

Water Capital Plan (2021-2024)

PROJECT	RATIONALE / DESCRIPTION	2021			2022			2023			2024		
		Pipe Length (m)	Resource PW / EXT	Estimated Budget (CAD \$)	Pipe Length (m)	Resource (INT / EXT)	Estimated Budget (CAD \$)	Pipe Length (m)	Resource (INT / EXT)	Estimated Budget (CAD \$)	Pipe Length (m)	Resource (INT / EXT)	Estimated Budget (CAD \$)

WATER RENEWAL PROJECTS

Armstrong Ave (Bowker Ck to Cranmore)	1914 - 100mm CI. Dead end pipe, Water quality issues (high maintenance, flush every 2 months). Replace with consolidated 300mm water main. Nominated by Public Works. Combine with some Storm main repairs.	175 m	PW Q1/Q2	\$200,000										
Burdick Ave (Nottingham to Musgrave)	1960 - 100 CI concrete lined pipe with recent water main breaks - just up from Musgrave 2 yrs. ago. Nominated by Public Works. Heavily tuberculated line, fire flow issues. Watermain replacement.	220 m	PW Q1/Q2	\$180,000										
Victoria Ave (Granite to Brighton)	1994 - 100mm CI. Water quality issues and significant tuberculation reported by Public Works, restricting Fire flows. Watermain replacement. There is also an abandoned pipe between Brighton and Windsor which is sealed with 100yr old valves. Needs to be properly cut and capped - health and safety risk.	130 m	PW	\$150,000										
Lincoln Loop	1948 - 100mm CI. Final watermain utility segment on the Lincoln/heron loop prior to road paving. All other utility work has been completed. Watermain replacement. Possibly bundle with remaining storm work.	220 m	PW Q3/Q4	\$220,000										
Hampshire (Central to Lafayette)	Lined 1948 - 300 CI. 2 recorded breaks (2008 and 2020). Location of 2020 watermain break. Lack of in-line valves for isolation. Triggers for age, size, and break history	Design	ENG	\$30,000	300 m	PW	\$440,000							
Hampshire (Oak Bay Ave to Lafayette)	1920's 100 and 150 CI. Beyond design life and opportunistic replacement, with larger transmission main. 1400m of pipe replaced over 3 years. Aligned with strategy to remove all 4" CI pipes due to water quality and fire flow.	Design	ENG	\$80,000	310 m	PW	\$330,000	400 m	PW	\$420,000	695 m	PW	\$730,000	
Foul Bay Road (Allenby to Cadboro Bay Rd)	1950 - 300 CI w/ 4 breaks 2010-2016. Transmission line serving large portion of community. High operational cost due to breaks, identified in Water Master Plan as priority. Complex traffic management requirement, well suited for Contractor. Could combine with Allenby.	Design	ENG	\$80,000	1000 m	Contract	\$1,450,000							
Allenby Road (Foul Bay to Henderson)	1950 - 300 CI w/ 3 breaks 2014-2018. High operational cost, identified in Water Master Plan - Bundle with Storm. Could do Contractor or PW. Could combine with Foul Bay W/M or do separately.				Design	-	\$20,000	240 m	PW	\$360,000				
Management Reserve	Program level contingency			\$50,000			\$50,000		\$50,000	\$50,000				
		745 m		\$990,000	1610 m		\$2,290,000	640 m	\$50,000	\$830,000				

OTHER CAPITAL WORKS - WATER PROJECTS

Detailed Condition Inspections and Investigation of Backup Power for Pump Stations and PRV's	Recommendations from Water Master Plan. Perform detailed condition inspections, develop asset management plans for each non-linear asset, and determine options for back up power which doesn't exist. None of the pump stations have emergency, back up power or a plug for a genset. In a power outage, the pumped zones (Uplands, Foul Bay, Plymouth, Sylvan) would have a reduced level of service and lower available pressures for fire flows	Study, Project Definition	ENG	\$50,000										
Cross-Border Connection - Victoria (Oak Bay Ave and Foul Bay)	Project is identified in Water Master Plan. Cross-Boundary connections for water supply redundancy, emergency preparedness and phasing strategy for future non-linear asset maintenance /replacement. For example, before any work can occur at the Lansdowne PRV pit, alternate water supply should be established. Several connections exist or are possible between Saanich and Victoria. Install Meters, valves, continue correspondence with adjacent muni's.	Study, Project Definition	ENG	\$10,000	0 m		\$26,000							

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Cross-Border Connection - Saanich (Cedar Hill and Gordon Head)	Project is identified in Water Master Plan. Cross-Boundary connections for water supply redundancy, emergency preparedness and phasing strategy for future non-linear asset maintenance /replacement. For example, before any work can occur at the Lansdowne pit, alternate water supply should be established. Several connections exist or are possible between Saanich and Victoria. Install Meters, valves, continue correspondence with adjacent muni's. Requires main extension.	Study, Project Definition	ENG	\$10,000	130 m		\$200,000						
Water Asset Management Strategy	Develop a water asset management strategy to prioritize replacements. Look at ranking assets based on size, material type, break history, etc. Used for future long range planning and proactive replacement of high risk and high consequence pipes. Recommended project in Water Master Plan. Also review Uplands area to coordinate water replacements with Sewer Separation project.	Study	ENG	\$50,000									
		0 m		\$120,000	130 m		\$226,000	0 m	\$100,000	\$0			

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SHELF-READY / CONTINGENCY CAPITAL PROJECTS - WATER

Thompson Ave (Cadboro Bay to Nottingham)	Part of Thompson Intersection Upgrade Project	54 m	PW	\$54,000
Cadboro Bay Road (Allenby to Neil)	Part of Thompson Intersection Upgrade Project	98 m	PW	\$98,000

EMERGING PROJECTS AND PRIORITIES

Lansdowne (Foul Bay to Cadboro Bay)	1952 (68yrs old) Steel main (500mm dia). Pro-Active Transmission Line Replacement due to age and development of pin hole leaks. Connects to pump station at Uplands and Lansdowne PRV. Main transmission pipe, high consequence of failure. Possible Lining? Could combine with North Oak Bay Pressure Zone investigation / upgrades.	820 m	EXT	\$1,640,000
Cadboro Bay Road (Estevan to Uplands)	1960's 200 Steel Main w/ 4 breaks 2014-2018. Water Master Plan project 46 (low priority) but bundling opportunity with Thompson Intersection. Or complete prior to intersection work.	450 m	PW	\$450,000
Exeter Road (Beach to Lansdowne)	1954 150mm CI main (lined in 1998). Multiple breaks (including one in 2020) and over 600m between valves.	530 m	PW	\$583,000

Storm Drainage Capital Plan (2021-2024)

PROJECT	RATIONALE / DESCRIPTION	2021			2022			2023			2024		
		Pipe Length (m)	Resource PW / EXT	Estimated Budget (CAD \$)	Pipe Length (m)	Resource (INT / EXT)	Estimated Budget (CAD \$)	Pipe Length (m)	Resource (INT / EXT)	Estimated Budget (CAD \$)	Pipe Length (m)	Resource (INT / EXT)	Estimated Budget (CAD \$)

STORM MAIN RENEWAL PROJECTS

Estevan Outfall Replacement	Estevan SD Modelling reports both 1960's outfalls are currently undersized and should be increased to twin 600mm. Overflow likely in existing conditions. Survey / Design / Permitting 2021, construction 2022. Archeological and Environmental Consultant required.	Design	ENG	\$50,000	250 m	EXT	\$575,000						
Sandowne Rear lot Easement (Henderson to Eastdowne)	1960 200mm SS and 1950 200mm SD located in narrow easement between rear lots. Numerous sewer back ups (annually) and insurance claims. High maintenance costs, root cutting, and flushing. Limited access. Structural damage of pipe may limit lining options so may have to pipe burst as an option. Could also be capacity issues to be modelled. Some areas have low flow and no option to line. Replace manholes. - 2021 Project is to perform further investigation and develop options for a renewal project.	Project Definition	ENG	\$20,000									
Armstrong Ave (Bowker Creek to Cranmore Rd)	1966 200mm concrete pipe, cannot televise. Bundling opportunity for work aligned with Armstrong water replacement. Recent sewer backup. Select repairs for approx. 20-25m of pipe which is undersized, has offset joints, and non-standard service tap-ins.	25 m	PW	\$30,000									
Thompson Ave (South side) (Pacifc to Musgrave)	1960 200mm clay tile - not lined. Estevan SD Modelling reports capacity issues under existing PWWF conditions and land use. CCTV from 2017 shows pipe in decent condition, but root problems. Some spot repairs completed in last 5 yrs. Anecdotally from PW, and from spot repairs and flooding in the area, pipe condition and roots are problematic. Design and construct 2021.	170 m	PW	\$290,000									
Mayhew St (Thompson to Dufferin)	1960's 150mm tile - not lined. No CCTV or condition data available. Estevan SD Modelling reports capacity issues, upsize to min 300mm. Complete prior to paving bus route. Design and construct 2021.	70 m	PW	\$115,000									
Allenby Road (Foul Bay to Henderson)	1940's 200mm clay tile pipe - not lined. CCTV indicated very poor condition. The north and south storm mains on Allenby were all surveyed and all surveys were abandoned due to collapsed pipe/roots/intruding connections/etc. Can bundle with Allenby Watermain design and construction. No modelling info available but it is located at upstream end of catchment.				Design	ENG	\$15,000	200 m	PW	\$320,000			
CIPP Lining	No lining proposed for 2021 or 2022	N/A	ENG	\$0	N/A	ENG	\$0	N/A	ENG	\$0			
Spot Repairs	On-Going Capital Allowance for identified spot repairs from CCTV program review.	N/A	PW	\$50,000	N/A	PW	\$50,000	N/A	PW	\$50,000			
Management Reserve	Program level contingency	N/A	ENG	\$50,000	N/A	ENG	\$50,000	N/A	ENG	\$50,000			
		265 m		\$605,000	250 m		\$690,000	200 m		\$420,000			

Storm Drainage Capital Plan (2021-2024)

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OTHER CAPITAL WORKS - STORM DRAINAGE PROJECTS

PROJECT	DESCRIPTION	2021	2022	2023	2024
Storm Drainage Master Plan			Operational Expenditure	Operational Expenditure	
Sub-Catchment SD Modelling and Condition Assessment of Pump Station (St. Patrick)	St. Patrick is only SD catchment with a pump station. Perform sub-catchment drainage model to identify any capacity issues and complete a condition assessment of the pump station itself. Information will be valuable ahead of developing plans for the McNeil Bay erosion control project if an outfall relocation is required. Will inform asset management plan for pump station itself.	Study	ENG	\$30,000	
Victoria Ave (NEW MAIN) (Granite to Brighton)	No existing storm main. Regulatory goal to provide main for future connections to reduce I&I and to address cross connections. Bundling opportunity with water replacement.	210 m	PW	\$240,000	
		210 m		\$270,000	0 m, \$0, 0 m, \$0

SHELF-READY / CONTINGENCY CAPITAL PROJECTS - STORM DRAINAGE

Burdick Ave (Nottingham to Musgrave)	1960 - 200mm VC main. Bundled with Water replacement. Don't know reason why storm.	370 m	PW	\$333,000
Thompson Ave (Cadboro Bay to Nottingham)	Part of Thompson Intersection Upgrade Project. Defer intersection project until later date. Design will be complete in early 2021	81 m	PW	\$72,900

EMERGING PROJECTS AND PRIORITIES

Lincoln Rd (Estevan to Loop)	1960's 200mm Tile. No condition or CCTV available. Only remaining segment of storm to be rehabilitated is 85 on West side of Lincoln. Original pipe, located in boulevard. High risk of impact to trees. Top of catchment, only servicing 4 or 5 houses. Possible to perform CIPP, or spot repairs.	85 m	PW	\$85,000
Beach Drive Creek Monterey Ave 600 mm storm				
Island Road Storm Relining	Request from Public Works			
Newport Storm Drain	Request from Public Works			
Dalhousie Storm Drain (Facility 1304)	Request from Public Works / CCTV bad condition			

Sanitary Sewer Capital Plan (2021-2024)

PROJECT	RATIONALE / DESCRIPTION	2021			2022			2023			2024		
		Pipe Length (m)	Resource PW / EXT	Estimated Budget (CAD \$)	Pipe Length (m)	Resource (INT / EXT)	Estimated Budget (CAD \$)	Pipe Length (m)	Resource (INT / EXT)	Estimated Budget (CAD \$)	Pipe Length (m)	Resource (INT / EXT)	Estimated Budget (CAD \$)
Sanitary Sewer Master Plan		Operational Expenditure											
Windsor Road (St. Patrick to Transit)	1915 200mm vitrified clay main - not lined and in poor condition. Windsor SS Modelling shows capacity concerns under PWWF (overflow unlikely but pipe is full) for St. Patrick to St David (LOS E), and approaching capacity from Hampshire to St. Patrick(LOS D). Design from Hampshire to Transit (outlet of Windsor Sani Catchment into CRD main), and phase construction. St Patrick to Transit replace in 2021, Hampshire to St. Patrick will be shelf ready for future year.	190 m	Contract	\$320,000									
Dalhousie Street (Eastdowne to Cadboro Bay Rd)	1940 200mm vitrified clay main. No CCTV or condition data available - not lined. Eastdowne SS Modelling reports this main has capacity concerns under existing PWWF conditions. Recommended upsizing from 200mm --> 300mm PVC due to low grades and low friction. This section is the Outfall of the Eastdowne Catchment.	Design	-	\$25,000	250 m	Contract	\$250,000						
Dalhousie Street (Cadboro Bay to Musgrave)	1912 250mm AC & 1936 300mm AC. No CCTV or condition data available. Eastdowne SS Modelling reports this main has capacity concerns under existing PWWF conditions and is a Phase 1 recommended project. Recommended upsizing from 250mm --> 375mm PVC due to low grades and low friction. This section is the Outfall of the Eastdowne Catchment.	Design	-	\$25,000	360 m	Contract	\$360,000						
CIPP Lining	On-Going Capital Allowance for CIPP lining project (smaller program of work)	N/A	ENG	\$50,000	N/A	ENG	\$0						
Spot Repairs	On-Going Capital Allowance for identified spot repairs from CCTV program review.	N/A	PW	\$50,000	N/A	PW	\$50,000						
Management Reserve	Program level contingency	N/A	ENG	\$50,000	N/A	ENG	\$50,000						
		190 m		\$520,000	610 m		\$710,000						

SHELF-READY / CONTINGENCY CAPITAL PROJECTS - SANITARY SEWER

N/A

EMERGING PROJECTS AND PRIORITIES

Sanitary Master Plan should be completed by Q4 2021 which will identify a number of priority projects for

Transportation Capital Plan (2021-2024)

PROJECT	RATIONALE / DESCRIPTION	2021			2022			2023			2024		
			Resource <i>(PW / EXT)</i>	Estimated Budget <i>(CAD \$)</i>		Resource <i>(INT / EXT)</i>	Estimated Budget <i>(CAD \$)</i>		Resource <i>(INT / EXT)</i>	Estimated Budget <i>(CAD \$)</i>		Resource <i>(INT / EXT)</i>	Estimated Budget <i>(CAD \$)</i>

TRANSPORTATION SAFETY

ICBC Pavement Marking and Traffic Sign Review	Carry-forward from 2016 project. Identify non-standard signs/markings. Project needs to be confirmed by ICBC. Includes crosswalk review on Oak Bay Avenue.	Study	ENG	\$30,000									
Intersection Upgrade (Cadboro Bay and Bowker)	7 Crashes 2015-2019 per ICBC. Project is driven by Abstract development. Project cost estimate came in over the CAC commitment by Abstract, so the District is planning to deliver the project and get reimbursed the amount of CAC. Abstract Contribution TBD but estimated \$185k.	Const.	ENG (TT)	\$150,000									
Intersection Upgrade (Foul Bay and Cadboro Bay)	93 crashes 2015-2019 per ICBC. Highest crash location in Oak Bay. In 2021, coordinate with City of Victoria project approaching intersection. Traffic signal upgrades expected. Tentatively estimated construction costs \$200k in 2022.	Project Definition, Detailed Design	ENG	\$50,000	Const	Contract	\$200,000						
Intersection Upgrade (Windsor and Newport)	4 Crashes 2015-2019 per ICBC. But not fully based on crash data. Driven by goal to address resident and neighbourhood concerns and make improvements even in areas where the incidents are relatively low. Study indicated curb bulges/extensions on all 4 corners to visually and physically narrow the roadway, creating safer and shorter crossings. - Design (\$25k) and Construction (\$50k) scheduled for 2021 (estimate RD)	Detailed Design & Const	ENG (RD)	\$75,000									
Intersection Upgrade (Windsor and Beach)	3 Crashes 2015-2019 per ICBC. Proposed one way out for Goodwin Street. Consolidate and optimize crosswalks and sidewalk locations. - Design 2021 & Construction 2022 (estimate RD)	Detailed Design	ENG (RD)	\$25,000	CONST	Contract	\$100,000						
Intersection Upgrade (Estevan and Musgrave)	6 Crashes 2015-2019 per ICBC. Add bike parking, better align north sidewalk. Options Analysis being completed by Robert Cheng 2020, progress to detailed design in 2021 for shelf-ready project	Detailed Design	-	\$25,000									
Traffic Devices	Supply and install new speed flasher and traffic counter (Foul Bay replacement, new on Cadboro Bay Rd)	N/A	ENG (RD)	\$20,000									
Traffic and Parking Master Plan	Establish current level of service across the District and determine priorities and future projects.				Study	ENG	\$40,000						
Rectangular Rapid Flashing Beacon (RRFB)	2 RRFB's per year - coordinate with intersection projects and other capital works where practical. - 2022 (Beach/Windsor & Beach/St. Patrick) - 2023 (Beach/Estevan & Beach/Bowker) - 2024 (Foul Bay/Camosun & McNeil/Monterey)				2	ENG (RD)	\$30,000	2	ENG (RD)	\$30,000	2	ENG (RD)	\$30,000
Safe Routes to School	Willows School - mostly small issues.	N/A	ENG (RD)	\$10,000	N/A	ENG (RD)	\$10,000	N/A	ENG (RD)	\$10,000	N/A	ENG (RD)	\$10,000
Bus Shelters	Foundation construction for bus shelters in partnership with BC Transit and trash bin. Shelter is free. Locations TBD on an annual basis.	N/A	PW	\$15,000	N/A	PW	\$15,000	N/A	PW	\$15,000	N/A	PW	\$15,000
Sidewalk Program	Annual Sidewalk Program (to be informed by sidewalk master plan). - 2021 Allenby Rd (Cadboro Bay West to Lane - 100m) Cavendish (Beach to Ocean - 150m)	250m	PW	\$100,000	250 m	PW	\$100,000	250 m	PW	\$100,000	250 m	PW	\$100,000
				\$500,000			\$495,000			\$155,000			\$155,000

ACTIVE TRANSPORTATION

Transportation Capital Plan (2021-2024)

PROJECT	RATIONALE / DESCRIPTION	2021			2022			2023			2024		
			Resource <i>PW / EXT</i>	Estimated Budget <i>(CAD \$)</i>		Resource <i>(INT / EXT)</i>	Estimated Budget <i>(CAD \$)</i>		Resource <i>(INT / EXT)</i>	Estimated Budget <i>(CAD \$)</i>		Resource <i>(INT / EXT)</i>	Estimated Budget <i>(CAD \$)</i>
Pedestrian and Sidewalk Master Plan	Determine levels of service, define requirements for and gaps in sidewalks, determine sidewalk condition, and establish priority areas and projects.	Study	ENG	\$30,000									
Active Transportation Strategy	Update Active Transportation Strategy based on outdated 2011 strategy, etc	Study	ENG	\$50,000									
Curb Drops	Annual curb drop program - reduced slightly for overspend in 2020.	N/A	PW	\$50,000									
Elgin Pathway - Phase 1	Elgin Avenue and the walkway adjacent the District's public works yard provides a valuable north-south connection between Oak Bay Avenue, Oak Bay High School, Oak Bay Recreation Centre, and a number of seniors residences on the route. Pedestrian network improvements as per Oak Bay Active Transportation Strategy (2011) Widening Existing Pathway	N/A	PW	\$40,000									
Management Reserve	Program level contingency	N/A	ENG	\$30,000			\$30,000			\$30,000			
				\$200,000			\$0			\$0			

SHELF-READY / CONTINGENCY CAPITAL PROJECTS - TRANSPORTATION

Intersection Upgrade (Cadboro Bay and Thompson)	2 Crashes 2015-2019 per ICBC. Study complete, detailed design in progress 2020. Will be shelf ready design ready for construction (construction estimate RD \$150k+contingency).	\$175,000
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EMERGING PROJECTS / PRIORITIES

Intersection Upgrade (Florence and Epworth)	18 Crashes at Florence and 3 crashes at Epworth in 2015-2019 per ICBC. Traffic Diversions, placeholder of \$100k per intersection). These intersections will be assessed following outcome of Foul Bay and Cadboro Bay intersection scope.	\$200,000
McNeill Avenue Upgrades	Staff developing options for improvements, partially in response to expected changes on Richardson, and in response to concerns raised by residents along that corridor.	
Intersection Upgrade (Cadboro Bay and Beach)	15 crashes in 2015-2019 per ICBC. Possibly change to "T" Intersection. Placeholder of \$200k for discussion purposes.	\$200,000
Cycling Master Plan	Updated focus on priority cycling infrastructure improvements.	
Cedar Hill Road Multi-Use Path	Active Transportation Strategy (2011)	
New Signage at Trailheads	Active Transportation Strategy (2011)	

Special Projects Capital Plan (2021-2024)

PROJECT	RATIONALE / DESCRIPTION	STATUS	2021			2022			2023			2024		
				Resource PW / EXT	Estimated Budget (CAD \$)		Resource (INT / EXT)	Estimated Budget (CAD \$)		Resource (INT / EXT)	Estimated Budget (CAD \$)		Resource (INT / EXT)	Estimated Budget (CAD \$)
Sanitary Sewer Master Plan		Contract Awarded October 2020	Operational Expenditure											
Storm Drainage Master Plan						Operational Expenditure			Operational Expenditure					
Capital Requirements to Support SSMP - Flow Monitoring Equipment	To support the SSMP, it may require purchase and installation of additional SS flow monitoring equipment. This was noted from Grace as well as suggested in SSMP RFP responses. This is also a good long term investment to target areas of high I&I and calibrate models. Costs includes an estimate to purchase up to 3, install and calibrate.	Oct 21 - no work to date, awaiting kick off of SSMP	Equip	ENG	\$25,000									
Remote Monitoring / SCADA WATER SYSTEM	<p>A SCADA system is a distributed remote monitoring system used by operations for system data collection, monitoring and performance management and helps provide a big picture understanding of how system is performing. Can help identify issues underground before they appear on the surface.</p> <p>This is a 2-part project.</p> <ul style="list-style-type: none"> - One is for immediate equipment installation at Landsdowne and Midowne PRV stations. SCADA equipment was not installed as part of Midowne PRV design but the chamber is set up for SCADA equipment. It is important Public Works knows how each PRV is functioning to monitor and control water pressure in several of Oak Bay's Pressure Zones, and identify water loss. - The second part is a long term options analysis and costing for a system wide water SCADA and remote monitoring review. 	Nov 3 - no work to date	Equip / Project Def'n	ENG/PW	\$80,000		ENG/PW							
Remote Monitoring / SCADA SEWER SYSTEM	<p>A SCADA system is a distributed remote monitoring system used by operations for system data collection, monitoring and performance management and helps provide a big picture understanding of how system is performing, and identify I&I. Can help identify issues underground before they appear on the surface.</p> <ul style="list-style-type: none"> - There is no remote monitoring on the sewer system and 2021 includes defining the requirements, what SCADA system makes sense and what the costing options are for future implementation. This is important to tie in with the Sewer Master Planning Process. <p>Placeholder of \$150k for 2022 equipment install. Costing to be determined.</p>	Nov 3 - no work to date	Project Def'n	ENG/PW	\$25,000	Equip	PW	\$150,000						

Special Projects Capital Plan (2021-2024)

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Runnymede Place (Runnymede Ave to Falkland Rd)	<p>Project is driven by a 2-lot subdivision at 2031 Runnymede. On November 5, 2020, Engineering was notified by planning that through preliminary off-site servicing discussions, commitments were made on behalf of Oak Bay for storm sewer installation. Developer Servicing is tentatively scheduled for June 2022.</p> <p>STORM - there is currently no storm main and the drainage service connects to sewer or is infiltrated on property. It is proposed to install approximately 150m of 250mm storm + 3 manholes, bedrock is present and blasting likely required. Approx. 54m will be funded by developer along property frontage. Further benefit for reduction in I&I as other properties can tie to new storm main over time.</p> <p>SEWER - 1920 200mm clay tile sewer main which will be lined by developer along property frontage. But there is another section running under a residential building. Project is not necessarily a priority, but risk of inaction high on sewer failure. Risk from blasting of new storm line. Section of sewer main on private property via easements to be abandoned, once work is completed and all properties are off the sewers and storm mains in the easement.</p> <p>WATER - 1966 AC 100mm water main may be damaged during blasting and may require temporary water then a new water line following storm install. to be investigated.</p>	Survey completed 2020.	100 m	ENG	\$150,000									
Foreshore Infrastructure	The natural areas along the foreshore of the District – including Willows Beach, Oak Bay, McNeill Bay and other areas – are extremely popular for walkers. The metal railings used for pedestrian safety in those areas are exposed to elements, particularly the salt water spray. This results in accelerated corrosion and failure of the railings. As part of an ongoing safety program, the District conducts periodic railings maintenance to refurbish or replace these railings. This annual program also addresses minor repairs to stairs and other foreshore access points.	On-going program	N/A	PW	\$50,000	N/A	PW	\$50,000	N/A	PW	\$50,000			

Special Projects Capital Plan (2021-2024)

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McNeil Bay (Shoal Bay) and McMicking Point Shoreline Protection	Shoreline Protection Works for McNeil bay and McMicking Point Sanitary. Previous 2011 McNeil erosion assessment / study recommended detailed design by approximately 2023 based on erosion rate. Project can incorporate considerations from the new Sea Level Rise study. - 2021 Project Definition/Concept Design/Phasing and allowance for some public engagement. - 2022 Preliminary and Detailed Design / Permitting - 2023 Construction (placeholder \$1.2M for now)	Foreshore Assessment was completed in 2011.	Project Def'n	ENG	\$30,000	Detailed Design / Permitting	ENG	\$50,000	Const.	Contract	\$1,200,000			
Electric Vehicle Charing Stations	Define locations, purchase equipment, and install infrastructure	Options Analysis completion in 2020	Equip Install	ENG	\$50,000									
TOTALS					\$510,000			\$450,000			\$7,250,000			

SHELF-READY / CONTINGENCY CAPITAL PROJECTS

N/A

EMERGING PROJECTS / PRIORITIES

<p>Bowker Creek Daylighting and Erosion Protection</p>	<p>Bowker Creek could experience significant flooding during a 1:25 year design rainfall event, and the extent of flooding will increase as redevelopment occurs within the basin. Creek near OBRC has history of flooding. Also observations of local erosion near Monteith community gardens. Upgrading should be staged from downstream to upstream.</p>	<p>Full corridor study has been completed in partnership with CRD and Bowker Creek Urban Watershed Renewal Initiative (BCI).</p>
	<p>This project should be initiated with a condition assessment of this natural asset to understand high risk areas and develop priority projects.</p>	