
To: Liquid Waste Committee

From: Peter Navratil, General Manager, Liquid Waste Services

Date: July 5, 2022 Meeting Date: July 13, 2022

Subject: **Draft Liquid Waste 2023–2027 Capital Plan**

RECOMMENDATION

That the Liquid Waste Committee receive for information the report dated July 5, 2022, titled “Draft Liquid Waste 2023–2027 Capital Plan”.

EXECUTIVE SUMMARY

The draft 2023–2027 Liquid Waste Capital Plan has been prepared based on direction received at the April 14, 2022 Metro Vancouver Board Budget Workshop and continues to meet the goals of the Liquid Waste Customer Level of Service Objectives. As part of Metro Vancouver’s focus on enhancing transparency and governance of the Capital Plan, this report allows the Liquid Waste Committee to provide comment on the Draft Capital Plan, which will then be incorporated into the Liquid Waste Financial Plan and included in the Fall budget presentations to the Committees and the Boards.

The estimated 2023 Capital Cash Flow is \$713.9M with a total estimated spend of \$4.8B over the five years (2023-2027). With respect to the common four years compared to the prior cycle’s capital plan, the estimated spend has decreased by \$383.6 million, or 10.0% primarily to project schedule changes.

PURPOSE

To present to the Committee the draft Liquid Waste 2023–2027 Capital Plan for comments.

BACKGROUND

On April 14, 2022, Metro Vancouver held a Board Budget Workshop with the objective to seek direction for the preparation of the 2023–2027 Financial Plan. This report provides the Liquid Waste Committee with the information needed to provide comments on the Capital Plan which will then be incorporated into the 2023-2027 Financial Plan scheduled to be presented in the fall.

Liquid Waste Customer Level of Service Objectives

Projects within the draft 2023–2027 Capital Plan over the five years are guided by the Liquid Waste Customer Level of Service Objectives specifically:

- Eliminate Discharges from the Sewer System
- Ensure that Authorized WWTP Discharges Meet Regulatory Requirements
- Improve Environmental Stewardship
- Minimize Timeline to recover from a Major Event

On an ongoing basis, staff monitor and evaluate the performance of the Liquid Waste infrastructure and its ability to achieve and/or maintain the service objectives. Where risks to service objectives are identified, mitigation actions are planned and incorporated into annual work plans. These actions

may take the form of changes to operating and maintenance activities, changes to infrastructure or the development of emergency response procedures. The projects in the annual capital plan embody the infrastructure changes required to achieve the service objectives.

CAPITAL PLAN HIGHLIGHTS

The draft 2023-2027 Capital Plan includes \$713.9M for 2023 and a total capital expenditure of \$4.8B over the five years, an average of \$952.3M per year (see Attachment). The largest four projects make up 63% of the planned capital spending over the next five years. There are 152 projects on the 5-year plan.

Key capital projects planned or ongoing in 2023 – 2027 for Liquid Waste include the following:

Infrastructure Type	Project Name	Infrastructure Driver	Proposed 2023 Cashflow
Wastewater Treatment	North Shore WWTP Secondary Upgrade, Conveyance and Decommissioning	Upgrade	\$193,755,000
Wastewater Treatment	Northwest Langley WWTP Expansion and Golden Ears Projects	Growth	114,800,000
Wastewater Treatment	Iona Secondary Wastewater Treatment Plant Upgrade	Upgrade	59,850,000
Collection	Burnaby Lake North Interceptor Expansion	Growth	43,450,000
Collection	Gilbert/Brighthouse Trunk Pressure Sewer Twinning	Maintenance	40,700,000
Wastewater Treatment	Annacis Island WWTP Stage 5 Expansion	Growth	31,800,000
Wastewater Treatment	Annacis Outfall System	Growth	19,400,000
Wastewater Treatment	Annacis Island WWTP Trickling Filters Refurbishment	Maintenance	18,100,000
Collection	Sewer Relocations and Protections (VSA/FSA)	Maintenance	17,750,000
Collection	South Surrey Interceptor Johnston Section Expansion	Growth	12,045,000
Collection	New West Interceptor Repair (Columbia St. Section)	Maintenance	9,500,000
Collection	Gleneagles Pump Stations	Maintenance	7,280,000
Collection	Production Way Operations Centre	Upgrade	7,000,000
Wastewater Treatment	Annacis Island WWTP Hydrothermal Processing Pilot	Opportunity	6,000,000
Collection	Westridge Forcemain Replacement	Maintenance	5,550,000
Collection	Glenbrook Combined Sanitary Truck (Kingsway Section)	Growth	4,950,000
Collection	Surrey Corrosion Control Facility Replacement	Maintenance	4,600,000

Infrastructure Type	Project Name	Infrastructure Driver	Proposed 2023 Cashflow
Wastewater Treatment	Lulu Island WWTP Power Reliability	Resilience	\$4,500,000
Collection	Gleneagles Forcemain Replacement	Maintenance	4,000,000
Collection	North Road Trunk Sewer (Phase 2)	Growth	4,000,000
Collection	Royal Avenue Pump Station Rehabilitation	Maintenance	3,200,000
Collection	New West Interceptor (Annacis Section 2)	Maintenance	3,100,000
Collection	New Westminster Interceptor West Branch and Columbia Extension Rehabilitation	Maintenance	1,650,000
Wastewater Treatment	Biosolids Dryer	Opportunity	1,500,000
Collection	Port Coquitlam Pump Station Refurbishment	Maintenance	1,350,000
	Other Projects	Various	94,070,000
			\$713,900,000

The spending over the next 5 years is driven by infrastructure changes required as a result of:

- growth in the number of residents moving into the region, creating an increased demand for services (Growth);
- changing conditions that impact the ability to meet service objectives like regulatory requirements including the Federally mandated requirement for all wastewater treatment plants in Canada to meet a minimum of secondary level treatment and infrastructure required to achieve a service objective (Upgrade);
- needs for replacement or refurbishment of existing infrastructure to ensure that it continues to perform as required to meet the service objectives (Maintenance);
- ensuring that infrastructure is resilient to major events including power outages, seismic events and the results of climate change (Resilience);
- opportunities to reduce the life-cycle cost of services and/or achieve Board goals such as climate change mitigation (Opportunity).

The capital program for Liquid Waste Services is funded by long-term debt, reserves, contributions from the operating budget, external (interagency and senior level government grants) contributions and development cost charges (DCCs).

Capital Plan Changes

Metro Vancouver's annual capital planning process allows the Board to adjust the capital budget once a year, in the fall, to accommodate changes required to fund projects transitioning from one phase to another (e.g. design phase to construction phase), and in response to new or changing project needs, emerging issues, and changing priorities.

Proposed changes in the draft 2023-2027 Capital Plan can be described within the following categories:

- Projected Carryforward – Project expenditures which were forecast to occur in 2022, but are now scheduled to occur in 2023.

- Net Deferral – Project expenditures that have been deferred or re-scheduled beyond 2026.
- Cost Adjustments – Project cashflow changes resulting from project budget changes not related to scope.
- New Scope – Project cashflow changes resulting from project budgets specifically related to project scope change or new projects identified with expenditures in 2023 to 2026.

The following table summarizes the total proposed capital plan adjustments in the draft 2023-2027 Capital Plan:

(\$Millions)

Prior cycle Cashflow 2022-2026	Cashflow 2022	Adjustments to 2023-2026 Capital Plan					Cash- flow 2027	Draft Capital Plan 2023- 2027
		Projected Carry- Forward	Net Deferral	Cost Adjustments	New Scope	Total		
4,628.0	(780.5)	242.6	(866.9)	110.6	130.1	(383.6)	1,297.7	4,761.6

With respect to the common four years compared to the prior cycle's capital plan, the estimated spend has decreased by \$383.6 million, or 10.0% primarily to project schedule changes.

A key contributor to this reduction, shown in Net Deferral, is an adjustment of expected expenditures related to the Northwest Langley and Iona WWTP projects over the next 5 years. This planned deferral relates to updates to project schedules for both of these projects which have been communicated to the Committee in prior reports.

Capital Plan Review Process

Liquid Waste and Project Delivery diligently reviewed the project schedules to accommodate any Carry Forwards and Cost Adjustments by deferring projects, where possible.

Throughout the capital planning process, Liquid Waste reviews each project to ensure project timing is appropriate, deliverability has been assessed and confirm that service risks and financial risks are properly balanced. This exercise was performed in preparing the Liquid Waste 2023-2027 Capital Plan and resulted in the net deferral of \$866.9 million in capital expenditures into future years.

ALTERNATIVES

This is an information report. No alternatives are presented.

FINANCIAL IMPLICATIONS

The draft 2023 - 2027 Capital Plan includes \$713.9M for 2023 and a total of \$4.8B over the five years, an average of \$952.3M per year. The intent is that the Liquid Waste Committee provide comments, which will then be incorporated into the Liquid Waste Capital Plan and included in the Fall budget presentations to the Committees and the Board.

CONCLUSION

The 2023–2027 Capital Plan is the consolidated list of infrastructure projects required to meet and/or maintain the regional Liquid Waste Customer Level of Service Objectives and the financial impacts of these projects over the next five years.

The presentation of the draft 2023–2027 Capital Plan for Liquid Waste provides the opportunity for the Liquid Waste Committee to provide comments, which will then be incorporated into the Liquid Waste Capital Plan and included in the Fall budget presentations to the Committees and the Board.

Attachment

Draft Liquid Waste 2023-2027 Capital Plan (53043080)

52892705

**GREATER VANCOUVER SEWERAGE AND DRAINAGE DISTRICT
CAPITAL PORTFOLIO
LIQUID WASTE**

ATTACHMENT

DRAFT 2023 CAPITAL BUDGET AND 2023-2027 CAPITAL PLAN

	PROJECT BUDGET FOR APPROVAL	2023 CASH FLOW	2024 CASH FLOW	2025 CASH FLOW	2026 CASH FLOW	2027 CASH FLOW	2023 to 2027 TOTAL	ACTIVE PHASE	PRIMARY DRIVER
SD Collection									
8th Avenue Interceptor Air Treatment Facilities	500,000	-	-	-	500,000	500,000	1,000,000	Planned	Upgrade
Albert Street Trunk Sewer	10,250,000	850,000	-	-	-	-	850,000	Construction	Growth
Big Bend Forcemain - Gate Replacement	200,000	80,000	-	-	600,000	650,000	1,330,000	Design	Maintenance
Burnaby Lake North Interceptor Cariboo Section	-	-	700,000	1,700,000	11,200,000	15,000,000	28,600,000	Planned	Growth
Burnaby Lake North Interceptor Winston Section	116,950,000	43,450,000	14,150,000	5,000,000	5,000,000	5,000,000	72,600,000	Construction	Growth
Burnaby South Slope Interceptor	500,000	200,000	250,000	500,000	600,000	4,450,000	6,000,000	Multiple	Growth
Cloverdale Pump Station Capacity Upgrade	3,400,000	900,000	900,000	900,000	15,000,000	5,000,000	22,700,000	Design	Growth
Cloverdale Trunk Sewer Capacity Upgrade	1,200,000	200,000	450,000	1,750,000	900,000	8,150,000	11,450,000	Design	Growth
Combined Sewer Overflow Sampling Station Enhancements	1,900,000	350,000	250,000	-	-	-	600,000	Construction	Maintenance
Crescent Beach FM - Replacement	26,850,000	2,025,000	25,000	25,000	25,000	275,000	2,375,000	Construction	Maintenance
Eagle Creek (Lower Section) Channel Restoration	-	-	-	750,000	-	-	750,000	Construction	Resilience
EMQC-Chemistry Laboratory	250,000	250,000	650,000	7,740,000	-	-	8,640,000	Design	Upgrade
Fraser Sewerage Area Integrated Resource Recovery (IRR) Study	1,200,000	500,000	438,000	-	-	-	938,000	Design	Opportunity
Front Street Pressure Sewer Access Hatches Reinforcement	5,000,000	2,000,000	2,000,000	-	-	-	4,000,000	Construction	Maintenance
FSA Flow Metering Program	2,500,000	500,000	500,000	300,000	200,000	-	1,500,000	Design	Maintenance
FSA River Crossing Scour Protection Program - Phase 1	4,200,000	330,000	1,550,000	630,000	-	-	2,510,000	Construction	Maintenance
FSA Sewer Relocations and Protections	11,700,000	6,550,000	2,050,000	-	-	-	8,600,000	Construction	Maintenance
FSA Statutory Right of Way Acquisitions Phase 1	35,100,000	4,800,000	12,000,000	4,800,000	-	-	21,600,000	Design	Maintenance
Gilbert/Brighouse Trunk Pressure Sewer	170,350,000	40,700,000	37,200,000	15,950,000	2,400,000	10,000,000	106,250,000	Multiple	Maintenance
Glenbrook Combined Trunk Kingsway Sanitary Section	7,200,000	4,950,000	1,500,000	-	-	-	6,450,000	Construction	Growth
Glenbrook CSO Gate Replacement	3,150,000	2,475,000	150,000	-	-	-	2,625,000	Construction	Maintenance
Gleneagles Forcemain Replacement	15,850,000	4,000,000	4,000,000	3,250,000	-	-	11,250,000	Multiple	Maintenance
Gleneagles Pump Stations Improvements	33,300,000	7,280,000	11,120,000	3,400,000	4,700,000	4,500,000	31,000,000	Construction	Maintenance
Harbour Pump Station Discharge Header Repair and Valve Replacements	2,500,000	1,950,000	-	-	-	-	1,950,000	Construction	Maintenance
Harbour Pump Station Power Distribution Equipment Replacement	3,300,000	2,250,000	400,000	-	-	-	2,650,000	Construction	Maintenance
Hastings-Cassiar Intake Connection	5,350,000	1,030,000	-	-	-	-	1,030,000	Construction	Growth
Highbury Interceptor Diversion Junction Chamber Wall Rehabilitation	500,000	300,000	200,000	-	5,500,000	-	6,000,000	Design	Maintenance
Highbury Interceptor North Arm Crossing - Upgrade of Siphons	12,500,000	50,000	-	-	-	-	50,000	Construction	Resilience
Jervis Pump Station 25kV Voltage Conversion	1,300,000	350,000	-	-	-	-	350,000	Construction	Maintenance
Kent Pump Station High Voltage Switchgear Replacement	2,000,000	1,050,000	350,000	-	-	-	1,400,000	Construction	Maintenance
Lozells Sanitary Trunk Golf Course Section	-	-	-	50,000	400,000	200,000	650,000	Planned	Growth
LSA Flow Metering Program	300,000	50,000	50,000	-	-	-	100,000	Construction	Maintenance
Manitoba Street Combined Trunk Sewer Separation	-	-	-	-	100,000	1,400,000	1,500,000	Planned	Upgrade
Marshend Pump Station	10,150,000	1,875,000	2,300,000	10,800,000	3,700,000	-	18,675,000	Multiple	Growth
New CSO Management Gates for New Westminster Interceptor	4,500,000	2,300,000	1,200,000	-	-	-	3,500,000	Construction	Upgrade

	PROJECT BUDGET FOR APPROVAL	2023 CASH FLOW	2024 CASH FLOW	2025 CASH FLOW	2026 CASH FLOW	2027 CASH FLOW	2023 to 2027 TOTAL	ACTIVE PHASE	PRIMARY DRIVER
New West Interceptor - Annacis Section 2	42,000,000	3,100,000	5,800,000	6,800,000	6,800,000	5,250,000	27,750,000	Construction	Maintenance
New West Interceptor Grit Chamber	9,300,000	400,000	700,000	3,700,000	4,000,000	-	8,800,000	Construction	Maintenance
New Westminster Interceptor Repair Columbia St. Section	36,150,000	9,500,000	4,200,000	-	-	-	13,700,000	Construction	Maintenance
New Westminster Interceptor West Branch and Columbia Extension Rehabilitation	2,900,000	1,650,000	14,400,000	7,200,000	4,200,000	-	27,450,000	Design	Maintenance
North Road Trunk Sewer	11,700,000	2,300,000	1,200,000	1,200,000	-	-	4,700,000	Construction	Growth
North Road Trunk Sewer Phase 2	8,450,000	4,000,000	2,500,000	-	-	-	6,500,000	Construction	Growth
North Surrey Interceptor - Port Mann Section - Odour Control	3,050,000	850,000	1,400,000	2,000,000	-	18,700,000	22,950,000	Construction	Upgrade
North Surrey Interceptor Annieville Channel Crossing Scour Protection	4,350,000	2,400,000	-	-	-	-	2,400,000	Construction	Maintenance
North Surrey Interceptor Improvements	3,000,000	2,500,000	3,500,000	-	-	-	6,000,000	Multiple	Maintenance
North Surrey Interceptor Roebuck Section Replacement	2,600,000	1,300,000	500,000	10,000,000	5,500,000	-	17,300,000	Design	Maintenance
NSA Flow Metering Program	500,000	150,000	200,000	100,000	100,000	-	550,000	Design	Maintenance
NSA Scour Protection Upgrades	2,250,000	1,000,000	-	-	-	-	1,000,000	Construction	Maintenance
NSI 104th Ave Extension	12,950,000	-	-	6,500,000	1,500,000	-	8,000,000	Construction	Growth
NSI Flow Management	11,500,000	900,000	21,250,000	31,000,000	31,000,000	4,000,000	88,150,000	Design	Upgrade
NSI Rehab or Replacement	16,450,000	2,050,000	5,000,000	26,500,000	6,000,000	850,000	40,400,000	Construction	Maintenance
Ocean Park Trunk Manholes Lining	1,150,000	-	1,050,000	-	-	-	1,050,000	Construction	Maintenance
Ocean Park Trunk Sewer - Air Management Facility	2,750,000	1,000,000	2,500,000	2,500,000	-	-	6,000,000	Design	Upgrade
Port Coquitlam Pump Station Refurbishment	3,950,000	1,350,000	1,500,000	23,100,000	25,100,000	4,500,000	55,550,000	Design	Maintenance
Port Moody Pump Station Capacity Upgrade	3,700,000	1,400,000	1,100,000	10,900,000	4,650,000	-	18,050,000	Design	Growth
Port Moody South Interceptor Capacity Upgrade	-	-	150,000	150,000	150,000	2,000,000	2,450,000	Planned	Growth
Port Moody Storm Drain Rehabilitation	200,000	-	-	-	400,000	600,000	1,000,000	Design	Maintenance
Production Way Facility Access and Parking Improvements	4,850,000	1,100,000	1,000,000	-	-	-	2,100,000	Construction	Maintenance
Production Way Operation Center Design and Construction	31,000,000	7,000,000	15,000,000	8,960,000	-	-	30,960,000	Construction	Upgrade
Rosemary Heights Pressure Sewer Capacity Upgrade	-	-	-	350,000	500,000	700,000	1,550,000	Planned	Growth
Royal Ave PS Rehabilitation	10,100,000	3,200,000	3,000,000	700,000	-	-	6,900,000	Construction	Maintenance
Sapperton Pump Station	97,500,000	1,900,000	3,600,000	-	-	-	5,500,000	Multiple	Growth
Sapperton Pump Station Emergency Backup Power	5,000,000	2,200,000	1,500,000	-	-	-	3,700,000	Construction	Resilience
Sewer Heat Projects	21,400,000	2,100,000	5,200,000	7,800,000	10,000,000	9,900,000	35,000,000	Construction	Opportunity
South Surrey Interceptor Johnston Section	84,050,000	12,045,000	14,600,000	5,950,000	-	-	32,595,000	Construction	Growth
South Surrey Interceptor Rehabilitation	2,600,000	2,580,000	11,500,000	28,690,000	20,000,000	2,000,000	64,770,000	Multiple	Maintenance
SSI - King George Section - Odor Control Facility (OCF) and Grit Chamber	19,550,000	1,150,000	-	-	-	-	1,150,000	Construction	Growth
SSI Influent Control Chamber Repair and Replace Gates	150,000	-	-	1,190,000	-	-	1,190,000	Construction	Maintenance
SSI Sulfide Odour and Corrosion Control	9,550,000	2,750,000	1,000,000	-	-	-	3,750,000	Construction	Upgrade
Stoney Creek Sanitary Trunk	3,700,000	450,000	1,500,000	1,500,000	3,900,000	12,000,000	19,350,000	Design	Growth
Surrey Central Valley Capacity Upgrade	-	-	-	-	150,000	450,000	600,000	Planned	Growth
Surrey Corrosion Control Facility Replacement	7,300,000	4,600,000	100,000	-	-	-	4,700,000	Construction	Maintenance
VSA Emergency Backup Power	24,300,000	3,050,000	3,200,000	2,550,000	1,200,000	-	10,000,000	Construction	Resilience
VSA Flow Metering Program	1,900,000	600,000	1,200,000	1,200,000	1,500,000	-	4,500,000	Design	Maintenance
VSA Grit Chamber Access Improvements	2,000,000	1,800,000	100,000	-	-	-	1,900,000	Construction	Maintenance
VSA Sewer Relocations and Protections	32,050,000	11,200,000	-	-	-	-	11,200,000	Construction	Maintenance
Westridge FM Replacement	7,600,000	5,550,000	900,000	-	-	-	6,450,000	Construction	Maintenance
Westridge Pump Stations 1 & 2 Refurbishment	5,800,000	1,550,000	5,100,000	5,000,000	3,400,000	-	15,050,000	Construction	Maintenance

	PROJECT BUDGET FOR APPROVAL	2023 CASH FLOW	2024 CASH FLOW	2025 CASH FLOW	2026 CASH FLOW	2027 CASH FLOW	2023 to 2027 TOTAL	ACTIVE PHASE	PRIMARY DRIVER
White Rock Forcemain Rehabilitation	1,200,000	650,000	10,300,000	3,300,000	-	-	14,250,000	Design	Maintenance
Works Yard	32,000,000	1,000,000	-	-	-	-	1,000,000	Design	Maintenance
SD Collection Total	1,076,450,000	235,920,000	240,133,000	256,385,000	180,875,000	116,075,000	1,029,388,000		
SD Wastewater Treatment									
AIWWTP Ammonia Removal – Sidestream	900,000	50,000	-	-	-	-	50,000	Design	Upgrade
AIWWTP Chemical Lab UPS System Replacement	600,000	400,000	50,000	-	-	-	450,000	Construction	Maintenance
AIWWTP Cogen Building Refurbishment	1,500,000	300,000	-	-	-	-	300,000	Construction	Maintenance
AIWWTP Cogeneration Backup Power	80,500,000	1,550,000	1,000,000	-	-	-	2,550,000	Multiple	Resilience
AIWWTP Digester No. 5	6,900,000	500,000	3,500,000	3,387,000	4,000,000	4,500,000	15,887,000	Design	Growth
AIWWTP Electrical Distribution System Protection Control and Monitoring	2,650,000	700,000	250,000	600,000	-	-	1,550,000	Construction	Upgrade
AIWWTP Hydrothermal Processing Pilot	25,150,000	6,000,000	6,050,000	5,000,000	2,900,000	1,550,000	21,500,000	Construction	Opportunity
AIWWTP ICS Replacement Program	14,350,000	1,500,000	2,750,000	2,500,000	2,500,000	2,500,000	11,750,000	Construction	Maintenance
AIWWTP Influent System Remediation	2,400,000	500,000	800,000	1,050,000	14,500,000	20,700,000	37,550,000	Design	Maintenance
AIWWTP IPS Gates Replacements	700,000	250,000	400,000	-	-	-	650,000	Construction	Maintenance
AIWWTP IPS Pump Building Roof Replacement Phase 2	-	-	100,000	500,000	200,000	-	800,000	Planned	Maintenance
AIWWTP Lubrication Storage Facility Conversion	500,000	500,000	-	-	-	-	500,000	Construction	Maintenance
AIWWTP O&M Building Refurbishment	-	-	100,000	1,200,000	3,100,000	1,800,000	6,200,000	Planned	Maintenance
AIWWTP Outfall Repair	1,550,000	800,000	750,000	-	-	-	1,550,000	Construction	Maintenance
AIWWTP Replacement of ICS Equipment	4,450,000	100,000	250,000	-	-	-	350,000	Multiple	Maintenance
AIWWTP Replacement of Protective Relays	3,350,000	100,000	850,000	-	-	-	950,000	Construction	Maintenance
AIWWTP Scheduled 64kV Potential & Current Transformer Replacements	800,000	100,000	200,000	250,000	-	-	550,000	Construction	Maintenance
AIWWTP Scum Pump Replacement	-	-	200,000	150,000	500,000	500,000	1,350,000	Planned	Maintenance
AIWWTP Secondary Clarifier Corrosion Repair	57,800,000	200,000	200,000	-	-	-	400,000	Multiple	Maintenance
AIWWTP Secondary Effluent Discharge Flowmeter Replacement	400,000	100,000	250,000	-	-	-	350,000	Construction	Maintenance
AIWWTP Sludge Control Building Electrical Room HVAC upgrade	850,000	850,000	-	-	-	-	850,000	Construction	Maintenance
AIWWTP Spare Trickling Filter Pump & Motor Purchase	1,950,000	90,000	-	-	-	-	90,000	Construction	Maintenance
AIWWTP Stage 5 Expansion	944,100,000	31,800,000	40,000,000	52,000,000	105,000,000	131,000,000	359,800,000	Multiple	Growth
AIWWTP Station Battery Replacement	1,250,000	50,000	100,000	-	-	-	150,000	Multiple	Maintenance
AIWWTP Trickling Filter Media & Distributor Arms & Ducting Replacement	90,700,000	18,100,000	320,000	50,000	-	-	18,470,000	Construction	Maintenance
AIWWTP UPS Condition Monitoring System	-	-	400,000	150,000	-	-	550,000	Planned	Resilience
All WWTPs Power Quality Monitoring & Outage Alarming Network	3,000,000	50,000	50,000	-	-	-	100,000	Construction	Upgrade
Annacis Influent System Surge Control Refurbishment	22,000,000	2,250,000	400,000	50,000	-	-	2,700,000	Construction	Growth
Annacis MCC 80 051, 80 070, 80 071 Replacement	2,850,000	50,000	550,000	-	-	-	600,000	Construction	Maintenance
Annacis Outfall System	356,050,000	19,400,000	5,750,000	20,050,000	76,450,000	50,000	121,700,000	Construction	Growth
Biosolids Dryer	22,700,000	1,500,000	13,400,000	43,400,000	76,500,000	109,500,000	244,300,000	Design	Opportunity
Ferguson Road Paving Refurbishment	1,100,000	500,000	-	-	-	-	500,000	Construction	Upgrade
IIWWTP - Biogas Lines Relocation	5,750,000	650,000	700,000	-	-	-	1,350,000	Construction	Resilience
IIWWTP Biosolids Dewatering Facility	61,300,000	510,000	750,000	-	-	-	1,260,000	Construction	Upgrade
IIWWTP CEPT Polymer Line Replacement	300,000	250,000	750,000	300,000	-	-	1,300,000	Design	Maintenance
IIWWTP CEPT Winterization	1,500,000	750,000	-	-	-	-	750,000	Construction	Maintenance
IIWWTP ICS IPS Control Replacement	1,750,000	550,000	-	-	-	-	550,000	Construction	Maintenance
IIWWTP ICS Migration Program	-	-	500,000	3,000,000	4,000,000	3,000,000	10,500,000	Planned	Maintenance

	PROJECT BUDGET FOR APPROVAL	2023 CASH FLOW	2024 CASH FLOW	2025 CASH FLOW	2026 CASH FLOW	2027 CASH FLOW	2023 to 2027 TOTAL	ACTIVE PHASE	PRIMARY DRIVER
IWWTP ICS Replacement Program	750,000	200,000	200,000	200,000	-	-	600,000	Construction	Maintenance
IWWTP Influent Gate Refurbishment	1,350,000	300,000	100,000	-	-	-	400,000	Construction	Maintenance
IWWTP IPS Drive Remediation	1,400,000	350,000	500,000	350,000	150,000	-	1,350,000	Construction	Maintenance
IWWTP MCC/Power Distribution Assess/Replace - Phase 2	1,000,000	50,000	250,000	-	-	-	300,000	Construction	Maintenance
IWWTP Non-Domestic Trucked Liquid Waste Alternative	800,000	600,000	200,000	-	-	-	800,000	Construction	Maintenance
IWWTP Outfall Refurbishment	20,000,000	1,500,000	2,000,000	3,000,000	3,000,000	63,000,000	72,500,000	Design	Maintenance
IWWTP PA Tanks Improvement	5,500,000	1,000,000	1,050,000	1,100,000	1,150,000	1,200,000	5,500,000	Construction	Maintenance
IWWTP PA-Sed Tank & Gallery Wall Refurbishment	950,000	150,000	300,000	200,000	100,000	40,000	790,000	Construction	Maintenance
IWWTP Replacement of CoGen Control System	2,500,000	350,000	100,000	400,000	-	-	850,000	Construction	Maintenance
IWWTP Siphon Chamber Refurbishment	2,150,000	800,000	960,000	330,000	-	-	2,090,000	Construction	Maintenance
IWWTP Solids Handling Refurbishment	64,850,000	100,000	6,706,000	-	-	-	6,806,000	Multiple	Maintenance
IWWTP Standby Diesel Generators	2,000,000	100,000	650,000	750,000	950,000	750,000	3,200,000	Design	Resilience
IWWTP Surge Mitigation	250,000	250,000	1,750,000	-	-	-	2,000,000	Design	Maintenance
Iona Island Control & Instrumentation Replacement 2011	2,750,000	100,000	-	-	-	-	100,000	Construction	Maintenance
Iona Island Wastewater Treatment Plant	9,944,800,000	59,850,000	125,300,000	300,550,000	295,650,000	362,350,000	1,143,700,000	Construction	Upgrade: WWTP
LIWWTP Admin Dewatering Building Roof Repair	100,000	90,000	700,000	-	-	-	790,000	Design	Maintenance
LIWWTP Biogas Clean-up Project	13,800,000	600,000	750,000	-	-	-	1,350,000	Construction	Opportunity
LIWWTP CCT Isolation Gates	2,050,000	500,000	400,000	400,000	-	-	1,300,000	Construction	Maintenance
LIWWTP Effluent Heat Recovery Project	10,000,000	1,000,000	2,000,000	3,000,000	2,000,000	2,000,000	10,000,000	Construction	Opportunity
LIWWTP Gravity Thickener Redundancy	500,000	75,000	425,000	2,125,000	18,750,000	-	21,375,000	Design	Maintenance
LIWWTP Ground Fault Detection System Replacement	1,550,000	300,000	300,000	750,000	150,000	-	1,500,000	Construction	Maintenance
LIWWTP High Efficiency Boiler	1,300,000	310,000	300,000	300,000	200,000	-	1,110,000	Construction	Maintenance
LIWWTP ICS Electrical Distribution System Migration Program	-	-	1,250,000	4,000,000	1,750,000	-	7,000,000	Planned	Maintenance
LIWWTP ICS Replacement Program	6,750,000	2,000,000	1,600,000	650,000	-	-	4,250,000	Construction	Maintenance
LIWWTP PA-Sed Tank Refurbishment	4,150,000	1,000,000	1,000,000	400,000	-	-	2,400,000	Construction	Maintenance
LIWWTP Pilot Digestion Optimization Facility	4,850,000	650,000	650,000	550,000	350,000	-	2,200,000	Construction	Opportunity
LIWWTP Power Reliability	12,400,000	4,500,000	4,200,000	-	-	-	8,700,000	Construction	Resilience
LIWWTP SCL Refurbishment	850,000	500,000	800,000	1,150,000	7,500,000	7,000,000	16,950,000	Design	Maintenance
LIWWTP Trickling Filter Refurbishment	500,000	350,000	400,000	650,000	10,200,000	10,000,000	21,600,000	Design	Maintenance
NLWWTP Screw Pump Replacement	1,550,000	100,000	100,000	-	-	-	200,000	Construction	Maintenance
NLWWTP Standby Diesel Generator	1,000,000	400,000	400,000	-	-	-	800,000	Construction	Resilience
North Shore WWTP Secondary Upgrade, Conveyance and Decommissioning	1,057,900,000	193,755,000	187,818,000	63,883,000	14,579,000	6,612,000	466,647,000	Construction	Upgrade: WWTP
Northwest Langley Wastewater Treatment Program	2,280,650,000	114,800,000	59,350,000	150,150,000	272,100,000	453,300,000	1,049,700,000	Multiple	Growth
NLWWTP 25 kV Substation Replacement	10,100,000	100,000	950,000	-	-	-	1,050,000	Construction	Maintenance
WWTPs Electrical System Studies & Upgrades	750,000	250,000	350,000	300,000	400,000	250,000	1,550,000	Design	Resilience
SD Wastewater Treatment Total	15,183,450,000	477,980,000	485,179,000	668,825,000	918,629,000	1,181,602,000	3,732,215,000		
TOTAL CAPITAL EXPENDITURES	16,259,900,000	713,900,000	725,312,000	925,210,000	1,099,504,000	1,297,677,000	4,761,603,000		

	PROJECT BUDGET FOR APPROVAL	2023 CASH FLOW	2024 CASH FLOW	2025 CASH FLOW	2026 CASH FLOW	2027 CASH FLOW	2023 to 2027 TOTAL	ACTIVE PHASE	PRIMARY DRIVER
SUMMARY BY DRIVER									
Growth	4,006,300,000	245,450,000	153,900,000	272,887,000	505,200,000	641,800,000	1,819,237,000		
Maintenance	875,550,000	172,885,000	173,356,000	170,840,000	158,175,000	138,365,000	813,621,000		
Resilience	144,200,000	12,750,000	12,400,000	4,500,000	2,550,000	1,000,000	33,200,000		
Upgrade	132,050,000	16,860,000	44,050,000	52,800,000	31,600,000	24,600,000	169,910,000		
Opportunity	99,100,000	12,350,000	28,488,000	59,750,000	91,750,000	122,950,000	315,288,000		
Upgrade: Wastewater Treatment	11,002,700,000	253,605,000	313,118,000	364,433,000	310,229,000	368,962,000	1,610,347,000		
TOTAL CAPITAL EXPENDITURES	16,259,900,000	713,900,000	725,312,000	925,210,000	1,099,504,000	1,297,677,000	4,761,603,000		

To: Liquid Waste Committee

From: Cheryl Nelms, General Manager, Project Delivery

Date: June 28, 2022

Meeting Date: July 13, 2022

Subject: **Project Delivery Capital Portfolio Update**

That the Liquid Waste Committee receive for information the report dated June 28, 2022 titled "Project Delivery Capital Portfolio Update".

EXECUTIVE SUMMARY

Metro Vancouver is providing an update on the portfolio of major capital projects being delivered by the Project Delivery Department. This update contains project specific information and a portfolio dashboard that provides information on the various programs and projects being delivered by the Department. The projects are progressing well. Key items of note are summarized below.

- Annacis Outfall System: Construction is 60% complete but the in-river work is at some risk due to technical challenges and poor performance of the sub-contractor.
- Iona Island Wastewater Treatment Plant: Project status flagged as completion date is five years beyond the regulatory deadline.
- North Shore Wastewater Treatment Plant: New designer and contractor have been engaged to complete design and construction execution planning. Project schedule and budget status update to be presented in Q4 2022.
- Northwest Langley Wastewater Treatment Plant: Significant delays due to archeological findings on the project site and change in location of the outfall.

PURPOSE

This report provides an update on the progress of major capital projects being delivered by the Project Delivery Department.

BACKGROUND

Metro Vancouver is implementing best practices related to governance and oversight on the highest value, risk, and consequence capital projects. A key deliverable is to provide regular, standardized updates on the portfolio of major capital projects being delivered by the Project Delivery Department. Metro Vancouver has developed a standardized dashboard report, which includes the following information for each major capital project:

- Primary location
- Project schedule over the next 10 years
- Project update
- Current status
- Anticipated date for next review by the relevant Metro Vancouver Board

To improve communication and transparency on these major capital projects, Metro Vancouver plans to provide three updates in 2022 – April, July and October.

ALTERNATIVES

This is an information report. No alternatives are presented.

FINANCIAL IMPLICATIONS

This is an information report. No financial implications are presented.

CONCLUSION

This report provides a progress update on the portfolio of capital projects being delivered by the Project Delivery Department. The next update will be in October 2022.

Attachment

Project Delivery Capital Portfolio Dashboard – July 2022

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Metro Vancouver Capital Projects Gantt Chart - Project Delivery
July 2022



Grandparent Name	Project Name	Municipality	Years										Comments	Status	Next Expected Board Review Date
			2022-2026 Capital Plan												
			2022	2023	2024	2025	2026	2027	2028	2029	2030	2031			
Liquid Waste															
Annacis Outfall															
	Annacis Outfall System	Delta											Construction is approximately 60% complete. In-river work is at some risk of delay due to technical challenges and poor performance of sub-contractor.		Oct 2022
Annacis Stage 5															
	Annacis Stage 5 Expansion	Delta											Construction of Phase 1 work complete. Early Phase 2 work complete with exception of gravity thickeners. Remaining Phase 2 work to be constructed after detailed design.		Jan 2023
Biosolids Dryer															
	Biosolids Dryer	Langley Township										Regional biosolids drying facility to be built at Annacis Island Wasterwater Treatment Plant. Design to start in 2023.		Jan 2023	
Iona Island Wastewater Treatment Plant (IIWWTP)															
	IIWWTP Outfall Refurbishment	Richmond											Existing Iona Wastewater Treatment Plant outfall refurbishment (land based portion) to be completed by 2030		Nov 2022
	Iona Secondary Wastewater Treatment Upgrade - Phase 1	Richmond										Baseline budget and schedule has been established as part of final Project Definition Report and Stage Gate 1 approval in March 2022. Status is yellow as completion is 5-years beyond regulatory deadline.		Mar 2022	
	Iona Secondary Wastewater Treatment Upgrade - Phase 2	Richmond									Mar 2022				
	Iona Secondary Wastewater Treatment Upgrade - Phase 3	Richmond									Mar 2022				
North Shore Wastewater Treatment Plant Secondary Upgrade & Conveyance															
	North Shore WWTP Secondary Upgrade	Dist of North Van											Construction 37% complete. Design Build Finance contract terminated. New Designer and Contractor engaged for detailed design and construction execution planning. Status is yellow due to uncertainty of new project budget/schedule/execution plan - update expected Q4 2022.		Oct 2022
	North Shore WWTP Secondary Conveyance	Dist of North Van											Pump Station Acceptance achieved. NSCP completion summer 2022.		Oct 2022
	North Shore WWTP Secondary Decommissioning	Dist of North Van										Groundwater monitoring ongoing. Decommissioning work to follow completion of treatment plant and conveyance projects. Status is yellow due to uncertainty of new project budget/schedule/execution plan - update expected Q4 2022.		Oct 2022	
Northwest Langley Wastewater Treatment Plant (NLWWTP)															
	Golden Ears Forcemain and River Crossing	Maple Ridge											Construction started in Q4 2021. Complex HDD (horizontal directional drilling) project.		
	Golden Ears Pump Station & SSO Tank	Maple Ridge											Construction of phase 1 started in 2020. 2nd phase of construction (River crossing pump installation and associated work) to be undertaken in 2027/2028 to align with WWTP.		
	NLWWTP Ground Improvements	Langley Township											Phase 1 construction completed 2020. Significant delay due to archeological findings. Phase 2 expected completion 2024. Phase 3/4 expected completion 2025. Archaeology-finding dependent timelines.		
	NLWWTP Outfall	Langley Township											New outfall for the new expanded WWTP. This project has been significantly delayed due to the change in outfall location, but is not presently on the Program critical path.		
	NLWWTP Stage 1	Langley Township											New upgraded WWTP to be delivered in two main contracts (liquid stream and solid stream). Archaeological findings during ground Improvements delaying completion from 2027 to 2029;		

To: Liquid Waste Committee

From: Nelson Szeto, Acting Director, Major Projects, Project Delivery

Date: June 28, 2022 Meeting Date: July 13, 2022

Subject: **Climate and Seismic Resilience Planning at Iona Island**

RECOMMENDATION

That the Liquid Waste Committee receive for information the report dated June 28, 2022, titled "Climate and Seismic Resilience Planning at Iona Island".

EXECUTIVE SUMMARY

The Board-approved conceptual design for the Iona Island Wastewater Treatment Plant projects includes the integration of the upgraded treatment plant into the surrounding community and Iona Beach Regional Park.

At a May 4, 2022 tour of the Iona Island Wastewater Treatment Plant and Iona Beach Regional Park for members of the Liquid Waste Committee, Regional Parks Committee and Climate Action Committee, participants expressed interest in receiving more information on what is being done to address the effects of climate change on the Iona Island Wastewater Treatment Plant and Iona Island as a whole.

Iona Island is likely to experience warmer average temperatures, drier summers, wetter winters, extreme precipitation, and rising sea levels as a result of climate change. Through project definition, these effects were considered for the Iona Island Wastewater Treatment Plant projects, and park infrastructure and ecosystems.

Measures to increase treatment plant resiliency include a higher flood construction level, more resilient utilities and access, and ground improvements to ensure the facility is operational following a major earthquake. Regional park infrastructure will be progressively adapted as sea levels rise to protect park ecology and the island as a whole. The Iona Island Wastewater Treatment Plant projects will collectively enhance ecosystems and improve resiliency for Iona Island and the surrounding area.

PURPOSE

The purpose of this report is to provide the Liquid Waste Committee additional details on resiliency measures that are part of the Iona Island Wastewater Treatment Plant (IIWWTP) projects to prepare Iona Island, including Iona Beach Regional Park (IBRP), for climate change and seismic impacts.

BACKGROUND

At a May 4, 2022 tour of the Iona Island Wastewater Treatment Plant and Iona Beach Regional Park for members of the Liquid Waste Committee, Regional Parks Committee and Climate Action Committee. Participants expressed interest in receiving more information on what is being done to

address the effects of climate change on the Iona Island Wastewater Treatment Plant and Iona Island as a whole.

Some of the projected impacts of climate change that will affect Metro Vancouver include warmer average winter and summer temperatures, drier summers, wetter falls and winters, extreme precipitation, and a projected sea level rise of approximately 1.0 meter by 2100¹. The overall warming trend will likely give rise to more intense storms and wind events. Seasonal distribution of marginal increases in precipitation will be the most notable as wetter fall and winter weather and a decrease in precipitation in the summers. Changes in the establishment and range of insects and disease-causing microorganisms may occur because of an increase in temperature and precipitation levels favouring the growth and distribution of most pest species by providing a warm and humid environment and providing necessary moisture for their growth. Increased ocean acidification is anticipated – a result of increased carbon dioxide in the atmosphere that is absorbed by the ocean. For Iona Island, changing weather patterns may affect temperature, and the timing, amount, and type of precipitation, which may affect patterns of flooding along the Fraser River. Unmitigated, these impacts of climate change will have implications for Iona Island, IBRP, and the new treatment plant.

Metro Vancouver's *Climate 2050* Strategic Framework (see Reference) goals for seismically resilient infrastructure, ecosystems, and communities have been incorporated into the IIWWTP projects ensuring climate resiliency is incorporated into all aspects of the projects.

Specific measures include increasing climate and seismic resiliency of built infrastructure at the plant and park, piloting strategies that simultaneously mitigate climate impacts and enhance ecosystems, nature-based climate adaptation, and strategies that increase the resilience of ecosystems in a changing climate.

IIWWTP Climate Change Resilience

Sea level rise is projected to have tangible impacts on the IIWWTP projects. The conceptual design responds to this challenge by:

- Establishing a flood construction level for the WWTP's buildings and structures at 7.0 metre geodetic to account for sea level rise, land settlement, high tide, storm surge, wave effect, and a freeboard safety factor
- Locating all critical infrastructure (such as electrical equipment and control rooms) at or above the flood construction level
- Using watertight protection for any non-critical interior spaces located below the flood construction level
- Raising all roadways over time including building a bridge to replace the current Iona Causeway.

IIWWTP Seismic Resilience

Seismic resilience is also being stringently evaluated. Ground settlement and seismic analysis has been undertaken to ensure the treatment plant meets the criteria defined in the current BC Building Code. The treatment plant is designed as a post-disaster facility with a 2,475 year return period

earthquake (2% chance of exceedance in 50 years). Ground improvements including preload, stone columns, seismic barriers, and piles are currently proposed to meet the post-disaster facility criteria.

Iona Beach Regional Park Climate Change Resilience

The conceptual design for IBRP is responsive to the impacts of climate change. Built assets will be constructed at elevations over time that avoid inundation and damage from sea level rise. Natural systems will be enhanced so they are regenerative and resilient to climate change.

Nature-based flood protection strategies are proposed for the park and connected natural areas. Iona Island's tidal habitats can adapt to sea level rise using projects such as thin layer sediment augmentation to mitigate wave energy and incrementally build new tidal habitat. Nature-based features such as sediment traps and breakwaters in the inter-jetty area are also proposed to enhance resilience. Protection, restoration and stewardship of sand dune ecosystems, tidal salt marsh and other important habitat types will encourage biodiversity, which is fundamental to mitigating and adapting to climate change.

Ecosystem-based Climate Adaption

There are a range of strategies included in the IWWTP Projects concept design to provide a level of protection to the island, such as, restoring ecological processes in the foreshore, creating conditions to help these coastal ecosystems keep pace with sea level rise and other climate impacts. Some specific projects include:

- Piloting sediment augmentation, which means adding thin layers of sediment in selected parts of the foreshore to help the tidal habitats keep pace with sea level rise
- Piloting living wave breaks to reduce wave energy, enhance sediment accretion, and provide subtidal habitat (as a separate initiative, Metro Vancouver is exploring the feasibility of Biorock, an artificial reef material that is grown in situ to provide resilient protection of coastal infrastructure – and this will be looked at further as part of foreshore design work)
- Maintaining water levels in the park's freshwater wetlands, especially during hot summer months, with treated effluent

The design of the treatment plant itself also aims to protect existing wetlands and use green infrastructure to support natural wetland recharge (e.g. rain gardens, swales, permeable pavement, green roofs, and designs to minimize riparian encroachment).

Increase Resilience of Local Ecosystems

Improving the health of ecosystems is important as healthier ecosystems are better able to bounce back from climate impacts. For aquatic ecosystems, this includes improved effluent quality, restoration of tidal habitats, reconnecting the river and the sea, and increasing forest cover to help shade areas during hotter summers. Terrestrial ecosystems will also be made more resilient through choosing indigenous plants that can withstand changing climate conditions and developing establishment plans to increase plant survival.

ALTERNATIVES

This is an information report. No alternatives are presented.

CONCLUSION

Climate change at Iona Island is expected to result in rising seas, changes in rainfall patterns, more severe coastal storm flooding, as well as consideration for seismic impacts.

The conceptual design for the new IWWTP projects has integrated nature-based adaptation methods to strengthen the resiliency of the park and the plant on Iona Island.

Natural areas can withstand climate change effects and build resilience of the land and for the community by protecting and restoring the park and providing stewardship opportunities.

While new buildings and other critical infrastructure at the plant meet the BC Building Code and are post-disaster facilities that will also withstand climate change effects, the inclusion of nature-based adaptation methods to restore ecosystems provides an added measure of protection for the park, plant, and island from sea level rise.

Reference

[Climate 2050 Strategic Framework](#)

To: Zero Waste Committee

From: Lynne Vidler, Lead Senior Engineer, Solid Waste Services

Date: July 5, 2022 Meeting Date: July 15, 2022

Subject: **Draft Solid Waste Services 2023–2027 Capital Plan**

RECOMMENDATION

That the Zero Waste Committee receive for information the report dated July 5, 2022, titled “Draft Solid Waste Services 2023–2027 Capital Plan”.

EXECUTIVE SUMMARY

The draft 2023 - 2027 Solid Waste Services Capital Plan has been prepared following direction received at the April 14, 2022 Metro Vancouver Board Budget Workshop and continues to maintain the Solid Waste customer level of service objectives. As part of Metro Vancouver’s focus on enhancing transparency and governance of the Capital Plan, this report allows the Zero Waste Committee to provide comments on the draft Capital Plan, which will then be incorporated into the Solid Waste Services Capital Plan and included in the Fall budget presentations to the Zero Waste Committee and the Board. Capital program expenditures are funded through debt charges in the annual operating budget. Solid Waste Services closely monitors waste flows as tipping fees are the primary revenue source for the solid waste system.

The estimated 2023 Capital Cash Flow is \$62.2M with a total estimated spend of \$272.0M over the five years. With respect to the common four years compared to the prior cycle’s capital plan, the estimated spend has increased by \$4.3M, or 2.0%.

PURPOSE

To present to the Zero Waste Committee the draft Solid Waste Services 2023–2027 Capital Plan for input and feedback, which will then be incorporated into the fall budget approvals.

BACKGROUND

On April 14, 2022, Metro Vancouver held a Board Budget Workshop with the objective to seek direction for the preparation of the 2023-2027 Financial Plan. In addition, Metro Vancouver is looking to enhance the transparency and governance of the capital planning process and give the Committee the opportunity to provide input and feedback earlier to be incorporated into the 2023-2027 Financial Plan.

Solid Waste Services

Solid Waste Services’ initiatives within the draft 2023–2027 Capital Plan are guided by customer level of service objectives, specifically:

- Offering exceptional customer service at Metro Vancouver solid waste facilities;
- Continuously improving services offered at the recycling and waste centres, including enhanced recycling opportunities;

- Providing cost effective disposal for ratepayers through sound financial management and long-term planning; and
- Monitoring and enhancing performance metrics.

CAPITAL PLAN HIGHLIGHTS

The draft 2023-2027 Capital Plan includes \$62.2M for 2023 and a total of \$272.0M over the five years, or an average of \$54.4M per year (Attachment 1). There are 42 projects and the largest six projects make up 69.5% of the capital spending over the next five years. The 2023 capital cash flow is \$8.3M (15.4%) more than last year's projection for 2023. The primary reason for the increase is cash flows carried forward for projects underspent in 2022 as a result of timing issues for delivery of the projects.

The spending over the next five years is driven by the need to improve the resilience of the solid waste system, replace aging systems particularly related to the Waste-to-Energy Facility, and create opportunities for waste reduction and greenhouse gas emissions reduction. Biosolids processing at the Waste-to-Energy Facility will strengthen the regional solid waste system and liquid waste system. The Waste-to-Energy Facility district energy system will substantially reduce greenhouse gas emissions in the region. The alternative fuel and recyclables recovery centre will process small load waste which will increase diversion and reduce greenhouse gas emissions by offsetting fossil fuel use.

Key capital projects planned or ongoing in 2023 – 2027 for Solid Waste Services include the following:

Infrastructure Type	Project Name	Primary Driver	Proposed 2023 Cashflow
Waste to Energy Facilities	Refuse Crane Replacement	Maintenance	9,000,000
Waste to Energy Facilities	Waste-to-Energy Facility Biosolids Processing	Resilience	8,100,000
Recycling and Waste Centres	North Surrey and Langley Recycling and Waste Centre recycling depots	Resilience	6,100,000
Waste to Energy Facilities	Waste-to-Energy Facility District Energy	Resilience	6,000,000
Waste to Energy Facilities	Electrical Transformers Replacement	Maintenance	4,500,000
	Other Projects	Various	28,450,000
			62,150,000

Initial funding for a western region recycling and waste centre replacement is included at the end of the financial plan with business casing, and needs assessment work to be brought forward for the Board's consideration in the coming years.

The capital program for Solid Waste Services is funded by long-term debt, contributions from the operating budget, and some external (interagency) contributions.

Capital Plan Changes

Metro Vancouver’s annual capital planning process allows the Board to adjust the capital budget once a year, in the fall, to accommodate changes required to fund projects transitioning from one phase to another (e.g. design phase to construction phase), and in response to new or changing project needs, emerging issues, and changing priorities.

Proposed changes in the draft 2023-2027 Capital Plan can be described within the following categories:

- Projected Carry-forward – Project expenditures which were expected to occur in 2022, but are now scheduled to occur in 2023.
- Net Deferral – Project expenditures that have been deferred or re-scheduled beyond 2026.
- Cost Adjustments – Project cashflow changes resulting from project budget changes not related to scope.
- New Scope – Project cashflow changes resulting from project budgets specifically related to project scope change.

The following table summarizes the total proposed capital plan adjustments in the draft 2023-2027 Capital Plan:

(\$Millions)

Prior cycle Cashflow 2022-2026	Cashflow 2022	Adjustments to 2023-2026 Capital Plan					Cashflow 2027	Draft Capital Plan 2023-2027
		Projected Carry-Forward	Net Deferral	Cost Adjustments	New scope	Total		
268.0	(50.8)	4.0	(5.0)	2.3	3.0	4.3	50.5	272.0

The draft 2023-2027 Capital plan expected cash flow is holding relatively steady on the common 4 years from last year’s budget, with an increase of \$4.3M over what was projected last year. This represents about a 2.0% increase. The new scope is primarily related to replacement of a series of weigh scales at different facilities.

Capital Plan Review Process

Solid Waste Services diligently reviewed their schedules to accommodate any Carry Forwards and Cost Adjustments by deferring projects, where possible.

Throughout the capital planning process, Solid Waste reviews each project line to ensure efficient project timing, deliverability, and scope. This exercise was performed in preparing the Solid Waste Services 2023-2027 capital plan and resulted in the deferral of \$5 million in capital expenditures into future years.

ALTERNATIVES

This is an information report. No alternatives are presented.

FINANCIAL IMPLICATIONS

The draft 2023-2027 Capital Plan includes \$62.2M for 2023 and a total of \$272.0M over the five years, an average of \$54.4M per year. Any feedback and input from the Zero Waste Committee will be incorporated into the fall budget presentations to the Committees and Boards.

Capital expenditures are funded through debt charges in the annual operating budget and five-year financial plan. The Solid Waste function revenues are almost exclusively from tipping fee revenues with revenues based on the amount of garbage disposed. Economic uncertainty has the potential to affect waste flows, and therefore Solid Waste Services monitors waste flows closely throughout the year.

SUMMARY / CONCLUSION

The 2023–2027 Capital Plan illustrates how Solid Waste Services supports projects that enhance recycling opportunities and provide cost-effective disposal for ratepayers, and the financial impacts of these projects over the next five years.

The presentation of the draft 2023–2027 Capital Plan for Solid Waste Services provides the Zero Waste Committee the opportunity to provide input and feedback which will be incorporated into the fall budget budget presentations to the Committees and Boards.

Attachment

Draft Solid Waste Services 2023-2027 Capital Plan (*Orbit 53041857*)



GREATER VANCOUVER SEWERAGE AND DRAINAGE DISTRICT
CAPITAL PORTFOLIO
SOLID WASTE SERVICES

DRAFT 2023 CAPITAL BUDGET AND 2023-2027 CAPITAL PLAN

	PROJECT BUDGET FOR APPROVAL	2023 CASH FLOW	2024 CASH FLOW	2025 CASH FLOW	2026 CASH FLOW	2027 CASH FLOW	2023 to 2027 TOTAL	ACTIVE PHASE	PRIMARY DRIVER
SWS - Landfills									
Alternative Fuel and Recyclables Recovery Centre	-	-	-	1,500,000	20,000,000	20,000,000	41,500,000	Planned	Opportunity
Coquitlam Landfill East Closure	5,000,000	2,150,000	1,750,000	1,100,000	-	-	5,000,000	Construction	Resilience
Coquitlam Landfill Gas Collection Upgrades	8,100,000	2,000,000	-	-	-	-	2,000,000	Multiple	Maintenance
Coquitlam Landfill Pump Station Upgrade	2,400,000	1,000,000	800,000	-	-	-	1,800,000	Construction	Maintenance
Coquitlam Landfill: Leachate Collection System Grade Realignment	1,000,000	850,000	-	-	-	-	850,000	Construction	Resilience
SWS - Landfills Total	16,500,000	6,000,000	2,550,000	2,600,000	20,000,000	20,000,000	51,150,000		
SWS - Recycling and Waste Centres									
Central Surrey Recycling and Waste Centre	49,800,000	200,000	-	-	-	-	200,000	Construction	Growth
Langley Recycling and Waste Centre Replacement	-	-	-	-	-	13,000,000	13,000,000	Planned	Growth
Langley Recycling Depot Development	5,500,000	3,050,000	2,250,000	-	-	-	5,300,000	Construction	Upgrade
Maple Ridge Recycling and Waste Centre Upgrades	2,000,000	1,800,000	-	-	-	-	1,800,000	Construction	Maintenance
North Shore Recycling and Waste Centre Compactor Replacement	-	-	-	2,500,000	-	-	2,500,000	Planned	Maintenance
North Surrey Recycling and Waste Centre Compactor Replacement	3,000,000	3,000,000	-	-	-	-	3,000,000	Construction	Maintenance
North Surrey Recycling Depot Development	25,500,000	3,050,000	2,250,000	-	-	-	5,300,000	Construction	Upgrade
Weigh Scale Replacement	3,000,000	1,000,000	2,000,000	-	-	-	3,000,000	Construction	Maintenance
Western Region Recycling and Waste Centre Replacement	-	-	-	-	-	5,000,000	5,000,000	Planned	Resilience
SWS - Recycling and Waste Centres Total	88,800,000	12,100,000	6,500,000	2,500,000	-	18,000,000	39,100,000		
SWS - Waste to Energy Facilities									
Acid Gas Reduction	2,000,000	-	2,800,000	7,750,000	30,000,000	6,500,000	47,050,000	Design	Upgrade
Air System Piping Replacement	300,000	300,000	-	-	-	-	300,000	Construction	Maintenance
Biosolids Processing	22,500,000	8,100,000	8,000,000	3,700,000	-	-	19,800,000	Construction	Resilience
Boiler and APC Roof Replacement	1,750,000	100,000	650,000	1,000,000	-	-	1,750,000	Construction	Maintenance
Bottom Ash Crane Replacement	1,400,000	500,000	-	-	-	-	500,000	Construction	Maintenance
Bottom Ash Processing	6,800,000	200,000	-	-	-	-	200,000	Construction	Opportunity
Carbon Silo Replacement	-	-	-	-	-	2,400,000	2,400,000	Planned	Maintenance
Compressed Air System Replacement	3,000,000	1,500,000	-	-	-	-	1,500,000	Construction	Maintenance
Electrical Transformers Replacement	5,000,000	4,500,000	300,000	-	-	-	4,800,000	Construction	Maintenance
Fabric Filter Hopper and Pulse Header Refurbishment	2,150,000	1,500,000	-	-	-	-	1,500,000	Construction	Maintenance
Feed Hopper/Chute	2,600,000	50,000	-	-	-	-	50,000	Construction	Maintenance
Feedwater Pump Replacement	1,000,000	50,000	-	-	-	-	50,000	Construction	Maintenance
Fire Suppression System	1,000,000	500,000	-	-	-	-	500,000	Construction	Maintenance
Fly Ash Silo Refurbishment	1,000,000	500,000	400,000	-	-	-	900,000	Construction	Maintenance
Generation Bank Replacement	9,000,000	100,000	5,900,000	3,000,000	-	-	9,000,000	Construction	Maintenance

	PROJECT BUDGET FOR APPROVAL	2023 CASH FLOW	2024 CASH FLOW	2025 CASH FLOW	2026 CASH FLOW	2027 CASH FLOW	2023 to 2027 TOTAL	ACTIVE PHASE	PRIMARY DRIVER
Lime Silo Replacement	-	-	-	-	-	3,600,000	3,600,000	Planned	Maintenance
Primary Economizer Replacement	7,000,000	3,000,000	-	-	-	-	3,000,000	Construction	Maintenance
Primary Superheaters Replacement	4,000,000	2,000,000	1,000,000	900,000	-	-	3,900,000	Construction	Maintenance
Programmable Logic Controllers Replacement	2,000,000	500,000	500,000	500,000	-	-	1,500,000	Construction	Maintenance
Pug Mill Enclosure Ventilation System Replacement	1,000,000	500,000	-	-	-	-	500,000	Construction	Maintenance
Refuse Crane	16,800,000	9,000,000	4,300,000	-	-	-	13,300,000	Construction	Maintenance
Refuse Pit Bunker Door Replacement	600,000	200,000	-	-	-	-	200,000	Construction	Maintenance
Secondary Economizers Replacement	6,000,000	1,750,000	3,000,000	1,000,000	-	-	5,750,000	Construction	Maintenance
Soot Blower Piping Replacement	300,000	300,000	-	-	-	-	300,000	Construction	Maintenance
Special Handle Waste Direct Feed System	5,000,000	2,500,000	2,500,000	-	-	-	5,000,000	Construction	Opportunity
Stack Refurbishment	350,000	350,000	-	-	-	-	350,000	Construction	Maintenance
WTE Facility District Heating	55,000,000	6,000,000	25,000,000	23,000,000	-	-	54,000,000	Construction	Resilience
WTE Facility District Heating Opportunities	2,300,000	50,000	-	-	-	-	50,000	Construction	Opportunity
SWS - Waste to Energy Facilities Total	159,850,000	44,050,000	54,350,000	40,850,000	30,000,000	12,500,000	181,750,000		
TOTAL CAPITAL EXPENDITURES	265,150,000	62,150,000	63,400,000	45,950,000	50,000,000	50,500,000	272,000,000		
SUMMARY BY DRIVER									
Growth	49,800,000	200,000	-	-	-	13,000,000	13,200,000		
Maintenance	84,750,000	36,000,000	18,850,000	8,900,000	-	6,000,000	69,750,000		
Resilience	83,500,000	17,100,000	34,750,000	27,800,000	-	5,000,000	84,650,000		
Upgrade	33,000,000	6,100,000	7,300,000	7,750,000	30,000,000	6,500,000	57,650,000		
Opportunity	14,100,000	2,750,000	2,500,000	1,500,000	20,000,000	20,000,000	46,750,000		
TOTAL CAPITAL EXPENDITURES	265,150,000	62,150,000	63,400,000	45,950,000	50,000,000	50,500,000	272,000,000		

To: Zero Waste Committee

From: Brandon Ho, Senior Project Engineer, Solid Waste Services

Date: July 7, 2022 Meeting Date: July 15, 2022

Subject: **2021 Disposal Ban Program Update**

RECOMMENDATION

That the Zero Waste Committee receive for information the report dated July 7, 2022, titled “2021 Disposal Ban Program Update”.

EXECUTIVE SUMMARY

Garbage loads received at regional solid waste facilities are visually inspected for banned materials, and surcharges are applied if banned materials are present. Metro Vancouver’s solid waste facilities received 822,000 loads of garbage in 2021, up 5% from 2020. 194,329 garbage loads were inspected (24% of total loads), and 16,781 were found to contain banned materials. In total, 3,104 surcharge notices were issued, representing a surcharge rate of 1.6%. Electronic waste, corrugated cardboard and oversized objects were the top three banned materials identified.

Following a procurement process, a new contractor began providing inspection services at Metro Vancouver and City of Vancouver solid waste facilities in May 2021. Disposal bans for recyclable material were temporarily waived in November and December 2021 following the atmospheric river flood event. The combination of the new contractor start-up and surcharge relaxations due to the flood event reduced both total inspections and surcharge rates in 2021 compared to 2020. Total surcharge revenues were \$386,507 and total program expenditures were \$921,403. Inspectors were able to work with customers and provided alternative recycling options to prevent 13,677 loads containing banned materials from being disposed as garbage.

A third party review of the disposal ban inspection process is being initiated as part of the solid waste management plan update process to determine if any improvements to the program can be implemented to further enhance the effect of the program in encouraging waste reduction and recycling.

PURPOSE

The purpose of this report is to provide the annual update to the Zero Waste Committee on the 2021 results of the Metro Vancouver disposal ban program.

BACKGROUND

Disposal ban program results are reported annually as outlined in the Zero Waste Committee work plan. The program helps keep readily recyclable materials and materials that pose operational risks and are hazardous out of the waste stream.

2021 DISPOSAL BAN PROGRAM RESULTS

The *Greater Vancouver Sewerage and Drainage District Tipping Fee and Solid Waste Disposal Regulation Bylaw No. 306, 2017*, as amended (Tipping Fee Bylaw) specifies a list of over 40 banned materials restricted from disposal (Attachment 1). Loads received at regional solid waste facilities are visually inspected for banned materials, and surcharges are applied if banned materials are present in quantities exceeding the thresholds defined in the Tipping Fee Bylaw. Metro Vancouver reports annually on program results including inspection and surcharge rates, and surcharges by material and customer type.

Disposal Ban Program Results

In 2021, the number of garbage loads received at regional solid waste facilities was 5% higher than in 2020, primarily due to an increase in loads received at the Vancouver Landfill. Table 1 provides a multi-year comparison of disposal ban program results.

Following a procurement process, a new disposal ban contractor commenced work in May of 2021. It took a number of months for the contractor to be fully staffed and trained given the complexity of the disposal ban program work. Additionally, a disposal ban waiver on recyclable materials was in effect in November and December following the flood emergency. These factors combined to reduce both the number of inspections and the inspection rate in 2021 compared to 2020.

In 2021, 194,329 garbage loads were inspected (24% inspection rate), and 16,781 (or approximately 9%) of inspected loads contained banned materials. Inspectors were able to work with customers and provided alternative recycling options to prevent 13,677 loads containing banned materials from being disposed as garbage.

Table 1: Inspection Statistics for Regional Solid Waste Facilities

Year	Garbage Loads	Loads Inspected	Inspection Rate	Re-Loads	Surcharge Notices	Surcharge Rate
2019	729,479	202,521	28%	16,578	4,294	2.1%
2020	782,333	221,875	28%	20,398	6,642	3.0%
2021	822,060	194,329	24%	13,677	3,104	1.6%

Results by Material Type

Table 2 summarizes the distribution of surcharged loads by banned material type. The largest category was electronic waste (including vacuums, kitchen appliances, home entertainment systems, computers, and other household electronic items), representing 26% of surcharged loads, down from 35% in 2020. Corrugated cardboard accounted for 25% of the surcharge notices in 2021, up from 20% in 2020. Large objects accounted for 11% of the surcharge notices in 2021, up from 10% in 2020. The majority of these large objects were identified at the Waste-to-Energy Facility where the length of an object is limited to one metre due to operational impacts. In comparison, the length restriction at recycling and waste centres is 2.5 metres resulting in less large object surcharges at those facilities. In August 2021, a temporary relaxation on surcharges for waxed cardboard was issued due to limited options for recycling, which remains in effect.

Table 2: Summary of Materials Contained in Surcharged Loads at Regional Solid Waste Facilities

Material	2019	2020	2021
Electronic Waste	30%	35%	26%
Cardboard	24%	20%	25%
Large Objects	5%	10%	11%
Mattresses	14%	9%	9%
Other Banned Materials	6%	5%	5%
Food Waste	4%	4%	5%
Gypsum	4%	3%	4%
Paint (Includes empty containers)	3%	4%	3%
Tires	3%	3%	3%
Clean Wood	2%	3%	3%
Expanded Polystyrene Packaging	1%	2%	3%
Green Waste	1%	< 1%	1%
Oil (Includes containers and filters)	1%	< 1%	1%
Recyclable Containers	1%	< 0.5%	0.5%
Recyclable Paper	1%	< 0.5%	0.5%

Surcharges by Customer Type

Table 3 summarizes the number of inspections and surcharge notices by customer type in 2021. The surcharge rate for commercial loads was higher than other customer types, due to the volumes, types of materials, and how they are collected. Non-account customers arriving in small vehicles normally unload materials manually and are able to separate and recycle banned materials more easily, while banned items in commercial loads cannot typically be reloaded into garbage trucks for safety and operational reasons.

Table 3: Summary of Surcharges by Customer Type for 2021

Customer Type	Inspections	Surcharge Notices	Surcharge Rate
Commercial	42,355	2,696	6%
Municipal	6,848	151	2%
Non-account	145,126	257	0.2%
Totals	194,329	3,104	1.6%

Dispute Resolution

Customers may dispute a surcharge within 30 days of it being issued by completing a dispute form. Metro Vancouver received 15 surcharge disputes in 2021, down from 26 in 2020. Ten surcharge notices were rescinded as summarized in Table 4.

Table 4: Surcharge Dispute Summary

Year	Surcharge Disputes Received	Surcharge Notices Rescinded
2019	17	11
2020	26	10
2021	15	10

Hauler Surcharge Information

The surcharge amount for each hauler with total surcharges exceeding \$1,000 is shown in Attachment 2 (for Metro Vancouver facilities only). The hauler surcharge rate is the number of surcharge notices divided by the number of inspections for each hauler.

Disposal Ban Program Third Party Review

With the start of a new contract and Metro Vancouver's ongoing work on the solid waste management plan update, a third party consulting review of the disposal ban program is being initiated to determine if any improvements to the program can be implemented to further enhance the effect of the program in encouraging waste reduction and recycling. Results of the consulting review will be communicated to the Zero Waste Committee. Stakeholders including the waste hauling industry through the Solid Waste and Recycling Industry Advisory Committee will be engaged through the review process.

ALTERNATIVES

This is an information report. No alternatives are presented.

FINANCIAL IMPLICATIONS

In 2021, surcharge revenues were \$386,507 with \$363,766 from Metro Vancouver solid waste facilities and \$22,741 from City of Vancouver solid waste facilities as shown in Attachment 3. Total program expenditures for regional facilities in 2021 were \$921,403. Program expenditures in 2021 were greater than 2020 because new contract rates are higher than under the historic contract.

CONCLUSION

The disposal ban program helps keep readily recyclable materials and materials that pose operational risks and other hazards out of the waste stream. In 2021, 194,329 loads were inspected, 16,781 loads were found to contain banned materials and 3,104 surcharge notices were issued. The disposal ban program remains an effective tool to encourage waste reduction and diversion.

Attachments

1. 2021 Banned Materials
2. 2021 Solid Waste Surcharge Information at Metro Vancouver Facilities
3. 2021 Solid Waste Surcharge Summary

2021 Banned Materials

Banned Hazardous and Operational Materials

(\$65 surcharge on any single item plus the costs of remediation and clean-up)

• Agricultural Waste	• Hazardous Waste
• Automobile Parts	• Inert Fill Materials
• Barrels or Drums (205 L or greater)	• Liquids or Sludge
• Creosote Treated Wood	• Mattresses
• Dead Animals	• Oversize Objects
• Dusty or Odourous	• Personal Hygiene Products over 10% of the load
• Excrement	• Propane Tanks
• Flammable Materials	• Toxic Plants
• Gypsum	• Wire, Hosing, Rope or Cable longer than 1 m

Banned Recyclable Materials

(50% surcharge on Items above the threshold)

5% threshold on any combination of the following:

- Beverage containers
- Other recyclable plastic, glass, metal, and composite material containers
- Corrugated cardboard
- Recyclable paper
- Green waste
- Clean Wood

25% threshold on food waste

Banned Recyclable Materials

(100% surcharge on Items above the threshold)

20% threshold on expanded polystyrene packaging

Banned Product Stewardship Materials

(\$65 surcharge on any single item)

• Antifreeze and Containers	• Paint and Paint Containers
• Electronics and Electrical Products	• Pesticides
• Gasoline	• Pharmaceutical Products and Medications
• Lead-Acid Batteries	• Solvents and Flammable Liquids
• Lubricating Oil and Containers	• Tires
• Oil, Oil Filters, Oil Containers	

ATTACHMENT 2

2021 Solid Waste Surcharge Information Metro Vancouver Facilities		
Hauler (MV Facilities)	Surcharge Amount*	Hauler Surcharge Rate**
Canada Minibins Ltd.	\$ 4,908	5%
Cascades Recovery	\$ 3,567	6%
City of Burnaby	\$ 7,533	4%
City of New Westminster	\$ 1,580	6%
City of Surrey	\$ 3,338	3%
District of North Vancouver	\$ 2,773	4%
GFL Environmental	\$ 65,260	7%
Halton Recycling Ltd.	\$ 5,213	14%
Maple Leaf Disposal Ltd.	\$ 11,971	10%
Metro Disposal	\$ 1,235	1%
NSD Disposal Ltd.	\$ 3,241	7%
Providence Health Care	\$ 1,231	12%
Residential (RDO) Non-Account	\$ 14,874	0.2%
Revolution Resource Recovery Inc.	\$ 19,566	9%
Smithrite Disposal Ltd.	\$ 4,443	11%
Super Save Disposal Inc.	\$ 52,074	12%
Urban Impact Recycling Ltd.	\$ 23,852	6%
Vancouver Coastal Health	\$ 11,388	27%
Waste Connections of Canada	\$ 36,710	11%
Waste Control Services Inc.	\$ 14,522	6%
Waste Management of Canada Corporation	\$ 63,823	12%
Wescan Disposal	\$ 1,160	4%

* Does not include haulers with surcharge amounts less than \$1,000.

** Hauler surcharge rate is equal to the number of surcharges divided by the number of inspections for each hauler.

ATTACHMENT 3

2021 Solid Waste Surcharge Summary	Surcharge Amount
Metro Vancouver Facilities (\$363,766)	
- Commercial	\$339,560
- Municipal	\$9,333
- Cash Customers	\$14,873
City of Vancouver Facilities	\$22,741
Total	\$386,507