metrovancouver
SERVICES AND SOLUTIONS FOR A LIVABLE REGION

METRO VANCOUVER REGIONAL DISTRICT
WATER COMMITTEE

MEETING

Wednesday, November 6, 2024
1:00 pm
28th Floor Committee room, 4515 Central Boulevard, Burnaby, British Columbia
Webstream available at https://www.metrovancouver.org

A G E N D A[1]

A. ADOPTION OF THE AGENDA

1. November 6, 2024 Meeting Agenda
That the Water Committee adopt the agenda for its meeting scheduled for November 6, 2024 as circulated.

B. ADOPTION OF THE MINUTES

1. October 2, 2024 Meeting Minutes *pg. 3*
That the Water Committee adopt the minutes of its meeting held October 2, 2024 as circulated.

C. DELEGATIONS

D. INVITED PRESENTATIONS

E. REPORTS FROM COMMITTEE OR CHIEF ADMINISTRATIVE OFFICER

1. Summer 2024 Water Supply Performance *pg. 8*
That the Water Committee receive for information the report dated October 18, 2024, titled "Summer 2024 Water Supply Performance".

2. 2024 Water Conservation Communications and Public Outreach Results *pg. 14*
That the Water Committee receive for information the report dated October 18, 2024, titled "2024 Water Conservation Communications and Public Outreach Results".

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

3. Update on the Development of a Construction Impact Mitigation Framework *pg. 23*
That the GVWD/GVS&DD Board receive for information the report dated October 18, 2024, titled "Update on the Development of a Construction Impact Mitigation Framework".

4. Water Supply Tunnel Projects Updates *pg. 79*
That the Water Committee receive for information the report dated October 28, 2024, titled "Water Supply Tunnel Projects Updates".

5. Manager's Report *pg. 97*
That the Water Committee receive for information the report dated October 30, 2024, titled "Manager's Report".

F. INFORMATION ITEMS

1. Semi-Annual report on GVS&DD (Sewerage) and GVWD (Water) Development Cost Charges

2. Jericho Reservoir Phase 2 – Dissolution of Water Supply Agreements

G. OTHER BUSINESS

H. RESOLUTION TO CLOSE MEETING

I. ADJOURNMENT
That the Water Committee adjourn its meeting of November 6, 2024.

Membership:

Brodie, Malcolm (C) – Richmond
Sager, Mark (VC) – West Vancouver
Albrecht, Paul – Langley City
Bell, Don – North Vancouver City
Cassidy, Laura – sc̓əwaθən məsteyəxʷ (Tsawwassen First Nation)
Guichon, Alicia – Delta
Hodge, Craig – Coquitlam
Keithley, Joe – Burnaby
Little, Mike – North Vancouver District
MacDonald, Nicole – Pitt Meadows
Stutt, Rob – Surrey
vanPopta, Misty – Langley Township
Zhou, Lenny – Vancouver

METRO VANCOUVER REGIONAL DISTRICT
WATER COMMITTEE

Minutes of the Regular Meeting of the Metro Vancouver Regional District (MVRD) Water Committee held at 1:00 pm on Wednesday, October 2, 2024 in the 28th Floor Committee Room, 4515 Central Boulevard, Burnaby, British Columbia.

MEMBERS PRESENT:
Chair, Director Malcolm Brodie, Richmond
Vice Chair, Director Mark Sager, West Vancouver
Director Paul Albrecht, Langley City
Councillor Don Bell, North Vancouver City
Director Craig Hodge, Coquitlam*
Councillor Joe Keithley, Burnaby*
Mayor Mike Little, North Vancouver District*
Director Nicole MacDonald, Pitt Meadows
Director Rob Stutt, Surrey
Councillor Misty vanPopta, Langley Township (arrived at 1:01 pm)
Director Lenny Zhou, Vancouver*

*denotes electronic meeting participation as authorized by the *Procedure Bylaw*

MEMBERS ABSENT:
Director Laura Cassidy, sc̓əw̓aθən məsteyəxʷ (Tsawwassen First Nation)
Councillor Alicia Guichon, Delta

STAFF PRESENT:
Jerry W. Dobrovolny, Chief Administrative Officer/Commissioner
Marilyn Towill, General Manager, Water Services
Nikki Tilley, Legislative Services Supervisor, Board and Information Services
Harji Varn, Chief Financial Officer/General Manager, Financial Services

A. ADOPTION OF THE AGENDA

1. October 2, 2024 Meeting Agenda

It was MOVED and SECONDED
That the Water Committee:
a) amend the agenda for its meeting scheduled for October 2, 2024 by varying the order of the agenda to consider Item H before Item B; and
b) adopt the agenda as amended.

CARRIED

1:01 pm Councillor Misty vanPopta arrived.

The agenda was varied to consider item H next per the resolution in item A1.

H. RESOLUTION TO CLOSE MEETING

It was MOVED and SECONDED

That the Water Committee close its meeting scheduled for October 2, 2024 pursuant to section 226 (1) (a) of the *Local Government Act* and the *Community Charter* provisions as follows:

90 (1) A part of a council meeting may be closed to the public if the subject matter being considered relates to or is one or more of the following:

(e) the acquisition, disposition or expropriation of land or improvements, if the council considers that disclosure could reasonably be expected to harm the interests of the municipality;

(g) litigation or potential litigation affecting the municipality; and

(k) negotiations and related discussions respecting the proposed provision of a municipal service that are at their preliminary stages and that, in the view of the council, could reasonably be expected to harm the interests of the municipality if they were held in public.

CARRIED

The Water Committee meeting recessed the October 2, 2024 meeting at 1:02 pm.

The Water Committee reconvened the October 2, 2024 meeting at 1:12 pm with the same members in attendance.

Item C was before the committee.

C. DELEGATIONS

No items presented.

D. INVITED PRESENTATIONS

No items presented.

E. REPORTS FROM COMMITTEE OR CHIEF ADMINISTRATIVE OFFICER

1. 2025 – 2029 Financial Plan Overview

Report dated September 23, 2024 from Jerry Dobrovolny, Commissioner/Chief Administrative Officer and Harji Varn, General Manager, Financial Services/Chief Financial Officer, providing a presentation that introduced a high-level overview of the Metro Vancouver 2025-2029 budget.

Jerry W. Dobrovolny and Harji Varn provided members with a presentation titled "2025 – 2029 Financial Plan Overview" which outlined the budget communication and engagement, its major cost drivers, the overall household impact, and an overview of the proposed operating and capital 2025 – 2029 Financial Plan.

Members discussed projected debt servicing, operating and capital spending, and the forecast of average household impact.

The committee considered item B1 next.

B. ADOPTION OF THE MINUTES

1. September 4, 2024 Meeting Minutes

It was MOVED and SECONDED
That the Water Committee adopt the minutes of its meeting held September 4, 2024 as circulated.

CARRIED

The committee considered item E2 next.

E. REPORTS FROM COMMITTEE OR CHIEF ADMINISTRATIVE OFFICER

2. 2025 – 2029 Financial Plan – Water Services

Report dated September 19, 2024 from Marilyn Towill, General Manager, Water Services, providing an overview of the 2025 – 2029 Financial Plan for Water Services.

Marilyn Towill provided a members with a presentation titled "2025 – 2029 Financial Plan – Water Services" which outlined Water Services goals, continuous improvement, and the operating and capital budgets for 2025 – 2029. Marilyn Towill noted that 2024 was the 100th anniversary of the Greater Vancouver Water District.

Members discussed the importance of water conservation, planning for population growth, and future infrastructure needs.

It was MOVED and SECONDED
That the Water Committee endorse the 2025 – 2029 Financial Plan for Water Services as presented in the report dated September 19, 2024, titled "2025 - 2029 Financial Plan – Water Services", and forward it to the Metro Vancouver Board Budget Workshop on October 16, 2024 for consideration.

CARRIED
Mayor Little voted against.

3. Drinking Water Management Plan Update and Report on Phase 1 Engagement

Report dated September 16, 2024 from Vanessa Anthony, Director, Policy, Planning, and Analysis, Water Services, and Lena Zordan, Community Engagement Program Manager, External Relations, outlining the progress on updating the *Drinking Water Management Plan* and provide a summary on the Phase 1 engagement.

It was MOVED and SECONDED

That the GVWD Board receive for information the report dated September 16, 2024, titled "Drinking Water Management Plan Update and Report on Phase 1 Engagement."

CARRIED

4. Award of RFP 24-006A Component 1 – Program Management Services for the Coquitlam Lake Water Supply Project (CLWSP) and Consulting Engineering Services for the Treatment Pilot Testing Program

Report dated September 10, 2024 from George Kavouras, Director, Procurement and Real Estate Services, and Bob Cheng, Director, Major Projects, Project Delivery, seeking approval from the GVWD to award RFP 24-006A Component 1 – Program Management Services for the Coquitlam Lake Water Supply Project and Consulting Engineering Services for the Treatment Pilot Testing Program, in the amount of up to $74,512,561 (exclusive of taxes) to Jacobs Consultancy Canada Inc., for an initial term of six years, with options for two additional two-year terms.

It was MOVED and SECONDED

That the GVWD Board:

a) approve the award of RFP 24-006A Component 1 – Program Management Services for the CLWSP and Consulting Engineering Services for the Treatment Pilot Testing Program, in the amount of up to $74,512,561 (exclusive of taxes) to Jacobs Consultancy Canada Inc., for an initial term of six years, with options for two additional two-year terms, subject to final review by the Commissioner; and

b) authorize the General Manager, Procurement and Real Estate to execute the required documentation once the General Manager, Procurement and Real Estate is satisfied that the award should proceed.

CARRIED

5. Award of RFP 24-006B Component 2 – Program Management and Consulting Engineering Services for Coquitlam Main No. 4 Project

Report dated September 9, 2024 from George Kavouras, Director, Procurement and Real Estate Services, and Bob Cheng, Director, Major Projects, Project Delivery, seeking approval from the GVWD to award RFP 24-006B Component 2 – Program Management and Consulting Engineering Services for the Coquitlam Main No. 4 Project, in the amount of up to $17,424,401 (exclusive of taxes) to CIMA Canada Inc., for an initial term of five years, with an option for one additional four-year term.

It was MOVED and SECONDED

That the GVWD Board:

a) approve the award of RFP 24-006B Component 2 – Program Management and Consulting Engineering Services for Coquitlam Main No. 4 Project, in the amount of up to $17,424,401 (exclusive of taxes) to CIMA Canada Inc., for an initial term of five (5) years, with an option for one additional four-year term, subject to final review by the Commissioner; and

b) authorize the General Manager, Procurement and Real Estate to execute the required documentation once the General Manager, Procurement and Real Estate is satisfied that the award should proceed.

CARRIED

6. Manager's Report

Report dated September 25, 2024 from Marilyn Towill, General Manager, Water Services, providing updates on water services operations, water supply, and the Coquitlam Lake Water Supply Project.

It was MOVED and SECONDED

That the Water Committee receive for information the report dated September 25, 2024, titled "Manager's Report".

CARRIED

F. INFORMATION ITEMS

No items presented.

G. OTHER BUSINESS

No items presented.

H. RESOLUTION TO CLOSE MEETING

No items presented.

I. ADJOURNMENT

It was MOVED and SECONDED

That the Water Committee adjourn its meeting of October 2, 2024.

CARRIED

(Time: 2:26 pm)

Nikki Tilley,
Legislative Services Supervisor

Malcolm Brodie,
Chair

71058669

To: Water Committee

From: Vanessa Anthony, Director, Planning Policy and Analysis, Water Services
Daniel Roberge, Deputy General Manager, Operations, Water Services

Date: October 18, 2024 Meeting Date: November 6, 2024

Subject: **Summer 2024 Water Supply Performance**

RECOMMENDATION
That the Water Committee receive for information the report dated October 18, 2024, titled "Summer 2024 Water Supply Performance".

EXECUTIVE SUMMARY
The water supply system performed well during the 2024 high-demand season. Metro Vancouver experienced a low snowpack year due to a milder winter caused by the El Nino weather pattern, however the spring was relatively cool and wet, which allowed the snowpack to build at higher elevations, and slowed snow melt. The climate outlook called for drier and warmer summer weather and in preparation Metro Vancouver took proactive steps to manage the water supply by starting seasonal dam and reservoir operations earlier than usual to maximize the storage ahead of the dry season.

Overall, the water supply areas received near-normal precipitation for the period of May 1 to October 15, 2024. July and September were notably dry and warm, but June and August saw above average precipitation. As a result, daily and peak day demands were slightly lower in 2024 than in 2023.

PURPOSE
To provide the Water Committee with an overview of water use and water supply system performance during the 2024 high-demand season.

BACKGROUND
The report titled "Water Supply Update for Summer 2024" was provided to the Water Committee at the May 8, 2024 meeting ahead of the high demand season. The report included a summary of past trends in water use, the state of source water supply, plans for operating the source reservoirs ahead of the high demand season, as well as an update on the regional public education program in support of activating Stage 1 of the Drinking Water Conservation Plan (DWCP). As per the Committee's 2024 Work Plan, this report provides an overview of the performance of the regional water supply system during the high demand season and is based on data available from May 1 to October 15, 2024.

Metro Vancouver's reservoirs get filled every winter and spring by precipitation and snowmelt, and that water needs to last through the summer and into the fall. In 2024, Metro Vancouver's

snowpack was below historical average during the winter months however the region experienced more typical weather conditions through the summer. The water supply areas received near-normal precipitation for the period of May 1 to October 15 with a series of well-timed storms each month that benefitted the water supply areas by relieving local drought conditions and reducing wildfire danger.

OPERATING AND MANAGING THE RESERVOIRS

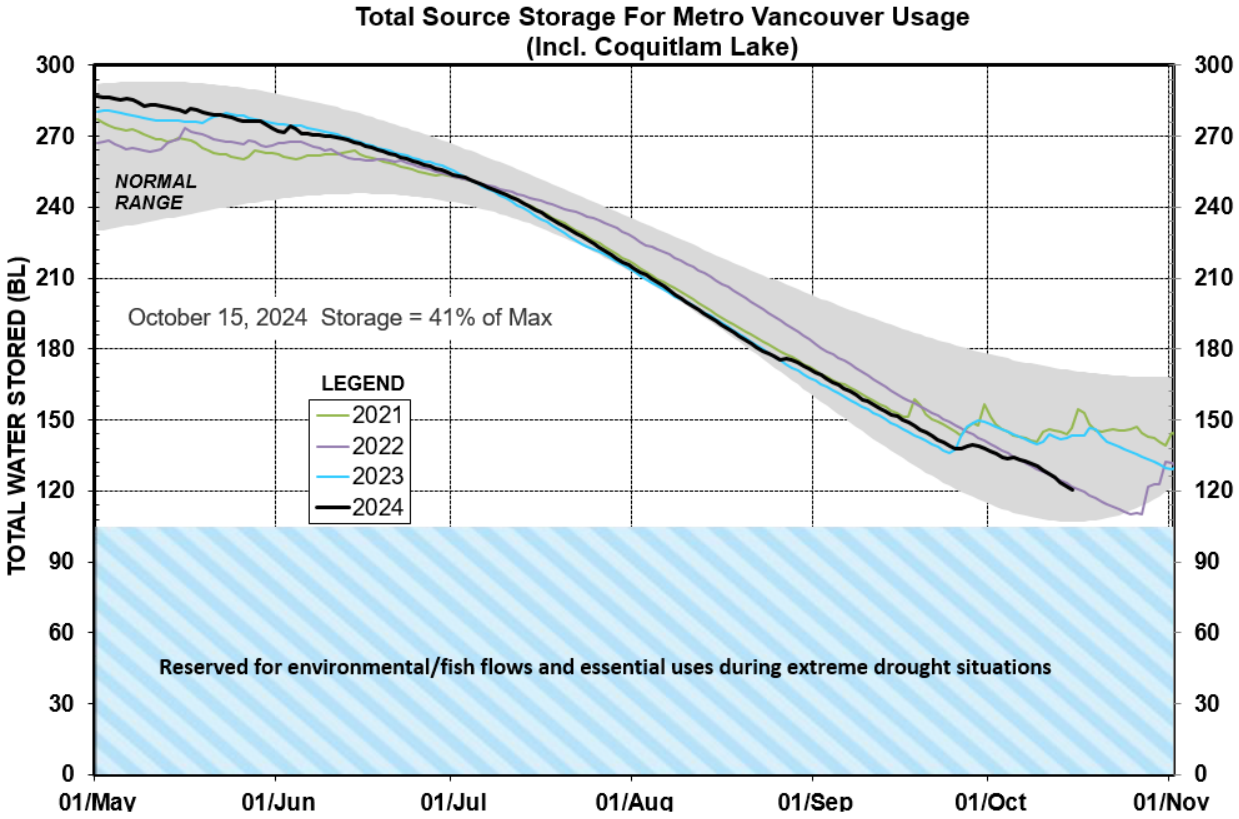
The source reservoirs were proactively managed through the spring and early summer to capture the incoming streamflow to ensure Capilano and Seymour Reservoirs reached their full pool water levels which happened on May 4 and June 14 respectively. By June 1, the snow survey measurements indicated that the snow water equivalent was at 33 percent of the historical average, but wetter than normal conditions enabled the reservoirs to retain full pool levels until late June.

Palisade Lake was opened on May 31 to supplement Capilano Reservoir and closed on July 17 for necessary maintenance work. Burwell Lake was opened on August 15, and Loch Lomond was opened on August 29 to supplement natural flows into Seymour Reservoir. Loch Lomond was closed on September 24 and Burwell closed on October 3.

Figure 1 illustrates that through the high-demand period when the regional drinking water use increases to over 1 billion litres per day, the total source storage levels were maintained within the normal range. The high volume of storage at the end of the spring can be attributed to increased inflow in the spring due to melting snowpack. Storage volumes started decreasing more rapidly in early July as the region experienced typical seasonal weather with high temperatures and minimal precipitation.

During this period of seasonal warm dry weather, and the resulting increased demands, the source reservoirs were managed to maintain a reliable water supply for the region by closely monitoring the overall system demands, river inflows, and system storage.

Figure 1 - Total Source Storage for Metro Vancouver Usage (Incl. Coquitlam Lake)



DRINKING WATER DEMANDS

Year Over Year Comparisons

As shown in Table 1, the average 2024 summer daily demands were lower than at the same time in 2023, however in 2023, water consumption was significantly higher in May, June, and July leading to rapid drawdown of the reservoirs early in the season. Additionally, in 2023 the forecasts were calling for continued hot and dry weather and continued drought conditions into the fall which led to Metro Vancouver's decision to activate Stage 2 watering restrictions. The decision to activate additional water restrictions is made on several factors, including snowpack, weather, and regional drinking water use trends through the summer.

Table 1: Daily Water Demand During High Season (billion litres per day)

Month	2023	2024
May	1.23 BL/d	1.12 BL/d
June	1.35 BL/d	1.19 BL/d
July	1.46 BL/d	1.41 BL/d
August*	1.33 BL/d	1.29 BL/d
September	1.17 BL/d	1.18 BL/d
October 1 - 15	1.05 BL/d	1.06 BL/d

*Stage 2 activated on August 4, 2023 until October 15, 2023

Total Volume Used During the High Demand Season

In 2024 the region used about 5 per cent less water during the period May 1 to October 15 as compared to the same period of 2023. The reduction in water use in 2024 could be attributed to having a wetter summer season, receiving over 105 per cent of normal precipitation from May 1 to October 15, while in 2023 the region received only 50 per cent of the normal precipitation.

Table 2: Total Volume of Water Used During High Demand Season (billion litres)

May 1 to October 15	
2023	**2024**
216 BL	205 BL

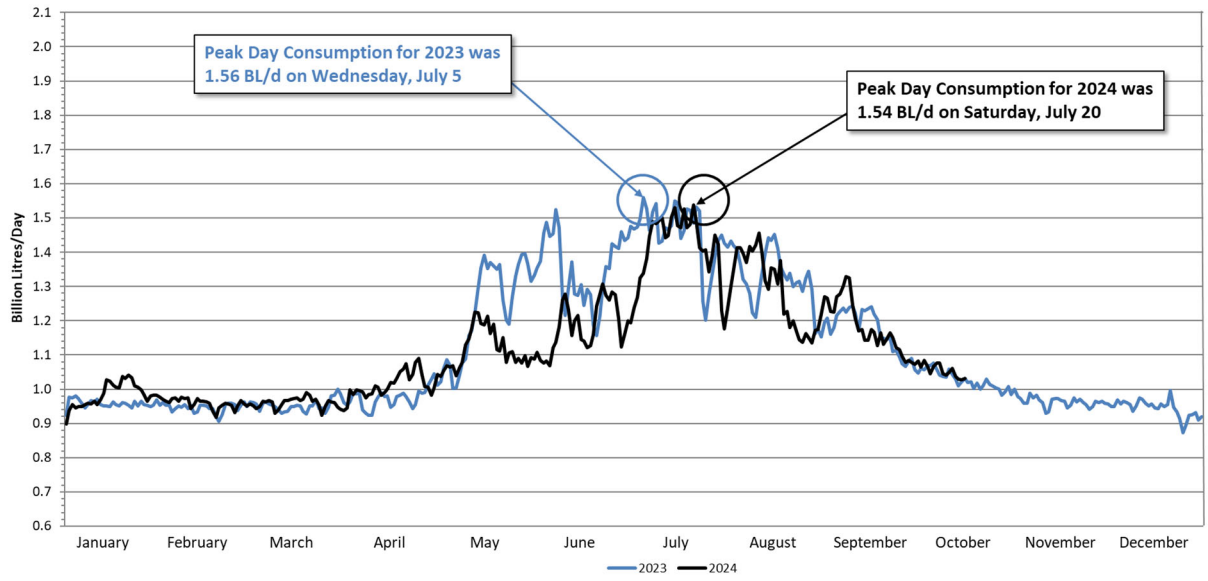
Peak Day and Peak Hour Demand

The peak day consumption data for summer 2023 and summer 2024 is shown below in Table 3 and is illustrated in Figure 2. It's encouraging to see that the peak day in 2024 occurred on a designated lawn watering day as compared to 2023 when the peak day occurred on a non-designated lawn watering day. And, in 2024 most peak days during a one-week period occurred on allowable lawn watering days, which is a testament to the education and enforcement efforts of member jurisdictions.

Table 3: Peak Day and Peak Hour Demand During High Season (billion litres per day)

	2023	**Day/Time**	**2024**	**Day/Time**
Peak day	1.56 BL/d	Wed. July 5	1.54 BL/d	Sat. July 20
Peak hour	1.96 BL/d	Sat. July 1 at 5:00 am	1.94 BL/d	Sat. July 20 at 6:00 am

Figure 2 - Metro Vancouver Daily System Consumption Comparison 2023 and 2024



Environmental Flows
In addition to drinking water needs, Metro Vancouver's reservoirs must also provide the required environmental flows to sustain fish populations. Raw water discharges from the Cleveland and Seymour Falls Dams were maintained throughout the season to provide flow to the river basins downstream of the dams.

WATER CONSERVATION MEASURES

With a relatively low snowpack this year and climate outlooks that were calling for above-average temperatures and reduced rain for the region for the spring and summer seasons, Metro Vancouver began its Stage 1 region wide communication earlier than usual. The messaging focused on reminding the public and stakeholders that limiting excessive outdoor water use will help avoid moving to Stage 2 where lawn watering is banned. Additionally, reducing lawn watering will help reduce seasonal demand for water and save treated drinking water for where it is needed most: for drinking, cooking, and cleaning.

Metro Vancouver's key initiatives during summer 2024 included the following:

- Early region wide communication of Stage 1 watering restrictions ahead of the May 1 start; an updated water conservation communication campaign which ran from June 24 to September 1; a promotion to celebrate the 100-year anniversary of the creation of the Greater Vancouver Water District; and the Water Wagon Program. The results of these communication efforts are shared in the separate report to this Committee titled "2024 Water Conservation Communications and Public Outreach Results".

- Metro Vancouver, in close coordination with the Provincial government, aligned on conservation and drought response messaging ahead of the 2024 high-demand season. Staff from Metro Vancouver and Ministry of Water, Land and Resource Stewardship have also been working together to clarify messaging between the Province's drought levels and Metro Vancouver's Drinking Water Conservation Plan stages. Both Metro Vancouver's and the Province's webpages have also been updated to include an explanation of the difference between the two as well as a links to each other's webpages for ease of finding information.

- The Drinking Water Conservation Plan Summer Support Program was offered for its final year in 2024 with participation from 10 member jurisdictions. The program was originally introduced to support and augment members' implementation of the updated DWCP in 2022. In 2024 the program was updated to target specific areas for monitoring and included early weekday morning shifts. When non-compliance was observed, details were recorded, and informational materials were left at the resident's door to support bringing them into compliance. Non-compliance data, including photographic evidence, was recorded and shared with member jurisdictions for follow-up. Preliminary feedback indicates that the program was valuable for local enforcement efforts. Collection of detailed feedback from participating member jurisdictions is planned later in 2024.

ALTERNATIVES

This is an information report; no alternatives are presented.

FINANCIAL IMPLICATIONS

Revenues from water sales as of October 1 are 1.4 per cent or about $4.3 million below budget.

CONCLUSION

Metro Vancouver's water supply system demonstrated resilience during the 2024 high-demand season despite the challenges posed by a low snowpack and the forecasted warm and dry weather. Average and peak day consumption were lower than in 2023 which can be attributed to proactive measures such as early dam and reservoir operations, a wetter-than-expected spring, as well as extensive communication and outreach initiatives supported by robust local government enforcement.

Annual Stage 1 lawn watering restrictions of the Drinking Water Conservation Plan were automatically activated on May 1, 2024 and the combination of snowpack, weather, and regional drinking water use trends through the summer ensured the region's water needs were met while adhering to Stage 1 watering restrictions.

63525249

To: Water Committee

From: Shellee Ritzman, Division Manager, Corporate Communications, External Relations
Dana Carlson, Project Coordinator, Corporate Communications, External Relations

Date: October 18, 2024 Meeting Date: November 6, 2024

Subject: **2024 Water Conservation Communications and Public Outreach Results**

RECOMMENDATION

That the Water Committee receive for information the report dated October 18, 2024, titled "2024 Water Conservation Communications and Public Outreach Results".

EXECUTIVE SUMMARY

Metro Vancouver undertakes annual communications to educate residents on the value of drinking water and to support drinking water conservation across the region. This includes communication of the annual water restrictions, the water conservation campaign, and the Water Wagon program. Also in 2024 was a promotion to celebrate the 100th anniversary of drinking water service in our region.

Media placements (broadcast, print, digital, and out-of-home) reached residents across the region, delivering 68.5 million impressions (compared to 59.6 million in 2023) and over 40,000 website visits. There were 277 earned media hits, delivering 324 million impressions for a total ad value equivalent of $10.3 million. The post-campaign survey indicates that the campaign is effectively capturing attention (48% recall) and driving incremental change (23% made changes to use less water). The Water Wagon program resulted in 8,227 water bottle refills and fountain uses, and nearly 3,000 conversations with residents.

PURPOSE

To update the Committee on regional communications to support the 2024 water restrictions, water conservation campaign, Water Wagon program, and the 100th Anniversary of the Greater Vancouver Water District.

BACKGROUND

Metro Vancouver educates residents on the value of drinking water and encourages more mindful water use to reduce overall demand. Reducing per capita demand is important because the available water needs to meet the needs of the growing population and allow the region to be resilient to climate change, which is causing increased instances of drought in summer months. Communication efforts support Metro Vancouver's Drinking Water Conservation Plan and Water Supply Outlook 2120 through three complementary initiatives:

- Water restrictions: Educate residents about the annual water restrictions
- Water conservation campaign: Change behaviour to reduce outdoor usage of treated drinking water

- Water Wagon program: Highlight Metro Vancouver's water system and high-quality drinking water, as well as encourage water conservation

Also in 2024, the 100th anniversary of the Greater Vancouver Water District was celebrated using communications that aimed to increase awareness of Metro Vancouver's role in delivering high-quality drinking water.

WATER CONSERVATION COMMUNICATIONS

Both the water restrictions promotion and water conservation campaign aimed to reduce the overall demand for treated drinking water.

Approach and Timing

Metro Vancouver began promoting outdoor water use restrictions with a media release on April 9. A second release was issued when the water restrictions came into effect on May 1. Promotions were in market until water restrictions ended on October 15. Materials included direct mail (postcard), posters, social media, as well as translated Chinese and Punjabi ads in multicultural community newspapers.

The full regional water conservation campaign was in market from June 24 to September 1. It highlighted the importance of water conservation to ensure our drinking water is available for where it's needed most: drinking, cooking, and cleaning. The campaign targeted homeowners in detached houses, duplexes, and townhouses with lawns, as they are most likely to engage in outdoor water uses, primarily lawn watering, which contributes to higher seasonal water demand. Media placements included digital (YouTube, digital banners, Facebook/Instagram, Google Search), television, radio, and digital billboards.

Two secondary social media promotions rounded out the water conservation campaign:

- During the spring, a promotion about the source of drinking water ran, aiming to increase awareness of Metro Vancouver's water system
- Seasonal maintenance tips to help lawns thrive with less water ran in the spring and fall

Creative Direction

The creative direction for the water restrictions promotion and the water conservation campaign (Attachment 1) was updated in response to focus group findings and to make a stronger connection between the two programs. The creative was simplified and features bold, attention-grabbing colours and graphics. The key message and tagline were "Water one hour a week for a healthy lawn" and "It's all drinking water". Water conservation tips were woven throughout the creative.

Metro Vancouver Member Engagement

Metro Vancouver made materials available to all Greater Vancouver Water District members for display, distribution, and to supplement members' education and enforcement programs. Items included social media content, co-branded materials such as posters, rack cards, transit shelter ads, digital billboards, and translated assets.

Evaluation

Combined performance for both the water restrictions promotion and water conservation campaign are below.

Website

- There were 47,000 page views across the campaign website (Reference 1) and water restrictions web page (Reference 2).

Regional Paid Media Placements

- Paid media placements delivered a total of 68.5 million impressions (up from 59.6 million in 2023 — an increase of 15%).
- A 15-second video aired on Global Television, resulting in 10.3 million impressions.
- Radio ads ran on eight stations, achieving 13.4 million impressions.
- YouTube delivered 2.57 million impressions, reaching 584,000 people an average of three times. The video view rate was 67%, surpassing the 48% benchmark.
- Social media posts (Facebook and Instagram) delivered 9.15 million impressions and were seen by more than one million residents on average nine times. There were 1,509 likes, comments, shares, and saves, and 9,177 clicks to the web page.
- Online banner ads exceeded targets, delivering 7.18 million impressions and 6,186 clicks.
- Google Search served 47,258 impressions and 18,551 clicks with a 39.06% click through rate, similar to 2023 and higher than previous years (38.84% in 2023, 37.03% in 2022, 31.08% in 2021).
- A postcard was mailed early July to 553,050 single-family homes and townhouses across the region.
- Eleven digital, weather-triggered billboards, delivered 25.6 million impressions.
- Print ads were placed in multicultural community papers with Asian and South Asian readership and delivered 102,000 impressions across four publications.

Earned Media

- There were 277 earned media hits, delivering 324 million impressions for a total ad value equivalent of $10.3 million.

Post-Campaign Survey

- 83% of respondents say they believe that a browning lawn will turn green again in the fall rainy season, a slight decrease from previous years (84% in 2022, 87% in 2021, 88% in 2020). This is highest amongst those 45 and older.
- Nearly one-half (48%) of residents say they saw or heard Metro Vancouver's ads or similar ads over the past few months, a 16-percentage point increase since 2022. The campaign was even more successful reaching its target audience of homeowners aged 35 and older living in single detached homes (58% aware).
- 23% of residents who saw or heard Metro Vancouver's water conservation ads say they made changes to use less water.
- Four-in-ten (39%) residents who saw or heard the ads say they talked about them with others, a marginal five percentage point decrease since 2022.

WATER WAGON PROGRAM

The Water Wagon and Tap Water Outreach Team offered free water bottle refills at community events across the region. The program highlights Metro Vancouver's water system and our high-quality tap water, and reduces the use of single-use bottled water. The outreach team engages with residents through displays and interactive games that share the "mountain to tap" story of Metro Vancouver's drinking water and ways to conserve it. This year the Water Wagon exterior was refreshed to feature the Water Service 100th Anniversary branding (Attachment 2).

The Water Wagon attended 24 community events across nine member jurisdictions between May 22 and September 15 for a total of 32 event days (Attachment 3). The outreach team tallied 8,227 water bottle refills and fountain uses and engaged in 2,931 discussions with residents.

100TH ANNIVERSARY CELEBRATION

2024 marks the 100th anniversary of the Greater Vancouver Water District. Metro Vancouver is celebrating this legacy of service and collaboration with member jurisdictions in providing drinking water to the region through activities and communications throughout the year.

Launching with a media release on January 11, the anniversary was highlighted on the website, social media (Facebook, Instagram, Twitter/X, YouTube), the PNE Fair showcase, Water Wagon, and at construction projects. An outdoor celebration event was held on July 20 in the Lower Seymour Conservation Reserve. Members of the public enjoyed a fun-filled day with food trucks, live music, and activities showcasing how water is stored, treated, and supplied to the region. (Attachment 2)

Celebrating this anniversary helps raise the profile of Metro Vancouver's long-standing role in delivering high-quality drinking water to the region.

ALTERNATIVES

This is an information report. No alternatives are presented.

FINANCIAL IMPLICATIONS

The water restrictions communications, the water conservation campaign, the Water Wagon program, and the 100th Anniversary Celebration is part of the 2024 External Relations budget. All items were completed within the Board-approved budget.

CONCLUSION

In 2024, Metro Vancouver educated residents about the value of drinking water and supported drinking water conservation through four communications initiatives: the water restrictions promotion, the water conservation campaign, the Water Wagon program, and the 100th Anniversary celebration. Across all communications, there were 68.5 million impressions and over 40,000 website visits. There were 277 earned media hits, delivering 324 million impressions for a total ad value equivalent of $10.3 million. The post-campaign survey indicates that the campaign is effectively capturing attention (48% recall) and driving incremental change (23% made changes to use less water).

Looking ahead to 2025, strategic communications will continue to support the goals and objectives in the Metro Vancouver's Drinking Water Conservation Plan and Water Supply Outlook 2120.

ATTACHMENTS

1. 2024 Water Conservation Communications Materials
2. Water Service 100th Anniversary Communications Materials
3. 2024 Water Wagon Program Event Schedule

REFERENCES

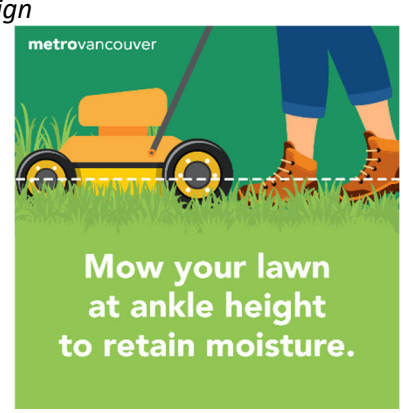
1. Water Conservation Campaign Website (www.welovewater.ca)
2. Water Restrictions Web Page (www.metrovancouver.org/lawns)

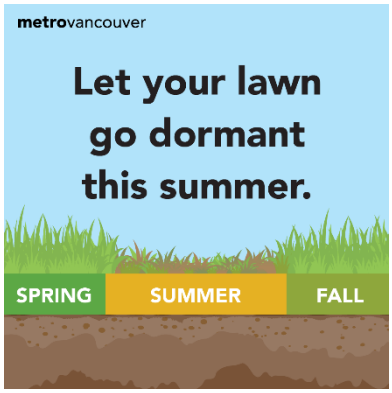
64272431

2024 Water Conservation Communications — Sample Materials

Water Conservation Campaign

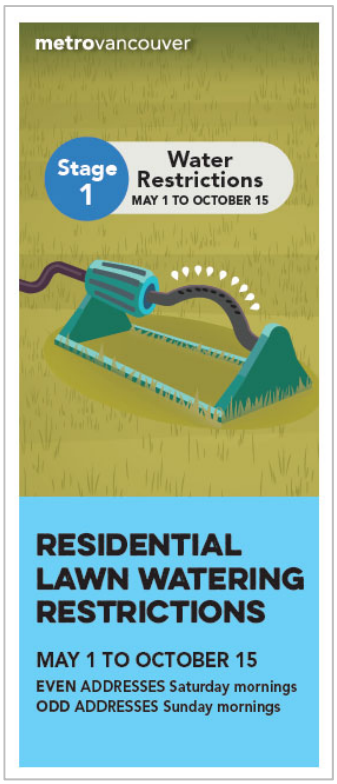
Main Water Conservation Campaign





Secondary Promotions: Water Source, Seasonal Lawn Care

Stage 1 Water Restrictions



Rack Card Front

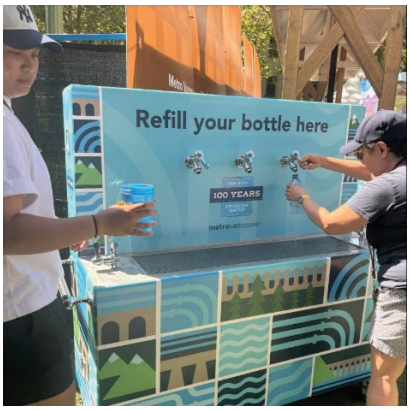
Rack Card Back

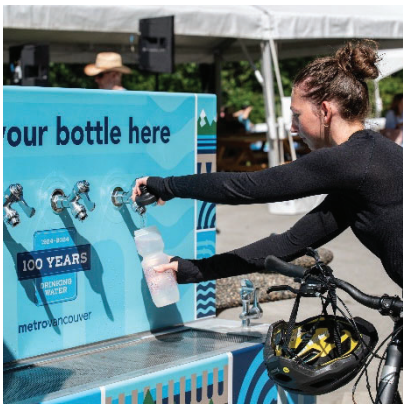
Social Media Story Image

Postcard Front

Postcard Back

Water Service 100th Anniversary — Sample Communications Materials





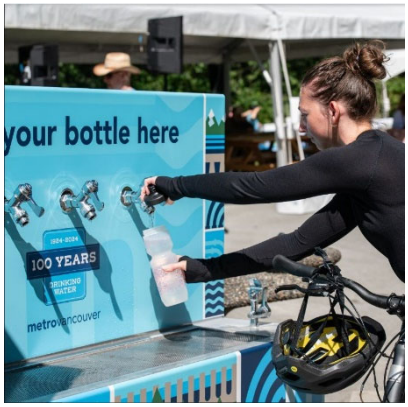
Water Wagon

Water Service 100th Anniversary Event

Attachment 3

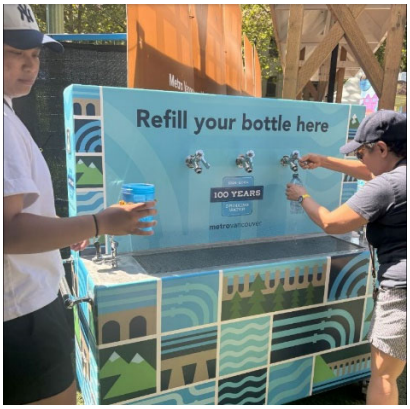
2024 Water Wagon Program Event Schedule — 44 Event Days

Event	Date	Member Jurisdiction/Location	# Days
Metro Vancouver Water Services AGM	May 22 - 23	Metro Vancouver	2
Maple Ridge Public Works Open House	May 25	Maple Ridge	1
West Vancouver Community Cultural Festival	May 31 - Jun 1	West Vancouver	2
City of Langley Community Day	June 8	City of Langley	1
Italian Day on the Drive	June 9	Vancouver	1
Splash! BC Family Fishing Day	June 16	Metro Vancouver	1
National Indigenous Peoples Day	June 16	New Westminster	1
Whey-ah-Wichen Canoe Festival	June 28 - 30	District of North Vancouver	3
Canada Day Westminster Pier Park	July 1	New Westminster	1
Squamish Nation Youth Powwow	July 5 - 7	West Vancouver	3
Boundary Bay Air Show	July 13	Delta	1
BC Summer Games	July 19 - 20	Maple Ridge	2
Water 100 Celebration Event	July 20	District of North Vancouver	1
Squamish Nation Amalgamation Day	July 23	West Vancouver	1
Maple Ridge Pitt Meadows Country Fest	July 27	Maple Ridge	1
Vancouver Dyke March and Festival	Aug 3	Vancouver	1
Delta Community Animal Festival	Aug 11	Delta	1
New West Pride Street Festival	Aug 17	New Westminster	1
Richmond Dragon Boat Festival	Aug 24	Richmond	1
Langley Global Fest	Aug 25	City of Langley	1
Car Free Day Port Coquitlam	Sept 7	Port Coquitlam	1
Maple Ridge 150 Birthday Celebration	Sept 14	Maple Ridge	1
The Fair at the PNE	Aug 17 - Sept 2	Vancouver	15



100th Anniversary Celebration, Lower Seymour Conservation Reserve

Community Day, City of Langley



Metro Vancouver exhibit, PNE Fair

To: Water Committee

From: Jennifer Crosby, Director - Project Management Office, Project Delivery

Date: October 18, 2024 Meeting Date: November 6, 2024

Subject: **Update on the Development of a Construction Impact Mitigation Framework**

RECOMMENDATION

That the GVWD/GVS&DD Boards receive for information the report dated October 18, 2024, titled "Update on the Development of a Construction Impact Mitigation Framework".

EXECUTIVE SUMMARY

Metro Vancouver staff continue to work with member jurisdictions to review practices to improve how member jurisdictions and Metro Vancouver staff coordinate and liaise on regional infrastructure projects in member jurisdictions.

Construction impacts of Metro Vancouver utility capital projects on member jurisdictions are currently mitigated through case-by-case negotiations directly between Metro Vancouver staff and the member jurisdiction where the project is located. This results in varied levels of mitigation as well as unpredictable and often significant impacts on project scope, cost and schedule.

The Construction Impact Mitigation Framework (the Framework) has been developed as a transparent, consistent, equitable, and fiscally responsible approach to mitigating impacts on member jurisdictions (members) during construction of region-serving utility infrastructure. The Framework enables collaboration between Metro Vancouver staff and members by following a standard approach to assessing and mitigating construction-related impacts. This will support discussions with members in seeking mutually agreeable solutions and reduce risks and uncertainty for project delivery.

PURPOSE

To update the GVWD/GVS&DD Boards on the development of a Construction Impact Mitigation Framework for member jurisdictions as related to Metro Vancouver utility capital project construction.

BACKGROUND

Each year Metro Vancouver delivers utility capital projects to ensure that the region has reliable access to high-quality drinking water, safe wastewater removal and treatment, and waste disposal and recycling. The purpose of delivering these services on behalf of the members is to provide infrastructure at a scale that is more efficient than if each jurisdiction delivered the services separately. As a result, the services offer efficiencies that benefit all members. Members participate in the core services based on the understanding that not only will the benefits of the service be equitably shared amongst participants, but the impacts and costs of delivering those services are also equitably shared.

In 2018, the Metro Vancouver Board rescinded the existing Capital Projects Policy and recommended that Metro Vancouver staff work with advisory committees to develop a capital projects framework, which would capture the approach and process of how Metro Vancouver utility capital projects are planned, managed, and communicated. Metro Vancouver initially engaged with member jurisdictions through a Regional Engineers Advisory Committee (REAC) working group. The working group recommended developing tools to improve the process and communication between Metro Vancouver and member jurisdictions, which include:

Tool Name	Development Status
Utility Capital Projects Guide	Complete
Project Coordination Reference Guide	Complete
Noise and Vibration Guide	Complete
Social Impact Assessment Guide	Complete
Construction Impact Mitigation Framework	Complete

An update on the development of these tools was provided to this committee in a report dated June 21, 2023 (see Attachment 3). The next section provides a further update on the development of the Framework including the Impact Assessment Tool, Mitigation Library and supporting materials.

UPDATE ON THE DEVELOPMENT OF THE CONSTRUCTION IMPACT MITIGATION FRAMEWORK

The development of the Construction Impact Mitigation Framework has been completed, leveraging feedback from Regional Engineers Advisory Committee, Regional Administrators Advisory Committee (RAAC) and Metro Vancouver staff and following the guiding principles of equitability, transparency, consistency, and fiscal responsibility.

The objectives of the Construction Impact Mitigation Framework are:

- To clarify expectations for how Metro Vancouver (MV) and member jurisdictions work together to deliver regional infrastructure.
- To standardize the process for assessing and mitigating the impact of utility capital projects on member jurisdictions.
- To reduce risk and uncertainty related to the delivery of Metro Vancouver utility capital projects, which in turn reduces impacts on costs and schedules.

The Construction Impact Mitigation Framework is comprised of a guide for users, a permitting fact sheet, a template to facilitate use of the Framework and two core deliverables used to assess impacts and plan a construction impact mitigation strategy for a utility capital project (see Attachments 1 and 2):

1. An Impact Assessment Tool that categorizes construction project impacts, and defines impact levels based on high, medium, and low impact; and
2. An Impact Mitigation Library that provides impact-specific mitigation measures that can be used to minimize, offset, or avoid impacts.

Feedback from member jurisdictions on the draft Framework was collected through three rounds of engagement with REAC and RAAC as well as through a workshop and Open House events during MV Conference Day in 2023 and 2024 and an online feedback survey. Overall positive feedback was

received including appreciation for the development of the Framework and support for a consistent, transparent, equitable and fiscally responsible approach to mitigating impacts to all members.

Below is a summary of the changes made to the Framework based on member feedback:

- Clarified impacts to non-MV utilities to include roadway infrastructure including reference to MV Board Policy *Pavement Restoration for Sewer and Water Main Installations*.
- Expanded traffic mitigation examples to include intersection modification, signal changes, enhanced intersection control.
- Revised access mitigation examples to reference access for emergency services and waste/ recycling collection.
- Revised bike trail/routes impact category to include pedestrian trails/ routes.

Based on feedback received, the following language was incorporated into the Framework guide:

- The Framework provides a clear process for MV and members to follow to enable expedited decision-making.
- The guide outlines the process whereby it is the collective suite of impacts and mitigations for the given projects; it is not necessary for each impact and mitigation intensity to match.
- Each MV utility capital project has an assigned liaison.
- The Framework outlines a collaborative process to avoid, minimize or mitigate construction impacts which in some cases will result in a “build back better” approach.
- The Framework guide speaks to monitoring quality and effectiveness of the impact mitigation measures during construction. MV is to refine mitigation measures if initial plans are insufficient, or when there is change in construction schedule or scope.
- Early collaboration with member jurisdictions on MV utility capital projects is enabled through various activities throughout the project lifecycle, as outlined in the Guide to Metro Vancouver Utility Capital Projects for Member Jurisdictions available on the MV internet site.

The feedback summarized in the table below is either out of scope for the Framework or is addressed elsewhere.

Feedback	**Response**
Broaden scope to include impacts or opportunities related to municipal planned work such as streetscape and greenway projects.	MV engages annually on the capital program with members at municipal coordination meetings which enables coordination of schedules. MV works with member jurisdictions to align restoration efforts with municipal plans for streetscapes and greenways. MV considers incorporation of member jurisdiction requested and funded scope into MV utility capital projects through Coordinated Works Agreements where appropriate.

Feedback	Response
Assessing and managing cumulative impacts of multiple MV projects on a member jurisdiction.	The Framework is intended to support individual projects. Accounting for impacts across a portfolio of projects to a member jurisdiction is out of scope for this initial version of the Framework.
Provision of funding for facilitating, approving and monitoring member permitting processes.	Permit fees are intended to cover these costs. Members have the option to delegate BC Building Code oversight to a qualified professional. In the guide to the Framework, it is noted that for large projects, custom agreements can be developed to formalize submission requirements, approvals, fees, timelines and resource commitments.
Consistent, transparent and equitable approach for quantifying land use impacts related to: • Concerns related to compensation for hosting infrastructure on land not designated for profitable development e.g. parkland • Concerns for the unfair burden of hosting multiple MV infrastructure projects	MV is considering establishing principles for assessing above-ground loss of use methodology. Currently, compensation may be payable if the land in question is investment land or if they are required for future municipal development lands. If compensation is payable, Metro Vancouver will compensate member jurisdictions for acquisition of land rights following the guiding principles of consistency, equity, transparency, and fiscal responsibility. In cases where Metro Vancouver requires land rights from members for a project, the tax payer should not be expected to pay for those lands which are already in the public realm, and where lands will be returned to the same general use following the project's completion.
Weighting criteria for the impact categories.	The Framework is intended to be a tool to enable collaboration between MV and members. Due to the variability in impacts felt by members for each project scope and location, no weighting criteria has been included at this time.
Compensation in lieu of mitigations(s) or transferring responsibility for impact mitigation (e.g. site restoration) to member jurisdictions.	MV is responsible for mitigating construction impacts due to utility capital projects. Requests for compensation in lieu of mitigations(s) will be handled on a case-by-case basis.

The Framework is expected to be refined over time as projects are completed and mitigations are monitored and documented.

ALTERNATIVES
This is an information report. No alternatives are presented.

FINANCIAL IMPLICATIONS

The development of standardized, region-wide approach to mitigation of impacts for projects undertaken in member jurisdictions will help to manage project costs, maintain project schedules, mitigate scope creep and change orders on construction projects, as well as ensure a consistent, transparent and equitable approach across all member jurisdictions.

CONCLUSION

Metro Vancouver is committed to the continuous improvement of its processes to deliver region-serving utility infrastructure projects efficiently and cost effectively, and to mitigate the construction impacts of these projects on member jurisdictions.

Metro Vancouver has liaised with the REAC and the RAAC to develop the Construction Impact Mitigation Framework based on the guiding principles of consistency, equity, transparency and fiscal responsibility. The Framework enables collaboration between Metro Vancouver staff and members by following a standard approach to assessing and mitigating construction-related impacts. This will support discussions with members in seeking mutually agreeable solutions and reduce risks and uncertainty for project scope, schedule and cost.

The Framework is being presented to Water Committee and the GVWD/GVS&DD Boards in November followed by a launch to Metro Vancouver and member staff in the first quarter of 2025.

ATTACHMENTS

1. MV Utility Capital Projects - Construction Impact Mitigation Framework Overview.
2. Construction Impact Mitigation Framework Guide.
3. Guide to Metro Vancouver Utility Capital Projects for Member Jurisdictions and Impact Mitigation Framework, report dated June 21, 2023.
4. MV Utility Capital Projects – Construction Impact Mitigation Framework - Presentation

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MV Utility Capital Projects - Construction Impact Mitigation Framework

The Construction Impact Mitigation Framework (the framework) is a transparent, consistent, equitable, and fiscally responsible approach to mitigating impacts on member jurisdictions (members) during construction of region-serving utility infrastructure. The framework supports the delivery of MV utility capital projects and enhances coordination and communication with members and member permitting processes.

The framework enables collaboration between MV staff and members by following a standard approach to assessing and mitigating construction-related impacts. This will support discussions with members in seeking mutually agreeable solutions and reduce risks and uncertainty for project delivery. This framework increases the ability for projects to stay on time and on schedule and will enable improved delivery of capital projects across the region.

The Framework will achieve this by:

- Identifying categories of impacts experienced by members
- Establishing common and consistent language
- Providing examples of mitigation measures
- Providing a template to document and refine anticipated impacts and planned mitigation measures in an iterative manner
- Enabling the creation of a common database of impacts and mitigation measures

To support the development of the framework, Metro Vancouver has regularly liaised with the Regional Engineers Advisory Committee (REAC) and the Regional Administrators Advisory Committee (RAAC) and leveraged feedback from REAC, RAAC and Metro Vancouver staff to develop the framework.

Structure of the Framework

The framework consists of **two core deliverables**:

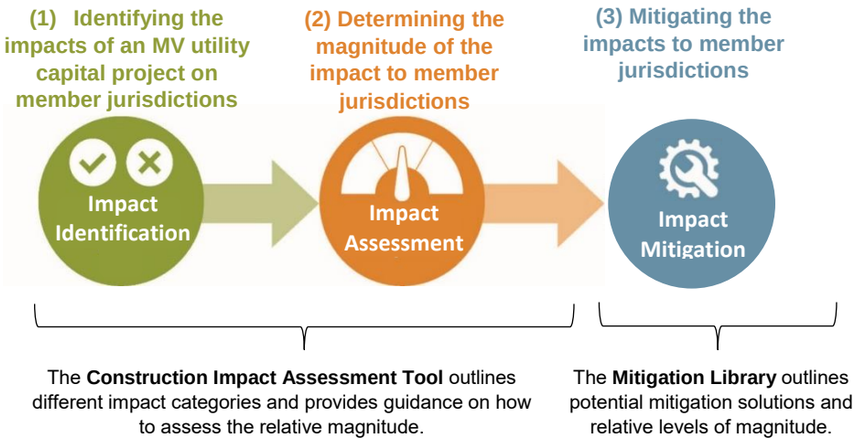
- A **Construction Impact Assessment Tool** containing a list of potential construction impacts and criteria for classifying each impact as either low, medium or high.
- A **Mitigation Library** that provides impact-specific mitigation measures that can be used to avoid, minimize or offset impacts.

Supporting deliverables for implementation of the framework include:

- **Framework Guide**: Introduction to the framework and guidance on implementation.
- **Permitting Fact Sheet**: Information on permitting requirements for Metro Vancouver utility capital projects in member jurisdictions.
- **Standardized template**: to facilitate use of the framework and document impacts and mitigation measures.

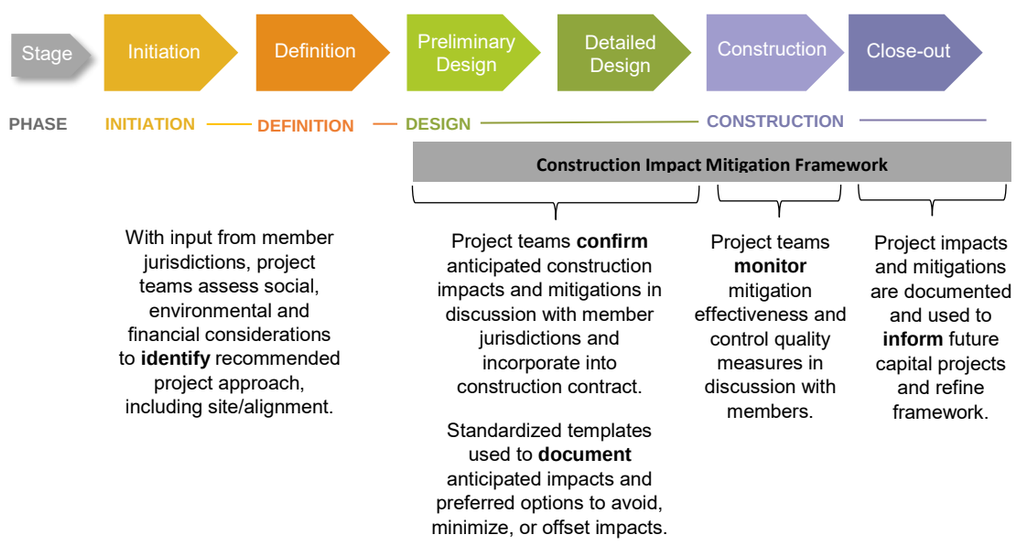
OVERVIEW

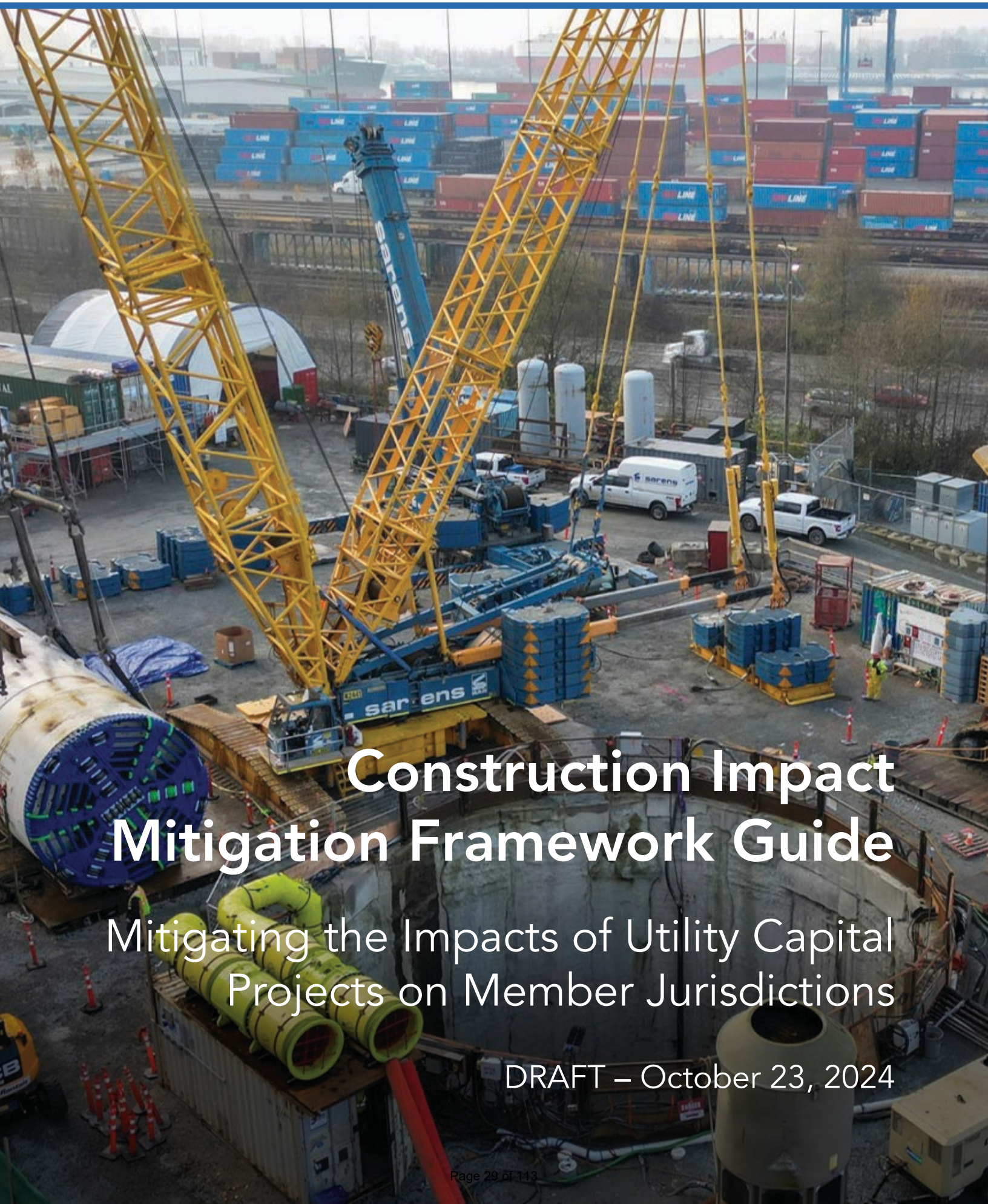
A 3-step **approach** using the core deliverables is the basis for the framework:



How will the Framework be Used?

Metro Vancouver project teams undertaking Preliminary Design and Detailed Design stages will utilize this Construction Impact Mitigation Framework in collaboration with members to identify, assess and document impacts and planned mitigation solutions that will be implemented during the construction stage and monitored for quality and effectiveness.





Construction Impact Mitigation Framework Guide

Mitigating the Impacts of Utility Capital Projects on Member Jurisdictions

DRAFT – October 23, 2024

Metro Vancouver acknowledges that the region's residents live, work, and learn on the shared territories of many Indigenous peoples, including 10 local First Nations: q̓i̓c̓əy̓ (Katzie), q̓ʷɑːn̓ƛ̓ən̓ (Kwantlen), kʷikʷəƛ̓əm (Kwikwetlem), máthxwi (Matsqui), xʷməθkʷəy̓əm (Musqueam), qiqéyt (Qayqayt), se'mya'me (Semiahmoo), Sḵwx̱wú7mesh Úxwumixw (Squamish), scəẃaθən məsteyəxʷ (Tsawwassen) and səlilwətaɬ (Tsleil-Waututh).

Metro Vancouver respects the diverse and distinct histories, languages, and cultures of First Nations, Métis, and Inuit, which collectively enrich our lives and the region.

Construction Impact Mitigation Framework Guide
Mitigating the Impacts of Utility Capital Projects on Member Jurisdictions

DRAFT – October 23, 2024

Developed for Metro Vancouver by:

KPMG

For more information or to provide feedback please contact Metro Vancouver Information Centre.
Phone: 604-432-6200
Email: icenter@metrovancouver.org

Metrotower III, 4515 Central Boulevard, Burnaby, BC, V5H 0C6
metrovancouver.org

Cover: Annacis Water Supply Tunnel construction

Table of Contents

Executive Summary

The Construction Impact Mitigation Framework is a transparent, consistent, equitable, and fiscally responsible approach to mitigating impacts on member jurisdictions during construction of region-serving utility infrastructure. The framework supports the delivery of Metro Vancouver utility capital projects and enhances coordination and communication with members and member permitting processes.

The framework enables collaboration between Metro Vancouver staff and members by following a standard approach to assessing and mitigating construction-related impacts. This will support discussions with members in seeking mutually agreeable solutions and reduce risks and uncertainty for project delivery.

Annacis Water Supply Tunnel construction

Central Park Water Main construction

Introduction

This guide refers to the Metro Vancouver utility capital projects for water, liquid waste, and solid waste. Metro Vancouver utility capital projects include construction of new infrastructure as well as the expansion or replacement of existing infrastructure.

Metro Vancouver plans and delivers utility capital projects to meet the needs of a growing population, maintain, upgrade and replace aging infrastructure, and increase the region's resilience to the impacts of climate change, seismic events, wildfires, power failures, and natural disasters. These projects are required to maintain the quality and reliability of the region's drinking water, wastewater, and solid waste management systems and continue to protect public health and the environment. Utility capital projects can be site-specific, such as a wastewater treatment plant, or a linear alignment, such as a water main.

Metro Vancouver delivers these services on behalf of our members to provide infrastructure at a scale that is more efficient than if each jurisdiction delivered the services separately. As a result, the services offer efficiencies that benefit all members. Members participate in these services based on the understanding that not only will the benefits of the services be shared amongst participants, but the impacts and costs of delivering those services are also shared.

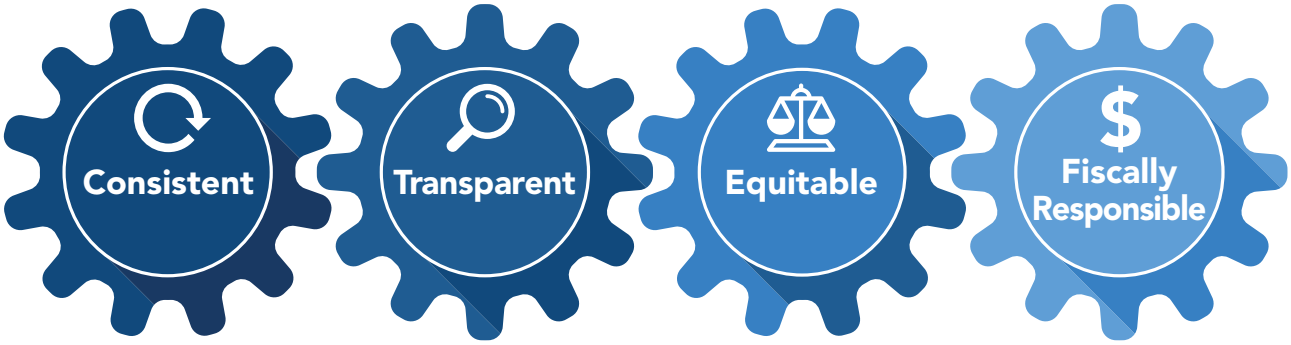
Metro Vancouver's Member Jurisdictions

- Village of Anmore
- Village of Belcarra
- Bowen Island Municipality
- City of Burnaby
- City of Coquitlam
- City of Delta
- Electoral Area A
- City of Langley
- Township of Langley
- Village of Lions Bay
- City of Maple Ridge
- City of New Westminster
- City of North Vancouver
- District of North Vancouver
- City of Pitt Meadows
- City of Port Coquitlam
- City of Port Moody
- City of Richmond
- City of Surrey
- Tsawwassen First Nation
- City of Vancouver
- District of West Vancouver
- City of White Rock

Purpose of the Construction Impact Mitigation Framework

The Construction Impact Mitigation Framework is intended to provide guidance for Metro Vancouver project teams and member staff for assessing construction impacts and applying mitigations to regional capital utility projects by:

- Establishing a **transparent process**;
- Maintaining a **consistent approach** for all capital utility projects regardless of location, size or complexity;
- Providing an **equitable framework** with structured but flexible tools; and
- Being **fiscally responsible** to maintain project schedules and budgets through proactive integration of mitigations.



The framework supports the delivery of utility capital projects, enhances coordination and communication with members and supports member permitting processes (see **Appendix A**). It also supports discussions with members in seeking mutually agreeable solutions to mitigate construction impacts and reduces risk and uncertainty for capital project delivery, which in turn reduces impacts to project costs and schedules. The framework will achieve this by:

- Identifying categories of impacts experienced by members (see **Appendix B**).
- Establishing common and consistent language.
- Providing examples of mitigation measures (see **Appendix C**).
- Providing a template for Metro Vancouver to document and refine anticipated impacts and planned mitigation measures in an iterative manner (see **Appendix D**).
- Enabling the creation of a common database of impacts and mitigation measures.

Collaboration with Members

This framework has been developed to better support collaboration with members for construction impact assessment and mitigation options by simplifying the process of reaching consensus, while providing flexibility to apply mitigations appropriate for each utility capital project.

Metro Vancouver project teams should use judgement for the scale and complexity of the project in assessing impacts and mitigations, and on seeking alignment with members. In some cases, exceptional circumstances may lead to a mitigation beyond common practice. Depending on the cost and complexity, some mitigations may result in reviews and approvals outside the project team, including possible Board approval.

Metro Vancouver may also incorporate member-requested and funded work into a utility capital project through a Coordinated Works Agreement.

The intent of the framework is to consider the combined project impacts and mitigations so the combined suite of mitigation measures balances the project's construction impacts.

Benefits to Metro Vancouver and Members

This framework has inherent benefits to Metro Vancouver and members. By establishing a common approach to impacts and mitigations, and clarifying the process to develop mutually agreeable solutions, project risks and uncertainty will be reduced overall. This approach will increase the ability for projects to stay on time and on schedule, improving the stability and predictability of utility rates, and will bring overall transparency to capital project delivery across the region.

Global Mitigations

This framework is focused on project-specific impacts and mitigations with the understanding that several 'global' mitigations will be integrated into any project regardless of size, scale, complexity, or location. These global mitigations include compliance with regulatory requirements and professional responsibilities, and are intended to minimize disturbance and align with best practices.

The examples of impacts and mitigations provided in the framework are a starting point. As new tools, information, and approaches on construction impacts and mitigations become known, Metro Vancouver will update this framework to reflect those practices.

Examples of global mitigation measures to be applied to all projects include:

- Compliance with environmental regulations
- Adherence to required permits, licensing, and approvals
- A Metro Vancouver point-of-contact to liaise with member jurisdictions in the respective project area
- Engaging with the public through community meetings, surveys, signage and outreach events to raise awareness about the upcoming construction project
- Refining the mitigation strategy if mitigations are insufficient, or if there is change in construction schedule or scope

Framework Exclusions

There are some items that are not addressed in the framework. These are outlined below with the rationale for each exclusion.

Exclusion	Rationale
Operational, maintenance and emergency response impacts associated with Metro Vancouver infrastructure in member jurisdictions	Framework addresses construction related impacts only
Impacts associated with perceived or realized loss of opportunity (e.g., taxes, amenity cost charges) related to private lands acquired by Metro Vancouver for the project	GVSDD and GVWD are exempted from paying property taxes* Amenity cost charges are not applicable to Metro Vancouver utility capital projects
Provision of net new community amenities (e.g., trails, playgrounds, public art)	Mandate of Metro Vancouver utility capital projects are to provide regional services. Requests for provision of net new community amenities in lieu of mitigation measures will be handled on a case-by-case basis
Impacts on Metro Vancouver projects due to member decisions/actions	Framework is focused on mitigating impacts of utility capital projects on members
Cumulative impacts of Metro Vancouver utility capital projects	Framework is for use on individual utility capital projects. Metro Vancouver liaises regularly with members to coordinate where there are multiple concurrent projects in an area
Compensation in lieu of mitigations(s) or transferring responsibility for impact mitigation (e.g., site restoration) to member jurisdiction	Metro Vancouver is responsible for mitigating construction impacts due to utility capital projects. Requests for compensation in lieu of mitigations(s) will be handled on a case-by-case basis

* Section 65 of the Greater Vancouver Sewerage and Drainage District Act and Section 81 of the Greater Vancouver Water District Act

How to Use the Framework

The following section outlines the structure of the framework, available tools, roles for Metro Vancouver and members, and additional guidance on assessing impacts and mitigations.

Structure of the Framework

The framework consists of two core components:

1. The **Construction Impact Assessment Tool (Appendix B)** breaks down construction impacts into categories, and each category into a 'level of impact': low, medium, and high. Each level provides a description of a low, medium and high scenario for the respective category, along with an example to provide insight for determining the impact metric.
2. The **Mitigation Library (Appendix C)** consists of the same categories identified in the Construction Impact Assessment Tool, with metrics looking at how different solutions can balance the magnitude of the impact identified for a construction project. The metrics look at the 'level of mitigation solution(s)' through three levels: low intensity, medium intensity, and high intensity. Similar to the assessment tool, each level consists of a description of the mitigation solution for the category, along with examples of what the solution could look like through application.

Note: while an impact category may have been rated as high, this does not mean the respective mitigation solution would automatically be high intensity. The collective impacts and collective mitigations need to be considered for any given construction project. When assessing mitigation measures, consider what would be reasonable for the member itself to implement as a mitigation measure when carrying out its own publicly funded utility construction projects.

Supporting materials are included to provide additional guidance in the identification, review and integration of construction impacts and mitigations. These include:

- A **Permitting Fact Sheet (Appendix A)** to provide information on member jurisdiction permitting processes that may inform the impacts or mitigations.
- A **Project Impact Mitigation Template (Appendix D)** to document the impacts and mitigations. Metro Vancouver project teams will document and maintain records on discussions and decisions as part of the project records.

Project Lifecycle Application

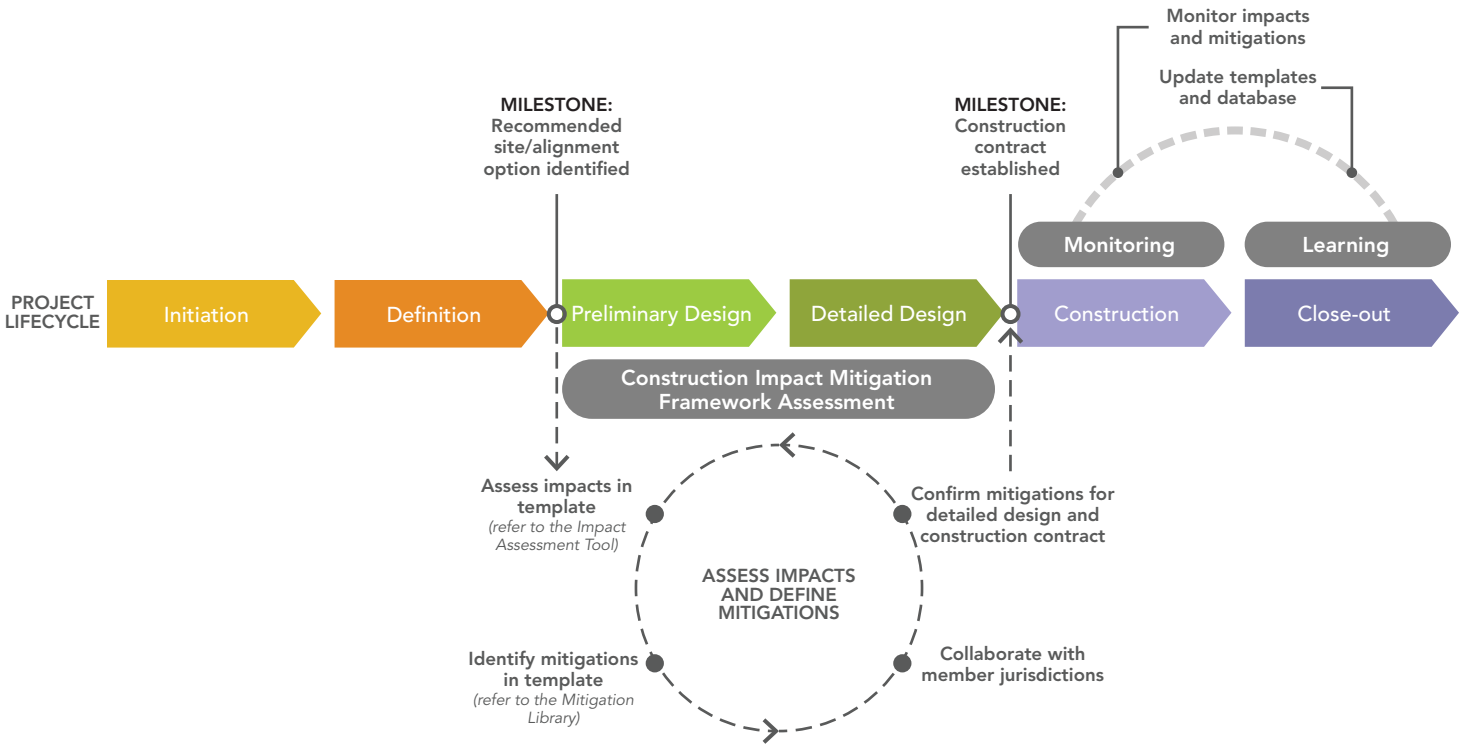
The application of the Construction Impact Mitigation Framework within the project lifecycle is illustrated below.

The Construction Impact Mitigation Framework is used during the design stages in preparation for construction activities. It is intended to be used once a preferred site or alignment is confirmed during the project definition stage, where Metro Vancouver assesses social[1], environmental and financial considerations to evaluate various project options.

Metro Vancouver project teams undertaking Preliminary Design and Detailed Design stages should utilize this Construction Impact Mitigation Framework in collaboration with members to identify, assess and document impacts and planned mitigation solutions that will be implemented during the construction stage and monitored for quality and effectiveness.

As part of the project close-out, both impacts and mitigation solutions will be documented in a database of impacts and mitigation measures for others to learn from, and to further refine the framework.

An iterative and collaborative approach to assessing and mitigating impacts during project lifecycle stages



1 The Metro Vancouver Social Impact Assessment Guide informs site/alignment options analysis. Should the project site or alignment be revisited in the course of Preliminary Design or Detailed Design, Metro Vancouver will re-evaluate social, environmental and financial considerations

Preliminary Design and Detailed Design stages

Starting at the Preliminary Design stage, the project team will complete the Construction Impact Mitigation Template (**Appendix D**) by:

A. Referring to the Construction Impact Assessment Tool (**Appendix B**) and the social, environmental and financial assessments completed during the Definition stage to identify which impacts are applicable to the project and their relative level of magnitude.

B. Referring to the Mitigation Library (**Appendix C**) to identify potential mitigation solution(s) that can offset the identified impacts. The high, medium, and low intensity categories are a guide to help assess the overall order of magnitude of the mitigation solutions.

C. Collaborating with members to discuss initial options and considerations related to potential impacts and mitigation solutions.

D. Confirming impacts and, specifically, mitigation solutions that will be integrated into the construction contract.

Once completed, the template establishes a baseline impact mitigation strategy. Depending on the scope, scale and complexity of the project, the strategy may need to be revised throughout the design phase in an iterative manner until design is complete.

Note: While the order of magnitude levels is intended for general guidance, a high impact does not necessarily require a high intensity mitigation solution. The intent of the framework is to identify a suite of mitigation solutions that collectively balance out the projects' construction impacts. For example, a high impact in one category may have multiple low intensity mitigation solutions.

Construction and Close-out stages

Metro Vancouver should monitor and refine the mitigation strategy to ensure quality and effectiveness and communicate with members through regular progress updates. Upon completion of construction, Metro Vancouver will update project templates with impact assessment(s) and mitigation solutions utilized.

Roles

The following roles for Metro Vancouver and members are outlined for each stage of the project lifecycle. Depending on the scope, scale and complexity of the project, the mitigation strategy may need to be revised throughout the design phase in an iterative manner until design is complete.

Lifecycle Stage	Initiation/ Definition	Preliminary Design/ Detailed Design	Construction	Close-out
		Construction Impact Mitigation Framework		
Overview	Project teams assess social[2], environmental and financial considerations to identify recommended site/alignment option.	Project team will identify and confirm anticipated construction impacts and mitigations based on a confirmed design and incorporate into construction contract. Standardized templates will be used to document anticipated impacts and preferred options to avoid, minimize, or offset impacts.	Project team will monitor mitigation effectiveness and control quality measures in discussion with members.	Completed templates and database used to inform future capital project delivery and refine framework.
Metro Vancouver Role	Gather and analyse social, environmental and financial information to assess site/alignment options.	Use the Construction Impact Assessment Tool and Mitigation Library to fill out the Project Impact Mitigation Template to identify and assess impacts, mitigations, estimated cost of mitigations, and an estimated timeframe. Liaise with member(s) to review and assess potential impacts and mitigations.	Monitor and refine the mitigation strategy to ensure quality and effectiveness and communicate with members through regular project progress updates.	Update templates and database with impact assessment(s) and final mitigation solutions.
Member Jurisdiction Role	Share information related to local considerations.	Review the identified impacts and mitigations and provide input.	Proactively communicate quality issues with mitigation solutions as they arise.	Share reflections on what worked and what could be improved to refine the framework.

2 The Metro Vancouver Social Impact Assessment Guide informs site/alignment options analysis. Should the project site or alignment be revisited in the course of Preliminary Design or Detailed Design, Metro Vancouver will re-evaluate social, environmental and financial considerations

Assessing Levels of Impacts and Mitigations

When determining whether the level of impact is low, medium or high for a category, or whether a mitigation is low, medium, or high intensity, it is necessary to consider two concepts:

1. The assessment is based on the best information available at the time
2. Impacts and mitigations will be monitored during construction and updated as required.

Furthermore, when a potential mitigation option is identified, it may not be appropriate for other projects.

Project managers have overall accountability for projects; they are responsible for ensuring appropriate and qualified individuals are engaged and involved in discussion of impact identification and mitigation planning. Metro Vancouver project teams need to exercise judgement and work with members to come up with a suite of appropriate mitigation strategies based on the combination of impacts.

Each category undergoing impact and mitigation evaluations should maintain the guiding principles of equity, transparency, consistency, and fiscal responsibility.

Tracking Impacts and Mitigations

Metro Vancouver, in collaboration with member jurisdictions, consultants, and contractors, actively and continuously improves its capital delivery practices. With this approach, the framework will be updated periodically to reflect these changes.

The ongoing use of this framework will contribute to the improvement of construction projects by tracking impacts and mitigations over time, and build a deeper understanding of what works and what can be improved. Metro Vancouver will collect feedback as part of the close-out stage of the project lifecycle, which will be used to update this framework, and contribute to continuous improvement of capital project delivery.

References to the completed project impact mitigation templates is intended to be a resource for Metro Vancouver and member jurisdiction staff. The impact assessment intensity and agreed upon mitigation solutions will vary from project to project.

Appendix A – Permitting Fact Sheet

metrovancouver

Metro Vancouver obtains permits from members for utility capital projects. This fact sheet is an informational document to support collaboration between Metro Vancouver and member jurisdiction staff to navigate member jurisdiction permitting requirements. The purpose of this fact sheet is to:

1. Clarify responsibilities and provide resources to help project teams. This information is applicable to all capital projects, however, project-specific variances may be needed.
2. Supplement the Construction Impact Mitigation Framework by providing an outline of applicable member jurisdiction permits that may be required for utility capital projects.
3. Recognize that regulatory and permitting processes can be significant cost and schedule drivers, and to outline permitting considerations that support the framework's guiding principles of providing a transparent, consistent, equitable, and fiscally responsible approach to mitigations during construction of essential region-serving infrastructure.

Note: In addition to permits issued by members, utility capital projects may require permits or approvals from other levels of government, Technical Safety BC, Port of Vancouver, BC Hydro, etc. Authorizations or approvals from other agencies may be prerequisites to acquiring member jurisdiction permits.

Why are members involved in regulating the construction of buildings for Metro Vancouver projects?

Metro Vancouver Regional District does not regulate the construction of buildings outside Electoral Area A as the Greater Vancouver Sewerage & Drainage District and Greater Vancouver Water Districts do not have statutory authority to regulate the construction of buildings.

Metro Vancouver's member municipalities typically regulate in respect to the construction of buildings within their areas, pursuant to the Community Charter and the Vancouver Charter. Metro Vancouver Regional District regulates in respect of the construction of buildings in Electoral Area A, pursuant to the Local Government Act. Tsawwassen First Nation regulates in respect to the construction of buildings within its treaty area pursuant to the Tsawwassen Land Use Planning and Development Act. Typically, regulation includes issuing permits to build and occupy, establishing permit fees, carrying out inspections, and the like.

Early and ongoing collaboration is key to efficient permitting and project success.

Metro Vancouver works closely with members on the planning and delivery of utility capital projects to identify impacts and mitigation measures, and seek approvals for required permits. Early collaboration between Metro Vancouver and members is necessary to align on which permits, approvals, and related processes are needed so that these requirements can be considered in project schedules, budgets, and contracts. As the project progresses, ongoing and proactive management of the permitting process reduces delays and schedule-related costs for delivery of Metro Vancouver projects.

Member jurisdiction permitting processes are often related to potential impacts on the member jurisdiction (e.g., road use, noise). Permitting requirements vary depending on the nature of the utility capital project. In some cases, a member's bylaws may allow it to exercise discretion to allow for exceptions to, or exemptions from, specific permits and approvals.

Why is Metro Vancouver required to pay fees to submit permit applications?

Permit application fees are charged by members to offset their internal costs for administering permit applications and enforcing permit conditions. Permit application fees are not compensation for mitigating project impacts.

Under Section 55(2)(b) of the Community Charter, member jurisdictions may, by bylaw, authorize a building inspector to require building permit applicants to provide a certification by a qualified professional that the submitted plans comply with the BC Building Code and other legal requirements. Under Section 743 of the Local Government Act, municipal liability is limited when relying on the certification of a qualified professional. If a qualified professional is engaged to provide a compliance certification, permit application fees must be reduced.

Preliminary Design | Detailed Design | Construction

KEY CONSIDERATIONS

At the preliminary design phase, it is critical that Metro Vancouver and member jurisdiction staff meet to align on matters such as:

- **Collaboration and ongoing coordination** expectations throughout the design and construction phases
- **Required permits, approvals, and other mechanisms** that allow members to provide input and oversight
- **Submission requirements, resource commitments, and timelines** that allow for cost-effective and timely approval processes

Most permit applications are submitted during the detailed design phase. To maintain project timelines, collaboration and communication should continue through:

- **Active oversight** by Metro Vancouver and member jurisdiction staff to address potential roadblocks
- **Regular meetings** between Metro Vancouver project team and member jurisdiction staff to align expectations, resourcing, and timelines
- **Site visits and regular meetings** during permit application review to address issues early, monitor timelines, and avoid unnecessary delays

After tender award(s), Metro Vancouver oversees the project through the completion of construction. Some permits will be obtained during construction by contractors just prior to undertaking the activity that triggers the permit or approval.

Regular communication between Metro Vancouver and members should continue during this phase to oversee construction-related permits and approvals and actively manage issues, including public concerns and inquiries.

Note: For highest value, risk, and complexity utility capital projects, a signed Project Agreement between Metro Vancouver and a member may be suitable. Project Agreements can be leveraged to formalize certain aspects of the permitting process, including submission requirements, approvals, fees, timelines, and resource commitments. By formalizing the permitting process, Project Agreements can add certainty to the roles and responsibilities of Metro Vancouver and member jurisdiction staff, reducing the potential for increased costs and delays.

Preliminary Design	Detailed Design	Construction
KEY OUTCOMES		
• Permitting assessment and permit summary prepared by Metro Vancouver and reviewed by member • Meetings and workshops between Metro Vancouver and member • Engagement with First Nations, the public, and senior government officials, as required	• Engagement with First Nations, the public, and senior government officials, as required. • Permit applications submitted by Metro Vancouver • Permits and approvals issued by member jurisdiction • Presentations to Mayor and Council, as appropriate	• Regular meetings and site visits • Engagement with First Nations, the public, and senior government officials, as required • Construction permit applications submitted by contractors or Metro Vancouver • Permits and approvals issued by member jurisdiction • Respond to public inquiries

Note: All Metro Vancouver utility capital project permit application forms must be signed by Metro Vancouver's Chief Administrative Officer/Commissioner or delegate. Permit applications will be approved by member jurisdiction staff or by Mayor and Council and may require public engagement and First Nations consultation processes.

Note: Metro Vancouver and members can enter into an Operation Agreement that covers a variety of operations and maintenance activities of a particular utility to formalize the parties' ongoing relationship by, among other things, establishing a set of mutual expectations for notifications, approvals, and submissions.

Typical Member Jurisdiction Permits

Below are examples of typical permits that member jurisdictions may require for utility capital projects. Metro Vancouver and members should work together to identify the permits that are necessary for a given utility capital project and reduce typical review times as much as possible. Permit application review timelines are driven by several factors, such as:

1. Availability of staff
2. Backlog of permit applications
3. Timing of review panel or council meetings
4. Complexity of project and issues
5. Requirements for public engagement and First Nations consultation
6. Departments involved in application review (e.g., engineering, parks, planning, fire department)
7. Coordination with other permitting agencies (e.g., federal, provincial, other utilities, etc.)
8. Coordination with other utilities

Permit or Approval	What is it required for?	When is it applied for?	Typical review timelines
Building Permit	To construct buildings or structures as specified in a bylaw.	Prior to construction of buildings and structures that require permit per member bylaws or BC Building Code	6 months to 2 years
Building Occupancy Permit	Prior to occupying a building.	During construction, prior to building occupancy	2 to 3 months
Development Permit	If the project site is within a designated Development Permit Area and no exemptions apply.	During detailed design	3 to 6 months
Demolition Permit	Demolishing a building or structure as specified in a bylaw.	During construction, prior to demolition of buildings and structures	3 to 6 months
Discharge Permit[3,4]	If activities during construction or operation result in the discharge of wastewater, contaminated groundwater, or stormwater into sewer or surrounding environment.	Prior to or during construction, in advance of any activities that may result in discharge	1 to 2 months
Noise Bylaw Exemption	If construction activities do not adhere to Noise Bylaw (e.g., outside of hours or above decibel levels).	During construction, prior to activity requiring exemption	3 to 4 months
Rezoning Approval	If current zoning on the property does not allow for planned site use.	During detailed design	6 months to 2 years
Road/Highway Use Permit	If member jurisdiction roads will be required for material or equipment storage, or as workspace or use for transporting equipment (e.g., where traffic controls involved to enter/exit site).	During construction, prior to activity requiring road use	1 to 2 months
Soil Removal Permit	If soil is removed from site, or if fill is brought to site above an amount specified in a soil bylaw.	During construction, prior to soil removal or addition of fill above amount specified in bylaw	1 to 2 months
Subdivision Approval	Subdividing a property or consolidating two or more properties into one lot.	During detailed design	6 months to 2 years
Tree Removal Permit	Removal of trees that are above the size specified in a tree bylaw.	Prior to tree removal	2 to 4 months
Various occupancy permits: safety, electrical, gas, plumbing, water/ wastewater connection permits	To complete commissioning of building and site infrastructure to meet the building code and connect to member jurisdiction services.	During construction, prior to completing building and site infrastructure construction	1 to 2 months

3 Issuing agency depends on discharge location (i.e., Metro Vancouver or member jurisdiction sewer, receiving environment)

4 A waste discharge authorization may also be required under the Environmental Management Act

Appendix B – Construction Impact Assessment Tool

The Construction Impact Assessment Tool guides identification of impacts and assessment of impact magnitude.

#	Impact Category	Low Level of Impact	Medium Level of Impact	High Level of Impact
1.	**Access disruption to businesses and residential properties**	Minimal or limited access disruption to businesses or residential properties are anticipated as a result of the planned works. **Example:** Some businesses or residential properties may experience some impact to reduced access points. Access disruptions can be resolved with minimal detours or accommodations.	Moderate/notable access disruption to businesses or residential properties are anticipated as a result of the planned works. **Example:** A substantial number of businesses or residential properties in the impacted area are anticipated to experience some reduction in access points. Access disruptions can be resolved with reasonable detours (e.g., no substantive change to business operation plans).	Substantial access disruption to businesses or residential properties are anticipated as a result of the planned works. **Example:** The majority of businesses and residential properties in the impacted area are anticipated to experience substantially less access via previous access points. Only available resolutions include major detours or accommodations (e.g., changing access hours, mode of access,etc.).
2.	**Traffic congestion impacting businesses and residents**	Limited additional traffic congestion is anticipated to impact businesses, residents or commuters as a result of planned works. **Example:** Some businesses within impacted area are anticipated to experience some impacts to business operations which require limited accommodations during construction period.	Moderately more severe traffic congestion is anticipated to impact businesses, residents or commuters as a result of planned works. **Example:** Some businesses within impacted area are anticipated to experience some impacts to business operations which can be reasonably accommodated.	Substantially more severe traffic congestion is anticipated to impact businesses, residents or commuters as a result of planned works. **Example:** The majority of businesses within the impacted area are anticipated to experience prolonged (e.g. >6 months) impacts to business operations (e.g., requiring major retooling of business operations) as a direct result of planned works.
3.	**Dust or odour**	Few complaints related to dust or odour are anticipated as a result of planned works. **Example:** Some complaints are anticipated to be received over the construction period with limited to no recurrence observed.	Moderately high number of complaints related to dust or odour are anticipated as a result of planned works. **Example:** Periodic instances of higher-than-normal complaints are anticipated to be received during construction, from a variety of parties. There may be occasional recurrences over the same period.	Substantially high number of complaints related to dust or odour are anticipated as a result of planned works. **Example:** Higher-than-normal volume of similar complaints are anticipated to be received consecutively (same impact or same originating party) for a prolonged period (e.g. > 6 consecutive months).

#	Impact Category	Low Level of Impact	Medium Level of Impact	High Level of Impact
4.	**Noise**	The Noise and Vibration Risk Screening* does not indicate a risk that people or buildings in the vicinity of planned construction activities will be impacted by noise.	The Noise and Vibration Risk Screening* indicates a potential risk that people or buildings in the vicinity of planned construction activities will be impacted by noise, and the impact assessment conducted by an acoustical professional anticipates that the noise from the planned construction activities may have a medium impact.	The Noise and Vibration Risk Screening* indicates a potential risk that people or buildings in the vicinity of planned construction activities will be impacted by noise, and the impact assessment conducted by an acoustical professional anticipates that the noise from the planned construction activities may have a high impact.
5.	**Vibrations**	The Noise and Vibration Risk Screening* does not indicate a risk that people or buildings in the vicinity of planned construction activities will be impacted by vibration.	The Noise and Vibration Risk Screening* indicates a potential risk that people or buildings in the vicinity of planned construction activities will be impacted by vibration and the impact assessment conducted by an acoustical professional anticipates that the vibration from the planned construction activities may have a medium impact.	The Noise and Vibration Risk Screening* indicates a potential risk that people or buildings in the vicinity of planned construction activities will be impacted by vibration and the impact assessment conducted by an acoustical professional anticipates that the vibration from the planned construction activities may have a high impact.
6.	**Parking**	Minimal to no parking reduction where there is high parking demand (for construction site or in vicinity of construction site for staff).	Moderate levels of parking reduction where there is high parking demand (for construction site or in vicinity of construction site for staff) are anticipated with some alternatives available.	Major levels of parking reduction where there is high parking demand (for construction site or vicinity of construction site for staff) are anticipated with limited alternatives available.
7.	**Disruption in access to bike/pedestrian trails and routes**	Minimal to no incremental levels of access disruption or duration of disruption are anticipated as a result of planned works. **Example:** Small percentage (or less) of impacted bike trail(s)/route(s) are closed off to cyclists, and a range of alternate solutions could be accommodated.	Moderate level of access disruption or duration of disruption are anticipated as a result of planned works. **Example:** Some bike trail(s)/ route(s) with normally high traffic are closed off to cyclists for short periods but there are some options for detours.	Major level of access disruption or duration of disruption are anticipated as a result of planned works. **Example:** Substantial percentage of impacted bike trail(s)/route(s) are closed off to cyclists entirely and few options exist for detours or alternate arrangements.

*The Noise and Vibration Risk Screening is contained in the Metro Vancouver Construction Noise and Vibration Guide and is completed at the beginning of a utility capital project by the project team.

#	Impact Category	Low Level of Impact	Medium Level of Impact	High Level of Impact
8.	**Disruption to special events operations**	Limited to no incremental disruptions to known special events operations (e.g., parade, annual festival) as a result of planned works are anticipated. **Example:** The number or magnitude of special events impacted is low or municipal revenues generated via special events may decrease, though average total impacts are marginal.	Moderate disruptions to known special events operations (e.g., parade, annual festival) as a result of planned works are anticipated. **Example:** The number or magnitude of special events impacted is moderate or municipal revenues generated via special events may decrease.	Substantial disruptions to known special events operations (e.g., parade, annual festival) as a result of planned works are anticipated. **Example:** The number or magnitude of special events impacted is substantial and municipal revenues generated via special events are anticipated to materially decrease.
9.	**Assessment of and protection against impacts on existing non-Metro Vancouver utilities and roadway infrastructure**	Limited to no net impacts on member jurisdiction(s) utilities and roadway infrastructure are anticipated as a result of planned works. **Example:** No, or minor, modifications are needed to protect existing utilities serving member jurisdiction(s) and minimal disruption to non-Metro Vancouver utility services is anticipated.	Moderate impacts on member jurisdiction(s) utilities and roadway infrastructure are anticipated as a result of planned works. **Example:** Some work is required to protect existing non-Metro Vancouver utilities serving member jurisdiction(s) and minor disruption in non-Metro Vancouver services is anticipated.	Substantial impacts on member jurisdiction(s) utilities and roadway infrastructure are anticipated as a result of planned works. **Example:** Major work is required to protect or relocate existing non-Metro Vancouver utilities serving member jurisdiction(s). Material disruption in non-Metro Vancouver services is anticipated.
10.	**Temporary or permanent statutory rights of way**	Land required for temporary or permanent right of way already designated for utility or public use and unlikely to encumber needs for other utility or public use.	Land required for temporary or permanent right of way already designated for utility or public use but could encumber needs for other utility or public use.	Land required for temporary or permanent right of way is on investment property (i.e., lands that can be sold to third parties for development) or municipal development lands for future development (e.g., physical buildings such as community centres if directly affected by the presence of a right of way).
11.	**Official Community Plan (OCP) form and character**	Limited to no deviations from planned design and character of the impacted area as a result of and at completion of planned works anticipated. **Example:** Planned design of the project will result in limited to no change or deviation from character for the site as outlined in the OCP for that area.	Moderate deviations from planned design and character of the impacted area as a result of or at completion of planned works anticipated. **Example:** Planned design of the project will result in moderate character change or deviation for the site as outlined in the OCP for that area.	Substantial deviations from planned design and character of the impacted area as a result of and at completion of planned works anticipated. **Example:** Planned design of the project will result in substantial character change or deviation for the site as outlined in the OCP for that area.

#	Impact Category	Low Level of Impact	Medium Level of Impact	High Level of Impact
12.	**Existing community amenities**	Limited or no net change to access or availability of community amenities (e.g. ., park bench, water fountain, community art, playground, etc.) As a result of planned works anticipated. **Example:** A small number of community amenities are inaccessible, and alternative amenities are available.	Moderate net change to access or availability of community amenities (e.g., park bench, water fountain, community art, playground, etc.) As a result of planned works anticipated. **Example:** Some community amenities with high use/ visitation are inaccessible for brief periods of time, but there are some alternative amenities available.	Major net change to access and availability of community amenities (e.g., park bench, water fountain, community art, playground, etc.) As a result of planned works anticipated. **Example:** Permanent removal of high use/visitation amenities and long term (>6 months) lack of access with minimal alternatives available.
13.	**Permit application processing**	Minimal/limited staff capacity or technical expertise required for member jurisdiction(s) to process permit applications for planned works. **Example:** The permit application is not anticipated to require specialized expertise or training to review.	Moderate staff capacity or technical expertise required for the member jurisdiction(s) to process permit applications for planned works. **Example:** The permit application may require specialized expertise or training to review.	Substantial staff capacity and technical expertise required for the member jurisdiction(s) to process permit applications for planned works. **Example:** The permit application is anticipated to require substantial staff capacity and specialized expertise and training to review.
14.	**Site ecological disturbance**	Minimal/limited ecological disturbance anticipated with the planned works.	Moderate/material ecological disturbance anticipated with the planned works.	Substantial ecological disturbance anticipated with the planned work.

Appendix C – Mitigation Library

The Mitigation Library guides the identification of mitigation solutions for construction-related impacts.

#	Mitigation Category	Low Intensity Level of Mitigation Solution	Medium Intensity Level of Mitigation Solution	High Intensity Level of Mitigation Solution
1.	**Access disruption to businesses and residential properties**	Mitigation measures seek to better understand and provide advance notice of access disruptions to businesses and residential properties within the impacted area. **Example:** • Providing ample notice to businesses and residents about upcoming construction projects, including details about the duration, scope, and potential traffic impacts. • Requiring a public impact plan prepared by Metro Vancouver – including traffic, noise, air quality, preservation of existing utilities, site cleanliness, restoration. • Providing advance notice to affected neighbourhoods in the form of letters or dedicated webpage. • Conduct pre- and post-construction condition assessments on affected properties and make repairs as needed.	Mitigation measures seek to implement temporary measures which offset or provide alternative access options to businesses and residential properties within the impacted area. **Example:** In addition to the potential low intensity mitigation solutions, examples can include: • Implementing temporary access during construction such as bridges or pedestrian walkways to ensure continuous access to businesses and residences, including maintaining accessibility. • Conduct studies to understand rerouting options and implement mitigations which prioritize highest-impact/most vulnerable populations. • Coordinate with public transit agencies to reduce impacts on bus routes or relocate bus stops. • Coordinate with emergency services to ensure access and alternate routes are feasible. • Coordinate with waste and recycling collectors to ensure continued service. • Moderate adjustments to project schedule. • Moderate change to standard work hours/days.	Mitigation measures require major changes to standard or typical construction schedule and methodology, requiring additional costs and management oversight. **Example:** In addition to the potential moderate and low intensity mitigation solutions, examples can include: • Utilize alternate construction methodology. • Changing project alignment or site location after Project Definition phase. • Alternate material delivery/ removal methods (e.g., barging, re-use) in order to reduce traffic impacts. • Substantial change to standard work hours/days. • Making substantial adjustments to project schedule.

#	Mitigation Category	Low Intensity Level of Mitigation Solution	Medium Intensity Level of Mitigation Solution	High Intensity Level of Mitigation Solution
2.	**Traffic congestion impacting businesses and residents**	Mitigation measures seek to provide advance notice and generate public awareness of upcoming traffic congestion. **Example:** • Providing ample notice to businesses and residents about upcoming construction projects, including details about the duration, scope, and potential traffic impacts. • Enhancing reference checks when awarding construction contracts. • Requiring contractors to attend public meetings. • Engaging with member jurisdiction(s) in development and review of traffic management strategies.	Mitigation measures seek to implement temporary relief measures to reduce dust or odour impacts, or establish more responsive, ongoing dialogue to understand and resolve impacts of dust or odour. **Example:** In addition to the potential low intensity mitigation solutions, examples can include: • Liaising with member jurisdiction(s) and other utilities to minimize collective impacts in the area. • Temporary works to facilitate traffic movement, such as intersection modifications, signal changes, enhanced intersection control. • Conduct studies to understand rerouting options and implement mitigations which prioritize highest-impact/most vulnerable populations. • Coordinate with public transit agencies to reduce impacts on bus routes or relocate bus stops. • Moderate adjustments to project schedule. • Moderate changes to standard work hours/days.	Mitigation measures seek to provide advance notice and generates public awareness of upcoming traffic congestion. **Example:** In addition to the potential moderate and low intensity mitigation solutions, examples can include: • Utilize alternate construction methodology. • Changing project alignment or site location after Project Definition phase. • Use alternative material delivery/removal options (e.g., barging). • Substantial changes to standard work hours/days (e.g., to avoid peak traffic, expedite construction, etc.). • Substantial adjustments to project schedule.

#	Mitigation Category	Low Intensity Level of Mitigation Solution	Medium Intensity Level of Mitigation Solution	High Intensity Level of Mitigation Solution
3.	**Dust or odour**	Mitigation measures seek to avoid/reduce impacts or to provide greater notice and public awareness of upcoming dust/odour nuisances. **Example:** • Providing ample notice to businesses and residents about upcoming construction projects, including details about the duration, scope, and potential impacts. • Incentivizing construction methods which reduce or minimize dust and odour. • Regular cleaning of construction equipment, vehicles, and work areas to prevent the buildup of dust and odours and minimize their dispersion off-site. • Conducting baseline and continuing dust and odour studies throughout construction.	Mitigation measures seek to implement temporary relief measures to reduce dust or odour impacts, or establish more responsive, ongoing dialogue to understand and resolve impacts. **Example:** In addition to the potential low intensity mitigation solutions, examples can include: • Applying dust control products such as water or other dust suppressants, or biodegradable soil stabilizers, on exposed soil surfaces to prevent dust generation. • Regular street sweeping. • Locating dust or odour generating construction equipment (e.g., diesel generators) as far as practical from nearby residents and businesses. • Moderate change to standard work hours/days.	Mitigation measures require major changes to standard or typical construction schedule and methodology, requiring additional costs and management oversight. **Example:** In addition to the potential moderate and low intensity mitigation solutions, examples can include: • Substantial change to standard work hours/days. • Utilize alternate construction methodology. • Revise project schedule to avoid dry season for dust producing activities.

#	Mitigation Category	Low Intensity Level of Mitigation Solution	Medium Intensity Level of Mitigation Solution	High Intensity Level of Mitigation Solution
4.	**Noise**	Mitigation measures seek to avoid/reduce impacts or to provide greater advanced notice and public awareness of upcoming noise nuisances. **Example:** • Providing ample notice to businesses and residents about upcoming construction projects, including details about the duration, scope, and potential noise impacts. • Conducting baseline and continuing noise studies throughout construction. • Specifying noise limits during construction.	Mitigation measures seek to implement temporary relief measures to reduce noise impacts, or establish more responsive, ongoing dialogue to understand and resolve impacts of noise. **Example:** In addition to the potential low intensity mitigation solutions, examples can include: • Non-standard construction methods during periods of peak activity. • Installing soundproofing materials on construction equipment, machinery or structures to reduce noise emissions (e.g., noise blankets, dampening panels, hush kits, mufflers, or enclosures). • Selecting low noise equipment (e.g., hospital grade diesel generators, or white noise back-up signals). • Locating noise generating equipment as far as practical from businesses and residents. • Installing noise monitoring equipment at sensitive locations to continuously monitor during construction. • Moderate change to standard work hours/days.	Mitigation measures require major changes to standard or typical construction schedule and methodology, requiring additional costs and management oversight. **Example:** In addition to the potential moderate and low intensity mitigation solutions, examples can include: • Utilizing alternate construction methodology or site design which would substantially reduce or eliminate noise-related nuisances. • Moving larger construction zones (e.g., chambers) away from residents as much as possible. • Installing sound barriers during construction. • Substantial change to standard work hours/days. • Opting for alternative construction materials that produce less noise during installation and construction activities. (e.g., prefabricated materials, such as steel or concrete panels are often installed with less noise compared to traditional methods like pouring concrete on-site). • Changing project alignment or site location after Project Definition phase.

#	Mitigation Category	Low Intensity Level of Mitigation Solution	Medium Intensity Level of Mitigation Solution	High Intensity Level of Mitigation Solution
5.	**Vibrations**	Mitigation measures seek to avoid/reduce impacts or to provide greater advanced notice and public awareness of upcoming vibration occurrences. **Example:** • Providing ample notice to businesses and residents about upcoming construction projects, including details about the duration, scope, and potential vibration impacts. • Looking at alignment/ equipment placement to reduce proximity to businesses/residents. • Specifying vibration limits during construction. • Establishing buffer zones between construction sites and sensitive structures to mitigate the effects of vibrations. • Conduct baseline studies and regular monitoring and reporting during construction.	Mitigation measures seek to implement temporary relief measures to reduce vibration impacts, or establish more responsive, ongoing dialogue to understand and resolve impacts of vibrations. **Example:** In addition to the potential low intensity mitigation solutions, examples can include: • Installing isolation measures such as dampening materials or isolators between machinery and the ground to minimize vibration transmission. • Installing monitoring equipment at sensitive locations to continuously monitor vibration levels during construction activities. • Installing vibration reduction materials on construction equipment, machinery and structures to reduce vibration (e.g., vibration isolation mounts).	Mitigation measures require major changes to standard or typical construction schedule and methodology, requiring additional costs and management oversight. **Example:** In addition to the potential moderate and low intensity mitigation solutions, examples can include: • Using alternative construction techniques such as precast elements or off-site construction where possible to reduce on-site activities and associated vibrations. • Employing low-impact construction methods (e.g., hydraulic breakers instead of traditional methods like pneumatic breakers, or vibratory rather than impact piling). • Changing project alignment or site location after Project Definition phase.

#	Mitigation Category	Low Intensity Level of Mitigation Solution	Medium Intensity Level of Mitigation Solution	High Intensity Level of Mitigation Solution
6.	**Parking**	Mitigation measures seek to avoid/reduce impacts or to provide greater notice and public awareness of upcoming parking disruptions and alternate solutions. **Example:** • Reviewing contractor parking plan with member jurisdiction(s) early in project planning. • Consider parking requirements during route alignment or site selection.	Mitigation measures seek to implement temporary relief measures to reduce or provide alternate solutions for business/resident parking during peak construction periods. **Example:** In addition to the potential low intensity mitigation solutions, examples can include: • Reducing contractor parking requirements. • Making contractor vehicles more visible for monitoring (e.g., requiring contractor to clearly identify vehicles of work crews during construction period). • Set limits on public roadway use by contractor vehicles. • Securing short-term, temporary free parking alternates for designated businesses and residents during peak construction activities when the most contractors are expected to be onsite. • Request Highway Use Permit (or other agreement) from member jurisdiction to designate part of public roadway for construction vehicle parking. • Alternate shift scheduling for construction activities to minimize parking requirements during peak hours, and concentrate activity/onsite parking availability for contractors during off-peak hours.	Mitigation measures require changes or material adjustments to construction schedule, methodology, or location of work, requiring additional costs and management oversight. **Example:** In addition to the potential moderate and low intensity mitigation solutions, examples can include: • Considering offsite parking and shuttle options. • Reducing peak parking by contractors by changing construction methodology, approach or scheduling of work. • Securing long-term free parking alternates for designated businesses and residents during construction period.

#	Mitigation Category	Low Intensity Level of Mitigation Solution	Medium Intensity Level of Mitigation Solution	High Intensity Level of Mitigation Solution
7.	**Disruption in access to bike/pedestrian trails and routes**	Mitigation measures seek to avoid/reduce impacts and to provide advance notice and generate public awareness of upcoming disruption to bike/ pedestrian trails and routes. **Example:** • Identify, map, and communicate affected areas, the duration, and alternative routes to the public. • Installing temporary signage along affected trails to notify users of the construction and redirect them to alternative routes or detours.	Mitigation measures provide and signal users to detour options, and act as temporary relief for impacted bike/ pedestrian trails and routes. These mitigation measures may not be of complete comparable capacity and function as to the bike/ pedestrian trail or route experiencing disruption. **Example:** In addition to the potential low intensity mitigation solutions, examples can include: • Maintain reduced-traffic bike/pedestrian trails or routes during construction and ensure safety of cyclists is actively managed. Ensure the original trail/route is restored or improved after construction. • Creating temporary bike/ pedestrian trails or routes to offset those closed during construction, and ensuring the original trail or route is restored or improved after construction.	Mitigation measures replace bike/ pedestrian trails or routes made inaccessible during construction. **Example:** In addition to the potential moderate and low intensity mitigation solutions, examples can include: • Creating new permanent bike/pedestrian trails or routes within close proximity of those closed for duration of construction; these routes will continue to be available after construction. • Changing project alignment after Project Definition phase.

#	Mitigation Category	Low Intensity Level of Mitigation Solution	Medium Intensity Level of Mitigation Solution	High Intensity Level of Mitigation Solution
8.	**Disruption to special events operations**	Mitigation measures will seek to better coordinate activities between Metro Vancouver project team and member jurisdiction(s), or to provide ample active notice to affected vendors and the public. **Example:** • Providing timely and clear communication to the member jurisdiction(s) about upcoming construction activities, including the duration, affected areas, and alternative routes. • Implementing traffic management plans to mitigate congestion caused by construction-related closures or detours. • Coordinating with member jurisdiction(s) to manage traffic flow and ensure smooth access to the event venue.	Mitigation measures may continue to accommodate special event operations in the member jurisdiction(s), though some reduction of event scale or programming is to be expected. **Example:** In addition to the potential low intensity mitigation solutions, examples can include: • Designating multiple entry and exit points to the venue to accommodate any access restrictions. • Scheduling work which may temporarily free up or delay works at particular sites allowing event to still proceed but with some restrictions/reduced programming. • Ask for temporary alternate options to host special event operations using Metro Vancouver's existing portfolio without substantial incremental investments to ready the site.	Mitigation measures will allow special event operations to continue with limited disruptions, by securing alternate sites or working with the member jurisdiction(s) to deliver the event through other means. **Example:** In addition to the potential moderate and low intensity mitigation solutions, examples can include: • Metro Vancouver to explore and fund opportunities to co-host events with member jurisdiction(s) virtually. • Changing project alignment or site location after Project Definition phase. • Work with member jurisdiction(s) to identify alternate location/routing for event while site is unavailable. • Revise project schedule or stop work temporarily to accommodate the event.

#	Mitigation Category	Low Intensity Level of Mitigation Solution	Medium Intensity Level of Mitigation Solution	High Intensity Level of Mitigation Solution
9.	**Assessment of and protection against impacts on existing non-Metro Vancouver utilities and roadway infrastructure**	Mitigation measures seek to provide ample notice to business and residents affected during construction, and enhances coordination between contractor, member jurisdiction(s) and Metro Vancouver project team. **Example:** In addition to restoration guidance for roadways outlined in Metro Vancouver's Pavement Restoration Policy, examples can include: • Engaging with utilities and BC 1 Call early in the planning process to understand the location and specifications of existing infrastructure to consider in design and show on drawings as required. • Require use of advanced mapping technologies like GIS (Geographic Information Systems) to create accurate records of underground and above-ground utilities. • Minimal offset required (e.g., no other utilities or plans for new infrastructure) from existing infrastructure to new infrastructure to reduce proximity and mitigation measures required. • Providing ample notice to residents and businesses of upcoming utility disruptions.	Mitigation measures include temporary protection methods and monitoring, and early detailed planning to avoid and minimize disruptions or damage to non-Metro Vancouver utilities and roadway infrastructure. **Example:** In addition to the potential low intensity mitigation solutions, examples can include: • Implementing safe excavation practices to avoid accidental damage to underground utilities (e.g., techniques like hand digging or vacuum excavation in sensitive areas where utilities are present). • Providing temporary physical supports or rerouting for utility services during construction to maintain uninterrupted service to customers and neighbouring properties. • Obtaining necessary easements or right-of-way permissions from utility owners to protect their infrastructure. • Installing protective barriers or warning signage to prevent accidental damage to utility infrastructure. • Using methods like utility markers, barricades, or temporary fencing to define construction zones. • Requiring substantial offsets from existing to new infrastructure to reduce proximity and mitigation measures required. • Pre-excavate utilities to confirm location.	Mitigation measures require changes to project alignment and location, seeks to eliminate any non-Metro Vancouver utilities and roadway infrastructure disruptions, or will enhance the state of utility protection for member jurisdiction(s) after construction. **Example:** In addition to the potential moderate and low intensity mitigation solutions, examples can include: • Providing alternate or temporary utility supply during periods of disruption. • Changing project alignment or site location after Project Definition phase.

#	Mitigation Category	Low Intensity Level of Mitigation Solution	Medium Intensity Level of Mitigation Solution	High Intensity Level of Mitigation Solution
10.	**Temporary or permanent statutory rights of way** Note: Metro Vancouver will not pay for land rights for member-owned public lands which will be returned to the same general use following the project's completion and will not pay land rental costs for rights of way.	Mitigation measures seek to minimize and restore impact areas. **Example:** • Address damage caused by the construction and restoration of disturbed areas. • Conducting thorough surveys of the statutory right of way and surrounding areas to identify potential risks, sensitive features, and existing infrastructure. • Existing replaced Metro Vancouver infrastructure abandoned in place.	Mitigation measures seek to address and/or compensate member for loss of use of area due to project activities. **Example:** In addition to the potential low intensity mitigation solutions, examples can include addressing: • Damage caused by the construction. • Restoration of disturbed areas. • Loss of revenue during construction (e.g., parking fees). • Relocation costs (permanent or temporary). • Loss of use during construction. • Removal of replaced Metro Vancouver infrastructure.	Mitigation measures seek changes to project alignment, location, or construction methods or payment for acquisition for permanent rights of way. **Example:** In addition to the potential moderate and low intensity mitigation solutions, examples can include: • Changes to project alignment, siting, or construction methodology after Project Definition phase to minimize area of statutory rights-of-way but not to be considered as compensation for acquisition of temporary or permanent rights-of-way. • Provision of multi-use pathways, property enhancements, or landscaping improvements, where deemed reasonable in the overall context of the project, but not considered as compensation for acquisition of temporary or permanent rights-of-way. • For permanent rights-of-way, Metro Vancouver to pay member jurisdiction(s) fair market value acquisition costs for investment properties (i.e., lands that can be sold to third parties for development) and municipal development lands designated for future use (e.g., physical buildings such as community centres if directly affected by the presence of a right-of-way).

#	Mitigation Category	Low Intensity Level of Mitigation Solution	Medium Intensity Level of Mitigation Solution	High Intensity Level of Mitigation Solution
11.	**Official Community Plan (OCP) form and character**	Mitigation measures to align with form and character requirements outlined in the OCP of the member jurisdiction(s) as part of initial site selection and planning discussions. **Example:** • Consider OCP in route alignment or site selection planning. • Accommodate minor changes (no net change to project cost or schedule) into project design to align with form and character of area as outlined in the OCP.	Mitigation measures will seek to limit or manage deviations from the form and character requirements outlined in the OCP of the member jurisdiction(s) for the selected site or alignment. **Example:** In addition to the potential low intensity mitigation solutions, examples can include: • Accommodating minor changes (minimal project cost or schedule implications) into project design to align with form and character of area. • Minor adjustment to route alignment or site selection.	Mitigation measures to limit deviations from form and character requirements outlined in the OCP of the member jurisdiction(s) involving changes to the design and site location. **Example:** In addition to the potential moderate and low intensity mitigation solutions, examples can include: • Changing project alignment or site location after Project Definition phase. • Altering the proposed design of the facility or infrastructure building(s) to align with form and character requirements within the OCP (e.g., building features such as a green roof, interpretive elements, higher end finishes, or project site features such as paths, tennis courts).
12.	**Existing community amenities** Note: Metro Vancouver will consider provision of net new community amenities in lieu of impact mitigation on a case-by-case basis.	Mitigation measures seek to provide advance notice and generate public awareness of upcoming amenity disruption. **Example:** • Identify, map, and communicate affected areas, the duration, and alternative amenity locations to the public.	Mitigation measures provide and signal users to alternative amenities. These mitigation measures may not be of comparable capacity and function. **Example:** • Providing maps to similar amenities. • Enhanced communication with the public on where and how to access alternative amenities. • Installing temporary signage to notify users of the construction and redirect them to alternative amenities.	Mitigation measures seek to maintain a similar experience of amenity in a temporary or alternate location. **Example:** • Creating a temporary amenity to offset those removed or made inaccessible during construction. • Ensuring the original amenity is restored after construction. • Providing a similar amenity in an alternate location. • Changing project alignment or site location after Project Definition phase.

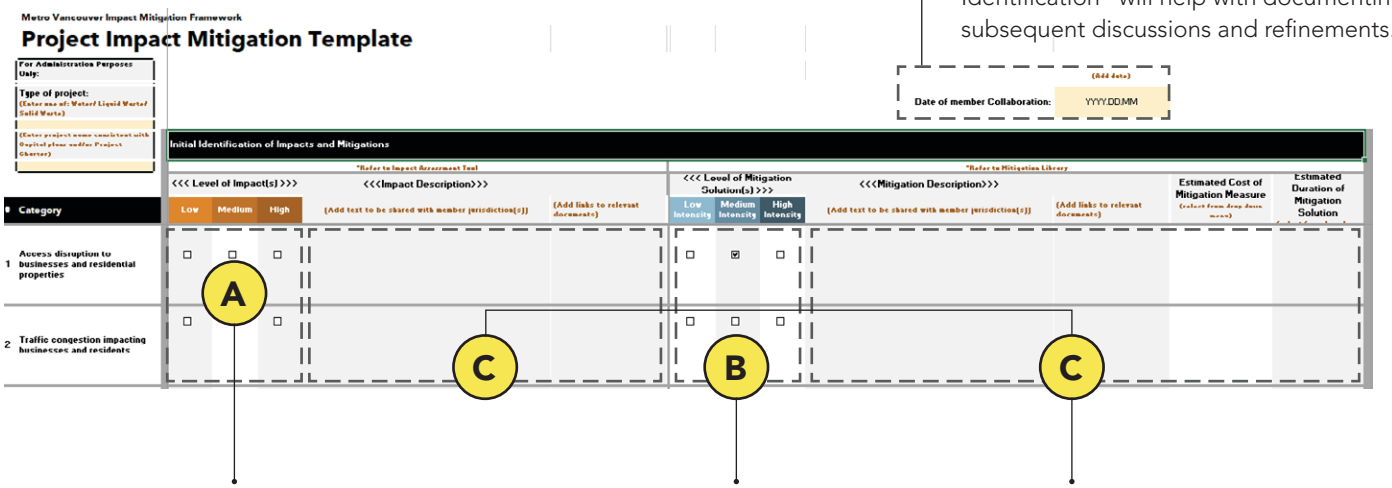
#	Mitigation Category	Low Intensity Level of Mitigation Solution	Medium Intensity Level of Mitigation Solution	High Intensity Level of Mitigation Solution
13.	**Permit application processing**	Mitigation measures enable improved efficiency in permit review and processing. **Example:** • Providing a clearly defined process for contractors and sub-contractors to propose and receive approval for alternative solutions or plans (from both member jurisdiction(s) and Metro Vancouver). • Providing advance notice to member jurisdiction(s) of project timing and requirements to flag potential issues and plan around anticipated approval timelines. • Metro Vancouver staff to engage consultants to review permit applications to facilitate expedient review by member jurisdiction(s). • Hosting member jurisdiction(s) to share information about upcoming projects, establish approval requirements, and plan resource allocations based on anticipated demands.	Mitigation measures provide tools, processes, some staff capacity or technical expertise for member jurisdiction(s) to process permit applications for planned works in a timely manner. **Example:** In addition to the potential low intensity mitigation solutions, examples can include: • Establishing overarching permits for Metro Vancouver capital projects, structural projects, and linear projects respectively. • Negotiating a permitting exemption agreement or an annual operating fee between Metro Vancouver and member jurisdiction(s).	Mitigation measures address gap in substantial staff capacity or technical expertise required for member jurisdiction(s) to process permit applications for planned works in a timely manner. **Example:** In addition to the potential moderate and low intensity mitigation solutions, examples can include: • Member jurisdiction(s) authorizing use of qualified professional(s) to certify building code and bylaw compliance of Metro Vancouver's permit application(s) at Metro Vancouver cost and thus foregoing permit fees to be charged by member jurisdiction(s) to Metro Vancouver (Refer to Chapter 26, Section 55 of the Community Charter and Section 743 of the Local Government Act.

#	Mitigation Category	Low Intensity Level of Mitigation Solution	Medium Intensity Level of Mitigation Solution	High Intensity Level of Mitigation Solution
14.	**Site ecological disturbance**	Mitigation measures encourage identification of opportunities which could reduce ecological disturbance of planned works. **Example:** • Establishing evaluation methodologies for innovative solutions that minimize or reduce ecological degradation. • Working with member jurisdiction(s) to minimize loss of trees, and environmental degradation resulting from construction. • Re-vegetation plans. • Environmental monitoring, erosion, and sediment control measures.	Mitigation measures seek to identify and provide some offsets for ecological disturbance from planned works or improve ecological condition greater than current state of an impacted area. **Example:** In addition to the potential low intensity mitigation solutions, examples can include: • Habitat restoration projects along the project alignment or site location.	Mitigation measures change construction approach and methodology to reduce ecological disturbance of planned works. **Example:** In addition to the potential moderate and low intensity mitigation solutions, examples can include: • Utilizing non-standard construction methodology to avoid tree removal, replanting, and environmental degradation. • Restoring degraded ecosystems or creating new habitats off-site from the project. • Changing project alignment or site location after the Project Definition phase.

Appendix D – Project Impact Mitigation Template

The template is a separate document where information can be entered based on the instructions below. The intent of this template is to capture all identified impacts and mitigations applied to a project.

Collaboration with members
Add the date of the collaboration period in the yellow cell to track ongoing collaboration with members. Grouped columns to the right of "Initial Identification" will help with documenting subsequent discussions and refinements.



Review the **Impact Assessment Tool** in **Appendix B** of the Guide. Under section Initial Identification of Impacts and Mitigations check Low, Medium, or High for the level of impact(s) determined for each Category.

#	Impact Category	Low Level of Impact	Medium Level of Impact	High Level of Impact
1.	Access disruption to businesses and residential properties	Minimal or limited access disruption to businesses or residential properties are anticipated as a result of the planned works. Example: Some businesses or residential properties may experience some impact to reduced access points. Access disruptions can be resolved with minimal detours or accommodations.	Moderate/notable access disruption to businesses or residential properties are anticipated as a result of the planned works. Example: A substantial number of businesses or residential properties in the impacted area are anticipated to experience some reduction in access points. Access disruptions can be resolved with reasonable detours (e.g., no substantive change to business operation plans).	Substantial access disruption to businesses or residential properties are anticipated as a result of the planned works. Example: The majority of businesses and residential properties in the impacted area are anticipated to experience substantially less access via previous access points. Only available resolutions include major detours or accommodations (e.g., changing access hours, mode of access,etc.).

Review the **Mitigation Library** in **Appendix C** of the Guide. Under section Initial Identification of Impacts and Mitigations check Low, Medium, or High for the level of mitigation solutions(s) determined for each Category.

#	Mitigation Category	Low Intensity Level of Mitigation Solution	Medium Intensity Level of Mitigation Solution	High Intensity Level of Mitigation Solution
1.	Access disruption to businesses and residential properties	Mitigation measures seek to better understand and provide advanced notice of access disruptions to businesses and residential properties within the impacted area. Example: • Providing ample notice to businesses and residents about upcoming construction projects, including details about the duration, scope, and	Mitigation measures seek to implement temporary measures which offset or provide alternative access options to businesses and residential properties within the impacted area. Example: In addition to the potential Low Intensity Mitigation Solutions, examples can include: • Implementing temporary access during construction such as bridges or	Mitigation measures require major changes to standard or typical construction schedule and methodology, requiring additional costs and management oversight. Example: In addition to the potential Moderate and Low Intensity Mitigation Solutions, examples can include: • Utilize alternate construction methodology. • Changing project alignment or site location after Project

Note: Each category includes examples of what a high, medium, and low intensity mitigation solution could look like to help determine the best solution for the impact identified in that category.

Establish the impact and mitigation solutions that will be used to inform the design and fill out the **Impact and Mitigation Description, Estimated Cost of Mitigation Measure,** and **Estimated Duration of Mitigation Solution** under the Initial Identification of Impacts and Mitigations section for each of the categories.

Collaborate with member jurisdictions on the level of impact and level of mitigation solutions determined, and confirm the impacts and solutions that have been established.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To: Water Committee and Liquid Waste Committee

From: Jennifer Crosby, Director, Project Management Office, Project Delivery
Nermine Tawfik, Supervisor Community Engagement, External Relations

Date: June 21, 2023 Meeting Date: July 12, 2023
July 19, 2023

Subject: **Guide to Metro Vancouver Utility Capital Projects for Member Jurisdictions and Impact Mitigation Framework**

RECOMMENDATION

That the GVWD and GVS&DD Boards receive for information the report dated June 21, 2023 titled "Guide to Metro Vancouver Utility Capital Projects for Member Jurisdictions and Impact Mitigation Framework".

EXECUTIVE SUMMARY

Metro Vancouver currently mitigates and compensates member jurisdictions for the impact of projects taking place within their jurisdiction through various means, which are generally negotiated on a case-by-case basis. Mitigation and compensation for member jurisdictions may take the form of changes to a design resulting in higher project costs, addition of community amenities, upgrades to member's infrastructure, provision of resources to our members to handle increased workload resulting from our projects, as well as payment of fees for various permits, lost revenue, letters of credit, and other charges.

Metro Vancouver staff continue to work with member jurisdictions to review practices with a goal to create a predictable, consistent and equitable approach to mitigating and compensating member jurisdictions for the impacts to their community during construction of region-serving infrastructure. This report provides an update on this work, including publishing the *Guide to Metro Vancouver Utility Capital Projects for Member Jurisdictions.*

PURPOSE

To provide the GVWD and GVS&DD Boards an update on progress with developing an equitable impact mitigation framework for member jurisdictions in which Metro Vancouver is undertaking capital project construction, including publishing the *Guide to Metro Vancouver Utility Capital Projects for Member Jurisdictions* (Attachment 1).

BACKGROUND

Each year, Metro Vancouver delivers projects to ensure that the region has reliable access to clean drinking water, safe wastewater removal and treatment, and waste disposal and recycling. The purpose of delivering these services on behalf of the members is to provide infrastructure at a scale that is more efficient than if each member or participant delivered the services separately. As a result, the services offer efficiencies that benefit all members. Members participate in the core services based on the understanding that not only will the benefits of the service be equitably

shared amongst participants, but the impacts and costs of delivering those services are also equitably shared.

Over the years, members have raised concerns regarding impacts to their communities through noise, dust, and traffic disruption, as well as impacts to their staffing time and resources due to capital project construction. Currently, impacts and corresponding mitigation measures are negotiated on a case-by-case basis with the member jurisdiction within which the construction project is taking place. This has resulted in unequal levels of compensation and mitigation to our members as well as unpredictable material impacts to the scope, schedule, and budget of Metro Vancouver capital projects.

In 2018, the Metro Vancouver Board rescinded the existing Capital Projects Policy and recommended that Metro Vancouver staff work with advisory committees to develop a capital projects framework, which would capture the approach and process of how Metro Vancouver utility capital projects are planned, managed, and communicated. Since then, Metro Vancouver has been engaging with member jurisdictions through a Regional Engineers Advisory Committee (REAC) working group consisting of members from the City of Coquitlam, District of North Vancouver, and the cities of Surrey and Vancouver, along with Metro Vancouver staff. The group discussed many important topics and issues and made practical suggestions toward creating more equitable and consistent approaches to improve the processes and communication between our organizations.

The working group came to agreement on a number of improvements and also identified areas where consensus was not possible. Some of the improvement solutions related to stronger coordination and communication have been implemented through a process Metro Vancouver staff just piloted with the City of New Westminster and are now implementing with the City of Burnaby. Recommendations related to improved tendering and procurement are being implemented on current projects. The balance of recommended improvement solutions/ideas (where there was and was not consensus) will be progressed through development of two key deliverables, which are further discussed in the following sections.

Guide to Metro Vancouver Utility Capital Projects for Member Jurisdictions

A guide has been developed to describe the phases of most Metro Vancouver utility capital projects and provides a high-level, consistent, and transparent roadmap that will help member jurisdictions plan their involvement in a Metro Vancouver utility capital project. It identifies the key responsibilities and decision points for both Metro Vancouver and member jurisdiction staff throughout the project lifecycle (from initiation through to close out). The audience for the guide is Metro Vancouver and member jurisdictions staff involved with Metro Vancouver water, liquid waste, and solid waste utility capital projects. The guide describes current practices only, not desired or future state, Metro Vancouver, in collaboration with member jurisdictions, consultants, and contractors is actively and continuously improving these practices and the guide will be updated periodically to reflect changes.

The guide was shared with all REAC members at the Metro Vancouver Conference Day held on May 12, 2023. The document will be available to member jurisdictions staff through the Metro Vancouver website.

Impact Mitigation Framework

In a report to the GVWD and GVS&DD Boards at their October 28, 2022 meeting (Attachment 2), Metro Vancouver staff outlined some of the current issues related to mitigation and compensation practices for Metro Vancouver capital projects construction. Building upon the outcomes from the REAC working group, an impact mitigation framework will be developed to enable predictable, consistent, and equitable approaches to mitigating construction impacts to their communities during construction. This will allow Metro Vancouver to strengthen its relationships with member jurisdictions and the public. The specific objectives for this work include:

- Clarify expectations for how Metro Vancouver and member jurisdictions work together to deliver regional infrastructure
- Standardize the process for assessing and mitigating the impacts of utility capital projects on member jurisdictions
- Reduce risk and uncertainty related to the delivery of Metro Vancouver utility capital projects which in turn reduces impacts on costs and schedules

To support this, Metro Vancouver has outlined a three-part facilitated workshop series with all REAC members starting in 2023 as follows:

Workshop 1 **May 12, 2023 - COMPLETE**	**Workshop 2** **Target Q4 2023**	**Workshop 3** **TBD**
Purpose: Explore the impacts of Metro Vancouver capital projects construction on member jurisdictions	**Purpose**: Share Metro Vancouver's tools and approaches for identifying impacts and improving intergovernmental coordination Build a framework for mitigation practices (guiding principles, impact assessment tool, defining mitigation)	**Purpose**: Revise and finalize the framework for mitigation practices
Outcome: Establish a shared understanding of the impacts of capital projects construction	**Outcome**: Identify elements of an equitable framework	**Outcome**: Framework to be presented to RAAC and Metro Vancouver Boards

The workshop on May 12 was attended by 25 REAC and REAC Subcommittee members representing 17 out of 21 GVWD and GVS&DD members. Following a short contextual presentation, members participated in a facilitated discussion to identify the impacts of Metro Vancouver's capital project construction, from project initiation through to close-out, and discussed the magnitude and

complexity of these impacts. Participants shared their experiences and the group heard diverse perspectives from each member jurisdiction.

The workshops are intended to be an iterative process to inform the framework development. Metro Vancouver staff will integrate feedback from the workshops and prior discussions from the REAC working group into recommended guiding principles and approaches to different forms of mitigation to develop a predictable, equitable, and consistent regional approach. The proposed framework will go to REAC and Regional Administrators Advisory Committee (RAAC) prior to coming to the Water and Liquid Waste Committees and the GVWD and GVS&DD Boards for review and approval.

ALTERNATIVES
This is an information report. No alternatives are presented

FINANCIAL IMPLICATIONS
The development of standardized, region-wide approaches to mitigation and compensation for projects undertaken in member jurisdictions would help to manage project costs, maintain project schedules, mitigate scope creep and change orders on construction projects, as well as ensure a transparent and equitable approach across all member jurisdictions.

CONCLUSION
Metro Vancouver is committed to the continuous improvement of its processes and coordination with member jurisdictions to deliver regional capital projects efficiently and cost effectively, and to mitigate the impacts of these projects. Development of the *Guide to Metro Vancouver Utility Capital Projects for Member Jurisdictions* is now complete and has been shared with REAC at the Metro Vancouver Conference Day on May 12, 2023 as well as RAAC on June 22, 2023.

The first workshop on May 12, 2023 is one of a three-part workshop series with REAC to engage with members on the development of a framework for mitigation practices for member jurisdictions in which Metro Vancouver is undertaking capital project construction. Planning is underway to prepare for the second workshop, which is targeted to be held in Q4 2023.

~~**Attachments**~~
1. ~~Guide to Metro Vancouver Utility Capital Projects (59308623)~~
2. ~~Compensation Practices Related to Metro Vancouver's Delivery of Projects, report dated September 28, 2022 (53943312)~~
3. ~~Guide to Metro Vancouver Utility Capital Projects for Member Jurisdictions and Impact Mitigation Framework - Presentation~~

60662303

Attachment 4

MV Utility Capital Projects - Construction Impact Mitigation Framework

Jennifer Crosby, P. Eng.
Director - Project Management Office
Project Delivery Department

Brianne Zimmermann
Sr. Regulatory Analyst
Project Delivery Department

Water Committee Meeting – November 6, 2024

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OBJECTIVES

1. Provide progress update
2. Share feedback from MV Conference Day and REAC / RAAC Survey Responses
3. Discuss next steps


Tunnel Boring Machine and Loading System

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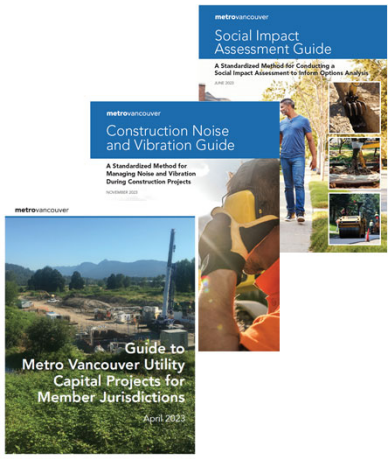
MV CAPITAL PROJECT PLANNING AND DELIVERY

Improving coordination and communication during the planning and delivery of regional infrastructure projects in member jurisdictions

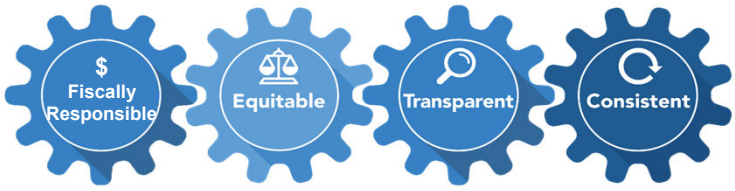
Completed works by MV:

- Utility Capital Projects Guide
- Project Coordination Reference Guide
- Noise and Vibration Guide
- Social Impact Assessment
- **Impact Mitigation Framework**



IMPACT MITIGATION FRAMEWORK

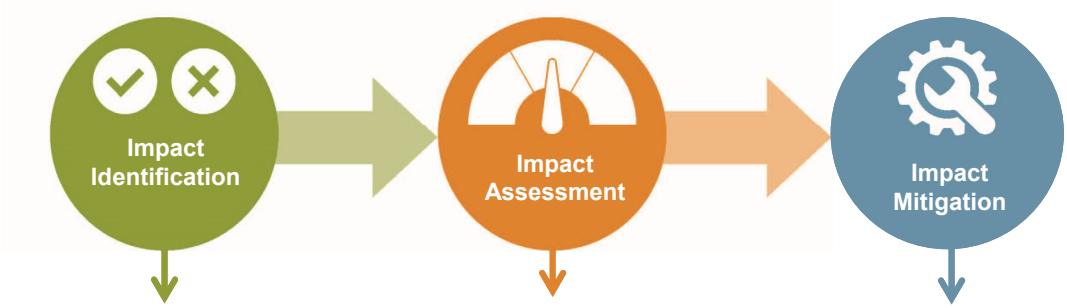
Guiding Principles & Project Objectives



- **Clarify expectations** for how Metro Vancouver and member jurisdictions work together to deliver regional infrastructure
- **Standardize the process** for assessing and mitigating the impacts of utility capital projects on member jurisdictions
- **Reduce risk and uncertainty** related to the delivery of Metro Vancouver utility capital projects which in turn reduces impacts on costs and schedules

IMPACT MITIGATION FRAMEWORK

High Level Process Overview



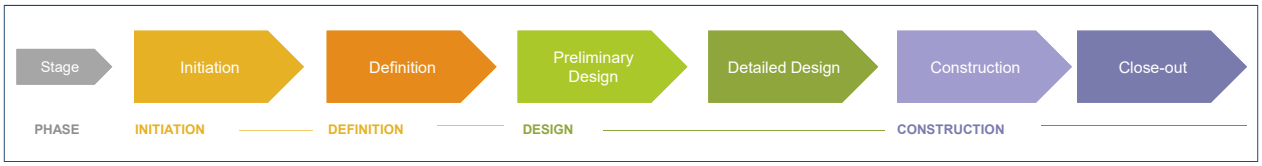
Identify the impacts of a utility capital project on member jurisdiction(s)

Determine the magnitude of the impact on member jurisdictions

Mitigate the impacts to member jurisdictions

HOW THE FRAMEWORK WILL BE USED

Applied iteratively over the project lifecycle with member jurisdiction involvement



With input from member jurisdictions, project teams assess social, environmental and financial considerations to **identify** recommended project approach, including site/alignment.

Construction Impact Mitigation Framework

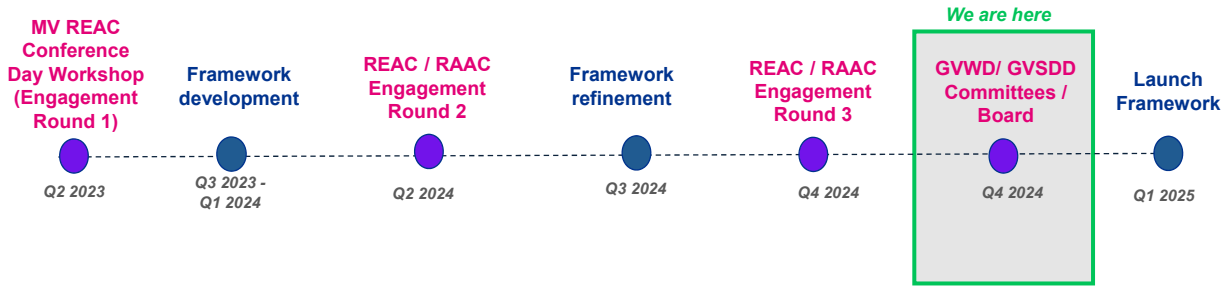
Project teams **confirm** anticipated construction impacts and mitigations in discussion with member jurisdictions and incorporate into construction contract.

Standardized templates used to **document** anticipated impacts and preferred options to avoid, minimize, or offset impacts.

Project teams **monitor** mitigation effectiveness and control quality measures in discussion with members.

Project impacts and mitigations are documented and used to **inform** future capital projects and refine framework.

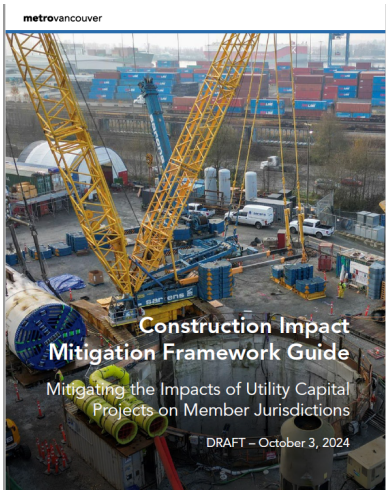
IMPACT MITIGATION FRAMEWORK WORK PLAN



IMPACT MITIGATION FRAMEWORK

Deliverables

1. Core Deliverables ✓
    a. Impact Assessment Tool
    b. Impact Mitigation Library
2. Supporting Deliverables ✓
    a. Framework Guide
    b. Framework Templates
    c. Utility Capital Projects - Permitting Fact Sheet



REAC & RAAC ROUND 2 & 3 ENGAGEMENT SUMMARY

- Presentation to REAC and RAAC – May 3; May 23
- Presentation & Open House at MV Conference Day – June 7
- Online Feedback Survey sent to REAC and RAAC (Open May 3 to June 14)
- Presentation to REAC and RAAC – October 4; Oct 15
  - ➢ Overall positive feedback including appreciation for the development of the framework.
  - ➢ Support for consistent approach and fiscal responsibility to mitigating impacts to all members.

MEMBER FEEDBACK: WHAT WE HEARD

Changes Made to Impact Assessment Tool & Mitigation Library

1. Clarified impacts to non-MV utilities to include roadway infrastructure including reference to MV Board Policy Pavement Restoration for Sewer and Water Main Installations
2. Expanded traffic mitigation examples to include intersection modification, signal changes, enhanced intersection control
3. Revised access mitigation examples to reference access for emergency services and waste/ recycling collection
4. Revised bike trail/routes impact category to include pedestrian trails/ routes

The **framework is expected to be refined over time** as projects are completed and mitigations are monitored and documented. This may include edits to the description of impacts and mitigation examples.

MEMBER FEEDBACK: WHAT WE HEARD

Language Incorporated into the Framework Guide

1. Framework enables expedited decision-making and nimble responses to adapting and refining mitigations.
2. The collective suite of impacts and mitigations for the given project is to be evaluated; not necessary for each impact and mitigation intensity to match within a project or between projects.
3. Each utility capital project has an MV point of contact assigned.
4. There is a collaborative process to avoid, minimize and mitigate construction impacts; in some cases this will result in a “build back better” approach.
5. Monitoring quality and effectiveness of the impact mitigation measures during construction and refining mitigation measures if initial plans are insufficient, or if there is a change in construction schedule or scope.
6. Early collaboration with member jurisdictions on MV utility capital projects is enabled through various MV and member jurisdiction activities throughout the project lifecycle.

MEMBER FEEDBACK: WHAT WE HEARD

Out of Scope of Framework or Addressed Elsewhere

Feedback	Response
Broaden scope to include impacts or opportunities related to municipal planned work such as streetscape and greenway projects	MV engages annually on the capital program with members at municipal coordination meetings which enables coordination of schedules. MV works with member jurisdictions to align restoration efforts with municipal plans for streetscapes and greenways. MV considers incorporation of Member jurisdiction requested and funded scope into MV utility capital projects through Coordinated Works Agreements where appropriate.
Assessing and managing cumulative impacts of multiple MV projects on a member jurisdiction	The framework is intended to support individual projects. Accounting for impacts across a portfolio of projects to a member jurisdiction is out of scope for this initial version of the Framework.
Provision of funding for facilitating, approving and monitoring member permitting processes	Permit fees are intended to cover these costs. Members have the option to delegate BC Building Code oversight to a qualified professional. In the Guide to the framework, it is noted that for large projects, custom agreements can be developed to formalize submission requirements, approvals, fees, timelines and resource commitments.

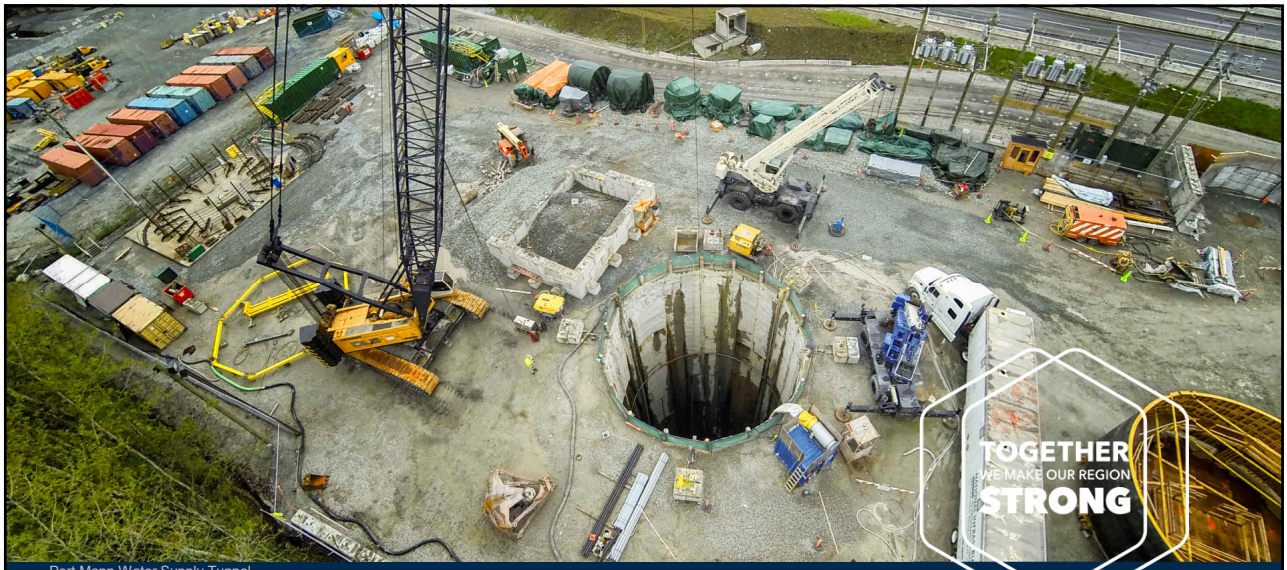
MEMBER FEEDBACK: WHAT WE HEARD (CONT'D)

Out of Scope of Framework or Addressed Elsewhere

Feedback	Response
Consistent, transparent and equitable approach for quantifying land use impacts **Concerns related to compensation for hosting infrastructure on land not designated for profitable development e.g. parkland** **Concerns for the unfair burden of hosting multiple MV infrastructure projects**	MV is considering establishing principles for assessing above-ground loss of use methodology. Currently, compensation may be payable if the land in question is investment land or if they are required for future municipal development lands. If compensation is payable, Metro Vancouver will compensate member jurisdictions for acquisition of land rights following the guiding principles of consistency, equity, transparency, and fiscal responsibility. In cases where Metro Vancouver requires land rights from members for a project, the tax payer should not be expected to pay for those lands which are already in the public realm, and where lands will be returned to the same general use following the project's completion.
Weighting criteria for the impact categories	The framework is intended to be a tool to enable collaboration between MV and Members. Due to the variability in impacts felt by members for each project scope and location, no weighting criteria has been included at this time.
Compensation in lieu of mitigations(s) or transferring responsibility for impact mitigation (e.g. site restoration) to member jurisdictions	MV is responsible for mitigating construction impacts due to utility capital projects. Requests for compensation in lieu of mitigations(s) will be handled on a case-by-case basis.

KEY TAKEAWAYS

1. Framework developed with input from RAAC, REAC and MV staff
2. Overall positive feedback received with some opportunities for future continuous improvement
3. Next Steps:
    1. Nov 2024 – Present Framework to GVS&DD and GVWD Committees and Boards
    2. Q1 2025 – Framework launched to MV and Member Staff



Port Mann Water Supply Tunnel

Thank you

metrovancouver

To: Water Committee

From: Murray Gant, Director, Major Projects, Project Delivery

Date: October 28, 2024 Meeting Date: November 6, 2024

Subject: **Water Supply Tunnel Projects Updates**

RECOMMENDATION

That the Water Committee receive for information the report dated October 28, 2024 titled "Water Supply Tunnel Projects Updates".

EXECUTIVE SUMMARY

Metro Vancouver is upgrading its water transmission system to ensure resilience in the event of an earthquake. Included in these upgrades are six major water supply tunnels being managed and delivered by the Project Delivery department. These high risk, high value, and complex projects are in various stages of design and construction and are being designed to meet current seismic standards, protect against scour and other marine activities, and meet the drinking water needs of the growing region.

Once complete, these projects will significantly contribute to Metro Vancouver's goals to ensure that the transmission components of the drinking water system are expanded and strengthened to allow the continued supply of high-quality drinking water to the region's residents and businesses.

PURPOSE

The purpose of this report is to provide an update on the status and progress of the six water supply tunnel projects.

BACKGROUND

In accordance with the Water Committee 2024 Work Plan, updates for the water supply tunnel projects are being brought forward to the Water Committee.

PROJECT UPDATES

Six major water supply tunnel projects are in various stages of planning, design and construction to support the continued delivery of high-quality drinking water to the region's residents and businesses. Following is a summary of each project. A map of the water supply tunnels is included as an attachment.

Second Narrows Water Supply Tunnel (Construction) – Project 1

The Second Narrows Water Supply Tunnel is a 1.1 kilometre long, 6.5 metre diameter tunnel crossing of Burrard Inlet from North Vancouver to Burnaby.

The project includes three steel water mains that will replace the three existing mains which were constructed in shallow trenches at the bottom of the Burrard Inlet from the 1940s through to the 1970s. The existing mains are near the end of their service lives and do not meet current seismic standards. The project consists of vertical shafts constructed on each side of Burrard Inlet, and large underground valve chambers to regulate the water flow through the newly installed steel water mains.

Construction of this new tunnel infrastructure commenced in 2019 and is scheduled to be completed in 2024. The three new water mains will be tied into the drinking water system over the next few winters and are expected to be in service by 2028. The total budget for construction is $445 million.

Annacis Water Supply Tunnel (Construction) – Project 2
The Annacis Water Supply Tunnel is a 2.3 km long, 4.5 m diameter crossing of the Fraser River from New Westminster to Surrey.

The project consists of a tunnel and deep vertical shafts located on each side of the river which will accommodate the installation of a 2.6 m diameter welded steel water main. Large underground valve chambers will be constructed adjacent to each shaft to regulate flow and facilitate connection of the water main into the existing water transmission system.

Construction commenced in early 2022 and the new tunnel is scheduled to be completed and in-service by 2028. The total budget for construction is $450 million.

Stanley Park Water Supply Tunnel (Construction) – Project 3
Metro Vancouver is commencing construction of a new water supply tunnel deep under Stanley Park. The new water supply tunnel will replace an existing water main that was built in the 1930s, has experienced leaks in 2016 and 2023, and has reached the end of its service life. The new Stanley Park Water Supply Tunnel is urgently needed to reduce the likelihood of additional leaks from the water main.

The project involves the construction of a new water supply tunnel, designed to provide increased capacity to meet future water demand as well as to meet current seismic standards. The new tunnel will be 1.4 km long, approximately 4.5 m in diameter, include a 2.6 m diameter steel water main, and will connect to two new underground valve chambers.

To facilitate construction, three shafts will be constructed within Stanley Park. The tunnel will be constructed from an intermediary central shaft located in the existing Stanley Park Service Yard, with two exit shafts, one at the north side of park at the First Narrows Crossing of Burrard Inlet, and one at the south side of the park near the intersection of Chilco and Alberni streets. The project has been designed to minimize construction footprint, minimize impacts to the park, and reduce construction impacts to park users and residents.

Procurement for the construction contractor is complete. Construction is anticipated to start in late 2024 and is expected to be substantially complete by 2029. The total budget for construction is $470 million.

Cambie-Richmond Water Supply Tunnel (Preliminary Design) – Project 4
The Cambie-Richmond Water Supply Tunnel is a 1.1 km long, 4.5 m diameter crossing under the Fraser River from Vancouver to Richmond.

The project consists of a tunnel and deep vertical shafts located on each side of the river to facilitate the installation of a 2.1 m diameter welded steel water main. Each shaft site will also include the construction of underground valve chambers to facilitate water control functions.

The conceptual design phase of the project was completed in 2022. Metro Vancouver subsequently acquired property in Vancouver and Richmond to facilitate construction of the shafts and valve chambers, and to launch and retrieve the tunnel boring machine.

Procurement for the preliminary design phase of the project is complete and preliminary design commenced in September 2024. Construction is scheduled to commence in 2029 and is anticipated to take approximately five years to complete. The preliminary design budget including the funds for property acquisition is $60 million.

Lulu Delta Water Supply Tunnel (Definition/Conceptual Design) – Project 5
The Lulu Delta Water Supply Tunnel is a 1 to 2 km long marine crossing deep under the Fraser River from Richmond to Delta, and is located near the George Massey Tunnel. The new water supply tunnel will replace the existing Lulu Delta crossing which is near the end of its service life.

The project consists of a new welded steel water main crossing constructed using a trenchless method such as tunneling, micro-tunneling or horizontal directional drilling, which is to be confirmed during the project definition phase. The RFP for project definition closed in early October and is anticipated to commence in late 2024 or early 2025. Construction is currently anticipated to commence in 2032. The conceptual design budget is $5 million.

This project is located in close proximity to the new George Massey Tunnel Replacement project, which will require close coordination with Ministry of Transportation and Infrastructure staff on logistics, schedule and workspace requirements. These discussions have commenced.

Pitt River Water Supply Tunnel (Definition/Conceptual Design) – Project 6
The Pitt River (Haney) Water Supply Tunnel is a 1 km long tunnel crossing of the Pitt River between Port Coquitlam and Pitt Meadows. The new water supply tunnel will replace the existing Haney Mains No. 2 and No. 3.

The project consists of constructing a shaft on each side of the Pitt River connected deep underground by a tunnel, which will facilitate the installation of a welded steel water main. Each shaft site will also include the construction of valve chambers to facilitate water control functions.

The project definition, or conceptual design, phase is anticipated to be completed by the end of 2024. Construction is anticipated to commence in 2029 and will take approximately five years to complete. The conceptual design budget including funds for preliminary preparatory work is $25 million.

ALTERNATIVES

This is an information report. No alternatives are presented.

FINANCIAL IMPLICATIONS

The budgets noted in this report have been previously approved by the Board. At this time, the total expenditures projected for each noted phase are not anticipated to exceed the budget amounts. The Water Committee will be advised of any changes required as the projects progress through design and construction.

CONCLUSION

Making sure the regional infrastructure is resilient to earthquakes is a high priority with multiple upgrades to the drinking water transmission system infrastructure underway. A major resilience initiative is to strengthen the water supply system by building large-diameter water mains in tunnels deep under the Burrard Inlet, the Fraser River, and Stanley Park. These water supply tunnel projects are critical components of Metro Vancouver's drinking water transmission system and are being designed to withstand a major earthquake, river scour and marine activities, and to meet projected future drinking water demands for the region's growing population.

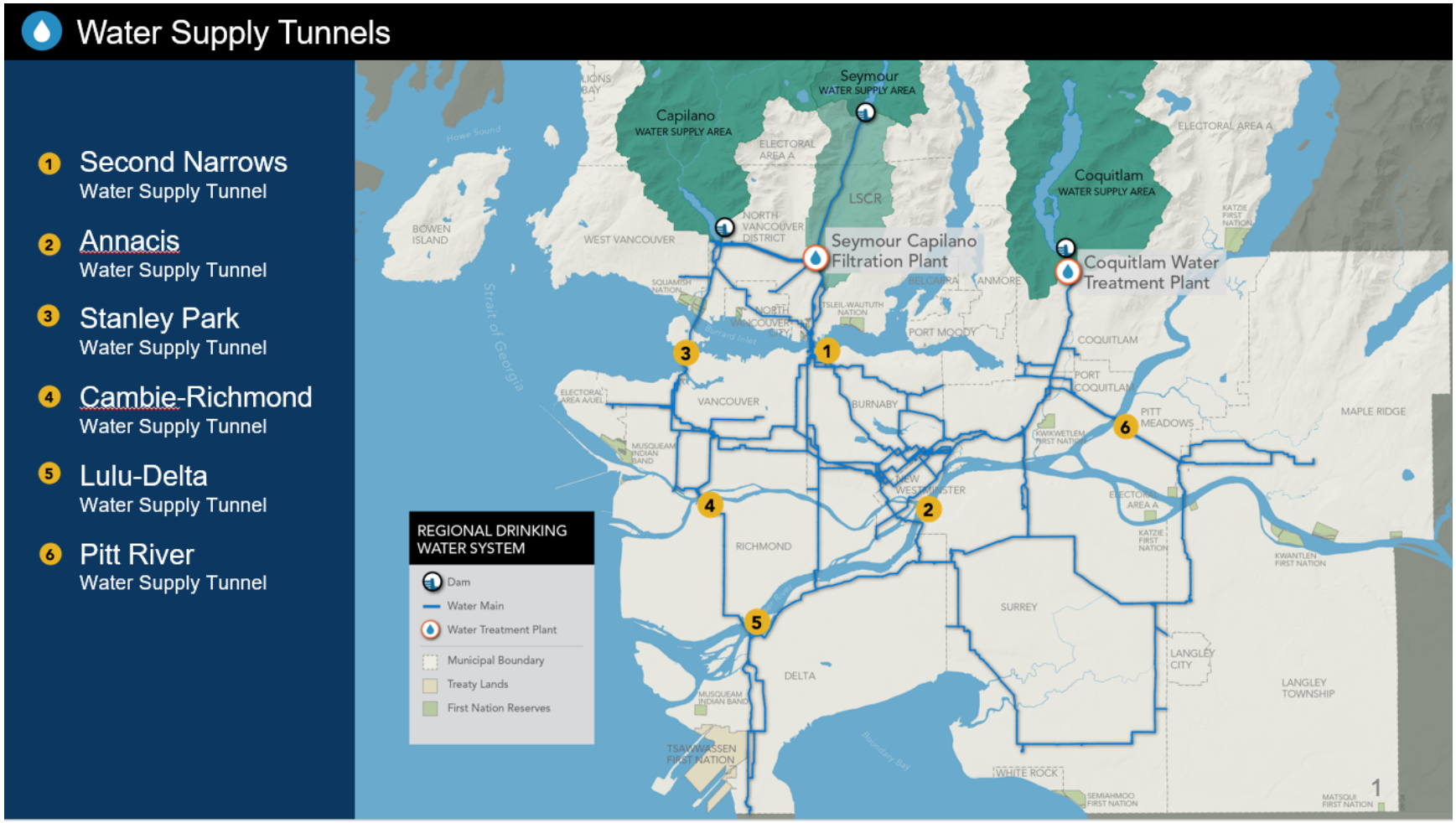
ATTACHMENT

1. Water Supply Tunnel Projects Map
2. Water Supply Tunnel Presentation

66894338

Attachment 1

Water Supply Tunnel Projects Map



Attachment 2

Overhead view of Second Narrows Water Supply Tunnel shaft

Water Supply Tunnel Projects Updates

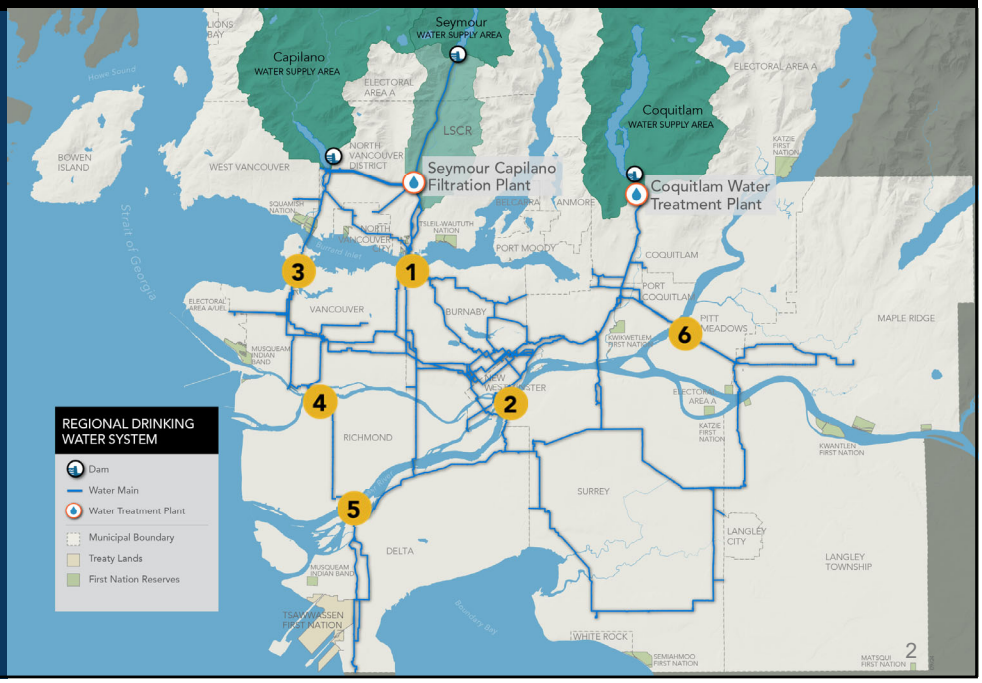
Murray Gant
Director, Major Projects, Project Delivery

Water Committee Meeting - November 6, 2024
Orbit No. 71798811

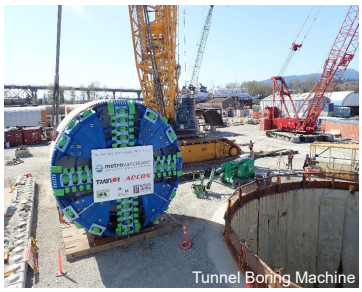
metrovancouver

Water Supply Tunnels

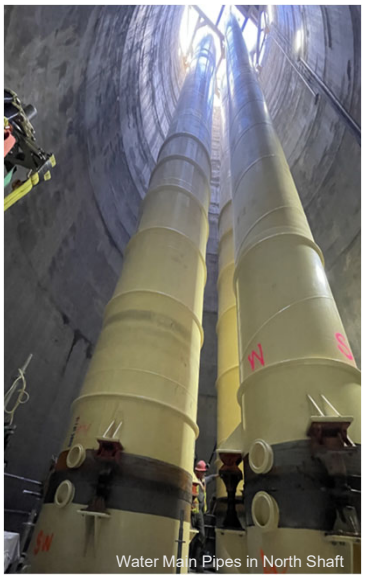
1. Second Narrows Water Supply Tunnel
2. Annacis Water Supply Tunnel
3. Stanley Park Water Supply Tunnel
4. Cambie-Richmond Water Supply Tunnel
5. Lulu-Delta Water Supply Tunnel
6. Pitt River Water Supply Tunnel



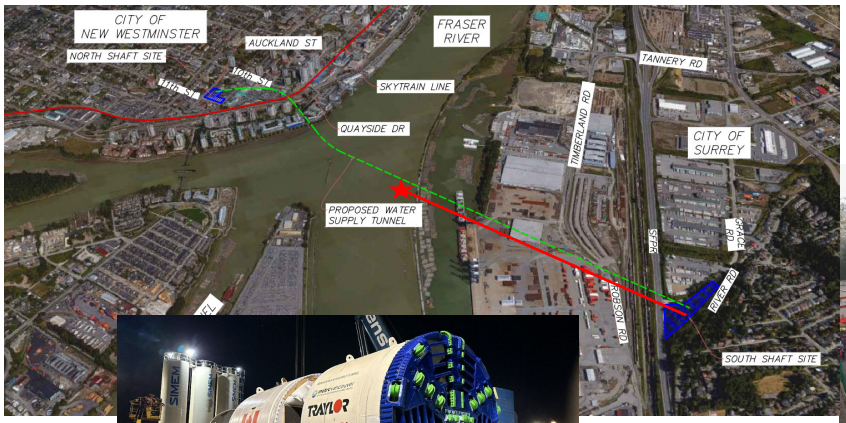
SECOND NARROWS WATER SUPPLY TUNNEL


Tunnel Boring Machine


North Valve Chamber


Water Main Pipes in North Shaft

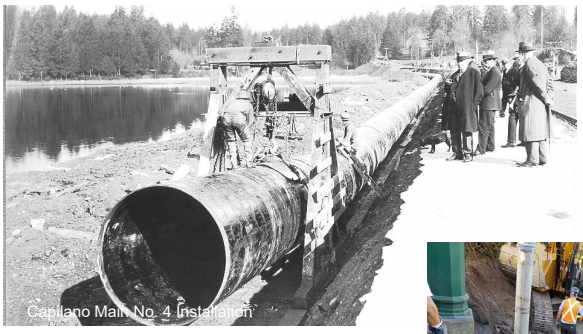
ANNACIS WATER SUPPLY TUNNEL




Annacis Tunnel Boring Machine


Annacis North Shaft and TBM

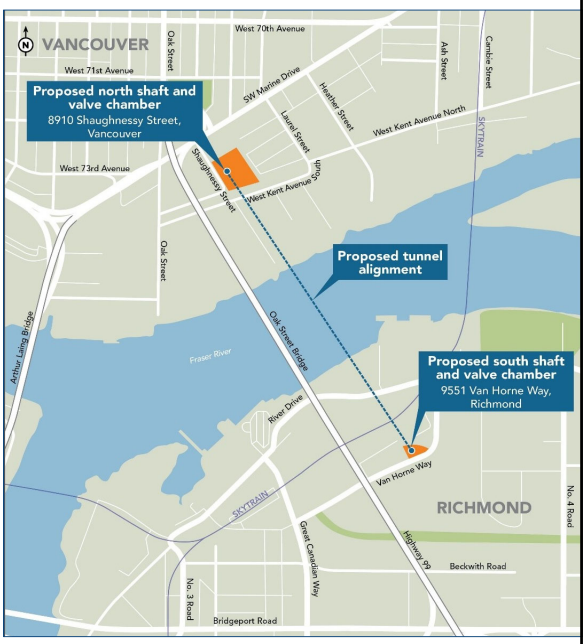
STANLEY PARK WATER SUPPLY TUNNEL


Capilano Main No. 4 Installation


Leak Repair 2016

CAMBIE RICHMOND WATER SUPPLY TUNNEL

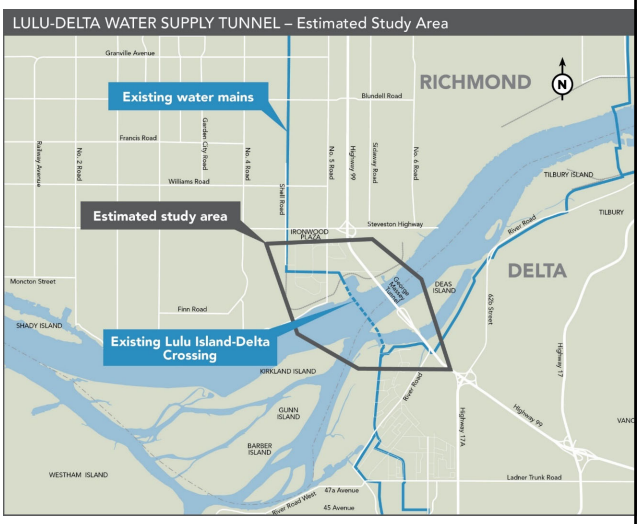
- Proposed shaft and valve chamber locations and proposed tunnel alignment
- Preliminary design recently commenced
- Construction anticipated to commence in 2029



Proposed Tunnel Alignment

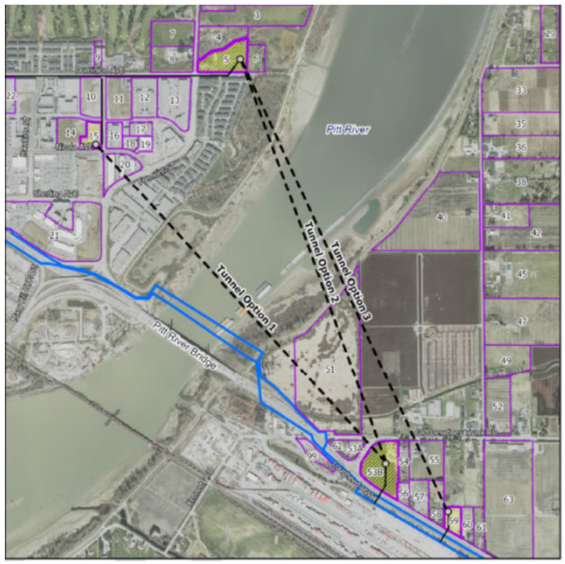
LULU DELTA WATER SUPPLY TUNNEL

- Replaces existing Lulu-Delta crossing
- Options: tunnel, micro-tunnel, HDD
- Underground valve chambers
- Project Definition to commence in 2025
- Construction anticipated to commence in approx. 2032



PITT RIVER WATER SUPPLY TUNNEL

- Replaces existing Haney Mains
- Tunnel Option 1 Preferred
- Single 2.4m diameter steel main
- Valve chambers
- Preliminary design to commence early next year
- Construction anticipated to commence in 2029



Workers inside the Second Narrows Water Supply Tunnel

Thank you

metrovancouver

9

To: Water Committee

From: Marilyn Towill, General Manager, Water Services

Date: October 30, 2024 Meeting Date: November 6, 2024

Subject: **Manager's Report**

RECOMMENDATION
That the Water Committee receive for information the report dated October 30, 2024, titled "Manager's Report".

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1. **Second Narrows Water Supply Tunnel – Tunnelling Association of Canada Award**
   The Second Narrows Water Supply Tunnel project was recently selected as the recipient of the Tunnelling Association of Canada 2024 Canadian Project of the Year Under $300 million award. This award is made to a team who has significantly contributed to a project in Canada that has demonstrated the highest level of engineering skill and shown insight and understanding of underground construction for a project in Canada. The award was received at the Tunnelling Association of Canada annual conference in October.

2. **Capilano River Hatchery Update**
   The Capilano River Hatchery has exceeded its designed life expectancy, prompting the Department of Fisheries and Oceans (DFO) to initiate a $50 million rebuild project to modernize and enhance the facility. This initiative aims to improve the hatchery's capacity and efficiency for salmon and steelhead production, which is vital for local fish populations and ecosystems.

   Physical improvements associated with the project include the construction of new buildings, rearing facilities and educational display centre. Investigations are underway for improving the water supply to the hatchery, which includes developing new groundwater wells, submerged intake in the Capilano Reservoir, and replacement of the existing water supply pipe. In addition, updated water supply agreements between GVWD and DFO, as well as provincial water licences will be required. DFO has agreed to fully compensate GVWD for any direct expenses pertaining to this project.

   The project will be completed in several phases over the next 4 to 5 years, and currently, demolition works are underway. Delivery of several components of the project has been transferred from DFO to Public Services and Procurement Canada and further updates will be provided at the appropriate time.

3. **Watershed Education Program – 2024 Update**
   The goal of Metro Vancouver's Watershed Education Program is to provide residents with the opportunity to see where their drinking water comes from through informative programs and tours into the region's water supply areas. These public and school programs foster an understanding of the value of the regional water resource, help participants recognize their

connection to it, develop a sense of pride and confidence in the drinking water supply, and become champions for conservation and sustainability. Watershed education programming targets two groups: the public and K-12 students.

A group of tour participants visit Rodgers Lake during a Capilano Watershed Tour.

Public tours are offered in the Lower Seymour Conservation Reserve and the Capilano and Coquitlam water supply areas during the summer, and on Mount Seymour (LSCR) for snowshoe tours in February and March. This year, a total of 1,196 individuals participated in the public programs. MV's popular school programs complement the BC curriculum and target grades 2, 4 and 5, and 8-10 in the spring and fall. This year, approximately 5,800 students were reached through both watershed tour field trips and in-class programming. Watershed Education staff also host and participate in public events throughout the year to showcase the drinking water system to attendees. An additional 600 members of the public were engaged through informative booths at such events. In total, over 7,500 people in 2024 learned about the Water Supply Areas and the work that Metro Vancouver does.

"My students are still talking about the forest walk, seeing the rocks by the river to correlate to their science unit, and seeing the impact they too have with our local watershed. They are eager to time their showers for our next project".

- A 2024 teacher, when asked what the best part of their field trip was in our post-program survey.

4. Annacis Water Supply Tunnel Construction Tour

A tour of the Annacis Water Supply Tunnel (AWST) construction project has been confirmed for November 27, starting at 9:30 am. Details are still being finalized and will be provided no later than November 8, 2024.

The new water supply tunnel is deep under the Fraser River, between the City of New Westminster and the City of Surrey. The AWST is one of several new marine crossings in the region being designed and constructed to withstand a major earthquake. When complete, it will help ensure the continued delivery of high-quality drinking water to the communities south of the Fraser River well into the future.

The construction phase of the AWST commenced in 2022 and is scheduled to be completed by 2028. The project involves the construction of two deep vertical shafts, one in Surrey and one in New Westminster, a 2.3 km long tunnel and two underground valve chambers near the surface to allow connection into the existing water transmission system. Tunnel excavation commenced in March 2024 and is approximately 40 percent complete. When complete, the tunnel will be the longest marine crossing tunnel in Metro Vancouver's drinking water system.

5. Water Committee 2024 Work Plan

ATTACHMENT

1. Water Committee 2024 Work Plan

63844551

Attachment 1

Water Committee 2024 Work Plan

Priorities

1st Quarter	Status
Drinking Water Conservation Plan – 2023 Summer Support Program Update	Complete
GVWD 100 Year Anniversary Celebrations	Complete
GVWD 2024 Water Sustainability Innovation Fund – New Projects	Complete
GVWD Electrical Energy Use, Generation, and Management	Complete
Watershed Fisheries Initiatives Annual Update	Complete
Contract Approvals as per Procurement and Real Property Contracting Authority Policy	Complete
Water Policies (as applicable)	Complete
2nd Quarter	
GVWD 2023 Contribution Agreement Annual Reports – Seymour Salmonid Society and Coquitlam River Watershed Roundtable	Complete
GVWD 2023 Water Quality Annual Report	Complete
GVWD 2023 Water Supply System Annual Update	Complete
GVWD 2023 Year End Financial Performance Results Review	Complete
GVWD 2024 Financial Performance Reporting and Annual Forecast #1	Complete
Project Delivery Update: Coquitlam Main No. 4 Update	Complete
Water Supply Update for Summer 2024	Complete
Water Use by Sector Report 2021 Summary	Complete
Wildfire Preparedness Update	Complete
Contract Approvals as per Procurement and Real Property Contracting Authority Policy	Complete
Water Policies (as applicable) & Bylaw Updates	Complete
3rd Quarter	
2023 Dam Safety Program Annual Update	Complete
GVWD 2024 Financial Performance Reporting and Annual Forecast #2	Pendings
GVWD Water Sustainability Innovation Fund Projects – Annual Update	Pending
Project Delivery Update: Coquitlam Lake Water Supply Project Update	Complete
Protection of Submerged Pipeline Crossings	Complete
Contract Approvals as per the Procurement and Asset Disposal Authority Policy	Complete
Transaction Approvals per the Real Estate Authority Policy	Complete
Water Policies (as applicable)	Complete
4th Quarter	
DFO Capilano River Hatchery Project and Water Supply Improvements	In Progress
Drinking Water Management Plan Update	Complete
GVWD Annual Budget and 5-Year Financial Plan	Complete
GVWD 2024 Financial Performance Reporting and Annual Forecast #3	Pending
GVWD Development Cost Charges – Update	In Progress
Project Delivery Update: Water Tunneling Projects	In Progress
Summer 2024 Water Supply Performance	In Progress
Water Communications and Public Outreach Results	In Progress
Contract Approvals as per the Procurement and Asset Disposal Authority Policy	In Progress
Transaction Approvals per the Real Estate Authority Policy	In Progress
Water Policies (as applicable)	In Progress

To: Water Committee

From: Guy Leroux, Director, Shared & Support Services, Water Services

Date: October 17, 2024 Meeting Date: November 6, 2024

Subject: **Semi-Annual Report on GVS&DD (Sewerage) and GVWD (Water) Development Cost Charges**

At their meeting on October 9, 2024, the Finance Committee received for information the report dated September 26, 2024, titled "Semi-Annual Report on GVS&DD (Sewerage) and GVWD (Water) Development Cost Charges". The report provides an update on the Development Cost Charges Revenue collected for the first half of 2024 and is included as an attachment for information.

ATTACHMENT

1. "Semi-Annual Report on GVS&DD (Sewerage) and GVWD (Water) Development Cost Charges" report to the October 9, 2024 Finance Committee.

71198700

metrovancouver
SERVICES AND SOLUTIONS FOR A LIVABLE REGION

To: Finance Committee

From: Sonu Kailley, Director, Financial Planning

Date: September 26, 2024 Meeting Date: October 9, 2024

Subject: **Semi-Annual Report on GVS&DD (Sewerage) and GVWD (Water) Development Cost Charges**

RECOMMENDATION

That the Finance Committee receive for information the report dated September 26, 2024, titled "Semi-Annual Report on GVS&DD (Sewerage) and GVWD (Water) Development Cost Charges".

EXECUTIVE SUMMARY

Total GVS&DD (Sewer) and GVWD (Water) Development Cost Charges (Sewer DCC's) collected in the 1st half of 2024 were $86.2 million (up from $45.5 million for 2023 1st half.) This is primarily due to updated GVS&DD DCC rates coming into effect as instream protection ended in mid 2023 as well as GVWD DCC rates instream protection ended in April 2024.

Building permit activity in the Region has been relatively consistent over the last 18 months with the period of January 2024 to June 2024 permit values approaching $7.3 billion compared to $7.1 billion compared to the same time period in 2023. The bulk of this activity has been in the residential development sector (averaging close to 69% of building permit values over the period January to June 2024) with the balance being generated in industrial (2%), commercial (22%), and institutional/governmental (7%) development sectors over the same period.

The total GVS&DD DCC's that are currently held in reserve at December 31, 2023 are $273.7 million.

PURPOSE

To report on the GVS&DD and GVWD Development Cost Charge (DCC) revenue collections during the first half of 2024 and any implications on their adequacy, as required in the Board's policy.

BACKGROUND

Regional GVS&DD and GVWD Development Cost Charges (DCC's) are collected on behalf of Metro Vancouver, as set out in the Board approved DCC Bylaws, by member municipalities and remitted twice a year. DCC's are used to fund growth related capital expenditures. Board policy requires that DCC collections be reported to the Committee on a semi-annual basis. This is the first 2024 report.

DCC COLLECTIONS

A review of the DCC program was recently completed which led to the implementation of new rates effective June 24, 2022 for GVS&DD and new rates for GVWD [effective April 28, 2023 with the in-stream provisions in place for one year] to derive additional future funding for the regional growth related requirements. Due to the in-stream provisions within enabling legislation, it was expected that there would likely not be substantive collections at the new rates for Sewer until 2nd half of

2023 forward (and 2024 for Water). The results for the 1st half of 2024 are largely the result of the aforementioned DCC rate uplifts along with some slight increases in development permit activity in the Region. Continued substantial revenue levels are being experienced in all GVS&DD (Sewerage) Areas and GVWD (Water) to lesser extent (as 'in-stream' bylaw provisions continue to impact Water DCC stream) in the 1st half of 2024. DCC revenue collections received by Entity/Area are as follows:

($ millions)	**Fraser**	**Lulu**	**North Shore**	**Vancouver**	***Total***
GVS&DD (Sewer):					
2023 1st half	$40.159	$0.143	$1.518	$3.671	$45.491
2023 2nd half	$27.607	$0.328	$1.806	$6.809	$36.550
2024 1st half	$65.000	$1.613	$2.075	$10.349	$79.037
GVWD (Water):					
2023(2nd half only)					$0.937
2024 1st half					$7.159
2024 1st half (Total GVS&DD and GVWD)					$86.196

Each year, the sewerage (and water) growth capital projects that are undertaken are generally funded through long term debt financing or funding growth capital projects directly. Excess DCC collections are maintained as deferred revenues for future application to the sewerage and water growth projects as required. The DCC deferred revenue balances as at December 31, 2023 totaled $273.7 million [GVS&DD (by Sewer Area) - $272.8 million/GVWD (Water) - $0.9 million] as follows:

GVS&DD (Fraser) Sewer Area - $193.1 million
GVS&DD (Lulu Island) Sewer Area - $21.0 million
GVS&DD (North Shore) Sewer Area - $8.6 million
GVS&DD (Vancouver) Sewer Area - $50.1 million
GVWD (Water District) - $0.9 million

ALTERNATIVES
This is an information report. No alternatives are presented.

FINANCIAL IMPLICATIONS
The DCC program was established pursuant to the concept of "Development Pays for Growth". Should the DCC collections be inadequate to fund the Sewerage growth related projects, the funding burden would default to Sewer levies collected annually from the GVS&DD member municipalities.

CONCLUSION
DCC collections for the first half of 2024 were $86.196 million. DCC's received are only used to pay for growth related GVS&DD and GVWD capital projects. As the requirement for capital projects related to growth is substantial and continues to grow, a review of the DCC program rates was completed recently which resulted in rates increasing effective June 24, 2022 for Sewer (with in-stream provisions in effect for 1 year as per enabling legislation) and new rates for Water effective

April 28, 2023 (with in-stream provisions in effect for 1 year as per enabling legislation) thereby ensuring the long term adequacy of program funds for future growth capital requirements. Note that the Sewer and Water DCC rates are currently in the process of a further review. The DCC collection levels have been steadily climbing over recent years and will continue to exhibit the impacts of the higher DCC rates adopted alongside a relatively consistent or otherwise increasing level of local development activity recently in the Region - in all 4 Sewerage Areas and for Water.

69876961

To: Water Committee

From: Guy Leroux, Director, Shared & Support Services, Water Services

Date: October 17, 2024 Meeting Date: November 6, 2024

Subject: **Jericho Reservoir Phase 2 – Dissolution of Water Supply Agreements**

At their meeting on October 9, 2024, the Finance Committee requested that the GVWD Board approve the dissolution of the Water Supply Agreements for Phase 2 of the Jericho Reservoir between the GVWD, Township of Langley, and City of Surrey and authorize the refund of any payments made in relation to Jericho Reservoir Phase 2 Project. The report titled "Jericho Reservoir Phase 2 – Dissolution of Water Supply Agreements" is attached for information.

ATTACHMENT

1. "Jericho Reservoir Phase 2 – Dissolution of Water Supply Agreements" report to the October 9, 2024 Finance Committee.

71200844

To: Finance Committee

From: Sonu Kailley, Director, Financial Planning
Date: September 30, 2024 Meeting Date: October 9, 2024

Subject: **Jericho Reservoir Phase 2 – Dissolution of Water Supply Agreements**

RECOMMENDATION

That the GVWD Board approve the dissolution of the Water Supply Agreements between the GVWD, Township of Langley, and City of Surrey for Phase 2 of the Jericho Reservoir and authorize the refund of payments made in relation to Jericho Reservoir Phase 2 Project.

EXECUTIVE SUMMARY

Prior to the adoption of the GVWD DCC Bylaw No 260, 2023, there were separate agreements between the Greater Vancouver Water District (GVWD), Township of Langley, and City of Surrey for the pre-payment of the Jericho Reservoir Phase 2, a future growth project, planned to be paid for upfront.

At the April 17, 2024 Special Joint Board Meeting, staff were directed to bring a report to the Finance Committee on the dissolution of these agreements, now that the funds can be captured via growth/developer contributions through DCCs. Upon approval to dissolve the agreements, funds received in 2023 for Phase 2 of the Jericho Reservoir project, will be refunded. ($4,091, 573 to the Langley Township and $2,081,591 to the City of Surrey). In addition, annual amounts for 2024 and 2025 of $4,091,573 from the Township of Langley and $2,081,591 from the City of Surrey, will no longer be collected. The dissolution of these agreements will have no impact on the 2025 water rates or household impacts as this project will be funded through the Water DCCs and there is no plan to commence this project in the plan until a future date.

PURPOSE

That the GVWD Board approve the dissolution of the Water Supply Agreements for Phase 2 of the Jericho Reservoir between the GVWD, Township of Langley, and City of Surrey and authorize the refund of any payments made in relation to Jericho Reservoir Phase 2 Project.

BACKGROUND

In 2018 separate agreements were entered into between the GVWD and Township of Langley and the GVWD and City of Surrey to pre-pay capital contributions towards Phase 2 of the Jericho reservoir which was expected to be built in 2030. These agreements are provided in Attachment 1 and 2.

Although the concept of Development Cost Charges (DCC) and the principle of growth paying for growth had been discussed previously, no DCCs were collected in 2018 related to the growth necessitating the construction of Phase 2 of the Jericho Reservoir.

In the 2019–2022 Board Strategic Plan, the Metro Vancouver Board included a commitment to

pursue the adoption of Water DCCs to ensure new growth-driven development in the region fund, or partially fund, the cost of water infrastructure expansion required to service that development. As part of the plan to implement a Water DCC, staff initiated the development of a Water DCC in 2020.

In March 2023, the Financial Plan Task Force Recommendations for the 2024-2028 Financial Plan included direction to the GVWD that staff prepare the 2024-2028 Financial Plan with DCC rate assumptions that would have Water DCCs moving to a 1% assist factor with interest. On April 28, 2023, upon receiving approval from the Inspector of Municipalities, the GVWD Board approved the Greater Vancouver Water District *Development Cost Charge Bylaw No. 257, 2022*, thus approving the concept of growth paying for growth within the capital plan.

With the adoption of GVWD DCC bylaw, staff received direction at the April 17, 2024 Special Joint Board Meeting to dissolve the agreements and refund any payments already made. By refunding the payments and dissolving the agreement, the GVWD would be complying with the GVWD Act.

ALTERNATIVES

This directive aligns with the Local Government Act, and as such, there are no alternatives presented.

FINANCIAL IMPLICATIONS

The financial implications of accepting the recommendations are refunds for unspent dollars that have been held in reserves of $4,091,573 to the Langley Township and $2,081,591 to the City of Surrey from the GVWD for the construction of Phase 2 of the Jericho Reservoir. In addition, annual amounts up to 2025 of $4,091,573 from the Township of Langley and $2,081,591 from the City of Surrey, will no longer be collected. The dissolution of these agreements will have no impact on the 2025 water rates and household impacts as there is no plan to commence the project until future years and is expected to be funded from the Water DCC.

CONCLUSION

That the GVWD approve the dissolution of the Water Supply Agreements for Phase 2 of the Jericho Reservoir between the GVWD, Township of Langley, and City of Surrey as well as refund any payments already made.

ATTACHMENTS

1. 2018 Agreement between GVWD and Township of Langley
2. 2018 Agreement between GVWD and City of Surrey

AMENDING AGREEMENT

THIS AGREEMENT dated as of SEPTEMBER 17, 2018

BETWEEN:

GREATER VANCOUVER WATER DISTRICT
4730 Kingsway, Burnaby, British Columbia V5H 0C6

("**GVWD**")

AND:

TOWNSHIP OF LANGLEY
20338 – 65 Avenue, Langley, British Columbia V2Y 3J1

("**Langley Township**")

WHEREAS:

A. GVWD and Langley Township are parties to a water supply agreement dated August 21, 1989, relating to the construction of certain water supply works by GVWD, as amended by an amending agreement dated October 29, 1998 (the "**Amended Water Supply Agreement**");

B. The Amended Water Supply Agreement requires that Langley Township pay its share of the actual costs incurred by GVWD in constructing and installing such water supply works, including the reservoir designated in the Amended Water Supply Agreement as the Future Jericho Reservoir (the "**Jericho Reservoir**");

C. Pursuant to the Amended Water Supply Agreement, Langley Township's percentage share of the actual costs for the Jericho Reservoir is 66.28%;

D. Pursuant to a payment agreement dated June 7, 2017, GVWD and Langley Township agreed upon a payment schedule pursuant to which Langley will pay its share of the actual costs of Phase 1 of the Jericho Reservoir;

E. GVWD and Langley Township have agreed that instead of paying the actual costs of Phase 2 of the Jericho Reservoir ("**Phase 2**"), Langley Township will prepay the projected costs of Phase 2; and

F. The parties wish to amend the Amended Water Supply Agreement to reflect these changes and agreements.

NOW THEREFORE IN CONSIDERATION of the premises and the mutual covenants and agreements set out below and other good and valuable consideration, the receipt and sufficiency of which is acknowledged, the parties hereto agree as follows:

1. Notwithstanding the provisions of the Amended Water Supply Agreement, GVWD and Langley Township agree that Langley Township will pay a fixed amount of $12,274,719 (the "**Requirement**") toward the costs incurred by GVWD in constructing and installing Phase 2. The Requirement will be paid to GVWD as shown below, and will be in full and final satisfaction of the amount owing by Langley Township to GVWD under the Amended Water Supply Agreement in respect of Phase 2, regardless of whether 66.28% of the actual costs incurred by GVWD in constructing and installing Phase 2 is higher or lower than the Requirement. GVWD and Langley Township agree that GVWD will have no obligation to refund any amount to Langley Township if 66.28% of the actual costs of Phase 2 is less than the Requirement.

On or before December 31, 2023:	$4,091,573
On or before December 31, 2024:	$4,091,573
On or before December 31, 2025:	$4,091,573

2. The terms of this Agreement are expressly made a part of the Amended Water Supply Agreement to the same extent as if the terms were incorporated in the Amended Water Supply Agreement.

3. This Agreement will enure to the benefit of and be binding upon the parties and their respective successors and permitted assigns.

4. Time is of the essence of this Agreement.

5. This Agreement is governed by and will be construed in accordance with the laws of the Province of British Columbia and the laws of Canada applicable therein.

6. This Agreement may be executed in any number of counterparts, each of which will be deemed to be an original and all of which taken together will be deemed to constitute one and the same instrument.

7. Delivery of an executed signature page to this Agreement by a party by electronic transmission will be as effective as delivery of an originally executed copy of the Agreement by such party.

IN WITNESS WHEREOF the parties hereto have executed this Agreement as of the date first written above.

GREATER VANCOUVER WATER DISTRICT
by its authorized signatory:

Carol Mason
Commissioner

TOWNSHIP OF LANGLEY
by its authorized signatories:

Name: WENDY BAUER
Title: Township Clerk

Name:
Title:

AMENDING AGREEMENT

THIS AGREEMENT dated as of SEPTEMBER 17, 2018

BETWEEN:

GREATER VANCOUVER WATER DISTRICT
4730 Kingsway, Burnaby, British Columbia V5H 0C6

("**GVWD**")

AND:

TOWNSHIP OF LANGLEY
20338 – 65 Avenue, Langley, British Columbia V2Y 3J1

("**Langley Township**")

WHEREAS:

A. GVWD and Langley Township are parties to a water supply agreement dated August 21, 1989, relating to the construction of certain water supply works by GVWD, as amended by an amending agreement dated October 29, 1998 (the "**Amended Water Supply Agreement**");

B. The Amended Water Supply Agreement requires that Langley Township pay its share of the actual costs incurred by GVWD in constructing and installing such water supply works, including the reservoir designated in the Amended Water Supply Agreement as the Future Jericho Reservoir (the "**Jericho Reservoir**");

C. Pursuant to the Amended Water Supply Agreement, Langley Township's percentage share of the actual costs for the Jericho Reservoir is 66.28%;

D. Pursuant to a payment agreement dated June 7, 2017, GVWD and Langley Township agreed upon a payment schedule pursuant to which Langley will pay its share of the actual costs of Phase 1 of the Jericho Reservoir;

E. GVWD and Langley Township have agreed that instead of paying the actual costs of Phase 2 of the Jericho Reservoir ("**Phase 2**"), Langley Township will prepay the projected costs of Phase 2; and

F. The parties wish to amend the Amended Water Supply Agreement to reflect these changes and agreements.

NOW THEREFORE IN CONSIDERATION of the premises and the mutual covenants and agreements set out below and other good and valuable consideration, the receipt and sufficiency of which is acknowledged, the parties hereto agree as follows:

1. Notwithstanding the provisions of the Amended Water Supply Agreement, GVWD and Langley Township agree that Langley Township will pay a fixed amount of $12,274,719 (the "**Requirement**") toward the costs incurred by GVWD in constructing and installing Phase 2. The Requirement will be paid to GVWD as shown below, and will be in full and final satisfaction of the amount owing by Langley Township to GVWD under the Amended Water Supply Agreement in respect of Phase 2, regardless of whether 66.28% of the actual costs incurred by GVWD in constructing and installing Phase 2 is higher or lower than the Requirement. GVWD and Langley Township agree that GVWD will have no obligation to refund any amount to Langley Township if 66.28% of the actual costs of Phase 2 is less than the Requirement.

On or before December 31, 2023:	$4,091,573
On or before December 31, 2024:	$4,091,573
On or before December 31, 2025:	$4,091,573

2. The terms of this Agreement are expressly made a part of the Amended Water Supply Agreement to the same extent as if the terms were incorporated in the Amended Water Supply Agreement.

3. This Agreement will enure to the benefit of and be binding upon the parties and their respective successors and permitted assigns.

4. Time is of the essence of this Agreement.

5. This Agreement is governed by and will be construed in accordance with the laws of the Province of British Columbia and the laws of Canada applicable therein.

6. This Agreement may be executed in any number of counterparts, each of which will be deemed to be an original and all of which taken together will be deemed to constitute one and the same instrument.

7. Delivery of an executed signature page to this Agreement by a party by electronic transmission will be as effective as delivery of an originally executed copy of the Agreement by such party.

IN WITNESS WHEREOF the parties hereto have executed this Agreement as of the date first written above.

GREATER VANCOUVER WATER DISTRICT
by its authorized signatory:

Carol Mason
Commissioner

TOWNSHIP OF LANGLEY
by its authorized signatories:

Name:
Title: **WENDY BAUER**
Township Clerk

Name:
Title:

AMENDING AGREEMENT

THIS AGREEMENT dated as of August 02, 2018

BETWEEN:

GREATER VANCOUVER WATER DISTRICT
4730 Kingsway, Burnaby, British Columbia V5H 0C6

("**GVWD**")

AND:

CITY OF SURREY
13450-104 Avenue, Surrey, British Columbia V3T 1V8

("**Surrey**")

WHEREAS:

A. GVWD and Surrey are parties to a water supply agreement dated August 14, 1989, relating to the construction and installation by GVWD of certain water supply works (the "Water Supply Agreement");

B. The Water Supply Agreement requires that Surrey pay its share of the actual costs incurred by GVWD in constructing and installing such water supply works, including the reservoir designated in the Water Supply Agreement as the Future Jericho Reservoir (the "**Jericho Reservoir**");

C. Section 5.(2)(a) of the Water Supply Agreement provides that Surrey's percentage share of the actual costs for the Jericho Reservoir is 28.8%;

D. Due to changes to the Langley-Surrey Water Supply Scheme approved by the GVWD Board, the total capacity of the Jericho Reservoir was reduced to 8.6 million imperial gallons, resulting in an adjustment to Surrey's percentage share of the costs for the smaller Jericho Reservoir;

E. GVWD and Surrey have agreed upon a payment schedule pursuant to which Surrey will pay its share of the actual costs of Phase 1 of the Jericho Reservoir ("**Phase 1**");

F. GVWD and Surrey have agreed that instead of paying the actual costs of Phase 2 of the Jericho Reservoir ("**Phase 2**"), Surrey will prepay the projected costs of Phase 2; and

G. The parties wish to amend the Water Supply Agreement to reflect these changes and agreements.

NOW THEREFORE IN CONSIDERATION of the premises and the mutual covenants and agreements set out below and other good and valuable consideration, the receipt and sufficiency of which is acknowledged, the parties hereto agree as follows:

1. The Water Supply Agreement is hereby amended by deleting "28.8%" in section 5.(2)(a) and replacing it with "33.72%".

2. GVWD and Surrey acknowledge and agree that the estimated cost for constructing and installing Phase 1 is $30,400,000.

3. Subject to Section 4, GVWD and Surrey agree that Surrey will pay GVWD its share of the actual costs of Phase 1 by making payments as follows:

On or before December 31, 2018:	$2,400,000
On or before December 31, 2019:	$2,000,000
On or before December 31, 2020:	$2,000,000
On or before December 31, 2021:	$2,000,000
On or before December 31, 2022:	$1,800,000

4. Upon completion of Phase 1 and final determination by GVWD of the actual costs incurred by GVWD in constructing and installing Phase 1, GVWD will promptly refund Surrey or Surrey will pay GVWD, as the case may be, the difference between 33.72% of such actual costs and the total of the amount already paid by Surrey pursuant to Section 3, such that the final amount paid by Surrey in respect of Phase 1 equals 33.72% of the actual costs incurred by GVWD.

   If the difference between 33.72% of such actual costs and the total of the amount already paid by Surrey is less than $500,000, Surrey will pay GVWD within 1-year from the date Surrey is advised of actual costs ("**Initial Reconciliation Payment Date**").

   If the difference between 33.72% of such actual costs and the total of the amount already paid by Surrey is greater than $500,000, Surrey will pay GVWD no less than $500,000 per annum beginning on the Initial Reconciliation Payment Date until such time as Surrey has paid GVWD the difference between 33.72% of such actual costs and the total of the amount already paid by Surrey plus interest of 3% per annum compounded annually, calculated from the Initial Reconciliation Payment Date until the date of the final payment.

5. Notwithstanding sections 5.(1) and 5.(2)(a) of the Water Supply Agreement, GVWD and Surrey agree that Surrey will pay a fixed amount of $6,244,773 (the "**Requirement**") toward the costs incurred by GVWD in constructing and installing Phase 2. The Requirement will be paid to GVWD as shown below, and will be in full and final satisfaction of the amount owing by Surrey to GVWD under the Water

Supply Agreement in respect of Phase 2, regardless of whether 33.72% of the actual costs incurred by GVWD in constructing and installing Phase 2 is higher or lower than the Requirement. GVWD and Surrey agree that GVWD will have no obligation to refund any amount to Surrey if 33.72% of the actual costs of Phase 2 is less than the Requirement.

On or before December 31, 2023:	$2,081,591
On or before December 31, 2024:	$2,081,591
On or before December 31, 2025:	$2,081,591

6. The terms of this Agreement are expressly made a part of the Water Supply Agreement to the same extent as if the terms were incorporated in the Water Supply Agreement.

7. This Agreement will enure to the benefit of and be binding upon the parties and their respective successors and permitted assigns.

8. Time is of the essence of this Agreement.

9. This Agreement is governed by and will be construed in accordance with the laws of the Province of British Columbia and the laws of Canada applicable therein.

10. This Agreement may be executed in any number of counterparts, each of which will be deemed to be an original and all of which taken together will be deemed to constitute one and the same instrument.

11. Delivery of an executed signature page to this Agreement by a party by electronic transmission will be as effective as delivery of an originally executed copy of the Agreement by such party.

IN WITNESS WHEREOF the parties hereto have executed this Agreement as of the date first written above.

GREATER VANCOUVER WATER DISTRICT
by its authorized signatory:

Carol Mason
Commissioner

CITY OF SURREY
by its authorized signatories:

Name:
Title: Acting mayor, Mike Starchuk

Name:
Title: Jane Sullivan, City Clerk

AMENDING AGREEMENT

THIS AGREEMENT dated as of August 02, 2018

BETWEEN:

GREATER VANCOUVER WATER DISTRICT
4730 Kingsway, Burnaby, British Columbia V5H 0C6

("**GVWD**")

AND:

CITY OF SURREY
13450-104 Avenue, Surrey, British Columbia V3T 1V8

("**Surrey**")

WHEREAS:

A. GVWD and Surrey are parties to a water supply agreement dated August 14, 1989, relating to the construction and installation by GVWD of certain water supply works (the "Water Supply Agreement");

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C. Section 5.(2)(a) of the Water Supply Agreement provides that Surrey's percentage share of the actual costs for the Jericho Reservoir is 28.8%;

D. Due to changes to the Langley-Surrey Water Supply Scheme approved by the GVWD Board, the total capacity of the Jericho Reservoir was reduced to 8.6 million imperial gallons, resulting in an adjustment to Surrey's percentage share of the costs for the smaller Jericho Reservoir;

E. GVWD and Surrey have agreed upon a payment schedule pursuant to which Surrey will pay its share of the actual costs of Phase 1 of the Jericho Reservoir ("**Phase 1**");

F. GVWD and Surrey have agreed that instead of paying the actual costs of Phase 2 of the Jericho Reservoir ("**Phase 2**"), Surrey will prepay the projected costs of Phase 2; and

G. The parties wish to amend the Water Supply Agreement to reflect these changes and agreements.

NOW THEREFORE IN CONSIDERATION of the premises and the mutual covenants and agreements set out below and other good and valuable consideration, the receipt and sufficiency of which is acknowledged, the parties hereto agree as follows:

1. The Water Supply Agreement is hereby amended by deleting "28.8%" in section 5.(2)(a) and replacing it with "33.72%".

2. GVWD and Surrey acknowledge and agree that the estimated cost for constructing and installing Phase 1 is $30,400,000.

3. Subject to Section 4, GVWD and Surrey agree that Surrey will pay GVWD its share of the actual costs of Phase 1 by making payments as follows:

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On or before December 31, 2025:	$2,081,591

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IN WITNESS WHEREOF the parties hereto have executed this Agreement as of the date first written above.

GREATER VANCOUVER WATER DISTRICT
by its authorized signatory:

Carol Mason
Commissioner

CITY OF SURREY
by its authorized signatories:

Name:
Title: Acting Mayor, Mike Starchuk

Name:
Title: Jane Sullivan, City Clerk