
 - Vacuum
 - Leaf Blower
 - Chainsaws
 - Steamers
2. Check all fluids (oil, coolant, fuel) and refill as required.

Section 2:

Annual Work Plan

(Wall Calendar)

Village of Sayward – Sanitary/ Water/ Storm Systems

Maintenance Management Plan

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52
30-Dec	6-Jan	13-Jan	20-Jan	27-Jan	3-Feb	10-Feb	17-Feb	24-Feb	3-Mar	10-Mar	17-Mar	24-Mar	31-Mar	7-Apr	14-Apr	21-Apr	28-Apr	5-May	12-May	19-May	26-May	2-Jun	9-Jun	16-Jun	23-Jun	30-Jun	7-Jul	14-Jul	21-Jul	28-Jul	4-Aug	11-Aug	18-Aug	25-Aug	1-Sep	8-Sep	15-Sep	22-Sep	29-Sep	6-Oct	13-Oct	20-Oct	27-Oct	3-Nov	10-Nov	17-Nov	24-Nov	1-Dec	8-Dec	15-Dec	22-Dec

To be completed by a Contractor
 Requires two operations personnel to complete task

Section 3:

Annual Operations and Maintenance Cost Estimate

Village of Sayward – Sanitary/ Water/ Storm Systems

Maintenance Management Plan

Operation and Maintenance Average Annual Cost Table

Task Code	Task Description	No. of Occurrences per Year	Task Duration (hrs)	No. of People Required	Village Representative Hours Required per Year	Operations Staff Hours Required Per Year	Assumed Hourly Rate for Village Representative (\$/hr)	Assumed Hourly Rate for Operations Staff (\$/hr)	Cost of Equipment Rental or Contracted Work	Comments	Total Annual Cost for Task
001	GENERAL ADMINISTRATION										
001.01	WEEKLY WORK PLANNING	52	0.5	2	26.0	26.0	\$45	\$35	\$0		\$2,080
001.02	WEEKLY REPORT	52	0.5	1	0.0	26.0	\$45	\$35	\$0		\$910
001.03	MONTHLY REPORT	12	2	2	12.0	12.0	\$45	\$35	\$0		\$960
001.04	MONTHLY BUDGET REVIEW	12	2	2	8.0	8.0	\$45	\$35	\$0		\$640
001.05	PREPARE ANNUAL BUDGET	1	8	2	8.0	8.0	\$45	\$35	\$0		\$640
002	WASTE WATER SYSTEM										
002.01.01	MANHOLE INSPECTION	4	2	1	0	8.0	\$45	\$35	\$0		\$280
002.01.02	FLUSHING OF GRAVITY SEWERS	1	8	1	0	8.0	\$45	\$35	\$10,000	flushing contractor	\$10,280
002.01.03	VIDEO INSPECTION OF GRAVITY SEWERS	1	8	1	0	8.0	\$45	\$35	\$5,000	video inspection contractor	\$5,280
002.02.01	INSPECTION OF VILLAGE PUMP STATIONS	1	16	1	0	16.0	\$45	\$35	\$0		\$560
002.03.01	INSPECTION OF TREATMENT LAGOON SYSTEM	1	16	1	0	16.0	\$45	\$35	\$0		\$560
003	WATER SYSTEM										
003.01.01	INTAKE INSPECTION	0	0	0	0	0.0	\$45	\$35	\$4,000	Every 5 years	\$4,000
003.01.02	INTAKE FLUSHING	2	2	2	0	0.0	\$45	\$35	\$0		\$0
003.01.03	REPLACE LEVEL TRANSMITTER DESICCANT	1	2	1	0	2.0	\$45	\$35	\$0		\$70
003.02.01	DAILY TREATMENT PLANT INSPECTION	365	0.5	1	0	182.5	\$45	\$35	\$0		\$6,388
003.02.02	TEST SAFETY EQUIPMENT	12	1	1	0	12.0	\$45	\$35	\$0		\$420
003.02.03	CHLORINE DOSING SYSTEM REGULAR CHECK	12	1	1	0	12.0	\$45	\$35	\$0		\$420
003.02.04	CHLORINE DOSING SYSTEM CHECK & REPAIR	1	2	1	0	2.0	\$45	\$35	\$0		\$70
003.02.05	CALIBRATE CHLORINATION SYSTEM	2	2	1	0	4.0	\$45	\$35	\$0		\$140
003.02.06	MAJOR CLEANING OF TREATMENT PLANT	1	4	2	0	8.0	\$45	\$35	\$0		\$280
003.03.01	DAILY DAF INSPECTION	365	0.5	1	0	182.5	\$45	\$35	\$0		\$6,388
003.03.02	CLEANING DAF UNIT	52	1	1	0	52.0	\$45	\$35	\$0		\$1,820
003.03.03	GREASE AND OILING	12	1	1	0	12.0	\$45	\$35	\$0		\$420
003.03.04	ALTERNATING PUMPS	12	1	1	0	12.0	\$45	\$35	\$0		\$420
003.03.01	RESERVOIR INSPECTION	52	1	1	0	52.0	\$45	\$35	\$0		\$1,820
003.03.02	ANNUAL RESERVOIR INSPECTION	1	4	1	0	4.0	\$45	\$35	\$0		\$140
003.03.03	RESERVOIR CLEANING	0	0	0	0	0.0	\$45	\$35	\$1,200	Every 5 years	\$1,200
003.04.01	VALVE EXERCISING	1	8	1	0	8.0	\$45	\$35	\$0		\$280
003.04.02	WATERMAIN INSPECTION	2	2	1	0	4.0	\$45	\$35	\$0		\$140
003.04.03	HYDRANT INSPECTION	1	8	2	0	16.0	\$45	\$35	\$0		\$560
003.04.04	HYDRANT MAINTENANCE	1	8	1	0	8.0	\$45	\$35	\$0		\$280
003.04.05	DISTRIBUTION FLUSHING	1	24	2	0	48.0	\$45	\$35	\$0		\$1,680
003.04.06	DISTRIBUTION SYSTEM SWABBING	0	0	0	0	0.0	\$45	\$35	\$5,000	Completed when required	\$5,000
003.05.01	DAILY CHLORINE RESIDUAL TESTING	365	1	1	0	365	\$45	\$35	\$0		\$12,775
003.05.02	WEEKLY MICROBIOLOGICAL TESTING	52	2	1	0	104.0	\$45	\$35	\$0		\$3,640
003.05.03	QUARTERLY WATER QUALITY TESTING	4	2	1	0	8.0	\$45	\$35	\$1,500	Environmental Rep Required	\$1,780
003.05.04	ANNUAL WATER QUALITY TESTING	1	2	1	0	2.0	\$45	\$35	\$2,000	Environmental Rep Required	\$2,070
004	STORM SYSTEM										

Operation and Maintenance Average Annual Cost Table

Task Code	Task Description	No. of Occurrences per Year	Task Duration (hrs)	No. of People Required	Village Representative Hours Required per Year	Operations Staff Hours Required Per Year	Assumed Hourly Rate for Village Representative (\$/hr)	Assumed Hourly Rate for Operations Staff (\$/hr)	Cost of Equipment Rental or Contracted Work	Comments	Total Annual Cost for Task
004.01.01	DITCH AND CULVERT MONITORING AND MAINTENANCE	52	2	1	0	104.0	\$45	\$35	\$0		\$3,640
004.02.01	CLEARING INLETS AND OUTLETS	12	1	1	0	12.0	\$45	\$35	\$0		\$420
004.02.02	POND MONITORING AND MAINTENANCE	12	1	1	0	12.0	\$45	\$35	\$0		\$420
004.02.03	VEGETATION CONTROL	3	3	1	0	9.0	\$45	\$35	\$0		\$315
004.02.04	FENCE REPAIRS	1	4	1	0	4.0	\$45	\$35	\$5,000	Contractor required	\$140
004.02.05	SNOW AND ICE REMOVAL	15	5	1	0	75.0	\$45	\$35	\$0		\$2,625
005	VEHICLES AND EQUIPMENT										
005.01	VEHICLE SERVICING	6	8	1	0	48.0	\$45	\$35	\$0		\$1,680
005.02	EQUIPMENT SERVICING	12	1	1	0	12.0	\$45	\$35	\$0		\$420
	EMERGENCY REPAIRS	1	-	0	0	0.0	\$45	\$35	\$5,000	miscellaneous contracted work	\$5,000
										Subtotal:	\$89,050
										10% Contingency:	\$8,905
										TOTAL:	\$98,000

Section 4:

Reporting Templates

Village of Sayward – Sanitary/ Water/ Storm Systems

Maintenance Management Plan

Section 4.1: Operations and Maintenance Weekly Report

Village of Sayward – Sanitary/ Water/ Storm Systems

Maintenance Management Plan



OPERATION AND MAINTENANCE WEEKLY REPORT
VILLAGE OF SAYWARD STORM SYSTEM

Year _____

Week # _____

Dates _____ to _____

Task Code	Task Description	Anticipated Task Frequency	Anticipated Task Hours (hrs)	Anticipated No. of Staff	Actual Task Hours (hrs)	Actual No. of Staff	Date of Task Last Completion	Date of Task Completion	Deferred to Date	Comments

Deferred Maintenance (from previous weeks)

Task	Description	Day Completed	Deferred to Date

Comments (explanation for deferred maintenance, emergencies events, etc.)

Completed by: _____
(System Operator)

Date: _____

Reviewed by: _____
(Village Representative)

Date: _____



OPERATION AND MAINTENANCE WEEKLY REPORT
VILLAGE OF SAYWARD SANITARY SEWER SYSTEM

Year _____

Week # _____

Dates _____ to _____

Task Code	Task Description	Anticipated Task Frequency	Anticipated Task Hours (hrs)	Anticipated No. of Staff	Actual Task Hours (hrs)	Actual No. of Staff	Date of Task Last Completion	Date of Task Completion	Deferred to Date	Comments

Deferred Maintenance (from previous weeks)

Task	Description	Day Completed	Deferred to Date

Comments (explanation for deferred maintenance, emergencies events, etc.)

Completed by: _____
(System Operator)

Date: _____

Reviewed by: _____
(Village Representative)

Date: _____



OPERATION AND MAINTENANCE WEEKLY REPORT
VILLAGE OF SAYWARD WATER SYSTEM

Year _____

Week # _____

Dates _____ to _____

Task Code	Task Description	Anticipated Task Frequency	Anticipated Task Hours (hrs)	Anticipated No. of Staff	Actual Task Hours (hrs)	Actual No. of Staff	Date of Task Last Completion	Date of Task Completion	Deferred to Date	Comments

Deferred Maintenance (from previous weeks)

Task	Description	Day Completed	Deferred to Date

Comments (explanation for deferred maintenance, emergencies events, etc.)

Completed by: _____
(System Operator)

Date: _____

Reviewed by: _____
(Village Representative)

Date: _____

Section 4.2:

Pump Station Data Logs

Village of Sayward – Sanitary/ Water/ Storm Systems

Maintenance Management Plan

Section 4.3: Operators' Certification

Section 4.4: Expenditures

**TO BE COMPLETED BY THE VILLAGE OF SAYWARD AFTER FIRST FULL YEAR OF OPERATION.
REFER TO SECTION 1 TASK 001.04**

Village of Sayward – Sanitary/ Water/ Storm Systems

Maintenance Management Plan

Village of Sayward
Kelsey Recreation Centre / Municipal Hall
Mechanical Assessment Report



Prepared for:
Onsite Engineering Ltd.

Prepared by:



#208 – 20171 92A Avenue
Langley, BC
V1M 3A5

Project # 19022-M

March 15, 2019

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Report Prepared by;
ROCKY POINT ENGINEERING LTD.



Thomas Popovich
Principal

1 Purpose of the Report

The intent of this report is to review the existing building's plumbing and mechanical systems and comment on their current condition. We will provide a description of the various systems, along with a condition assessment and what would be required to bring up to current codes and standards.

2 Site Services

In general, all of the site services; 150mm storm, 100mm sanitary and 65mm water, leave / enter the property at the north side and connect to services running along Kelsey Way.

2.1 Sanitary

The sanitary is serviced from a 100mm sanitary sewer that leaves the north corner of the building to the main, running along Kelsey Way. The service is adequate, unless a fire protection sprinkler system is to be incorporated, then the sanitary should be up sized to 150mm. At this point no further upgrading is required.

2.2 Storm

The storm is connected to a 150mm storm system and also leaves at the north corner of the building and extends down to the main, running along Kelsey Way. There does not appear to be any perimeter foundation drainage installed around the building. At this point no further upgrading is required.

2.3 Water Distribution

The existing building is currently serviced from a 65mm city water line which enters the building at the northeast corner from a service main running along Kelsey Way. The service is adequate for the existing domestic water requirements, but if the building was to be provided with fire protection sprinkler system, then the service would need to be upgraded to 150mm, depending on water pressure.

At this point no further upgrading is required unless sprinkler system is to be added.

2.4 Propane Gas

The building heating system is fueled by two (estimated) 4500 litre propane tanks located within a chain link fenced enclosure on the southeast backside of the building. Propane gas PRV is located on the left side of the pool access door with the gas main running up and over the doors and down into the Boiler Room.



Propane Tanks



Propane Gas PRV

3 Building Systems

The building has undergone a number of additions and the major ones are as follows;

- 1974 original building
- Municipal offices incorporated, date unknown
- Solar panels / heat pumps added, date unknown
- Hot tub added, date unknown
- DDC System Added

3.1 Plumbing Systems

The building currently has a 65mm water service located in the water entry/mechanical room in the basement and is in serviceable condition with a full-size by-pass. No back-flow prevention station provided.



Water Entry



Heat Pumps & Circulation Pump

First stage of domestic hot water is generated from the high efficiency gas fired boilers and pumped through an Allied Engineering Tankless Coil heat exchanger, located in the boiler room, hot water from the heat exchanger is then piped over to a 60-gallon storage tank. Along with the boilers, there is a 2-ton water to water heat pump unit that is connected to the roof mounted solar panels, incorporated into the primary source heating system, that also provides hot water to the Tankless Coil heat exchanger.

Using a tankless coil heat exchanger for this type of domestic hot water heating system is not very efficient, based on using condensing boilers and heat pump (low supply water temperature), which reduces the capacity of hot water that is available for the public's use.



Heat Exchanger



DHW Storage Tank

A majority of the existing insulation on the domestic water piping located in the boiler room is either non-existent or in very poor condition, and to minimize heat loss the piping should be properly insulated.

Domestic hot, recirc and cold water is distributed throughout the complex with a copper piping system. The condition of the copper piping is not known however, given the age of the building it is likely that the distribution is at, or nearing end of life.

The piping should be considered for replacement if fixtures are upgraded in any area of the building in the next 5 to 10 years, or upgraded as fixtures are upgraded in specific areas.

3.2 Plumbing Fixtures

The existing building's plumbing fixtures are in generally good condition throughout the building and some upgrading of the trim has been done. However, the fixtures appear to be original to the building and do not meet current low flow requirements of the BC Building Code.



Urinals



Washroom lavatories

Flush valves are provided on toilets and urinals along with conventional faucets on lavatory and sinks. The pool shower - diverters are the push button activated type, with mixing valve located in the mechanical room and vandal-resistant shower heads. These heads are conventional flow and do not meet current plumbing code based on water flow.



Changeroom Shower



H/C Washroom

Roof drainage is provided from a series of roof drains and conventional rain water leaders. We did not access the roof so no review was conducted.

3.3 Swimming Pool and Hot Tub

The swimming pool was included in the base building design and a majority of the pool mechanical equipment has been replaced and upgraded over the years. The brown sand filter serves the pool and the white filter serves the hot tub. Both filters have a 2017 date on them to indicate their last service. All of the pumps appear to be operational and it is assumed that they were also serviced at the same time as the filters. Heating for the pool is provided by the boilers and the 5-ton water to water heat pump unit and associated solar panels on the roof. The pool equipment appears to be in reasonable operating condition.



Pool Sand Filters



Pool Circulation Pumps

3.4 Swimming Pool and Hot Tub Deck Area

Presently, there is a single drinking fountain located near the pool but no shower, it is assumed that the operation relies on the public using the showers in the change rooms, which do not meet current Health Code Requirements.



Pool Drinking Fountain



Eyewash Station

3.5 Swimming Pool and Hot Tub Chemical Storage Room

The pool chemicals are located in a small locked storage room beside the hot tub, with a variety of pool chemicals, muriatic acid, formula 500 liquid algicide, sodium bicarbonate and calcium chloride contained in a locked storage cabinet. Within the room, there is a wall mounted eye & skin treatment station. In a facility like this, I would have expected an emergency eye wash as a minimum (Health Code Requirement) and an emergency shower for the most effective safety precaution for the staff. There is also a small, wall mounted exhaust fan with manual control.

4 Fire Protection Systems

Presently, the building does not contain a fire protection sprinkler system. All that could be found were several fire hose cabinets and some random fire extinguishers. Normally in a public building of this classification, I would have expected to find a sprinkler system. I was unable to determine where the fire hoses get their water supply, but I have assumed that it is directly connected to the domestic water distribution system. This does not meet code and should be separately zoned with its own water service that separates the domestic from the fire with a double check valve assembly.



Fire Hose Cabinet



Fire Hose & Extinguisher

5 Mechanical Heating Systems

The HVAC systems in the building consist of a combination of a central gas fired boiler plant which delivers heating water to terminal units, baseboard heating and two air handling units that serve the Gym and Pool. Some upgrading of the existing systems have been done over the years.

5.1 Central Boiler Plant

The original gas fired heating plant was upgraded several years ago and provided with 2 recently installed NTI - #TI200 (199 MBH) high efficiency gas fired boilers. The boilers were provided with several new secondary pumps. The system provides heating water to terminal units, air handling units, the pool system and the domestic hot water heat exchanger.



Boilers



Heating Circulation Pumps

The gas fired boilers have an input capacity of 398 MBH and a combined heating output in the range of 364 MBH at peak heating efficiency. The system has been well maintained and chemical treatment being provided with chemical pot feeder.

Condensate is piped from the boilers over to a floor drain, without the use of an acid neutralizer and has caused serious corrosion to the cast iron floor drain, along with adjoining sanitary piping below the slab. Note that this connects into the community sanitary drainage system. Acid neutralizer should be installed ASAP.

A majority of the existing insulation on the heating water piping located in the Boiler Room is either non-existent or in very poor condition and to minimize heat loss the piping should be properly insulated.

No heating system expansion tank was located, but the system would not work without one so we are unsure of its location.

An emergency boiler shut down switch located near the entrance door needs to be provided to meet the current Boiler Safety Code.



Rotted floor drain

5.2 Solar Collection System

The solar collection system comprises 4 solar panels mounted on the roof, which are piped down to the boiler room. The solar system within the boiler room contains a drain down tank to alleviate the chance of the solar panels freezing during cold weather. The water from the solar panels is then pumped through two water to water heat pump units, a 2-ton heat pump serves the domestic hot water system and a 5-ton heat pump serves the pool heating system. The system is controlled through the DDC and it appeared that it was operational but comments from the staff were that the installation was not completed. No design drawings or Maintenance Manuals for the system were available during the site visit, it is recommended that the Municipality contact the original installer / system designer to obtain the operating information.



Solar Panels



Solar Drain Down Tank



Solar Heat Pumps



Circulation Pumps

5.3 DDC Controls

The originally installed Barber Colman control system has been replaced with a current Controls Solutions / Automated Logic DDC system, the control system operates the following equipment:

- Domestic hot water solar collection system including pumps, heat pump and heat exchanger served from the boilers.
- Pool heating and circulation system includes pumps, heat pump and heat exchanger served from the boilers, along with the ventilation and dehumidification systems.
- Hot tub heating and circulation system includes pumps, heat pump and heat exchanger served from the boilers.
- Boilers, circulation pumps and temperature controls along with heating terminal control valves throughout the building.
- Gym air handling units, 3-way control valve, dampers along with space temperature, CO2 levels, humidity, lights and occupancy
- Change / washroom room exhaust fans



DDC panel boiler room

Output Summary for Panel 140163

Descriptor	Device Type
DDH-WirelessTemp	CT-21.01
DDH-WirelessTemp	CT-21.02
DDH-WirelessTemp	CT-21.03
DDH-WirelessTemp	CT-21.04
DDH-WirelessTemp	CT-21.05
DDH-WirelessTemp	CT-21.06
DDH-WirelessTemp	CT-21.07
DDH-WirelessTemp	CT-21.08
DDH-WirelessTemp	CT-21.09
DDH-WirelessTemp	CT-21.10
DDH-WirelessTemp	CT-21.11
DDH-WirelessTemp	CT-21.12
DDH-WirelessTemp	CT-21.13
DDH-WirelessTemp	CT-21.14
DDH-WirelessTemp	CT-21.15
DDH-WirelessTemp	CT-21.16
DDH-WirelessTemp	CT-21.17
DDH-WirelessTemp	CT-21.18
DDH-WirelessTemp	CT-21.19
DDH-WirelessTemp	CT-21.20
DDH-WirelessTemp	CT-21.21
DDH-WirelessTemp	CT-21.22
DDH-WirelessTemp	CT-21.23
DDH-WirelessTemp	CT-21.24
DDH-WirelessTemp	CT-21.25
DDH-WirelessTemp	CT-21.26
DDH-WirelessTemp	CT-21.27
DDH-WirelessTemp	CT-21.28
DDH-WirelessTemp	CT-21.29
DDH-WirelessTemp	CT-21.30
DDH-WirelessTemp	CT-21.31
DDH-WirelessTemp	CT-21.32
DDH-WirelessTemp	CT-21.33
DDH-WirelessTemp	CT-21.34
DDH-WirelessTemp	CT-21.35
DDH-WirelessTemp	CT-21.36
DDH-WirelessTemp	CT-21.37
DDH-WirelessTemp	CT-21.38
DDH-WirelessTemp	CT-21.39
DDH-WirelessTemp	CT-21.40
DDH-WirelessTemp	CT-21.41
DDH-WirelessTemp	CT-21.42
DDH-WirelessTemp	CT-21.43
DDH-WirelessTemp	CT-21.44
DDH-WirelessTemp	CT-21.45
DDH-WirelessTemp	CT-21.46
DDH-WirelessTemp	CT-21.47
DDH-WirelessTemp	CT-21.48
DDH-WirelessTemp	CT-21.49
DDH-WirelessTemp	CT-21.50
DDH-WirelessTemp	CT-21.51
DDH-WirelessTemp	CT-21.52
DDH-WirelessTemp	CT-21.53
DDH-WirelessTemp	CT-21.54
DDH-WirelessTemp	CT-21.55
DDH-WirelessTemp	CT-21.56
DDH-WirelessTemp	CT-21.57
DDH-WirelessTemp	CT-21.58
DDH-WirelessTemp	CT-21.59
DDH-WirelessTemp	CT-21.60
DDH-WirelessTemp	CT-21.61
DDH-WirelessTemp	CT-21.62
DDH-WirelessTemp	CT-21.63
DDH-WirelessTemp	CT-21.64
DDH-WirelessTemp	CT-21.65
DDH-WirelessTemp	CT-21.66
DDH-WirelessTemp	CT-21.67
DDH-WirelessTemp	CT-21.68
DDH-WirelessTemp	CT-21.69
DDH-WirelessTemp	CT-21.70
DDH-WirelessTemp	CT-21.71
DDH-WirelessTemp	CT-21.72
DDH-WirelessTemp	CT-21.73
DDH-WirelessTemp	CT-21.74
DDH-WirelessTemp	CT-21.75
DDH-WirelessTemp	CT-21.76
DDH-WirelessTemp	CT-21.77
DDH-WirelessTemp	CT-21.78
DDH-WirelessTemp	CT-21.79
DDH-WirelessTemp	CT-21.80
DDH-WirelessTemp	CT-21.81
DDH-WirelessTemp	CT-21.82
DDH-WirelessTemp	CT-21.83
DDH-WirelessTemp	CT-21.84
DDH-WirelessTemp	CT-21.85
DDH-WirelessTemp	CT-21.86
DDH-WirelessTemp	CT-21.87
DDH-WirelessTemp	CT-21.88
DDH-WirelessTemp	CT-21.89
DDH-WirelessTemp	CT-21.90
DDH-WirelessTemp	CT-21.91
DDH-WirelessTemp	CT-21.92
DDH-WirelessTemp	CT-21.93
DDH-WirelessTemp	CT-21.94
DDH-WirelessTemp	CT-21.95
DDH-WirelessTemp	CT-21.96
DDH-WirelessTemp	CT-21.97
DDH-WirelessTemp	CT-21.98
DDH-WirelessTemp	CT-21.99
DDH-WirelessTemp	CT-21.00

Output Summary for Panel 140163

Descriptor	Device Type
DDH-WirelessTemp	CT-21.01
DDH-WirelessTemp	CT-21.02
DDH-WirelessTemp	CT-21.03
DDH-WirelessTemp	CT-21.04
DDH-WirelessTemp	CT-21.05
DDH-WirelessTemp	CT-21.06
DDH-WirelessTemp	CT-21.07
DDH-WirelessTemp	CT-21.08
DDH-WirelessTemp	CT-21.09
DDH-WirelessTemp	CT-21.10
DDH-WirelessTemp	CT-21.11
DDH-WirelessTemp	CT-21.12
DDH-WirelessTemp	CT-21.13
DDH-WirelessTemp	CT-21.14
DDH-WirelessTemp	CT-21.15
DDH-WirelessTemp	CT-21.16
DDH-WirelessTemp	CT-21.17
DDH-WirelessTemp	CT-21.18
DDH-WirelessTemp	CT-21.19
DDH-WirelessTemp	CT-21.20
DDH-WirelessTemp	CT-21.21
DDH-WirelessTemp	CT-21.22
DDH-WirelessTemp	CT-21.23
DDH-WirelessTemp	CT-21.24
DDH-WirelessTemp	CT-21.25
DDH-WirelessTemp	CT-21.26
DDH-WirelessTemp	CT-21.27
DDH-WirelessTemp	CT-21.28
DDH-WirelessTemp	CT-21.29
DDH-WirelessTemp	CT-21.30
DDH-WirelessTemp	CT-21.31
DDH-WirelessTemp	CT-21.32
DDH-WirelessTemp	CT-21.33
DDH-WirelessTemp	CT-21.34
DDH-WirelessTemp	CT-21.35
DDH-WirelessTemp	CT-21.36
DDH-WirelessTemp	CT-21.37
DDH-WirelessTemp	CT-21.38
DDH-WirelessTemp	CT-21.39
DDH-WirelessTemp	CT-21.40
DDH-WirelessTemp	CT-21.41
DDH-WirelessTemp	CT-21.42
DDH-WirelessTemp	CT-21.43
DDH-WirelessTemp	CT-21.44
DDH-WirelessTemp	CT-21.45
DDH-WirelessTemp	CT-21.46
DDH-WirelessTemp	CT-21.47
DDH-WirelessTemp	CT-21.48
DDH-WirelessTemp	CT-21.49
DDH-WirelessTemp	CT-21.50
DDH-WirelessTemp	CT-21.51
DDH-WirelessTemp	CT-21.52
DDH-WirelessTemp	CT-21.53
DDH-WirelessTemp	CT-21.54
DDH-WirelessTemp	CT-21.55
DDH-WirelessTemp	CT-21.56
DDH-WirelessTemp	CT-21.57
DDH-WirelessTemp	CT-21.58
DDH-WirelessTemp	CT-21.59
DDH-WirelessTemp	CT-21.60
DDH-WirelessTemp	CT-21.61
DDH-WirelessTemp	CT-21.62
DDH-WirelessTemp	CT-21.63
DDH-WirelessTemp	CT-21.64
DDH-WirelessTemp	CT-21.65
DDH-WirelessTemp	CT-21.66
DDH-WirelessTemp	CT-21.67
DDH-WirelessTemp	CT-21.68
DDH-WirelessTemp	CT-21.69
DDH-WirelessTemp	CT-21.70
DDH-WirelessTemp	CT-21.71
DDH-WirelessTemp	CT-21.72
DDH-WirelessTemp	CT-21.73
DDH-WirelessTemp	CT-21.74
DDH-WirelessTemp	CT-21.75
DDH-WirelessTemp	CT-21.76
DDH-WirelessTemp	CT-21.77
DDH-WirelessTemp	CT-21.78
DDH-WirelessTemp	CT-21.79
DDH-WirelessTemp	CT-21.80
DDH-WirelessTemp	CT-21.81
DDH-WirelessTemp	CT-21.82
DDH-WirelessTemp	CT-21.83
DDH-WirelessTemp	CT-21.84
DDH-WirelessTemp	CT-21.85
DDH-WirelessTemp	CT-21.86
DDH-WirelessTemp	CT-21.87
DDH-WirelessTemp	CT-21.88
DDH-WirelessTemp	CT-21.89
DDH-WirelessTemp	CT-21.90
DDH-WirelessTemp	CT-21.91
DDH-WirelessTemp	CT-21.92
DDH-WirelessTemp	CT-21.93
DDH-WirelessTemp	CT-21.94
DDH-WirelessTemp	CT-21.95
DDH-WirelessTemp	CT-21.96
DDH-WirelessTemp	CT-21.97
DDH-WirelessTemp	CT-21.98
DDH-WirelessTemp	CT-21.99
DDH-WirelessTemp	CT-21.00

Input Output Summary for Panel 140164

Connect	Descriptor	Device Type
A-011	Hot Tap High Voltage	CT-14.01
A-012	Hot Tap High Voltage	CT-14.02
A-013	Hot Tap High Voltage	CT-14.03
A-014	Hot Tap High Voltage	CT-14.04
A-015	Hot Tap High Voltage	CT-14.05
A-016	Hot Tap High Voltage	CT-14.06
A-017	Hot Tap High Voltage	CT-14.07
A-018	Hot Tap High Voltage	CT-14.08
A-019	Hot Tap High Voltage	CT-14.09
A-020	Hot Tap High Voltage	CT-14.10
A-021	Hot Tap High Voltage	CT-14.11
A-022	Hot Tap High Voltage	CT-14.12
A-023	Hot Tap High Voltage	CT-14.13
A-024	Hot Tap High Voltage	CT-14.14
A-025	Hot Tap High Voltage	CT-14.15
A-026	Hot Tap High Voltage	CT-14.16
A-027	Hot Tap High Voltage	CT-14.17
A-028	Hot Tap High Voltage	CT-14.18
A-029	Hot Tap High Voltage	CT-14.19
A-030	Hot Tap High Voltage	CT-14.20
A-031	Hot Tap High Voltage	CT-14.21
A-032	Hot Tap High Voltage	CT-14.22
A-033	Hot Tap High Voltage	CT-14.23
A-034	Hot Tap High Voltage	CT-14.24
A-035	Hot Tap High Voltage	CT-14.25
A-036	Hot Tap High Voltage	CT-14.26
A-037	Hot Tap High Voltage	CT-14.27
A-038	Hot Tap High Voltage	CT-14.28
A-039	Hot Tap High Voltage	CT-14.29
A-040	Hot Tap High Voltage	CT-14.30
A-041	Hot Tap High Voltage	CT-14.31
A-042	Hot Tap High Voltage	CT-14.32
A-043	Hot Tap High Voltage	CT-14.33
A-044	Hot Tap High Voltage	CT-14.34
A-045	Hot Tap High Voltage	CT-14.35
A-046	Hot Tap High Voltage	CT-14.36
A-047	Hot Tap High Voltage	CT-14.37
A-048	Hot Tap High Voltage	CT-14.38
A-049	Hot Tap High Voltage	CT-14.39
A-050	Hot Tap High Voltage	CT-14.40
A-051	Hot Tap High Voltage	CT-14.41
A-052	Hot Tap High Voltage	CT-14.42
A-053	Hot Tap High Voltage	CT-14.43
A-054	Hot Tap High Voltage	CT-14.44
A-055	Hot Tap High Voltage	CT-14.45
A-056	Hot Tap High Voltage	CT-14.46
A-057	Hot Tap High Voltage	CT-14.47
A-058	Hot Tap High Voltage	CT-14.48
A-059	Hot Tap High Voltage	CT-14.49
A-060	Hot Tap High Voltage	CT-14.50
A-061	Hot Tap High Voltage	CT-14.51
A-062	Hot Tap High Voltage	CT-14.52
A-063	Hot Tap High Voltage	CT-14.53
A-064	Hot Tap High Voltage	CT-14.54
A-065	Hot Tap High Voltage	CT-14.55
A-066	Hot Tap High Voltage	CT-14.56
A-067	Hot Tap High Voltage	CT-14.57
A-068	Hot Tap High Voltage	CT-14.58
A-069	Hot Tap High Voltage	CT-14.59
A-070	Hot Tap High Voltage	CT-14.60
A-071	Hot Tap High Voltage	CT-14.61
A-072	Hot Tap High Voltage	CT-14.62
A-073	Hot Tap High Voltage	CT-14.63
A-074	Hot Tap High Voltage	CT-14.64
A-075	Hot Tap High Voltage	CT-14.65
A-076	Hot Tap High Voltage	CT-14.66
A-077	Hot Tap High Voltage	CT-14.67
A-078	Hot Tap High Voltage	CT-14.68
A-079	Hot Tap High Voltage	CT-14.69
A-080	Hot Tap High Voltage	CT-14.70
A-081	Hot Tap High Voltage	CT-14.71
A-082	Hot Tap High Voltage	CT-14.72
A-083	Hot Tap High Voltage	CT-14.73
A-084	Hot Tap High Voltage	CT-14.74
A-085	Hot Tap High Voltage	CT-14.75
A-086	Hot Tap High Voltage	CT-14.76
A-087	Hot Tap High Voltage	CT-14.77
A-088	Hot Tap High Voltage	CT-14.78
A-089	Hot Tap High Voltage	CT-14.79
A-090	Hot Tap High Voltage	CT-14.80
A-091	Hot Tap High Voltage	CT-14.81
A-092	Hot Tap High Voltage	CT-14.82
A-093	Hot Tap High Voltage	CT-14.83
A-094	Hot Tap High Voltage	CT-14.84
A-095	Hot Tap High Voltage	CT-14.85
A-096	Hot Tap High Voltage	CT-14.86
A-097	Hot Tap High Voltage	CT-14.87
A-098	Hot Tap High Voltage	CT-14.88
A-099	Hot Tap High Voltage	CT-14.89
A-100	Hot Tap High Voltage	CT-14.90

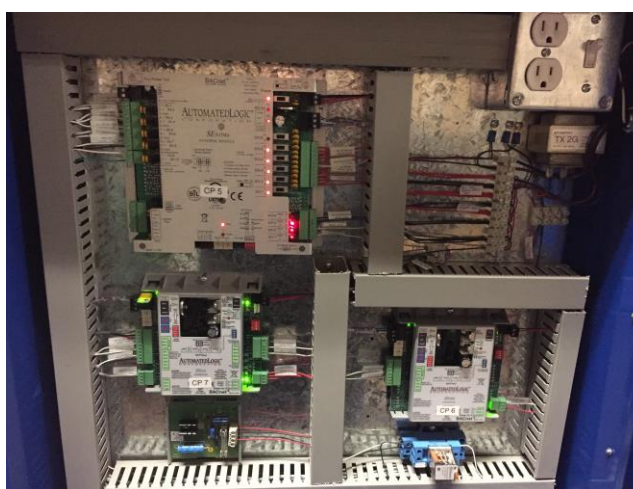
Input Output Summary for Panel 140165

Connect	Descriptor	Device Type
A-011	Hot Tap High Voltage	CT-14.01
A-012	Hot Tap High Voltage	CT-14.02
A-013	Hot Tap High Voltage	CT-14.03
A-014	Hot Tap High Voltage	CT-14.04
A-015	Hot Tap High Voltage	CT-14.05
A-016	Hot Tap High Voltage	CT-14.06
A-017	Hot Tap High Voltage	CT-14.07
A-018	Hot Tap High Voltage	CT-14.08
A-019	Hot Tap High Voltage	CT-14.09
A-020	Hot Tap High Voltage	CT-14.10
A-021	Hot Tap High Voltage	CT-14.11
A-022	Hot Tap High Voltage	CT-14.12
A-023	Hot Tap High Voltage	CT-14.13
A-024	Hot Tap High Voltage	CT-14.14
A-025	Hot Tap High Voltage	CT-14.15
A-026	Hot Tap High Voltage	CT-14.16
A-027	Hot Tap High Voltage	CT-14.17
A-028	Hot Tap High Voltage	CT-14.18
A-029	Hot Tap High Voltage	CT-14.19
A-030	Hot Tap High Voltage	CT-14.20
A-031	Hot Tap High Voltage	CT-14.21
A-032	Hot Tap High Voltage	CT-14.22
A-033	Hot Tap High Voltage	CT-14.23
A-034	Hot Tap High Voltage	CT-14.24
A-035	Hot Tap High Voltage	CT-14.25
A-036	Hot Tap High Voltage	CT-14.26
A-037	Hot Tap High Voltage	CT-14.27
A-038	Hot Tap High Voltage	CT-14.28
A-039	Hot Tap High Voltage	CT-14.29
A-040	Hot Tap High Voltage	CT-14.30
A-041	Hot Tap High Voltage	CT-14.31
A-042	Hot Tap High Voltage	CT-14.32
A-043	Hot Tap High Voltage	CT-14.33
A-044	Hot Tap High Voltage	CT-14.34
A-045	Hot Tap High Voltage	CT-14.35
A-046	Hot Tap High Voltage	CT-14.36
A-047	Hot Tap High Voltage	CT-14.37
A-048	Hot Tap High Voltage	CT-14.38
A-049	Hot Tap High Voltage	CT-14.39
A-050	Hot Tap High Voltage	CT-14.40
A-051	Hot Tap High Voltage	CT-14.41
A-052	Hot Tap High Voltage	CT-14.42
A-053	Hot Tap High Voltage	CT-14.43
A-054	Hot Tap High Voltage	CT-14.44
A-055	Hot Tap High Voltage	CT-14.45
A-056	Hot Tap High Voltage	CT-14.46
A-057	Hot Tap High Voltage	CT-14.47
A-058	Hot Tap High Voltage	CT-14.48
A-059	Hot Tap High Voltage	CT-14.49
A-060	Hot Tap High Voltage	CT-14.50
A-061	Hot Tap High Voltage	CT-14.51
A-062	Hot Tap High Voltage	CT-14.52
A-063	Hot Tap High Voltage	CT-14.53
A-064	Hot Tap High Voltage	CT-14.54
A-065	Hot Tap High Voltage	CT-14.55
A-066	Hot Tap High Voltage	CT-14.56
A-067	Hot Tap High Voltage	CT-14.57
A-068	Hot Tap High Voltage	CT-14.58
A-069	Hot Tap High Voltage	CT-14.59
A-070	Hot Tap High Voltage	CT-14.60
A-071	Hot Tap High Voltage	CT-14.61
A-072	Hot Tap High Voltage	CT-14.62
A-073	Hot Tap High Voltage	CT-14.63
A-074	Hot Tap High Voltage	CT-14.64
A-075	Hot Tap High Voltage	CT-14.65
A-076	Hot Tap High Voltage	CT-14.66
A-077	Hot Tap High Voltage	CT-14.67
A-078	Hot Tap High Voltage	CT-14.68
A-079	Hot Tap High Voltage	CT-14.69
A-080	Hot Tap High Voltage	CT-14.70
A-081	Hot Tap High Voltage	CT-14.71
A-082	Hot Tap High Voltage	CT-14.72
A-083	Hot Tap High Voltage	CT-14.73
A-084	Hot Tap High Voltage	CT-14.74
A-085	Hot Tap High Voltage	CT-14.75
A-086	Hot Tap High Voltage	CT-14.76
A-087	Hot Tap High Voltage	CT-14.77
A-088	Hot Tap High Voltage	CT-14.78
A-089	Hot Tap High Voltage	CT-14.79
A-090	Hot Tap High Voltage	CT-14.80

DDC points list



DDC temperature sensor



DDC panel fan room

5.4 Ventilation Systems

The building presently consists of two indoor air handling units, one serves the pool area and the second one serves the gym. Along with the pool supply air unit, there is also a return air handling unit that draws air from the pool area and exhaust to the exterior or back into the mixing plenum for the pool system. Presently there is no ventilation air being supplied to the Municipal Offices, Daycare or the Weight Room which does not meet the current Building Code. These areas are heated with hot water convectors and a unit heater.

Both of the air handling units contain outdoor, return and relief air dampers, along with air filter, heating coil and 3-way mixing valve. The filter appeared in a cleaned condition, but there was a noticeable bearing squeal from both air handling unit supply air fans. The insulation on the heating piping located within the fan room is in very poor condition and should be replaced during the next renovation.

Note: all of the air moving equipment is nearing 45 years of age and is still operating as designed. It is nearing the end of life, so a major upgrade should be considered in the near future, and at that time, a ventilation system could be incorporated into the systems to serve the Municipal Offices, Daycare or the Weight Room.

**Pool AHU****Pool R/A Fan**

5.5 Exhaust Air Systems

The Pool Change/Washrooms are exhausted directly to the exterior. The Gym Change/Washrooms are also exhausted directly to the exterior by its own exhaust fan. No motorized damper has been provided at the exterior louvres which should be provided at the next upgrade. The fans are controlled by the DDC system.

**Pool Changeroom Exhaust Fan****Gym Changeroom Exhaust Fan**

5.6 Heating Water Convection Systems

The hot water heating system consists of radiation baseboard heaters and larger convection heaters in entrance ways and common areas. The heating units are modulated by DDC wall-mounted temperature sensors, they open and close 2-way valves that control the water flow through the units. All of the distribution piping is concealed within the building structure so no assessment could be done, but if the system has been chemically treated then there should be no concerns about its condition. The building system DDC controls have been incorporated with the system.



Heating Convectors

6 Assessment Summary and Recommended Upgrades

6.1 Site Services:

No further upgrades are anticipated unless there is a decision to provide a Fire Protection Sprinkler System for the building. If a sprinkler system is to be provided then a 150mm new water services will be required. The sanitary should be also increased in size (if this was a new construction), but with an existing building this could be left as is, no further sanitary up sizing required.

6.2 Domestic Water Piping:

Based on the age of the building nearing 45 years, the water pipe distribution system through out the building is nearing the end of its life expectancy and should be considered for a full replacement in the next 5 to 10 years, this work could be done in stages, if Washrooms were to be updated and replace the piping at that time.

6.3 Domestic Hot Water Heating System:

The hot water heating system has been upgraded over the years and if there are no complaints of running out of hot water (showers) then there should be many more years of service from the installed system.

6.4 Plumbing Fixtures:

The plumbing fixtures all appear to be in decent shape, the fixtures, faucets and flush valves don't meet the current code water usage flow rates. We would not recommend changing them until you have a failure or Washroom upgrade.

6.5 Swimming Pool & Hot Tub:

The pool and hot tub systems have also been upgraded and maintained over the years and appear to be operating effectively. The only item that could be upgraded is the installation of an emergency eye wash station in the chemical storage room and also one in the boiler room.

6.6 Fire Protection System:

The building does not presently have a fire protection sprinkler system, and as identified in the earlier part of this report we find it surprising that a sprinkler system has never been incorporated. A Code Consultant should be asked to review and make recommendations.

6.7 Hot Water Heating System / Central Boiler Plant:

The hot water heating system components (boilers, pumps, controls) have all been replaced over the recent years and the only recommendation is to provide an acid neutralizer to dilute the condensate that is discharged from the boilers and provide an emergency shut down switch (boilers) at the door entrance to the boiler room.

6.8 Solar Collection System:

The solar collection system was installed in recent years and even though it was identified that it was not in operation, all the signs were that it is working, the heat pumps, circulating pumps all indicate that they work and the DDC system is controlling them. Recommend that the installing contractor provide maintenance and operational Literature along with As-built drawings.

6.9 DDC Control System:

The base building control system was replaced within the last few years with a current Automated Logic DDC system. Based on the control panels most of the existing equipment including the heating boilers, pumps, ventilation AHU, domestic hot water, pool, hot tub and solar system are being controlled. There is no on-site dedicated computer to modify the sequence of operation of the equipment which, if there was one available then the Maintenance Crew could enhance the system control / operation. All control changes currently have to be done through Control Solutions Office by their personnel.

6.10 Ventilation System:

The existing air handling units that serve the Gym and Pool are approaching 45 years of age and fan bearing noise is evident, these units could be either replaced or fixed. If the units were to be replaced then they would be constructed with higher efficiency motors, better sealing motorized dampers, more effective heat transfer coils, (as the existing coils get build up with sediment and become less efficient at transfer heat).

There are various areas within the building i.e. Municipal Offices, Day Care and Weight Room which **needs a ventilation system**. The Offices and other occupied areas have heat but no fresh air, which is a Code requirement.

To help keep better control over the building pressure, motorized damper should be installed in the exhaust air louvres.

6.11 Heating Water Convection System:

The existing hot water convectors have virtually no moving parts to wear out, only the control valves which should have been replaced when the DDC system was upgraded. No evaluation could be done on the condition of the concealed heating piping, but if it has been properly chemically treated from the time of installation it should be in decent condition. There are many locations that the pipe insulation has been damaged beyond repair (mechanical and fan rooms) which should be replaced, this helps keep the water temperature up by not dissipating heat it into the adjacent mechanical rooms.

7.0 Upgrade Budget Estimate

The below budgets do not include any hazardous material abatement or other system deficiencies which may be encountered during the upgrade.

7.1 Site Services

No upgrades anticipated, water upgrade will be quantified in 7.6

7.2 Domestic Water Piping

Item #	Description	Cost
1.1	Replace and insulate all domestic water piping	\$35,000
1.2	Re & Re drywall by others	TBC
1.3	Balancing, maintenance manuals	\$500
	Total	\$40,000

7.3 Domestic Hot Water Heating System

No upgrades anticipated

7.4 Plumbing Fixtures

Item #	Description	Cost
1.1	Replace Plumbing Fixtures	\$25,000
1.2	Re & Re drywall / tiles / flooring by others	TBC
1.3	Balancing, maintenance manuals	\$500
	Total	\$25,500

7.5 Swimming Pool & Hot Tub

Item #	Description	Cost
1.1	New Emergency Eye Wash x 2	10,000
1.2	Re & Re drywall / tiles / flooring by others	TBC
1.3	Balancing, maintenance manuals	\$500
	Total	\$10,500

7.6 Fire Protection System

Item #	Description	Cost
1.1	Sprinkler System through out the building	\$95,000
1.2	Upgrade water service	\$20,000
1.3	Re & Re ceilings and walls by others	TBC
1.4	Upgrade fire alarm panel	TBC
1.5	Maintenance manuals	\$1,000
	Total	\$116,000

7.7 Hot Water Heating System

Item #	Description	Cost
1.1	Acid Neutralizer	\$1,000
1.2	Replace below grade sanitary piping that's been damaged	TBC
1.3	Emergency boiler shut down switch	\$5,000
1.4	Maintenance manuals	\$500
	Total	\$6,500

7.8 Solar Collection System

No upgrades anticipated

Item #	Description	Cost
1.1	Maintenance Manual and as-builts from Contractor	\$1,000
	Total	\$1,000

7.9 DDC Control System

Item #	Description	Cost
1.1	Computer and programming	\$5,000
	Total	\$5,000

7.10 Ventilation System

Item #	Description	Cost
1.1	Replace 2 large air handling units	\$200,000
1.2	Add a 3 rd AHU to handle unit and ductwork for Offices, Weight and Day Care	\$100,000
1.3	Add additional DDC Controls	\$15,000
1.4	Miscellaneous dampers and controls	\$10,000
1.5	Balancing, commissioning & maintenance manuals	\$5,500
	Total	\$330,500

7.11 Heating Water Convection System

Item #	Description	Cost
1.1	Replace pipe insulation / fire stopping	\$20,000
1.2	Maintenance manuals	\$500
	Total	\$20,500