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SERVICES AND SOLUTIONS FOR A LIVABLE REGION

METRO VANCOUVER REGIONAL DISTRICT
LIQUID WASTE COMMITTEE

REGULAR MEETING

July 13, 2022
1:00 p.m.
Meeting conducted electronically and in-person pursuant to the Procedure Bylaw
28th Floor Boardroom, 4515 Central Boulevard, Burnaby, British Columbia
Webstream available at http://www.metrovancouver.org

A G E N D A[1]

1. ADOPTION OF THE AGENDA

1.1 July 13, 2022 Regular Meeting Agenda
That the Liquid Waste Committee adopt the agenda for its regular meeting scheduled for July 13, 2022 as circulated.

2. ADOPTION OF THE MINUTES

2.1 June 8, 2022 Regular Meeting Minutes
That the Liquid Waste Committee adopt the minutes of its regular meeting held June 8, 2022 as circulated.

3. DELEGATIONS

4. INVITED PRESENTATIONS

5. REPORTS FROM COMMITTEE OR STAFF

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

5.2 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".

[1] *Note: Recommendation is shown under each item, where applicable.*

5.3 Sewage and Waste: Heat Recovery Policy

That the GVS&DD Board approve the proposed *Sewage and Waste: Heat Recovery Policy*, as presented in the report dated July 5, 2022, titled "Sewage and Waste: Heat Recovery Policy".

5.4 Proposed Capital Investment for the Surrey City Energy Sewer Heat Recovery Project

That the GVS&DD Board:

a) direct staff to enter into contract negotiations with the City of Surrey for the Surrey City Centre Sewer Heat Recovery project, as presented in the report dated June 28, 2022, titled "Proposed Capital Investment for the Surrey City Centre Sewer Heat Recovery Project"; and
b) authorize expenditures up to $19 million as endorsed in the 2022 to 2026 capital plan.

5.5 Climate and Seismic Resilience Planning at Iona Island

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

5.6 Award of a Contract Resulting from Request for Proposal No. 22-006: Construction of Gilbert Trunk Sewer No.2 Gilbert Road South Section

That the GVS&DD Board:

a) approve award of a contract in the amount of up to $39,856,650 (exclusive of taxes) to Jacob Brothers Construction Inc., resulting from Request for Proposal No. 22-006: Construction of Gilbert Trunk Sewer No.2 Gilbert Road South Section, subject to final review by the Commissioner; and
b) authorize the Commissioner and the Corporate Officer to execute the required documentation once the Commissioner is satisfied that award should proceed.

5.7 Manager's Report

That the Liquid Waste Committee receive for information the report dated June 27, 2022 titled "Manager's Report".

6. INFORMATION ITEMS

7. OTHER BUSINESS

8. BUSINESS ARISING FROM DELEGATIONS

9. RESOLUTION TO CLOSE MEETING

Note: The Committee must state by resolution the basis under section 90 of the Community Charter on which the meeting is being closed. If a member wishes to add an item, the basis must be included below.

10. ADJOURNMENT/CONCLUSION

That the Liquid Waste Committee adjourn/conclude its regular meeting of July 13, 2022.

Membership:

Stewart, Richard (C) - Coquitlam
Dominato, Lisa (VC) - Vancouver
Calendino, Pietro - Burnaby
Elford, Doug - City of Surrey
Ferguson, Steve - Langley Township
Little, Mike - North Vancouver District
Loo, Alexa - Richmond
McDonald, Bruce - Delta
McEwen, John - Anmore
Trentadue, Mary - New Westminster
Walker, Darryl - White Rock

METRO VANCOUVER REGIONAL DISTRICT
LIQUID WASTE COMMITTEE

Minutes of the Regular Meeting of the Metro Vancouver Regional District (MVRD) Liquid Waste Committee held at 1:00 p.m. on Wednesday, June 8, 2022 in the 28th Floor Boardroom, 4515 Central Boulevard, Burnaby, British Columbia.

MEMBERS PRESENT:
Chair, Mayor Richard Stewart*, Coquitlam
Councillor Pietro Calendino*, Burnaby
Councillor Doug Elford*, Surrey
Councillor Steve Ferguson, Langley Township
Mayor Mike Little*, North Vancouver District
Councillor Alexa Loo*, Richmond
Councillor Bruce McDonald*, Delta
Mayor John McEwen*, Anmore
Councillor Mary Trentadue*, New Westminster
Mayor Darryl Walker*, White Rock

MEMBERS ABSENT:
Vice Chair, Councillor Lisa Dominato, Vancouver

STAFF PRESENT:
Peter Navratil, General Manager, Liquid Waste Services
Natalia Melnikov, Legislative Services Coordinator, Board and Information Services

1. ADOPTION OF THE AGENDA

1.1 June 8, 2022 Regular Meeting Agenda

It was MOVED and SECONDED
That the Liquid Waste Committee adopt the agenda for its regular meeting scheduled for June 8, 2022 as circulated.

CARRIED

*denotes electronic meeting participation as authorized by Section 3.6.2 of the *Procedure Bylaw*

2. ADOPTION OF THE MINUTES

2.1 May 18, 2022 Regular Meeting Minutes

It was MOVED and SECONDED
That the Liquid Waste Committee adopt the minutes of its regular meeting held May 18, 2022 as circulated.

CARRIED

3. DELEGATIONS

No items presented.

4. INVITED PRESENTATIONS

No items presented.

5. REPORTS FROM COMMITTEE OR STAFF

5.1 Annacis Island Wastewater Treatment Plant Process

Dan Coulman, Chargehand, Annacis Island Wastewater Treatment Plant, Liquid Waste Services, provided the Liquid Waste Committee with a verbal update on the Annacis Island Wastewater Treatment Plant outlining the wastewater treatment process and the day-to-day activities of an environmental plant operator.

Members were provided a presentation on the Annacis Island Wastewater Treatment Plant, the largest Metro Vancouver treatment facility providing secondary treatment, highlighting the primary and secondary wastewater treatment processes, operators' certification requirements, and safe resolutions in the equipment failure events.

Presentation material titled "Annacis Island Wastewater Treatment Plant Process" is retained with the June 8, 2022 Liquid Waste Committee agenda.

It was MOVED and SECONDED
That the Liquid Waste Committee receive for information the verbal report from Dan Coulman, Chargehand, Annacis Island Wastewater Treatment Plant, Liquid Waste Services, titled "Annacis Island Wastewater Treatment Plant Process".

CARRIED

5.2 2021 GVS&DD Environmental Management and Quality Control Annual Report

Report dated May 12, 2022, from Andjela Knezevic-Stevanovic, Director, Environmental Management and Quality Control, Liquid Waste Services, providing the Liquid Waste Committee with a summary of the 2021 GVS&DD Environmental Management and Quality Control Annual Report.

Members were provided a presentation on the 2021 GVS&DD Environmental Management and Quality Control program, outlining the wastewater treatment facilities and highlighting the regulatory and technical performance requirements, biosolids quality and effluent toxicity monitoring tests and requirements, and monitoring of the receiving water bodies program.

Presentation material titled "2021 GVS&DD Environmental Management and Quality Control" is retained with the June 8, 2022 Liquid Waste Committee agenda.

It was MOVED and SECONDED
That the Liquid Waste Committee receive for information the report dated May 12, 2022 titled "2021 GVS&DD Environmental Management & Quality Control Annual Report".

CARRIED

5.3 Greater Vancouver Sewerage and Drainage District Sewerage and Drainage Areas Boundaries Amending Bylaw No. 356, 2022 – Fraser Sewerage Area – City of Maple Ridge

Report dated May 30, 2022, from Mark Wellman, Senior Engineer, Policy, Planning and Analysis, Liquid Waste Services, presenting the Liquid Waste Committee with an application to amend *the Greater Vancouver Sewerage and Drainage District Sewerage and Drainage Areas Boundaries Bylaw No. 310, 2018*, to include the property located at 13179 224 Street, Maple Ridge within the Fraser Sewerage Area for the GVS&DD Board's approval.

It was MOVED and SECONDED
That the GVS&DD Board:

a) give first, second and third reading to the *Greater Vancouver Sewerage and Drainage District Sewerage and Drainage Areas Boundaries Amending Bylaw No. 356, 2022*; and,
b) pass, and finally adopt the *Greater Vancouver Sewerage and Drainage District Sewerage and Drainage Areas Boundaries Amending Bylaw No. 356, 2022*.

CARRIED

5.4 Out-of-Region Trucked Liquid Waste Discharge Request (Super Save)

Report dated May 31, 2022, from Dana Zheng, Program Manager, Policy, Planning and Analysis, Liquid Waste Services, presenting the Liquid Waste Committee with an application for a temporary discharge of out-of-region trucked liquid waste from Super Save Toilet Rentals Inc. at GVS&DD wastewater treatment plants for the GVS&DD Board's consideration.

It was MOVED and SECONDED
That the GVS&DD Board authorize staff to issue an out-of-region discharge number based on the application from Super Save Toilet Rentals Inc. to discharge out-of-region trucked liquid waste from June 1, 2022 to September 30, 2022

pursuant to *GVS&DD Trucked Liquid Waste Bylaw No. 345, 2021*, as presented in the report dated May 31, 2022 titled "Out-of-Region Trucked Liquid Waste Discharge Request (Super Save)".

CARRIED

5.5 Appointment of Deputy Sewage Control Manager and Enforcement Officer

Report dated May 3, 2022, from Kathy Preston, Director, Environmental Regulation and Enforcement, Parks and Environment, providing the Liquid Waste Committee with an update on the appointments of Metro Vancouver and City of Vancouver employees as Board-designated deputy sewage control managers and officers.

It was MOVED and SECONDED

That the GVS&DD Board:

a) pursuant to the *Greater Vancouver Sewerage and Drainage District Sewer Use Bylaw* and the *Environmental Management Act*:
   i. rescind the appointment of former Metro Vancouver employee Grant McGillivray as a deputy sewage control manager and as an officer;
   ii. appoint Metro Vancouver employee Maari Hirvi Mayne as a deputy sewage control manager; and
   iii. appoint City of Vancouver employee Charla Brake as an officer.

b) pursuant to Section 28 of the *Offence Act* for the purpose of serving summons for alleged violations under the *Greater Vancouver Sewerage and Drainage District Sewer Use Bylaw*:
   i. rescind the appointment of former Metro Vancouver employee Grant McGillivray; and
   ii. appoint City of Vancouver employee Charla Brake.

CARRIED

5.6 Manager's Report

Report dated May 20, 2022, from Peter Navratil, General Manager, Liquid Waste Services, and Cheryl Nelms, General Manager, Project Delivery, providing the Liquid Waste Committee with an update on the North Shore Wastewater Treatment Plant construction, an initiative to reduce surfactants in wastewater, and the Liquid Waste Committee 2022 Work Plan.

It was MOVED and SECONDED

That the Liquid Waste Committee receive for information the report dated May 20, 2022 titled "Manager's Report".

CARRIED

6. INFORMATION ITEMS

No items presented.

7. OTHER BUSINESS

No items presented.

8. BUSINESS ARISING FROM DELEGATIONS

No items presented.

9. RESOLUTION TO CLOSE MEETING

No items presented.

10. ADJOURNMENT/CONCLUSION

It was MOVED and SECONDED

That the Liquid Waste Committee conclude its regular meeting of June 8, 2022.

CARRIED

(Time: 1:49 p.m.)

_____ _____

Natalia Melnikov,
Legislative Services Coordinator

Richard Stewart, Chair

53207155 FINAL

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/Brighouse 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

ATTACHMENT

GREATER VANCOUVER SEWERAGE AND DRAINAGE DISTRICT
CAPITAL PORTFOLIO
LIQUID WASTE

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 Rehabilitatio	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
IIWWTP ICS Replacement Program	750,000	200,000	200,000	200,000	-	-	600,000	Construction	Maintenance
IIWWTP Influent Gate Refurbishment	1,350,000	300,000	100,000	-	-	-	400,000	Construction	Maintenance
IIWWTP IPS Drive Remediation	1,400,000	350,000	500,000	350,000	150,000	-	1,350,000	Construction	Maintenance
IIWWTP MCC/Power Distribution Assess/Replace - Phase 2	1,000,000	50,000	250,000	-	-	-	300,000	Construction	Maintenance
IIWWTP Non-Domestic Trucked Liquid Waste Alternative	800,000	600,000	200,000	-	-	-	800,000	Construction	Maintenance
IIWWTP 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
IIWWTP 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
IIWWTP PA-Sed Tank & Gallery Wall Refurbishment	950,000	150,000	300,000	200,000	100,000	40,000	790,000	Construction	Maintenance
IIWWTP Replacement of CoGen Control System	2,500,000	350,000	100,000	400,000	-	-	850,000	Construction	Maintenance
IIWWTP Siphon Chamber Refurbishment	2,150,000	800,000	960,000	330,000	-	-	2,090,000	Construction	Maintenance
IIWWTP Solids Handling Refurbishment	64,850,000	100,000	6,706,000	-	-	-	6,806,000	Multiple	Maintenance
IIWWTP Standby Diesel Generators	2,000,000	100,000	650,000	750,000	950,000	750,000	3,200,000	Design	Resilience
IIWWTP 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

Definition | Preliminary Design | Detailed Design | Construction

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				Mar 2022
	Iona Secondary Wastewater Treatment Upgrade - Phase 2	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 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). Archaelogical findings during ground Improvements delaying completion from 2027 to 2029;		

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SERVICES AND SOLUTIONS FOR A LIVABLE REGION

To: Liquid Waste Committee

From: Jeff Carmichael, Division Manager, Business Development, Liquid Waste Services

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

Subject: **Proposed Capital Investment for the Surrey City Energy Sewer Heat Recovery Project**

RECOMMENDATION

That the GVS&DD Board:

a) direct staff to enter into contract negotiations with the City of Surrey for the Surrey City Centre Sewer Heat Recovery project, as presented in the report dated June 28, 2022, titled "Proposed Capital Investment for the Surrey City Centre Sewer Heat Recovery Project"; and
b) authorize expenditures up to $19 million as endorsed in the 2022 to 2026 capital plan.

EXECUTIVE SUMMARY

Metro Vancouver's *Climate 2050* strategy (Reference 1) includes a target to achieve a 45% reduction in regional greenhouse gas emissions by 2030, from 2010 levels. Sewer heat recovery facilities will provide renewable, fossil fuel-free heat extracted from sewage to residents and businesses in the region. There is enough excess heat in the liquid waste collection system to heat 700 high rise buildings throughout the region.

The project will reduce greenhouse gas emissions, contributing to the *Climate 2050* Strategy, as guided by the *Waste Heat Recovery Policy*. The investment will be capped at $19 million out of a total estimated project cost of $151 million. The investment is based on the value of the anticipated greenhouse gas reductions over the life of the project, and was included in the endorsed 2022 to 2026 capital plan. Metro Vancouver will receive carbon credits based on relative costs incurred by both parties, which will contribute toward Metro Vancouver's goal of carbon neutrality.

PURPOSE

To present to the Liquid Waste Committee for consideration by the GVS&DD Board a recommendation to direct staff to negotiate a contract with the City of Surrey for the Surrey City Centre Sewer Heat Recovery project, which will recover heat from the GVS&DD North Surrey Interceptor and make it available to the City of Surrey's District energy system, and to authorize expenditures up to $19 million as endorsed in the 2022 to 2026 capital plan.

BACKGROUND

Several plans and policies provide the foundation for the recommendations in this report.

The *Integrated Liquid Waste and Resource Management Plan* (Reference 2) includes the goal to use liquid waste as a resource, and commitments to evaluate opportunities to expand the recovery of energy from the liquid waste system, and to implement projects based on business case evaluations for such projects.

The *Waste Heat Recovery Policy* (Reference 3) enables waste heat from the liquid waste system to be used by municipalities and other external parties. It also provides guidelines for GVS&DD financial contributions to such projects, which require capital funding by municipalities and potentially by Metro Vancouver. GVS&DD is capable of contributing to both regional and corporate greenhouse gas (GHG) emission reduction targets by capturing unused heat from sewage and making it available to municipalities and private parties for use, replacing fossil fuel combustion.

The *Carbon Price Policy* (Reference 4) establishes a price on GHG emissions, and directs staff to incorporate that value into life cycle cost analyses for projects.

The *Climate 2050* Strategy vision is that Metro Vancouver demonstrate bold leadership in responding to climate change. It commits to achieving a carbon-neutral region by 2050, with an interim target of reducing GHG emissions by 45% from 2010 levels by 2030.

On March 26, 2021, the GVS&DD Board approved an amendment to the *Cost Apportionment Bylaw 283* (Reference 5), to allocate heat recovery project investments using Tier III cost apportionment (100% regional). At the same meeting, the GVS&DD Board approved an amendment to the *Liquid Waste Heat Recovery Policy* (Reference 6), which expanded the scope of allowed investments to include sewer heat projects as well as wastewater treatment plant based effluent heat projects. The amendment allows the Board to consider approving capital contributions to sewer heat recovery projects to support collaborative district energy projects.

In collaboration with the City of Surrey, a proposed sewer heat recovery project has been developed to provide recovered heat to the Surrey's district energy system, and a capital investment proposal to support the project has been created.

BUSINESS CASE

Several sewer heat recovery projects are under development or assessment. A number of future capital investment proposals are anticipated over the next several years.

The City of Surrey is expanding its district energy systems in Surrey City Centre. The system will use waste heat recovered from sewage to meet most heating needs, displacing natural gas use by existing customers.

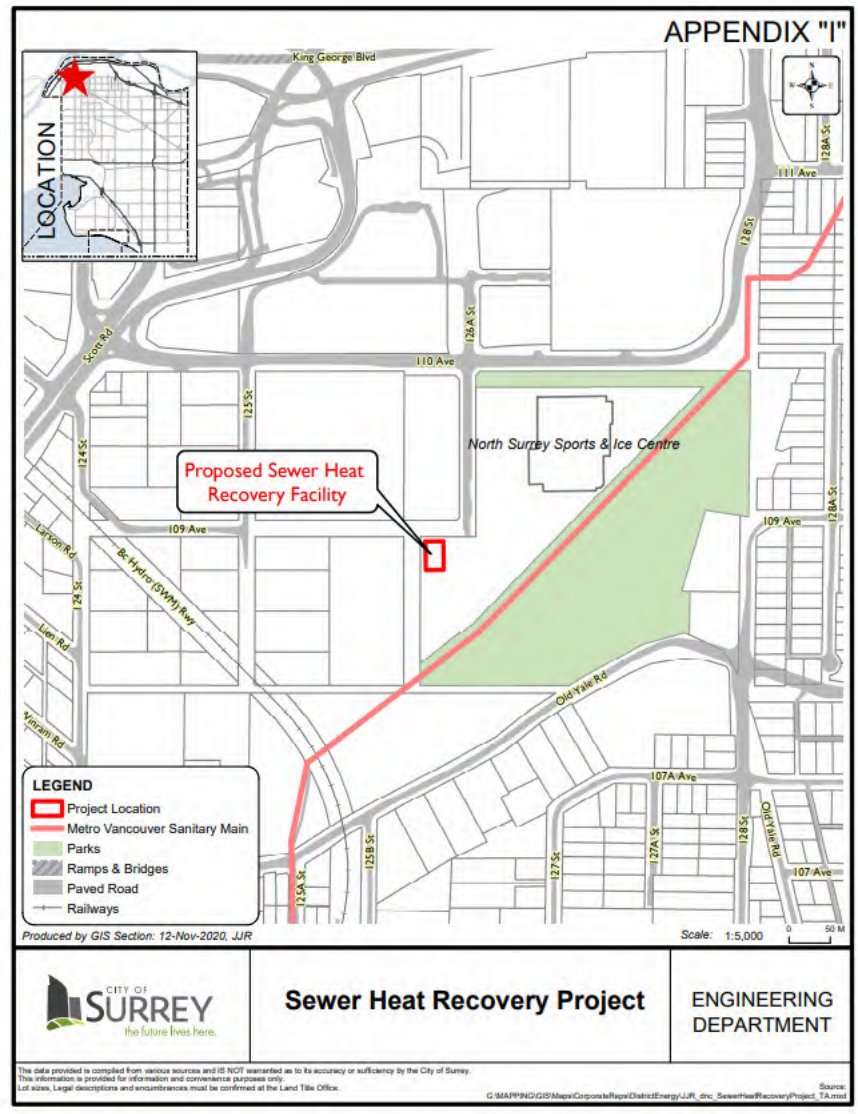
Figure 1 shows a schematic of the proposed service area and the location of the proposed sewer heat recovery facility.

The proposed sewer heat recovery infrastructure will be constructed on a municipally-owned site in the Bridgeview area of Surrey. Connections will be established to the North Surrey Interceptor. Heat will be extracted from the sewage and the sewage returned to the sewer main. Equipment is required to extract heat from the sewage.

It is proposed that GVS&DD make a capital investment for supporting sewer heat recovery equipment. The investment will be capped at $19 million, which is based on the value of the

anticipated GHG reductions over the life of the project. Metro Vancouver's investment will not be the primary funding source for the project: it is estimated that this investment will provide approximately 14 percent of the total capital cost of this district energy expansion project. In exchange, Metro Vancouver will receive carbon credits based on relative costs incurred by both parties, which will contribute toward Metro Vancouver's goal of carbon neutrality.

Figure 1. Proposed Surrey City Centre Sewer Heat Recovery Project



This opportunity was evaluated using life-cycle cost analysis methods, including application of the *Carbon Price Policy*, and determined to be a cost-effective project. Low carbon energy source options were evaluated by the City of Surrey, and it was determined that sewer heat-sourced energy is competitive with other clean energy sources, and is a lower risk long-term energy source than some sources (like biomass).

Capital costs will be allocated by GVS&DD using Tier III cost apportionment, as a wastewater resource recovery project that will reduce GHG emissions regionally. Any and all operating and maintenance costs incurred by GVS&DD will be recovered from the City of Surrey.

Table 1. Business Case Summary

Item	**GVS&DD**	**City of Surrey**
District energy system estimated capital costs	($19 million)	($139 million)
Spending authority requested	$19 million	
Operating costs	($331,500) / year	tbd
Revenues	$331,500 / year	tbd, based on rate structure
Benefits from GHG reductions (as per Carbon Price Policy)	$32 million	
Net benefit to GVS&DD	$13 million	

The project is anticipated to reduce GHG emissions by 300,000 tonnes over the life of the project. GHG reductions, which are valued as benefits as per the *Carbon Price Policy*, are expected to generate $13 million in benefits. GHG reductions at this location are voluntary, and may be transferred to other parties as credits. Metro Vancouver will receive some credits, as per *Waste Heat Recovery Policy* guidelines. Terms of Reference for the proposed contract, including GHG reduction allocations, are outlined in Attachment 1.

Project Risks and Risk Mitigation Strategies

Given the long-term commitment and relatively large capital investment for the development of a district energy system, there are inherent risks. Key risks and mitigation strategies are listed in Attachment 2.

ALTERNATIVES

1. That the GVS&DD Board:
   a) direct staff to enter into contract negotiations with the City of Surrey for the Surrey City Centre Sewer Heat Recovery project, as presented in the report dated June 28, 2022, titled "Proposed Capital Investment for the Surrey City Centre Sewer Heat Recovery Project"; and
   b) authorize expenditures up to $19 million as endorsed in the 2022 to 2026 capital plan.

2. That the GVS&DD Board receive for information the report dated June 28, 2022, titled "Proposed Capital Investment for the Surrey City Centre Sewer Heat Recovery Project" and provide alternate direction to staff.

FINANCIAL IMPLICATIONS

If the Board approves Alternative 1, GVS&DD will authorize expenditures up to $19 million for the project. The investment by Metro Vancouver is expected to be $19M and will be capped at $19M based on the application of the *Carbon Price Policy*. Metro Vancouver will receive carbon credits based on relative costs incurred by both parties, which will contribute toward Metro Vancouver's goal of carbon neutrality. Costs will be recovered from GVS&DD members under Tier III cost apportionment (100% regional allocation). The household financial impact will be less than $1 per household per year.

OTHER IMPLICATIONS

The City of Surrey and Metro Vancouver may be required to seek approval or exemption for the system from the British Columbia Utilities Commission. This can be accomplished with existing staff and at minimal cost.

CONCLUSION

In the *Climate 2050* strategy, Metro Vancouver has committed to reduce GHG emissions by 45% by 2030 compared to 2010 levels, and be a carbon neutral region by 2050. Metro Vancouver has the potential and opportunity to take action on climate change to reduce greenhouse gas emissions by enabling the provision of capital funding for new facilities that will provide renewable, fossil fuel-free heat extracted from sewage to residents and businesses in the region.

Several projects are currently under development and further potential exists. A proposed sewer heat recovery project has been developed in collaboration with the City of Surrey, which will provide clean, renewable energy to Surrey City Centre's district energy system. Metro Vancouver will make a capital investment of up to $19 million for necessary sewer heat extraction infrastructure. All ongoing operation and maintenance costs will be borne by the district energy system owner. The benefits of the reduced GHG emissions from the proposed project are $19 million, so the project has a positive business case. Staff recommend Alternative 1.

Attachments

1. GVS&DD and City of Surrey Agreement Terms of Reference
2. Risk Matrix

References

1. *Climate 2050*
2. *Integrated Liquid Waste and Resource Management Plan*
3. *Waste Heat Recovery Policy*
4. *Carbon Price Policy*
5. "Tier III Cost Apportionment Bylaw Amendments", report dated March 11, 2021
6. "Liquid Waste Heat Recovery Policy Amendments to Expand Opportunities for Sewer Heat Recovery", report dated March 2, 2021

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ATTACHMENT 1

GVS&DD AND CITY OF SURREY AGREEMENT TERMS OF REFERENCE

The terms of reference below between the Greater Vancouver Sewerage and Drainage District (GVS&DD) and the City of Surrey (CoS) reflect the current intent of the parties in drafting a detailed agreement.

Preamble	
Contract Term	Initial term of 20 years from service commencement. Expected service commencement Jan 1, 2026 Charges to begin when GVS&DD invested infrastructure is completed and commissioned.
Renewal Provisions	Option to renew on mutual agreement. Renewal to be confirmed a minimum of 3 years before end of initial term.
Proposed Sewer Heat Recovery Location	North Surrey, near North Surrey Sports and Ice Centre
Subscribed Capacity	City of Surrey intends to recover 6 MW of thermal capacity from sewage in the GVS&DD's North Surrey Interceptor
Charges	All operating and maintenance costs incurred by GVS&DD will be recovered from the City of Surrey.
Allocation of GHG Emissions Reductions	GVS&DD will receive some GHG credits, as per the Liquid Waste Heat Recovery Policy, which states: • Carbon allocation will be on the basis of relative financial contributions. • Transferred credits to be retained by GVS&DD until carbon neutrality achieved in a given year.

Terms will also be established concerning items including: termination or default by either party, scheduled outages, insurance, reporting, cooperation and coordination mechanisms, and dispute resolution mechanisms.

RISK MATRIX

Risk	Description	Mitigation Strategy
Capital Cost Risk	Overall costs are a key risk for any capital project.	The GVS&DD infrastructure capacity and the corresponding purchase will be structured to contain contingency of 50% to ensure that actual cost is less than budget.
City of Surrey Utility Risk	The City of Surrey may not choose to proceed with development of the Surrey City Centre District Energy system.	The agreement will be structured such that GVS&DD's capital investment will only proceed if commitments are in place for development of the system.
Regulatory Risk	Expected GHG emission reductions are based on current regulatory requirements in the City of Surrey. If those requirements change in the future, there is some risk that GHG credits available in the future will diminish.	The agreement will front load GHG emission credit transfers to GVS&DD, minimizing credit transfers further into the future when requirement change risk is more significant.

To: Liquid Waste Committee and Zero Waste Committee

From: Jeff Carmichael, Division Manager, Business Development, Liquid Waste Services
Sarah Wellman, Senior Engineer, Solid Waste Operations, Solid Waste Services

Date: July 5, 2022 Meeting Dates: July 13, 2022
July 15, 2022

Subject: **Sewage and Waste: Heat Recovery Policy**

RECOMMENDATION

That the GVS&DD Board approve the proposed *Sewage and Waste: Heat Recovery Policy*, as presented in the report dated July 5, 2022, titled "Sewage and Waste: Heat Recovery Policy".

EXECUTIVE SUMMARY

Metro Vancouver has the opportunity to reduce greenhouse gas emissions by investing in waste heat recovery to offset fossil fuel use for building heat and hot water. Metro Vancouver's *Climate 2050* strategy includes a target of a climate neutral region by 2050 with an interim target of 45% greenhouse gas emission reductions by 2030. Metro Vancouver's liquid waste system and the Waste-to-Energy Facility have the potential to provide heat and hot water for up to 130,000 homes, reducing greenhouse gas emissions by up to 300,000 tonnes per year, or equivalent to approximately the annual emissions of 60,000 passenger vehicles. The proposed *Sewage and Waste: Heat Recovery Policy* facilitates maximizing the recovery of this resource.

The proposed *Sewage and Waste: Heat Recovery Policy* replaces the existing *Liquid Waste Heat Recovery Policy*:

- incorporating Waste-to-Energy Facility district energy projects;
- standardizing the baseline for GHG emission reduction calculations;
- updating the approach to allocating GHG emission reduction credits between the GVS&DD and member jurisdictions; and
- standardizing the approach for applying the *Carbon Price Policy* to liquid waste and solid waste system projects.

PURPOSE

To present a proposed *Sewage and Waste: Heat Recovery Policy* for consideration by the GVS&DD Board.

BACKGROUND

On June 23, 2017, the MVRD Board approved a *Carbon Price Policy* for Metro Vancouver that established a Carbon Price (inclusive of any applicable external carbon taxes) of $150 per tonne of CO_2e. On July 26, 2019, the MVRD Board approved the *Climate 2050 Strategic Framework*, which targets 45% reduction in greenhouse gas (GHG) emission by 2030 and a climate neutral region by 2050.

On March 26, 2021, the GVS&DD Board approved the following resolutions:

> *a) approve the revised Liquid Waste Heat Recovery Policy, as presented in the report dated March 2, 2021, titled "Liquid Waste Heat Recovery Policy Amendments to Expand Opportunities for Sewer Heat Recovery"; and*
> *b) direct staff to work with GVS&DD members' staff to assess the range of options available for carbon accounting for liquid waste heat recovery projects; and if appropriate, develop a framework for allocation of carbon offset credits among the GVS&DD members; and report back to the GVS&DD Board by the end of 2021.*

The updated policy included the potential for GVS&DD investment in sewer heat projects considering the GHG emission benefits of the projects.

On May 28, 2021, the GVS&DD Board approved proceeding with development of a district energy system for the Waste-to-Energy Facility that will serve River District in Vancouver along with developments in Burnaby and potentially New Westminster.

This report proposes replacement of the *Liquid Waste Heat Recovery Policy* with an overarching *Sewage and Waste: Heat Recovery Policy* for liquid waste and Waste-to-Energy Facility projects consistent with the *Carbon Price Policy.* The proposed policy supports maximizing energy recovery and GHG emission reduction by offsetting fossil fuel use.

SEWAGE AND WASTE: HEAT RECOVERY POLICY

The purpose of the proposed *Sewage and Waste: Heat Recovery Policy* is to facilitate maximizing heat recovery from the region's liquid waste and solid waste systems. The proposed *Sewage and Waste: Heat Recovery Policy* is attached to this report.

Liquid Waste and Waste-to-Energy Facility Heat Recovery Opportunity

There is enough excess heat energy in the liquid waste collection system to heat 100,000 homes throughout the region, which could reduce GHG emissions by nearly 250,000 tonnes per year. An agreement is in place to provide heat to Lonsdale Energy Corporation, a capital contribution toward the Sapperton District sewer heat project has been approved by the Board, and several additional sewer heat recovery projects are under development or assessment.

The Waste-to-Energy Facility currently generates approximately 20 MW of electricity, sufficient for 16,000 homes. Developing a district energy system in addition to continuing to generate electricity will triple the energy recovery efficiency for the facility compared to electricity generation alone. The Waste-to-Energy Facility district energy system will provide heat and hot water for up to 30,000 homes and reduce GHG emissions by up to 45,000 tonnes per year. An agreement is in place with River District Energy in Vancouver to substitute Waste-to-Energy Facility waste heat for natural gas to provide heat and hot water for the development. Agreements are being negotiated with Vancouver and Burnaby to facilitate access to municipal streets, and in the case of Burnaby to provide energy for district energy systems for developments in Burnaby.

The total emission reduction potential of liquid waste system projects and the Waste-to-Energy Facility district energy system projects equate to the emissions of approximately the annual emissions of 60,000 passenger vehicles.

***Sewage and Waste: Heat Recovery Policy* Elements**

Greenhouse Gas Emission Reduction Calculation: Member jurisdictions have different policies in place with respect to green building requirements. To allow a standardized approach for GHG emission reduction calculations the proposed *Sewage and Waste: Heat Recovery Policy* establishes a baseline for GHG emission reduction calculations as the Provincial regulatory standard for building construction. On that basis, the current baseline for calculating GHG emission reductions would be natural gas heating.

Environmental Attributes: Given the different green building policies in the region, GHG emission reduction credits may vary between projects. To ensure GVS&DD investment can be provided equitably in all member jurisdictions, the amount of GHG emission reduction credits generated by a project will not be a criterion for determining investment in projects. In the event there are GHG emission reduction credits generated by a project, those credits will be allocated between GVS&DD and the other project participants based on financial and non-financial contributions to the project, with the allocation being subject to Board approval as part of any agreement with those parties.

For credits allocated to Metro Vancouver, those credits will be used for the GVS&DD to attain carbon neutrality with any residual credits distributed to member jurisdictions based on population.

Application of Carbon Price Policy: The proposed *Sewage and Waste: Heat Recovery Policy* allows for investment in projects with the maximum investment determined by the *Carbon Price Policy*. Investment would be limited such that the cost to the consumer would not be reduced below the least expensive alternative allowed under Provincial regulatory requirements – currently natural gas.

***Sewage and Waste: Heat Recovery Policy* Implementation Examples:** Under the proposed *Sewage and Waste: Heat Recovery Policy*, GVS&DD capital investments in sewer heat projects would be calculated based on the *Carbon Price Policy*, with heat users paying all operating and maintenance costs. For the Waste-to-Energy District Energy system, GVS&DD would provide heat to member district energy systems with pricing based on natural gas prices with the maximum GVS&DD investment based on the *Carbon Price Policy*.

Municipal Staff Advisory Committee Engagement

An original draft of the policy was provided to municipal staff advisory committees including the Regional Engineers Advisory Committee and the Regional Administrators Advisory Committee. The proposed *Sewage and Waste: Heat Recovery Policy* includes suggestions provided by those committees.

ALTERNATIVES

1. That the GVS&DD Board approve the proposed *Sewage and Waste: Heat Recovery Policy*, as presented in the report dated July 5, 2022, titled “Sewage and Waste: Heat Recovery Policy”.

2. That the Liquid Waste and Zero Waste Committees receive for information the report dated July 5, 2022, titled " Sewage and Waste: Heat Recovery Policy" and provide alternate direction to staff.

FINANCIAL IMPLICATIONS

If the Board approves Alternative 1, Metro Vancouver will negotiate agreements for the recovery of waste heat with member jurisdictions consistent with the new policy. Each agreement will be negotiated based on business casing considering the benefit of GHG emission reductions. If Provincial regulatory requirements change or if the price of natural gas increases, future agreements will be based on the new baseline conditions as determined by Provincial regulatory requirements.

CONCLUSION

Metro Vancouver's *Climate 2050* strategy includes targets for regional GHG reductions of 45% by 2030 compared to 2010 levels, and a carbon neutral region by 2050. The proposed *Sewage and Waste: Heat Recovery Policy* supports capital funding for projects that recover energy from liquid and solid waste systems for building heat and hot water. These projects reduce greenhouse gas emissions by offsetting the use of fossil fuels. The policy will replace the *Liquid Waste Heat Recovery Policy*. Staff recommend Alternative 1.

Attachments

1. Proposed *Sewage and Waste: Heat Recovery Policy* (blackline version)
2. Proposed *Sewage and Waste: Heat Recovery Policy* (clean version)

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SERVICES AND SOLUTIONS FOR A LIVABLE REGION

~~LIQUID~~ SEWAGE AND WASTE: ~~HEAT RECOVERY~~HEAT RECOVERY

Effective Date: June 23, 2017 (revised ~~March 26, 2021~~July 29, 2022)
Approved By: GVS&DD Board

Policy No. UT-008

PURPOSE

To ~~enable~~encourage beneficial use of waste heat from Metro Vancouver's liquid waste and ~~associated~~solid waste systems, and maximize greenhouse gas emission reductions ~~from Metro Vancouver's liquid waste system~~ by ~~external parties~~using the heat to displace fossil fuel use.

DEFINITIONS

"Waste heat" is excess heat that is available from GVS&DD operations, including but not limited to heat from untreated sewage, treated effluent, ~~equipment or processes~~and municipal solid waste processing.

"Heat user" is a third party interested in accessing excess heat from GVS&DD's liquid waste ~~system.~~or solid waste systems. A heat user may be a member ~~municipality~~jurisdiction or other entity.

POLICY

Metro Vancouver is committed to pursuing strategies and actions that mitigate climate change. Waste heat recovery projects that displace the use of fossil fuels result in a reduction in regional greenhouse gas emissions. Recovering waste heat from the liquid waste ~~system contributes~~and solid waste systems contribute to GVS&DD's *Integrated Liquid Waste and Resource Management Plan* ~~goal~~and *Integrated Solid Waste and Resource Management Plan* goals of using waste as a resource.

This policy enables expedient access to waste heat where technically and financially feasible, while ensuring that GVS&DD is able to convey and ~~treat~~process wastewater and municipal solid waste and meet all service objectives. This policy applies to situations where external parties request waste heat from GVS&DD's liquid waste ~~system~~or solid waste systems and to situations where GVS&DD offers waste heat to interested external parties.

LIQUID WASTE COLLECTION SYSTEM PROJECTS

Allocation of Waste Heat

GVS&DD will allocate access to untreated sewage for heat recovery on a first-come first-served basis in response to requests by interested heat users, provided the proposed heat recovery project will not adversely impact GVS&DD services or other established heat recovery projects, as determined by GVS&DD review. If an established heat recovery project that is already in place or approved for development by GVS&DD could be impacted by a proposed new heat recovery project, the established project's heating and/or cooling requirements will have priority. Private entities requesting access to waste heat must provide a letter of support from the host ~~municipality~~member jurisdiction demonstrating support and cooperation including allowance for works within municipal rights of way. Projects that access heat from municipal sewers do not require GVS&DD approval.

Ownership and Responsibilities

GVS&DD owns a sewerage system and is responsible for sewage in its liquid waste system, including any associated resources such as heat. The boundaries of responsibility for heat recovery equipment and infrastructure ~~are primarily tied to property ownership and~~ will be defined in a contract between GVS&DD and the heat user. GVS&DD will in all situations own and be responsible for the portion of the tie-in up to and including a shut-off valve on both the diversion and return lines~~.~~, and may also own and maintain additional supporting infrastructure. GVS&DD will consider an in-line heat recovery system built directly in a GVS&DD sewer if the system will not impair GVS&DD operations.

Cost Recovery

GVS&DD will charge the heat user for all costs incurred to establish and maintain access to sewage. The value of sewage will be assessed using business case processes, including consideration of nominal value of sewage, and incorporated into sewage access contracts. GVS&DD may consider capital investment in heat recovery projects accessing sewage from GVS&DD infrastructure. GVS&DD staff will evaluate heat recovery projects using established life cycle cost analysis and options analysis frameworks and will consider each project on a case-by-case basis. Benefits will include the value of avoided greenhouse gas emissions. ~~GVS&DD does not seek to profit from the provision of heat.~~ A contract with the heat user will be established for each project that assigns the costs and benefits between GVS&DD, the heat user and other funding sources.

All maintenance and operating costs borne by GVS&DD from GVS&DD infrastructure will be recovered from ~~energy purchasers~~heat users.

LIQUID WASTE TREATMENT PLANT AND OUTFALL PROJECTS

Allocation of Waste Heat

When GVS&DD identifies waste heat opportunities in wastewater treatment plants and effluent outfalls, GVS&DD will follow competitive processes in offering available waste heat to potential heat users, to ensure fairness and transparency.

Ownership and Responsibilities

The boundaries of responsibility for heat recovery equipment and infrastructure are primarily tied to property ownership and will be defined in a contract between GVS&DD and the heat user. GVS&DD will own and be responsible for waste heat recovery equipment and related infrastructure installed within its wastewater treatment plants and effluent outfalls, except in cases where ownership by an external party is deemed preferable to the GVS&DD.

Cost Recovery

Heat recovery projects within wastewater treatment plants and effluent outfalls will require capital investment by GVS&DD and will require ongoing operations and maintenance by GVS&DD. ~~GVS&DD will recover the costs incurred in providing waste heat to external parties over the life of the project. GVS&DD does not seek to profit from the provision of heat.~~GVS&DD staff will evaluate heat recovery projects using established life cycle cost analysis and options analysis frameworks and will consider each project on a case-by-case basis. Benefits will include the value of avoided greenhouse gas emissions. A contract with the heat user will be established for each project that assigns the costs and benefits between GVS&DD, the heat user and other funding sources.

SOLID WASTE PROJECTS - WASTE-TO-ENERGY FACILITY

Ownership and Responsibilities

The GVS&DD is developing a district energy system to distribute heat from the Waste-to-Energy Facility. GVS&DD expects to deliver heat to local distribution systems including River District in Vancouver and various developments in Burnaby and potentially New Westminster. GVS&DD expects to own and operate an energy centre at the Waste-to-Energy Facility, and potentially large scale distribution piping delivering heat to the local distribution systems as well.

Allocation of Heat

Heat will be allocated to potential users on a first-come first served basis considering proximity to heat distribution infrastructure and expected heat user load. Modelling of potential heat demand has demonstrated that there is sufficient waste heat available from the Waste-to-Energy Facility to connect River District, Metrotown, Edmonds, and downtown New Westminster.

Cost Recovery

The Waste-to-Energy Facility District Energy system will require capital investment by GVS&DD and will require ongoing operations and maintenance by GVS&DD. GVS&DD staff will evaluate heat recovery projects using established life cycle cost analysis and options analysis frameworks and will consider each project on a case-by-case basis. Benefits will include the value of avoided greenhouse gas emissions. Anticipated lost revenue resulting from any reduction in electricity sales revenue will be included in any business case. A contract with the heat user will be established for each project that assigns the costs and benefits between GVS&DD, the heat user and other funding sources.

ALL PROJECTS

Environmental Attributes

Benefits associated with avoided greenhouse gas ~~reductions~~emissions (such as carbon ~~offset~~ credits) and the costs of administering those benefits will be allocated on a case-by-case basis, in accordance with the costs and risks incurred by the parties involved in developing the heat recovery project. If a project does not create carbon credits, credits will not be allocated.

~~Carbon credits~~GVS&DD will ~~be allocated to the~~negotiate carbon credit allocation with each project participant (including host member jurisdiction ~~as~~) on a ~~project proponent for~~case-by-case basis, based on one or more of (1) contributions to the project that can be financially valued (~~other than Tier 1~~excluding contributions paid as part of GVS&DD liquid waste disposal fees and ~~2 cost apportionments). In recognition of the important role of the host~~levies or solid waste tipping fees) and ~~of impacts~~(2) contributions to the project that cannot be ~~valued~~ financially~~, the host jurisdiction will receive 5% of the~~ valued. GVS&DD credits allocated to ~~GVS&DD, for the initial term of the~~the project participants will be subject to approval by the GVS&DD Board as part of any agreement ~~for~~with the ~~sale of heat~~parties.

Carbon credits from GVS&DD ~~emissions reduction~~waste heat recovery projects that have been allocated to GVS&DD as a project proponent will be retained by GVS&DD, up to the amount needed

for GVS&DD to be carbon neutral in a given year. If GVS&DD achieves carbon neutrality in a given year, excess carbon credits will be transferred to member jurisdictions. The distribution of excess carbon credits among member jurisdictions will be calculated based on ~~capital contribution to~~BC Stats population estimates for the ~~portfolio of GVS&DD liquid waste heat recovery emissions reduction projects.~~previous year. Calculated excess carbon credit distributions less than one tonne will not be transferred~~, but will instead be redistributed among the other member jurisdictions~~.

Life Cycle Cost Analysis Parameters

In determining the quantity of avoided greenhouse gas emissions, GVS&DD will compare greenhouse gas emissions based on Provincial regulatory requirements to greenhouse gas emissions based on the proposed sewer heat or Waste-to-Energy Facility district energy system. On this basis, greenhouse gas emission reductions for a project will be calculated by comparing the emissions following implementation of the project to the emissions assuming building heat and hot water were provided using the lowest cost alternative based on Provincial regulatory requirements – currently natural gas.

GVS&DD's will invest in projects based on the difference between the life cycle project revenues and combination of capital and operational costs of a waste heat recovery project. The investment will be the lower of the value of the avoided greenhouse gas emissions based on Metro Vancouver's *Carbon Price Policy* or the amount required for the end-user of the heat's costs to not exceed their costs using the least expensive option under Provincial regulations – currently natural gas.

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SERVICES AND SOLUTIONS FOR A LIVABLE REGION

SEWAGE AND WASTE: HEAT RECOVERY

Effective Date: June 23, 2017 (revised July 29, 2022)

Approved By: GVS&DD Board

Policy No. UT-008

PURPOSE

To encourage beneficial use of waste heat from Metro Vancouver's liquid waste and solid waste systems, and maximize greenhouse gas emission reductions by using the heat to displace fossil fuel use.

DEFINITIONS

"Waste heat" is excess heat that is available from GVS&DD operations, including but not limited to heat from untreated sewage, treated effluent, and municipal solid waste processing.

"Heat user" is a third party interested in accessing excess heat from GVS&DD's liquid waste or solid waste systems. A heat user may be a member jurisdiction or other entity.

POLICY

Metro Vancouver is committed to pursuing strategies and actions that mitigate climate change. Waste heat recovery projects that displace the use of fossil fuels result in a reduction in regional greenhouse gas emissions. Recovering waste heat from the liquid waste and solid waste systems contribute to GVS&DD's *Integrated Liquid Waste and Resource Management Plan* and *Integrated Solid Waste and Resource Management Plan* goals of using waste as a resource.

This policy enables expedient access to waste heat where technically and financially feasible, while ensuring that GVS&DD is able to convey and process wastewater and municipal solid waste and meet all service objectives. This policy applies to situations where external parties request waste heat from GVS&DD's liquid waste or solid waste systems and to situations where GVS&DD offers waste heat to interested external parties.

LIQUID WASTE COLLECTION SYSTEM PROJECTS

Allocation of Waste Heat

GVS&DD will allocate access to untreated sewage for heat recovery on a first-come first-served basis in response to requests by interested heat users, provided the proposed heat recovery project will not adversely impact GVS&DD services or other established heat recovery projects, as determined by GVS&DD review. If an established heat recovery project that is already in place or approved for development by GVS&DD could be impacted by a proposed new heat recovery project, the established project's heating and/or cooling requirements will have priority. Private entities requesting access to waste heat must provide a letter of support from the host member jurisdiction demonstrating support and cooperation including allowance for works within municipal rights of way. Projects that access heat from municipal sewers do not require GVS&DD approval.

Ownership and Responsibilities

GVS&DD owns a sewerage system and is responsible for sewage in its liquid waste system, including any associated resources such as heat. The boundaries of responsibility for heat recovery equipment and infrastructure will be defined in a contract between GVS&DD and the heat user. GVS&DD will in all situations own and be responsible for the portion of the tie-in up to and including a shut-off valve on both the diversion and return lines, and may also own and maintain additional supporting infrastructure. GVS&DD will consider an in-line heat recovery system built directly in a GVS&DD sewer if the system will not impair GVS&DD operations.

Cost Recovery

GVS&DD will charge the heat user for all costs incurred to establish and maintain access to sewage. The value of sewage will be assessed using business case processes, including consideration of nominal value of sewage, and incorporated into sewage access contracts. GVS&DD may consider capital investment in heat recovery projects accessing sewage from GVS&DD infrastructure. GVS&DD staff will evaluate heat recovery projects using established life cycle cost analysis and options analysis frameworks and will consider each project on a case-by-case basis. Benefits will include the value of avoided greenhouse gas emissions. A contract with the heat user will be established for each project that assigns the costs and benefits between GVS&DD, the heat user and other funding sources.

All maintenance and operating costs borne by GVS&DD from GVS&DD infrastructure will be recovered from heat users.

LIQUID WASTE TREATMENT PLANT AND OUTFALL PROJECTS

Allocation of Waste Heat

When GVS&DD identifies waste heat opportunities in wastewater treatment plants and effluent outfalls, GVS&DD will follow competitive processes in offering available waste heat to potential heat users, to ensure fairness and transparency.

Ownership and Responsibilities

The boundaries of responsibility for heat recovery equipment and infrastructure are primarily tied to property ownership and will be defined in a contract between GVS&DD and the heat user. GVS&DD will own and be responsible for waste heat recovery equipment and related infrastructure installed within its wastewater treatment plants and effluent outfalls, except in cases where ownership by an external party is deemed preferable to the GVS&DD.

Cost Recovery

Heat recovery projects within wastewater treatment plants and effluent outfalls will require capital investment by GVS&DD and will require ongoing operations and maintenance by GVS&DD. GVS&DD staff will evaluate heat recovery projects using established life cycle cost analysis and options analysis frameworks and will consider each project on a case-by-case basis. Benefits will include the value of avoided greenhouse gas emissions. A contract with the heat user will be established for each project that assigns the costs and benefits between GVS&DD, the heat user and other funding sources.

SOLID WASTE PROJECTS - WASTE-TO-ENERGY FACILITY

Ownership and Responsibilities

The GVS&DD is developing a district energy system to distribute heat from the Waste-to-Energy Facility. GVS&DD expects to deliver heat to local distribution systems including River District in Vancouver and various developments in Burnaby and potentially New Westminster. GVS&DD expects to own and operate an energy centre at the Waste-to-Energy Facility, and potentially large scale distribution piping delivering heat to the local distribution systems as well.

Allocation of Heat

Heat will be allocated to potential users on a first-come first served basis considering proximity to heat distribution infrastructure and expected heat user load. Modelling of potential heat demand has demonstrated that there is sufficient waste heat available from the Waste-to-Energy Facility to connect River District, Metrotown, Edmonds, and downtown New Westminster.

Cost Recovery

The Waste-to-Energy Facility District Energy system will require capital investment by GVS&DD and will require ongoing operations and maintenance by GVS&DD. GVS&DD staff will evaluate heat recovery projects using established life cycle cost analysis and options analysis frameworks and will consider each project on a case-by-case basis. Benefits will include the value of avoided greenhouse gas emissions. Anticipated lost revenue resulting from any reduction in electricity sales revenue will be included in any business case. A contract with the heat user will be established for each project that assigns the costs and benefits between GVS&DD, the heat user and other funding sources.

ALL PROJECTS

Environmental Attributes

Benefits associated with avoided greenhouse gas emissions (such as carbon credits) and the costs of administering those benefits will be allocated on a case-by-case basis, in accordance with the costs and risks incurred by the parties involved in developing the heat recovery project. If a project does not create carbon credits, credits will not be allocated.

GVS&DD will negotiate carbon credit allocation with each project participant (including host member jurisdiction) on a case-by-case basis, based on one or more of (1) contributions to the project that can be financially valued (excluding contributions paid as part of GVS&DD liquid waste disposal fees and levies or solid waste tipping fees) and (2) contributions to the project that cannot be financially valued. GVS&DD credits allocated to the project participants will be subject to approval by the GVS&DD Board as part of any agreement with the parties.

Carbon credits from GVS&DD waste heat recovery projects that have been allocated to GVS&DD as a project proponent will be retained by GVS&DD, up to the amount needed for GVS&DD to be carbon neutral in a given year. If GVS&DD achieves carbon neutrality in a given year, excess carbon credits will be transferred to member jurisdictions. The distribution of excess carbon credits among member jurisdictions will be calculated based on BC Stats population estimates for the previous year. Calculated excess carbon credit distributions less than one tonne will not be transferred.

Life Cycle Cost Analysis Parameters

In determining the quantity of avoided greenhouse gas emissions, GVS&DD will compare greenhouse gas emissions based on Provincial regulatory requirements to greenhouse gas emissions based on the proposed sewer heat or Waste-to-Energy Facility district energy system. On this basis, greenhouse gas emission reductions for a project will be calculated by comparing the emissions following implementation of the project to the emissions assuming building heat and hot water were provided using the lowest cost alternative based on Provincial regulatory requirements – currently natural gas.

GVS&DD's will invest in projects based on the difference between the life cycle project revenues and combination of capital and operational costs of a waste heat recovery project. The investment will be the lower of the value of the avoided greenhouse gas emissions based on Metro Vancouver's *Carbon Price Policy* or the amount required for the end-user of the heat's costs to not exceed their costs using the least expensive option under Provincial regulations – currently natural gas.

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 2100[1]. 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 IIWWTP 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 IIWWTP 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

52296351

To: Liquid Waste Committee

From: Roy Moulder, Director Procurement, Procurement and Real Estate Services
Joan Liu, Division Manager, Collection Systems, Engineering Design and Construction, Liquid Waste Services

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

Subject: **Award of a Contract Resulting from Request for Proposal No. 22-006: Construction of Gilbert Trunk Sewer No.2 Gilbert Road South Section**

RECOMMENDATION

That the GVS&DD Board:

a) approve award of a contract in the amount of up to $39,856,650 (exclusive of taxes) to Jacob Brothers Construction Inc., resulting from Request for Proposal No. 22-006: Construction of Gilbert Trunk Sewer No.2 Gilbert Road South Section, subject to final review by the Commissioner; and
b) authorize the Commissioner and the Corporate Officer to execute the required documentation once the Commissioner is satisfied that award should proceed.

EXECUTIVE SUMMARY

A Request for Proposals No. 22-006, was issued in February 2022 for construction of the Gilbert Trunk Sewer No.2 Gilbert Road South Section. Jacob Brothers Construction Inc. was identified as the highest ranked proponent. It is recommended that the GVS&DD Board authorize the award of a Contract for Construction of the Gilbert Trunk Sewer No.2 Gilbert Road South Section, in an amount of $39,856,650 (exclusive of taxes) to Jacob Brothers Construction Inc. and authorize the Commissioner and the Corporate Officer to execute the required documentation.

PURPOSE

This report is to advise the GVS&DD Board of the results of Request for Proposal (RFP) No. 22-006: Gilbert Trunk Sewer No.2 Gilbert Road South Section and to recommend award of the contract in the amount of up to $39,856,650 (exclusive of taxes) to Jacob Brothers Construction Inc. (Jacob Brothers).

BACKGROUND

Pursuant to the *GVS&DD Officers and Delegation Bylaw. No. 284, 2014* (Bylaw) and the *Procurement and Real Property Contracting Authority Policy* (Policy), procurement contracts which exceed a value of $5 million require the approval of the Board of Directors.

PROJECT DESCRIPTION

The 10km long Gilbert Trunk Sewer (GTS) that services the majority of the City of Richmond is in a state of corrosion and in need of repair. A high level of maintenance is also required to address significant build-up of grease and dirt, which reduces pipe capacity. In order to facilitate future repairs and more efficient maintenance and meet the long term capacity need in the City of Richmond, it is necessary to construct the Gilbert Trunk Sewer No.2 (GTS2).

The GTS2 project was divided into four phases. The construction of GTS2 Phases 1 and 2 is complete, and both phases are now in service. The design of GTS2 Phases 3 and 4 (Central and South sections respectively) is complete, and Phases 3 and 4 are ready for construction.

EVALUATION

As a result of Request for Qualifications (RFQ) No. 21-244: Construction of the Gilbert Trunk Sewer No.2 Gilbert Road (Central and South Sections) five (5) experienced contractors were shortlisted and invited to respond to RFP No. 22-006. The RFP competition closed on April 21, 2022 and four (4) compliant submissions were received, as shown in Table 1. RFP 22-006 for Construction of the Gilbert Road No.2 Gilbert Road South Section was issued in February 2022.

Table 1: Proposal Submission Pricing

Proponent	Proposed Fee (exclusive of taxes)
Jacob Brothers Construction	$39,856,650
Clearway Construction	$40,377,900
Hall Constructors	$48,941,600
JJM Construction	$54,502,590

Proposals were evaluated based on 50% technical and 50% financial. The technical component of the proposals was evaluated by staff within the Liquid Waste Department and supporting external consultants and the financial component was evaluated by staff within the Procurement Division.

Jacob Brothers' submission illustrated strong experience of working in similar conditions. Jacob Brothers, along with their joint venture partner successfully completed the earlier Phase 2 of this project in 2021.

As is allowed for within the competition documents, negotiations were conducted with Jacob Brothers, as the highest ranked proponent. The negotiations confirmed that shoring methodology is the contractor's responsibility based on existing pipe restoration details, groundwater drawdown analysis and concrete pipe joint deflection limits. The contract value after negotiation remains unchanged at $39,856,650 (exclusive of taxes).

ALTERNATIVES

1. That the GVS&DD Board:
    2. approve award of a contract in the amount of up to $39,856,650 (exclusive of taxes) to Jacob Brothers Construction Inc., resulting from Request for Proposal No. 22-006: Construction of Gilbert Trunk Sewer No.2 Gilbert Road South Section, subject to final review by the Commissioner; and
    3. authorize the Commissioner and the Corporate Officer to execute the required documentation once the Commissioner is satisfied that award should proceed.

2. That the GVS&DD Board terminate Request for Proposal No. 22-006: Construction of Gilbert Trunk Sewer No.2 Gilbert Road South Section and direct staff to report back to the GVS&DD Board with options for an alternate course of action.

FINANCIAL IMPLICATIONS

If the GVS&DD Board approves Alternative 1, a contract will be awarded to Jacob Brothers Construction Inc. for the amount of $39,856,650 (exclusive of taxes) to complete the south section. This amount is within the budget allocated for this project and comes in under the engineer's estimate for the work.

The GVS&DD Board has the choice to not proceed with Alternative 1, but staff will need further direction in relation to completion of the project. Alternative 2 will result in a delay in construction of the GTS2 South Section which would potentially result in damage to the environment due to sanitary sewer overflows and incur higher construction costs in future.

CONCLUSION

A Request for Proposals No. 22-006 was issued in February 2022 for Construction of the Gilbert Trunk Sewer No.2 Gilbert Road South Section and Jacob Brothers Construction Inc. was identified as the highest ranked proponent. Based on the evaluations of the proposals, it is recommended that the GVS&DD Board authorize the award of a contract resulting from RFP No. 22-006 for the Construction of Gilbert Trunk Sewer No.2 Gilbert Road South Section, in an amount of up to $39,856,650, to Jacob Brothers Construction Inc. and authorize the Commissioner and the Corporate Officer to execute the required documentation.

Attachment

Gilbert Road Sewer Project Construction Phases

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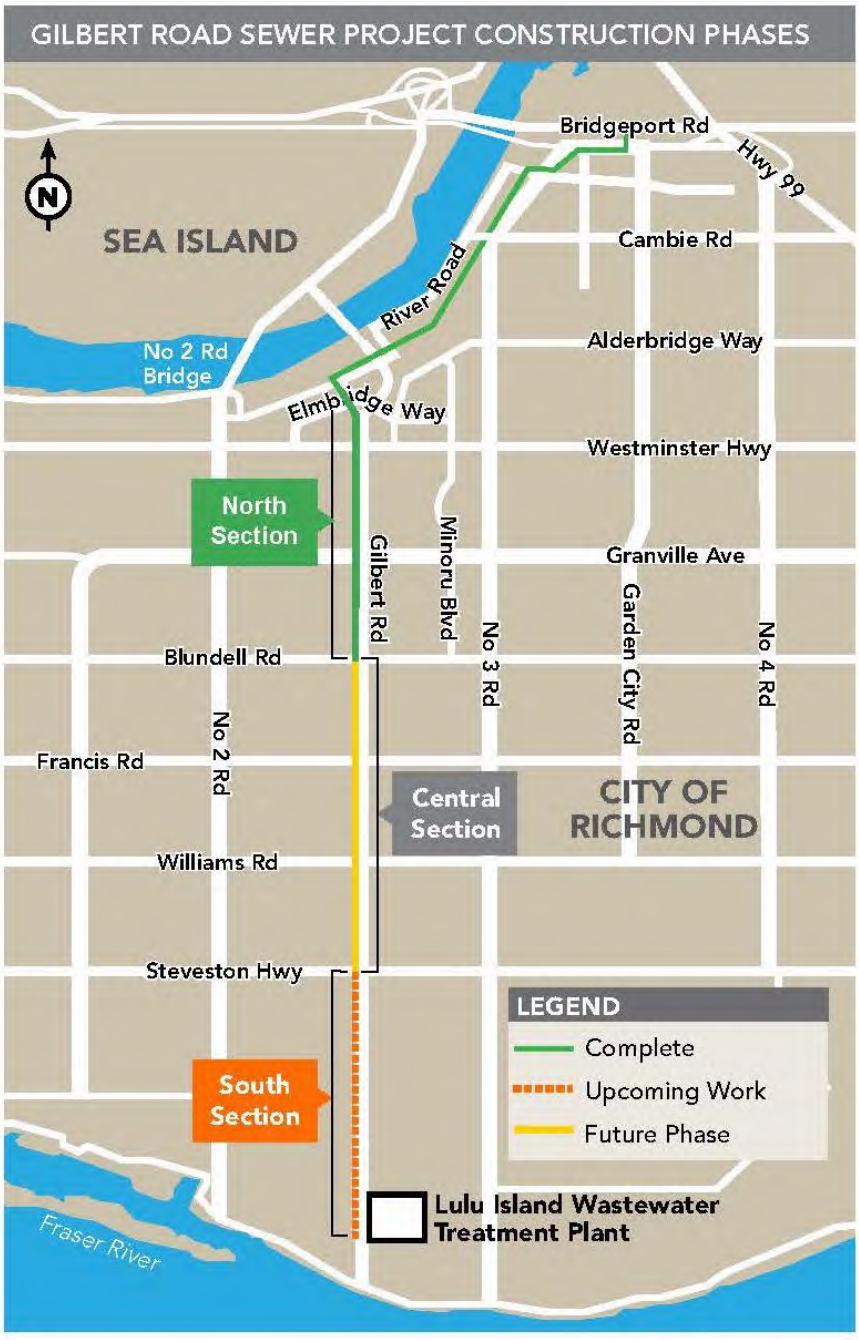
Gilbert Road Sewer Project Construction Phases



To: Liquid Waste Committee

From: Peter Navratil, General Manager, Liquid Waste Services

Date: June 27, 2022 Meeting Date: July 13, 2022

Subject: **Manager's Report**

RECOMMENDATION
That the Liquid Waste Committee receive for information the report dated June 27, 2022 titled "Manager's Report".

1. North Shore Wastewater Treatment Plant Update

At the treatment plant site, PCL, the new designated Prime Contractor for the project, is completing field assessments and laser scanning of existing structures to identify work required to make all areas accessible and safe. They are also providing project plans and reviewing the early works contract and scope in order to inform the development of a cost estimate. Further, they have initiated contact with some previous process equipment vendors to negotiate agreements for the project.

Meanwhile, Metro Vancouver is negotiating permits and property rentals for construction use (e.g. parking and laydown). This includes conducting meetings with District of North Vancouver staff regarding permitting, construction and development coordination, and repairs to the Philip Avenue Overpass. AECOM, the project's design engineer, continues to progress with development of the design, and is providing several design packages for early works.

In June 2022, Metro Vancouver took the next steps in our legal process with Acciona, filing a response to Acciona's claim and issuing a counterclaim against Acciona and related companies, regarding the termination of the contract to design and build the North Shore Wastewater Treatment Plant. Metro Vancouver remains confident that the decision to terminate was justified.

2. Liquid Waste Services Capital Program Expenditures Update as at June 30, 2022

Liquid Waste Services, in collaboration with Financial Services and the Project Management Office are in the process of updating the format and presentation of the Capital Expenditure Update. This will bring alignment to this reporting and Project Delivery Capital Portfolio Update currently being presented to this Committee. These will be provided Quarterly beginning in the Fall of 2022.

For the Committee's information, the below table provides a brief update on Liquid Waste capital expenditures for the first 6 months of 2022 as compared to budgeted expenditures over the same period

2022 Capital Spending Summary For the 6 months ending June 30, 2022	Year to Date		
	2022 Budget to June 2022	Actual Expenditures	% of Prorated Budget
Liquid Waste Services			
Collections	93,670,000	16,119,199	
Treatment Plants	296,558,000	99,388,750	
	390,228,000	**115,507,950**	**30%**

The underspend is due to a variety of factors, including delays in tendering works or initiating construction, Covid-19 induced delays, protracted property negotiations and permitting delays. In addition, the North Shore Secondary Wastewater Treatment Plant project was previously forecasted to have milestone payments in 2022, however the contract has been terminated.

3. Metro Vancouver/UBC Collaborative Research Project Highlighted in EGBC Magazine

Metro Vancouver engineering staff are collaborating with doctoral students and faculty at UBC on a pilot project for a new concrete coating material called multi-phase composite coating (MCC). MCC is a carbon-neutral, geopolymer coating with biocides that, when applied on sewer infrastructure, will resist bacterial attack, prevent further corrosion, and extend the infrastructure's service life. The coating was recently applied to the Tilbury Wastewater Junction Chamber near Annacis Island with excellent results. This innovative project was highlighted in the May-June 2022 edition of the Engineers and Geoscientists British Columbia – *Innovation* magazine (see Reference).

4. Liquid Waste Committee 2022 Work Plan

The updated 2022 Work Plan (Attachment) shows the status of the Committee's key priorities for the year.

Attachment
Liquid Waste Committee 2022 Work Plan

Reference
EGBC *Innovation* Magazine, Issue May-June 2022, pg 28

ATTACHMENT

Liquid Waste Committee 2022 Work Plan
Report Date: July 13, 2022

Priorities	
1st Quarter	**Status**
2021 Microfibres "The Ocean Thanks You" Campaign Results	Complete
2021 Fats, Oil and Grease Campaign Results	Complete
Northwest Langley Wastewater Treatment Plant Project Update	Complete
North Shore Wastewater Treatment Plant Project Update	Complete
Development Cost Charge Review Process and Rate Amending Bylaw	Complete
Iona Island Wastewater Treatment Plant Projects - Project Definition Engagement Results	Complete
Iona Island Wastewater Treatment Plant Projects - Project Definition and Conceptual Design	Complete
GVS&DD Trucked Liquid Waste Bylaw Amendment	Complete
2022 Liquid Waste - Sustainability Innovation Fund Applications	Complete
Municipal Requests for Sewerage Area Boundary Amendments (as applicable)	Complete
Utility Policies (as applicable)	Complete
Contract Approvals – Contracts > $5M (as applicable)	Complete
Project Delivery Capital Portfolio Update	Complete
Sewer and Effluent Heat Recovery Bylaw	Complete
Iona Island Land Tenure and License Agreements	Complete
Liquid Waste State of Assets Report	Complete
2nd Quarter	
Liquid Waste Services Capital Program Expenditures Update as at Dec 31, 2021	Complete
Integrated Liquid Waste and Resource Management Plan: Report on Phase 1	Complete
LWS Environmental Management System Policy	Complete
2022 Update on Liquid Waste Sustainability Innovation Fund Projects	Complete
2021 GVS&DD Environmental Management and Quality Control Annual Report	Complete
Liquid Waste Services Environmental Risk Management Report	Complete
Municipal Requests for Sewerage Area Boundary Amendments (as applicable)	Complete
Utility Policies (as applicable)	Complete
Contract Approvals – Contracts > $5M (as applicable)	Complete
3rd Quarter	
Liquid Waste Services Capital Program Expenditures Update as at April 30, 2022	In Progress
Northwest Langley Wastewater Treatment Plant Project Design Update	In Progress
Proposed Capital Investment and Carbon Accounting Processes For Sewer Heat Recovery Projects	Cancelled
Liquid Waste Heat Recovery Policy	In Progress
2022 Unflushables Campaign Results	In Progress
Sustainability Innovation Fund Project Update	In Progress
Municipal Requests for Sewerage Area Boundary Amendments (as applicable)	In Progress
Utility Policies (as applicable)	In Progress
Contract Approvals – Contracts > $5M (as applicable)	In Progress

4th Quarter	Status
Liquid Waste Services Capital Program Expenditures Update as at August 31, 2022	Pending
Annual Budget & 5 Year Financial Plan - Liquid Waste	Pending
Annacis Outfall Construction Update	Pending
Drainage Areas Facility Policy	Pending
Estuary Management Program Update	Pending
Municipal Requests for Sewerage Area Boundary Amendments (as applicable)	Pending
Utility Policies (as applicable)	Pending
Contract Approvals – Contracts > $5M (as applicable)	Pending
Sewage Catchment Area (Rawn) Amendments	Deferred to 2023
Food Sector Bylaw Review	Deferred to 2023