



**City Council
Electronic Meeting**

**Council Chambers, City Hall
6911 No. 3 Road
Monday, June 26, 2023
7:00 p.m.**

Pg. # ITEM

MINUTES

1. *Motion to:*

- | | |
|----------------|---|
| CNCL-13 | (1) <i>adopt the minutes of the Regular Council meeting held on June 12, 2023;</i> |
| CNCL-22 | (2) <i>adopt the minutes of the Regular Council meeting for Public Hearings held on June 19, 2023; and</i> |
| CNCL-40 | (3) <i>receive for information the Metro Vancouver 'Board in Brief' dated June 2, 2023.</i> |



AGENDA ADDITIONS & DELETIONS

COMMITTEE OF THE WHOLE

- 2. *Motion to resolve into Committee of the Whole to hear delegations on agenda items.***



3. Delegations from the floor on Agenda items.

PLEASE NOTE THAT FOR LEGAL REASONS, DELEGATIONS ARE NOT PERMITTED ON ZONING OR OCP AMENDMENT BYLAWS WHICH ARE TO BE ADOPTED OR ON DEVELOPMENT PERMITS/DEVELOPMENT VARIANCE PERMITS– ITEM NO. 25.

4. *Motion to rise and report.*



RATIFICATION OF COMMITTEE ACTION

CONSENT AGENDA

PLEASE NOTE THAT ITEMS APPEARING ON THE CONSENT AGENDA WHICH PRESENT A CONFLICT OF INTEREST FOR COUNCIL MEMBERS MUST BE REMOVED FROM THE CONSENT AGENDA AND CONSIDERED SEPARATELY.

CONSENT AGENDA HIGHLIGHTS

- Receipt of Committee minutes
- Proposed Amendment to Bylaw Enforcement Officer Bylaw No. 9742
- Expanding The Inter-Municipal TNS Business Licence
- Seasonal Patio & Extension Of Service Hours - Emperor's Kitchen Ltd. DBA: Grill Party - 120 – 8511 Alexandra Rd., Richmond, BC
- Richmond Accessibility Advisory Committee 2023 Work Program
- Land use applications for first reading (to be further considered at the Public Hearing on July 17, 2023):
 - 7520 Ash Street – Rezone From Single Detached (Rs1/F)” Zone To “Single Detached (Rs2/E)” Zone (Benito Kho And Verney Kho – Applicant)
 - 7100 And 7120 Ash Street – Rezone From The “Single Detached(Rs1/F)” Zone To The “Town Housing (Zt16) - South Mclellan And St. Albans Sub-Area (City Centre)”Zone (Sian Group Investments Inc. – Applicant)

Council Agenda – Monday, June 26, 2023

Pg. # ITEM

- Proposed Updates To The Richmond Community Services Advisory Committee Charter
- Response To Metro Vancouver's Referral: Land Use Designation Amendment To The Metro 2050 Regional Growth Strategy Proposed By The Township Of Langley
- Kittiwake Drive - Traffic Calming Pilot Project Update
- 2022 Annual Water Quality Report
- Drainage Canal Bank Failure Repairs-12506 Vickers Way
- Circular Procurement Policy Implementation and Progress Update
- Dike Master Plan - Phase 4 Report
- 480 Bus Route

5. *Motion to adopt Items No. 6 through No. 20 by general consent.*

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6. **COMMITTEE MINUTES**

That the minutes of:

- CNCL-53 (1) the **Community Safety Committee** meeting held on June 13, 2023;
- CNCL-57 (2) the **General Purposes Committee** meeting held on June 19, 2023;
- CNCL-63 (3) the **Planning Committee** meeting held on June 20, 2023; and
- (4) the **Public Works and Transportation Committee** meeting held on June 21, 2023; (distributed separately)
- be received for information.*

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7. **PROPOSED AMENDMENT TO BYLAW ENFORCEMENT OFFICER BYLAW NO. 9742**

(File Ref. No. 12-8375-01) (REDMS No. 7198574)

CNCL-68

See Page CNCL-68 for full report

GENERAL PURPOSES COMMITTEE RECOMMENDATION

That Bylaw Enforcement Officer Bylaw No. 9742, Amendment Bylaw No. 10462 be introduced and given first, second and third readings.

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Council Agenda – Monday, June 26, 2023

Pg. # ITEM

Consent
Agenda
Item

8. **EXPANDING THE INTER-MUNICIPAL TNS BUSINESS LICENCE**
(File Ref. No. 12-8375-01) (REDMS No. 7208159)

CNCL-72

See Page CNCL-72 for full report

GENERAL PURPOSES COMMITTEE RECOMMENDATION

- (1) *That Inter-Municipal Business Licence Agreement Bylaw No. 10134, Amendment Bylaw No. 10468, to expand the participating municipalities for ride-hailing services, be introduced and given first, second and third readings; and*
- (2) *That Inter-Municipal Business Licence Bylaw No. 10159, Amendment Bylaw No. 10471, with minor housekeeping revisions, be introduced and given first, second and third readings.*



Consent
Agenda
Item

9. **SEASONAL PATIO & EXTENSION OF SERVICE HOURS -
EMPEROR'S KITCHEN LTD. DBA: GRILL PARTY - 120 – 8511
ALEXANDRA RD., RICHMOND, BC**
(File Ref. No. 12-8275-30-001) (REDMS No. 7225768)

CNCL-87

See Page CNCL-87 for full report

GENERAL PURPOSES COMMITTEE RECOMMENDATION

- (1) *That the application from Emperor's Kitchen Ltd. doing business as: Grill Party, for an amendment to Food Primary Liquor Licence No. 305936 requesting:*
 - (a) *An addition of a Seasonal Patio area to permit liquor and food service between April 1 and October 31 each year with 20 seats;*
 - (b) *Total person capacity to remain the same at 98 occupants; and*
 - (c) *An increase to hours of liquor service currently set at Monday to Sunday, 9:00AM to Midnight, be supported for change to Monday to Sunday, 9:00 AM to 2:00 AM, be supported; and*
- (2) *That a letter be sent to the Liquor and Cannabis Regulation Branch, which includes the information attached as Appendix A (Attachment 1), advising that Council recommends the approval of the licence amendments for the reasons that these amendments have been determined, following public consultation, to be acceptable to the neighbouring community.*



Pg. # ITEM

Consent
Agenda
Item

10. **RICHMOND ACCESSIBILITY ADVISORY COMMITTEE 2023 WORK PROGRAM**

(File Ref. No. 08-4055-05) (REDMS No. 7225033)

CNCL-96

See Page CNCL-96 for full report

GENERAL PURPOSES COMMITTEE RECOMMENDATION

That the proposed work plan for the Richmond Accessibility Advisory Committee as outlined in the staff report titled “Richmond Accessibility Advisory Committee 2023 Work Program,” dated May 19, 2023, from the Director, Community Social Development, be approved.



Consent
Agenda
Item

11. **APPLICATION BY BENITO KHO AND VERNEY KHO FOR REZONING AT 7520 ASH STREET FROM “SINGLE DETACHED (RS1/F)” ZONE TO “SINGLE DETACHED (RS2/E)” ZONE**

(File Ref. No. RZ 21-945951) (REDMS No. 7227004)

CNCL-102

See Page CNCL-102 for full report

PLANNING COMMITTEE RECOMMENDATION

That Richmond Zoning Bylaw 8500, Amendment Bylaw 10472, for the rezoning of 7520 Ash Street from the “Single Family (RS1/F)” zone to the “Single Family (RS2/E)” zone, be introduced and given first reading.



Consent
Agenda
Item

12. **REVISED REZONING CONSIDERATIONS FOR THE APPLICATION BY SIAN GROUP INVESTMENTS INC. FOR REZONING AT 7100 AND 7120 ASH STREET FROM THE “SINGLE DETACHED(RS1/F)” ZONE TO THE “TOWN HOUSING (ZT16) - SOUTH MCLENNAN AND ST. ALBANS SUB-AREA (CITY CENTRE)”ZONE**

(File Ref. No. RZ 18-843479) (REDMS No. 7215969)

CNCL-125

See Page CNCL-125 for full report

PLANNING COMMITTEE RECOMMENDATION

(1) That third reading of Richmond Zoning Bylaw 8500, Amendment Bylaw 10163, for the rezoning of 7100 and 7120 Ash Street, be rescinded and the associated Rezoning Considerations be revised to reflect changes to tree retention and replacement, as per Attachment D to this report; and

- (2) *That Richmond Zoning Bylaw 8500, Amendment Bylaw 10163, for the rezoning of 7100 and 7120 Ash Street from the “Single Detached (RS1/F)” zone to the “Town Housing (ZT16) - South McLennan and St. Albans Sub-Area (City Centre)” zone, be granted third reading.*



Consent
Agenda
Item

13. PROPOSED UPDATES TO THE RICHMOND COMMUNITY SERVICES ADVISORY COMMITTEE CHARTER

(File Ref. No. 01-0100-30-RCSA1-01) (REDMS No. 7202810)

CNCL-183

See Page CNCL-183 for full report

PLANNING COMMITTEE RECOMMENDATION

- (1) *That the proposed updates to the Richmond Community Services Advisory Committee Charter as outlined in the staff report titled “Proposed Updates to the Richmond Community Services Advisory Committee Charter”, dated May 17, 2023, from the Director, Community Social Development, be endorsed; and*
- (2) *That the Richmond Community Services Advisory Committee Charter be renamed the Richmond Community Services Advisory Committee Terms of Reference.*



Consent
Agenda
Item

14. RESPONSE TO METRO VANCOUVER’S REFERRAL: LAND USE DESIGNATION AMENDMENT TO THE METRO 2050 REGIONAL GROWTH STRATEGY PROPOSED BY THE TOWNSHIP OF LANGLEY

(File Ref. No. 01-0157-30-RGST1) (REDMS No. 7245335)

CNCL-220

See Page CNCL-220 for full report

PLANNING COMMITTEE RECOMMENDATION

That staff be directed to communicate to the Metro Vancouver Regional District Board the City of Richmond’s opposition and comments, as outlined in the staff report titled “Response to Metro Vancouver’s Referral: Land Use Designation Amendment to the Metro 2050 Regional Growth Strategy Proposed by the Township of Langley”, dated May 30, 2023 from the Director, Policy Planning.



Council Agenda – Monday, June 26, 2023

Pg. # ITEM

Consent
Agenda
Item

15. **KITTIWAKE DRIVE - TRAFFIC CALMING PILOT PROJECT UPDATE**

(File Ref. No. 10-6450-09-01) (REDMS No. 7233657)

CNCL-235

See Page CNCL-235 for full report

PUBLIC WORKS AND TRANSPORTATION COMMITTEE
RECOMMENDATION

That Option 3 to implement a pilot project for the temporary installation of two asphalt speed cushions on Kitiwake Drive for a trial period of six months, as described in the staff report titled "Kitiwake Drive - Traffic Calming Pilot Project Update" dated May 19, 2023 from the Director, Transportation, be endorsed.



Consent
Agenda
Item

16. **2022 ANNUAL WATER QUALITY REPORT**

(File Ref. No. 10-6000-01) (REDMS No. 7233576)

CNCL-240

See Page CNCL-240 for full report

PUBLIC WORKS AND TRANSPORTATION COMMITTEE
RECOMMENDATION

- (1) *That the annual report titled “2022 Annual Water Quality Report” dated May 17, 2023, from the Director of Public Works Operations, be endorsed; and*
- (2) *That the annual report titled “2022 Annual Water Quality Report” dated May 17, 2023, be made available to the community on the City’s website and through various communication tools including social media channels and as part of community outreach initiatives.*



Council Agenda – Monday, June 26, 2023

Pg. # ITEM

Consent
Agenda
Item

17. **DRAINAGE CANAL BANK FAILURE REPAIRS-12506 VICKERS WAY**

(File Ref. No. 10-6340-20-P.2022CD00096Vol) (REDMS No. 7237488)

CNCL-316

[See Page CNCL-316 for full report](#)

PUBLIC WORKS AND TRANSPORTATION COMMITTEE
RECOMMENDATION

That funding of \$1,000,000 from the Drainage Improvement Reserve Fund for the drainage canal bank failure repairs at 12506 Vickers Way, be approved and that the Consolidated 5 Year Financial Plan (2023-2027) be amended accordingly, as detailed in the report titled "Drainage Canal Bank Failure Repairs - 12506 Vickers Way" dated May 23, 2023, from the Director, Engineering.



Consent
Agenda
Item

18. **CIRCULAR PROCUREMENT POLICY IMPLEMENTATION AND PROGRESS UPDATE**

(File Ref. No. 10-6125-07-04) (REDMS No. 7181733)

CNCL-319

[See Page CNCL-319 for full report](#)

PUBLIC WORKS AND TRANSPORTATION COMMITTEE
RECOMMENDATION

That results of the implementation of circular economy criteria into projects and procurement activities, as noted in the staff report titled "Circular Procurement Policy Implementation and Progress Update," dated May 8, 2023, from the Director, Sustainability and District Energy, be posted online to inform the public.



Council Agenda – Monday, June 26, 2023

Pg. # ITEM

19. **DIKE MASTER PLAN - PHASE 4 REPORT**

(File Ref. No. 10-6060-01) (REDMS No. 7182372)

CNCL-345

See Page CNCL-345 for full report

Consent
Agenda
Item

PUBLIC WORKS AND TRANSPORTATION COMMITTEE
RECOMMENDATION

That the “Dike Master Plan – Phase 4 Final Report,” as attached in the staff report titled “Dike Master Plan – Phase 4 Report,” dated May 23, 2023, from the Director, Engineering, be endorsed for capital project and development planning purposes.



20. **480 BUS ROUTE**

(File Ref. No.)

Consent
Agenda
Item

PUBLIC WORKS AND TRANSPORTATION COMMITTEE
RECOMMENDATION

- (1) That the City of Richmond write a letter to TransLink outlining concerns with respect to the 480 bus route; and*
- (2) That a TransLink representative be invited to a future Council meeting to provide a brief update on the 480 bus route.*



CONSIDERATION OF MATTERS REMOVED FROM THE
CONSENT AGENDA

NON-CONSENT AGENDA ITEMS

GENERAL PURPOSES COMMITTEE

Mayor Malcolm D. Brodie, Chair

Council Agenda – Monday, June 26, 2023

Pg. #	ITEM
21.	PILOT PROJECT FOR THE CONSUMPTION OF ALCOHOL IN PUBLIC PARKS (File Ref. No. 11-7200-20-01) (REDMS No. 7238902)
CNCL-501	<div>See Page CNCL-501 for full report</div> <div>GENERAL PURPOSES COMMITTEE RECOMMENDATION</div> <div><i>None.</i></div> <div>Note: The Following recommendation was DEFEATED at General Purposes Committee (with Mayor Brodie, Cllrs. Au, Hobbs, McNulty, and Wolfe opposed):</div> <div><i>That a Bylaw be drafted to permit the implementation of a Pilot Project for the consumption of liquor in designated areas in a limited number of City of Richmond parks as detailed in the report "Pilot Project For the Consumption of Alcohol in Public Parks," dated May 25, 2023, from the Directors of Parks Services and Community Bylaws.</i></div> <div><input type="checkbox"/></div>
FINANCE AND CORPORATE SERVICES DIVISION	
22.	2022 ANNUAL REPORT AND 2022 ANNUAL REPORT HIGHLIGHTS (File Ref. No. 01-0375-01) (REDMS No. 6898968)
CNCL-518	<div>See Page CNCL-518 for full report</div> <div>STAFF RECOMMENDATION</div> <div><i>That the reports titled “2022 Annual Report” and “2022 Annual Report – Highlights” be approved.</i></div> <div><input type="checkbox"/></div>
23.	2022 COUNCIL REMUNERATION AND EXPENSES (File Ref. No. 03-1200-03) (REDMS No. 6909545)
CNCL-617	<div>See Page CNCL- 617 for full report</div> <div>STAFF RECOMMENDATION</div> <div><i>That the report titled 2022 Council Remuneration and Expenses be received for information.</i></div> <div><input type="checkbox"/></div>

Council Agenda – Monday, June 26, 2023

Pg. # ITEM

24. **2022 STATEMENT OF FINANCIAL INFORMATION**
(File Ref. No. 03-1200-03) (REDMS No. 6909545)

CNCL-619

See Page **CNCL- 619** for full report

STAFF RECOMMENDATION

That the 2022 Statement of Financial Information be approved.

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PUBLIC ANNOUNCEMENTS AND EVENTS

NEW BUSINESS

BYLAWS FOR ADOPTION

CNCL-702

Richmond Zoning Bylaw No. 8500, Amendment **Bylaw No. 9586**
(8100 No. 5 Road, RZ 14-667707)
Opposed at 1st Reading – None.
Opposed at 2nd/3rd Readings – None.

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CNCL-704

Richmond Zoning Bylaw No. 8500, Amendment **Bylaw No. 10432**
(11431 Williams Rd, RZ 22-014680)
Opposed at 1st Reading – None.
Opposed at 2nd/3rd Readings – None.

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CNCL-706

Business Regulation Bylaw No. 7538, Amendment **Bylaw No. 10444**
Opposed at 1st/2nd/3rd Readings – None.

Council Agenda – Monday, June 26, 2023

Pg. #

ITEM

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CNCL-707

Growing Communities Reserve Fund Establishment **Bylaw No. 10466**

Opposed at 1st/2nd/3rd Readings – None.

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DEVELOPMENT PERMIT PANEL

25. RECOMMENDATION

See DPP Plan Package (distributed separately) for full hardcopy plans

CNCL-708

CNCL-735

CNCL-738

(1) *That the **minutes** of the Development Permit Panel meeting held on June 14, 2023, and the Chair's reports for the Development Permit Panel meetings held on **March 11, 2020** and **June 14, 2023** be received for information; and*

(2) *That the recommendations of the Panel to authorize the issuance of:*

(a) *Development Permit (DP 17-766824) for the property at 8100 No. 5 Road, and*

(b) *Development Permit (DP 21-935984) for the property at 12551 No. 1 Road,*

be endorsed, and the Permits so issued.

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ADJOURNMENT

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Regular Council

Monday, June 12, 2023

Place: Council Chambers
Richmond City Hall

Present: Mayor Malcolm D. Brodie
Councillor Chak Au (by teleconference)
Councillor Carol Day
Councillor Laura Gillanders
Councillor Kash Heed
Councillor Andy Hobbs
Councillor Alexa Loo
Councillor Bill McNulty (by teleconference)
Councillor Michael Wolfe

Corporate Officer – Claudia Jesson

Call to Order: Mayor Brodie called the meeting to order at 7:00 p.m.

RES NO. ITEM

MINUTES

- R23/11-1 1. It was moved and seconded
That:
- (1) *the minutes of the Regular Council meeting held on May 23, 2023, be adopted as circulated;*
 - (2) *the minutes of the Special Council meeting held on June 5, 2023, be adopted as circulated;*
 - (3) *the minutes of the Special Council meeting held on June 7, 2023, be adopted as circulated;*

CARRIED



**Regular Council
Monday, June 12, 2023**

COMMITTEE OF THE WHOLE

- R23/11-2 2. It was moved and seconded
That Council resolve into Committee of the Whole to hear delegations on agenda items (7:02 p.m.).

CARRIED

3. Delegations from the floor on Agenda items – None.

Item No. 13 – Application By Inter Luck Trading Corp For Rezoning At 3560 Moncton Street From “Steveston Commercial (Cs2)” Zone to “Commercial Mixed Use (Zmu43) – (Steveston Village)” Zone

Ken Chow, Architect, Interface Architecture, spoke about the various changes that were made to the proposed development application to address Council’s concerns with the application. He highlighted that the application meets the new Enhanced Development Review Process and is consistent with the land use policies in the Steveston Area Plan.

- R23/11-3 4. It was moved and seconded
That Committee rise and report (7:07 p.m.).

CARRIED

CONSENT AGENDA

- R23/11-4 5. It was moved and seconded
That Items No. 6 through No. 10 be adopted by general consent.

CARRIED

6. **COMMITTEE MINUTES**

That the minutes of:

- (1) *the Parks, Recreation and Cultural Services Committee meeting held on May 24, 2023;*



Regular Council
Monday, June 12, 2023

- (2) *the Finance Committee meeting held on June 5, 2023;*
- (3) *the General Purposes Committee meeting held on June 5, 2023;*
- (4) *the Planning Committee meeting held on June 6, 2023;*
- (5) *the Special General Purposes Committee meeting held on June 7, 2023; and*
- (6) *the Council/School Board Liaison Committee meeting held on April 5, 2023;*

be received for information.

ADOPTED ON CONSENT

7. **CANADA LINE STATION ART PLINTH PROGRAM PUBLIC ART PROJECT TERMS OF REFERENCE**

(File Ref. No. 11-7000-09-20-109) (REDMS No. 7137262, 6985276)

That the Terms of Reference for the Canada Line Station Art Plinth Program Public Art Project as presented in the staff report titled, "Canada Line Station Art Plinth Program Public Art Project Terms of Reference" dated April 20, 2023 from the Director, Arts, Culture & Heritage Services, be approved.

ADOPTED ON CONSENT

8. **RICHMOND CULTURAL CENTRE ANNEX COMMUNITY MURAL PROJECT TERMS OF REFERENCE**

(File Ref. No. 11-7000-09-20-346) (REDMS No. 7206968, 7206238)

That the Terms of Reference for the Richmond Cultural Centre Annex Community Mural Project, as presented in the staff report titled "Richmond Cultural Centre Annex Community Mural Project Terms of Reference," dated April 20, 2023, from the Director, Arts, Culture and Heritage Services, be endorsed.

ADOPTED ON CONSENT



**Regular Council
Monday, June 12, 2023**

9. OPTIONS FOR REGULATING THE USE OF THE CITY'S WATERFRONT

(File Ref. No. 06-2345-01; 12-8080-17-01; 06-2345-00) (REDMS No. 7226352, 6729715, 7229448, 7229431)

That a bylaw to regulate the use of the City's waterfront as detailed in the staff report titled "Options for Regulating the Use of the City's Waterfront," dated May 5, 2023, from the Director of Parks Services be drafted for Council's consideration.

ADOPTED ON CONSENT

10. ESTABLISHMENT OF THE GROWING COMMUNITIES RESERVE FUND

(File Ref. No. 12-8060-20-010466/) (REDMS No. 7181598, 7206026)

That the Growing Communities Reserve Fund Establishment Bylaw 10466 be introduced and given first, second and- third readings.

ADOPTED ON CONSENT

11. APPLICATION BY DAVA DEVELOPMENTS LTD. FOR REZONING AT 8911, 8931, 8951, 8991 PATTERSON ROAD FROM "RESIDENTIAL SINGLE FAMILY (RS1/F)" ZONE TO "RESIDENTIAL/ LIMITED COMMERCIAL (ZMU54)" ZONE AND "SCHOOL & INSTITUTIONAL USE (SI)" ZONE

(File Ref. No. 12-8060-20-010464, RZ 20-919113) (REDMS No. 7205757, 7236181)

Please see Page 5 for action on this item.

12. APPLICATION BY INTERFACE ARCHITECTURE INC. FOR REZONING AT 5800, 5840, 5860 GRANVILLE AVENUE FROM THE "SINGLE DETACHED (RS1/E)" ZONE TO THE "LOW-DENSITY TOWNHOUSES (RTL4)" ZONE

(File Ref. No. 12-8060-20-010470, RZ 21-922202) (REDMS No. 7216004, 7232833)

Please see Page 5 for action on this item.



Regular Council
Monday, June 12, 2023

**CONSIDERATION OF MATTERS REMOVED FROM THE
CONSENT AGENDA**

11. **APPLICATION BY DAVA DEVELOPMENTS LTD. FOR REZONING AT 8911, 8931, 8951, 8991 PATTERSON ROAD FROM “RESIDENTIAL SINGLE FAMILY (RS1/F)” ZONE TO “RESIDENTIAL/ LIMITED COMMERCIAL (ZMU54)” ZONE AND “SCHOOL & INSTITUTIONAL USE (SI)” ZONE**
(File Ref. No. 12-8060-20-010075, RZ 18-817742) (REDMS No. 7205757)

R23/11-5

It was moved and seconded

That Richmond Zoning Bylaw 8500, Amendment Bylaw 10464 to create the “Residential/Limited Commercial (ZMU54)” zone and to rezone 8911, 8931, 8951, 8991 Patterson Road from “Residential Single Family (RS1/F)” zone to “Residential/Limited Commercial (ZMU54)” zone and “School & Institutional Use (SI)” zone be introduced and given first reading.

The question on the motion was not called as discussion ensued with respect to: (i) tree replacement and retention, (ii) shared parking option with neighboring property, and future development plans for the neighborhood.

The question on the motion was then called and **CARRIED** with Cllrs. Gillanders and Wolfe opposed.

12. **APPLICATION BY INTERFACE ARCHITECTURE INC. FOR REZONING AT 5800, 5840, 5860 GRANVILLE AVENUE FROM THE “SINGLE DETACHED (RS1/E)” ZONE TO THE “LOW-DENSITY TOWNHOUSES (RTL4)” ZONE**
(File Ref. No. 12-8060-20-010470, RZ 21-922202) (REDMS No. 7216004, 7232833)

R23/11-6

It was moved and seconded



Regular Council
Monday, June 12, 2023

That Richmond Zoning Bylaw 8500, Amendment Bylaw 10470, for the rezoning of 5800, 5840, 5860 Granville Avenue from the “Single Detached (RS1/E)” zone to the “Low-Density Townhouses (RTL4)” zone, be introduced and given first reading.

The question on the motion was not called as discussion ensued with respect to (i) tree retention, (ii) the City’s House Moving and Salvage program, (iii) the variance request to reduce the exterior side yard setback along Granville Avenue, and (iv) the maximum height restrictions for this proposal.

The question on the motion was then called and **CARRIED**.

NON-CONSENT AGENDA ITEMS

PLANNING COMMITTEE
Councillor Bill McNulty, Chair

13. **APPLICATION BY INTER LUCK TRADING CORP FOR REZONING AT 3560 MONCTON STREET FROM “STEVESTON COMMERCIAL (CS2)” ZONE TO “COMMERCIAL MIXED USE (ZMU43) – (STEVESTON VILLAGE)” ZONE**
(File Ref. No. 12-8060-20-010075, RZ 18-817742) (REDMS No. 7236314)

R23/11-7

It was moved and seconded

That Richmond Zoning Bylaw 8500, Amendment Bylaw 10075, to create the “Commercial Mixed Use (ZMU43) – Steveston Village” zone, and to rezone 3560 Moncton Street from “Steveston Commercial (CS2)” zone to “Commercial Mixed Use (ZMU43) – Steveston Village” zone, be introduced and given first reading.

The question on the motion was not called as discussion ensued with respect to (i) keeping Moncton Street as one storey commercial to preserve the historical aspect of the area (ii) the need for a hardware store in Steveston, (iii) residential units built above commercial units, (iv) Heritage Commission endorsement of the proposed application, (v) typology of proposed development being consistent with the heritage lot pattern, and (vi) potential increased residential traffic in the area.



Regular Council
Monday, June 12, 2023

As a result of the discussion the following **referral motion** was introduced:

R23/11-8

It was moved and seconded

That the application by “Inter Luck Trading Corp For Rezoning At 3560 Moncton Street From “Steveston Commercial (CS2)” Zone to “Commercial Mixed Use (ZMU43) – (Steveston Village)” Zone” be referred back to staff to explore options to maintain the heritage of Steveston as a fishing village with services for the people of Richmond and to explore options to maintain the current one-storey height and to orient the businesses toward Moncton Street.

DEFEATED

Opposed: Mayor Brodie

Cllrs: Au

Heed

Hobbs

Loo

McNulty

The question on the main motion was then called and **CARRIED** with Cllrs. Day, Gillanders and Wolfe opposed.

PUBLIC ANNOUNCEMENTS AND EVENTS

Mayor Brodie advised that:

Susan Stiene, Janeil Mackay and Mark Boden, were appointed to the Tourism Richmond Board of Directors for a two-year term.

Adena MacLean was appointed as the Vancouver Coastal Health representative to the Richmond Intercultural Advisory Committee for the remainder of the two-year term expiring on December 31, 2024.

The City of Richmond has received a Silver Award from the Planning Institute of BC for the City Centre Area Plan.

BYLAWS FOR ADOPTION



Regular Council
Monday, June 12, 2023

- R23/11-9 It was moved and seconded
That the following bylaws be adopted:
- R23/11-10 It was moved and seconded
That Richmond Zoning Bylaw No. 8500, Amendment **Bylaw No. 9694** be
adopted.
- CARRIED**
Opposed: Cllrs. Gillanders
 Wolfe
- R23/11-11 It was moved and seconded
That Richmond Official Community Plan Bylaw 7100, Amendment **Bylaw**
No. 10235 be adopted.
- CARRIED**
Opposed: Cllrs. Day
 Gillanders
 Wolfe
- R23/11-12 It was moved and seconded
That Richmond Zoning Bylaw No. 8500, Amendment **Bylaw No. 10198** be
adopted.
- CARRIED**
Opposed: Cllrs. Day
 Wolfe
- R23/11-13 It was moved and seconded
That Richmond Zoning Bylaw No. 8500, Amendment **Bylaw No. 10379** be
adopted.
- CARRIED**

ADJOURNMENT

- R23/11-14 It was moved and seconded
That the meeting adjourn (7:53 p.m.).
- CARRIED**



**City of
Richmond**

Minutes

Regular Council Monday, June 12, 2023

Certified a true and correct copy of the Minutes of the Regular meeting of the Council of the City of Richmond held on Monday, June 12, 2023.

Mayor (Malcolm D. Brodie)

Corporate Officer (Claudia Jesson)



**Regular Council meeting for Public Hearings
Monday, June 19, 2023**

Place: Council Chambers
Richmond City Hall

Present: Mayor Malcolm D. Brodie, Chair
Councillor Chak Au
Councillor Carol Day
Councillor Laura Gillanders
Councillor Kash Heed
Councillor Andy Hobbs
Councillor Bill McNulty
Councillor Michael Wolfe

Evangel Biason, Acting Corporate Officer

Absent: Councillor Alexa Loo

Call to Order: Mayor Brodie opened the proceedings at 7:00 p.m.

1. **RICHMOND ZONING BYLAW 8500, AMENDMENT BYLAW 10433
(RZ 17-791280)**

(Location: 8180 Heather Street; Applicant: 1265028 B.C. Ltd. (Xinyu Zhao))

Applicant's Comments:

The architect and geotechnical engineer for the applicant, 1265028 B.C. Ltd. (Xinyu Zhao), noted the following regarding the two proposed compact lots:

- the subject property will be infilled to match the east neighbouring existing grade, and the existing concrete retaining wall on the east side, believed to be a grade separation of the existing garden and the neighbour's side yard, will not be impacted by the excavation and infill compact; and
- initial construction plans included the removal of the existing east side yard retaining wall to be replaced with a new timber retaining wall, however the neighbour has requested the retention of the existing concrete retaining wall, which will now remain as development can still continue with it in place.



**Regular Council meeting for Public Hearings
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Regular Council meeting for Public Hearings Monday, June 19, 2023

Written Submissions:

None.

Submissions from the floor:

Gordon Hallinan, 9271 Dixon Avenue, expressed opposition for the development, noting concerns with the setback of the new construction, total loss of privacy, and the structural integrity of the existing retaining wall.

PH23/6-1

It was moved and seconded

That Richmond Zoning Bylaw 8500, Amendment Bylaw 10433 be given second and third readings.

The question on the motion was not called as further discussion ensued and the applicant's representative noted (i) he had again met with Mr. Hallinan to address concerns raised and was advised the main concern was for the side of his house to continue to have the existing setbacks and privacy fencing between the residential buildings; (ii) the zoning for the subject property permits construction of a 4ft. setback to the existing fence, and (iii) the geotechnical engineers will ensure construction will be 4ft. away from the retaining wall, 8ft. from neighbouring house.

In response to queries from Council, staff noted:

- as per the recommendations of the applicant's geotechnical review, the retaining wall would remain in place with the fence as constructed above and the grade of the property being matched with the property to the east;
- with respect to ensuring the integrity of the neighbouring property, as part of the Building Permit application the applicant will be required to submit a thorough geotechnical study. Also, as noted in the geotechnical report submitted by the applicant, monitoring the undertaking during construction is recommended, which would include installing monitoring equipment on the retaining wall itself. The applicant has also made an offer to place such equipment on the neighbouring property as well, subject to getting the neighbouring properties authorization;
- the existing hedges on-site are is not recommended for retention. Also, the area occupied by the existing hedges would be used to access the secondary suite on the property;

Regular Council meeting for Public Hearings Monday, June 19, 2023

- a damage deposit is not required for the adjacent property as part of the applicant's undertaking for construction on the subject property; and
- for the purposes of the subject property, Dixon Road is considered the front yard, the east property line is a side yard, as such, any new construction on the property could be placed 1.2m from the property line, consistent with the rezoning application.

The question on the motion was then called and it was **CARRIED**.

2. RICHMOND ZONING BYLAW 8500, AMENDMENT BYLAW 10447 (RZ 22-027435)

(Location: 9671 No. 1 Road; Applicant: Bradley Dore)

Applicant's Comments:

Bradley Dore, Norm Hol, and Ben Taddei, provided a brief presentation (attached to and forming part of these minutes as Schedule 1) and noted:

- the proposed subdivision will result in two 33' x 110' sites with each new site having a 2176 sq. ft. single family dwelling and, secondary suites are proposed in both of the new houses, exceeding the minimum requirements;
- access to the site has been challenging as a result of the tree line which was addressed by the project arborist, resulting in the recommendation of the removal of 11 trees, replacement of three trees on-site and a cash contribution to the City's Tree Compensation Fund in lieu of the remaining required tree replacement; and
- further challenges include addressing the substantial grade change that occurs between No. 1 Road and the existing grade for the site and what is needed to provide for the flood plain control level for the main floor elevations.

In response to queries from Council, the applicant confirmed the majority of the impact to the trees for removal are related to servicing and that the landscape architect had advised additional replacement trees would not be viable in the space available.

Written Submissions:

None.

**Regular Council meeting for Public Hearings
Monday, June 19, 2023**

Submissions from the floor:

None.

PH23/6-2

It was moved and seconded

That Richmond Zoning Bylaw 8500, Amendment Bylaw 10447 be given second and third readings.

CARRIED

3. **OFFICIAL COMMUNITY PLAN BYLAW 9000, AMENDMENT BYLAW 10452 AND RICHMOND ZONING BYLAW 8500, AMENDMENT BYLAW 10453 (RZ 22-027435)**

(Location: 4651, 4671, 4691 Smith Crescent, 23301, 23321, 23361, and 23381 Gilley Road;
Applicant: Maskeen (Hamilton) Properties Corp.)

Applicant's Comments:

The applicant was available to respond to queries.

Written Submissions:

None.

Submissions from the floor:

None.

PH23/6-3

It was moved and seconded

That Official Community Plan Bylaw 9000, Amendment Bylaw 10452 be given second and third readings.

The question on the motion was not called as a brief discussion ensued regarding tree removal/replacement ratio, the loss of ditch habitat and opportunities for additional amenities.

In response to queries from Council, staff advised the following:

- the proposed OCP amendment will not impact the trees, and
- the proposed OCP re-designation will allow for a higher building height at the edge of the northern most property to match the height of the remainder of the development, permitting the increase to apartment over parking in place of four-storey stacked townhouses.

The question on the motion was then called and it was **CARRIED** with Cllr. Wolfe opposed.

4.

**Regular Council meeting for Public Hearings
Monday, June 19, 2023**

PH23/6-4

It was moved and seconded

That Richmond Zoning Bylaw 8500, Amendment Bylaw 10453 be given second and third readings.

CARRIED

Opposed: Cllr. Wolfe

4. **RICHMOND ZONING BYLAW 8500, AMENDMENT BYLAW 10454
(RZ 21-941625)**

(Location: 10611 and 10751 River Drive; Applicant: Fougere Architecture Inc.)

Applicant's Comments:

The applicant was available to respond to queries.

Written Submissions:

Sandra Lindahl and John Carlson (Schedule 2)

Submissions from the floor:

Sandra Lindahl, 10766 River Drive, noted the concerns expressed in her written submission with regards to increased vehicle traffic, construction activity (including disposal of nails which has resulted in six flat tires), proposed building height, proposed density, and ensuring the availability of affordable housing.

In response to queries from Council, staff advised the following:

- the development complies with the City's affordable housing strategy;
- the developer is proposing to construct 18 Low-End Market Rental (LEMR) units and, although an in-stream application not subject to the City's market rental policy, is also voluntarily proposing to provide 13 market rental units; and
- the LEMR and market rental units will be secured by legal agreement registered on Title.

PH23/6-5

It was moved and seconded

That Richmond Zoning Bylaw 8500, Amendment Bylaw 10454 be given second and third readings.

The question on the motion was not called as discussion ensued with respect to construction damage on roads. In response to queries from Council, staff noted:

5.

**Regular Council meeting for Public Hearings
Monday, June 19, 2023**

- with respect to damage to City infrastructure, a damage deposit is required as a condition of the Building Permit;
- regarding construction parking and management, prior to Building Permit, the developer is required to provide a construction parking and management plan that must be reviewed by the City;
- with respect to the items noted by the delegation regarding debris, waste, etc., the City relies on the good neighbourly approach with development clients; and
- signage with City and developer contact information will be posted on site for residents experiencing difficulty with construction related activity.

The question on the motion was then called and it was **CARRIED** with Cllr. Wolfe opposed.

5. **RICHMOND ZONING BYLAW 8500, AMENDMENT BYLAW 10457
(RZ 20-919143)**

(Location: 7371 No. 4 Road; Applicant: Fougere Architecture Inc.)

Applicant's Comments:

The applicant was available to respond to queries.

Written Submissions:

None.

Submissions from the floor:

None.

PH23/6-6

It was moved and seconded

That Richmond Zoning Bylaw 8500, Amendment Bylaw 10457 be given second and third readings.

CARRIED

Opposed: Cllrs. Gillanders
Wolfe

**Regular Council meeting for Public Hearings
Monday, June 19, 2023**

6. **RICHMOND ZONING BYLAW 8500, AMENDMENT BYLAW 10465**
(Location: 8635, 8655, 8675 and 8695 Cook Crescent, and the surplus portion of the Spires Road and Cook Crescent road allowance; Applicant: TopStream Management Ltd.)

Applicant's Comments:

The applicant was available to respond to queries.

Written Submissions:

None.

Submissions from the floor:

None.

PH23/6-7

It was moved and seconded

That Richmond Zoning Bylaw 8500, Amendment Bylaw 10465 be given second and third readings.

CARRIED

Opposed: Cllrs. Day
Gillanders
Wolfe

ADJOURNMENT

PH23/6-8

It was moved and seconded

That the meeting adjourn (8:00 p.m.).

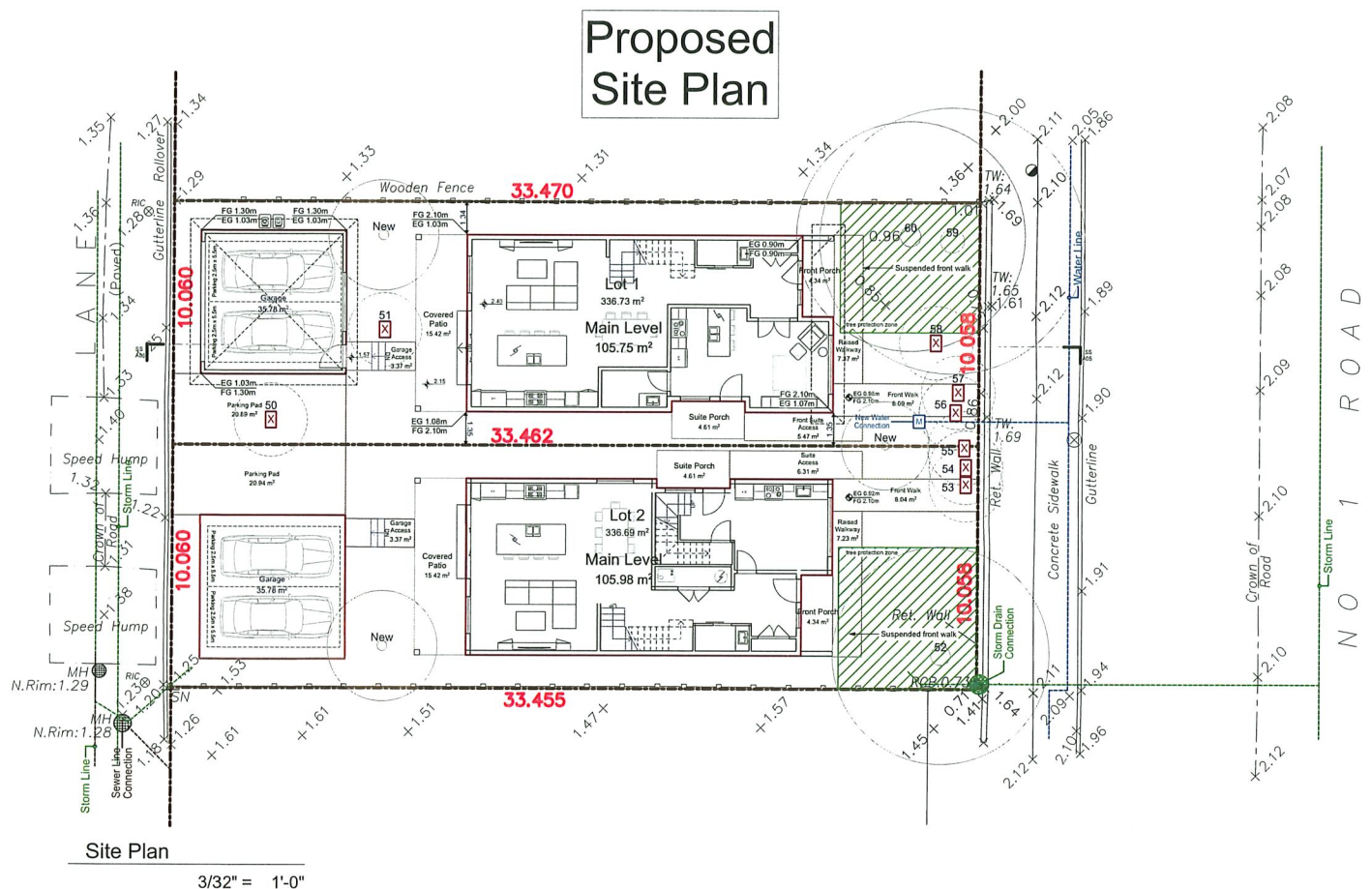
CARRIED

Certified a true and correct copy of the
Minutes of the Regular meeting for Public
Hearings of the City of Richmond held on
Monday, June 19, 2023.

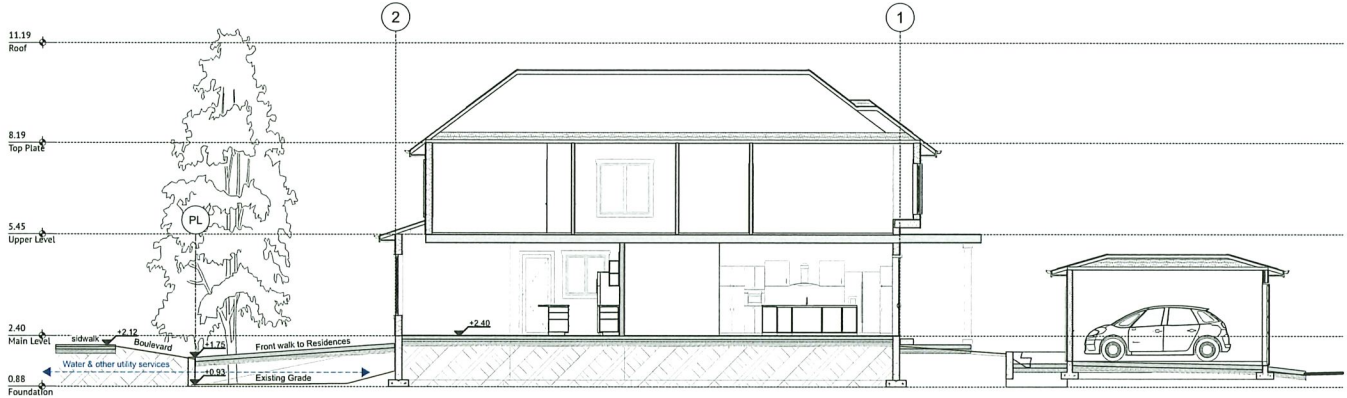
Mayor (Malcolm D. Brodie)

Acting Corporate Officer (Evangel Biason)

Schedule 1 to the Minutes of the
Public Hearing meeting of
Richmond City Council held on
Monday, June 19, 2023.



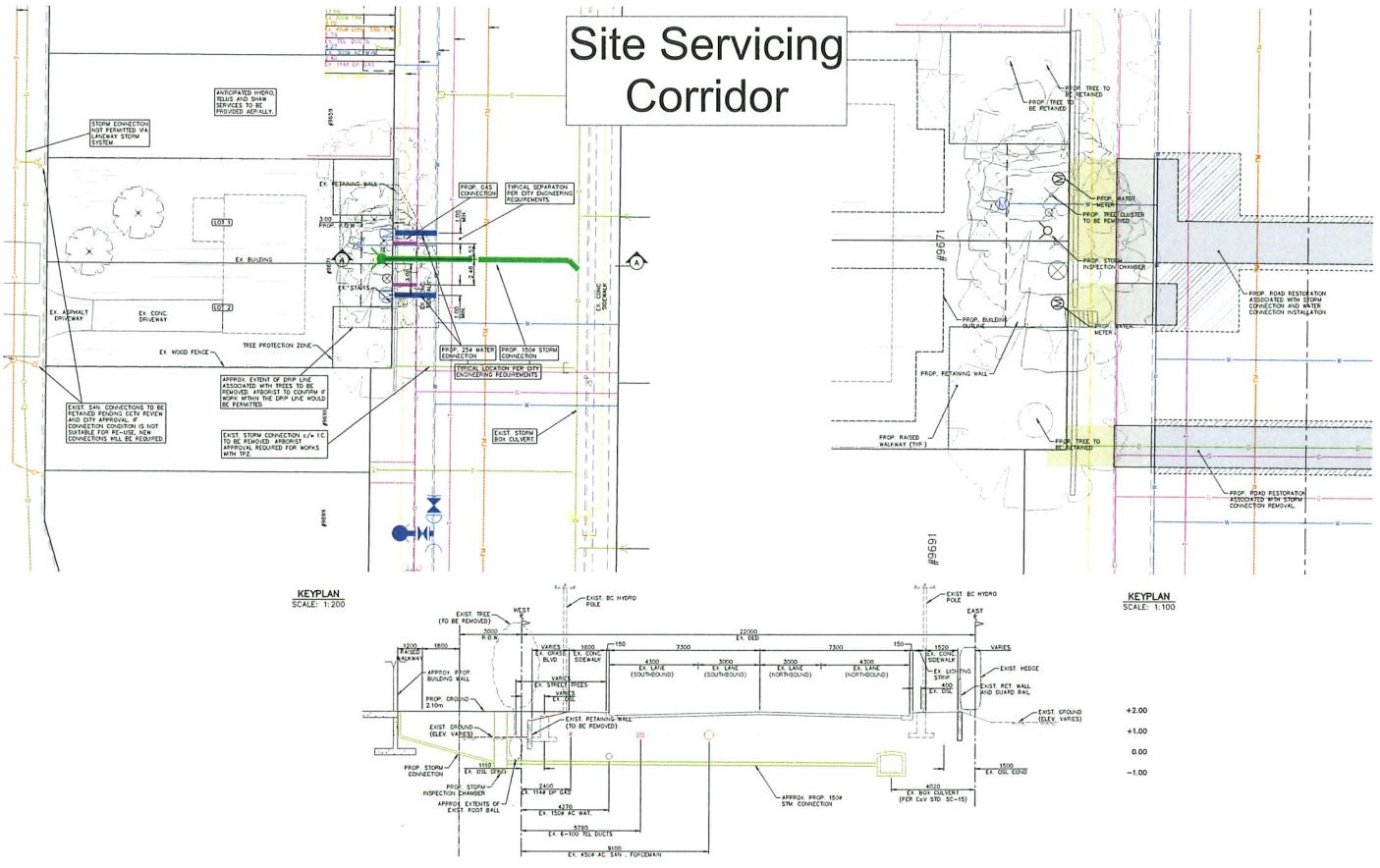
Site Grading



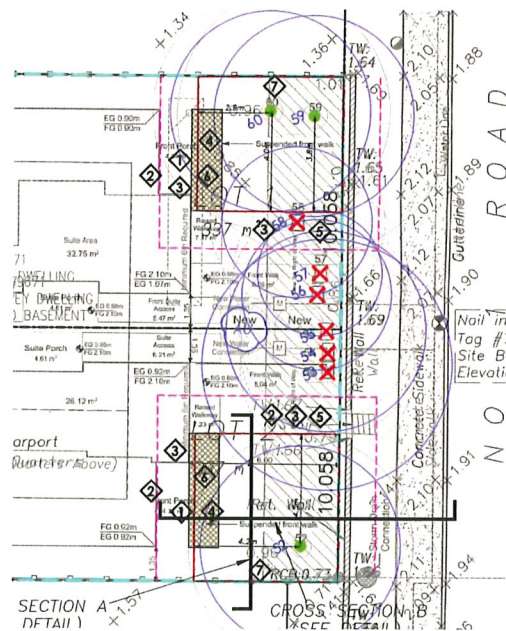
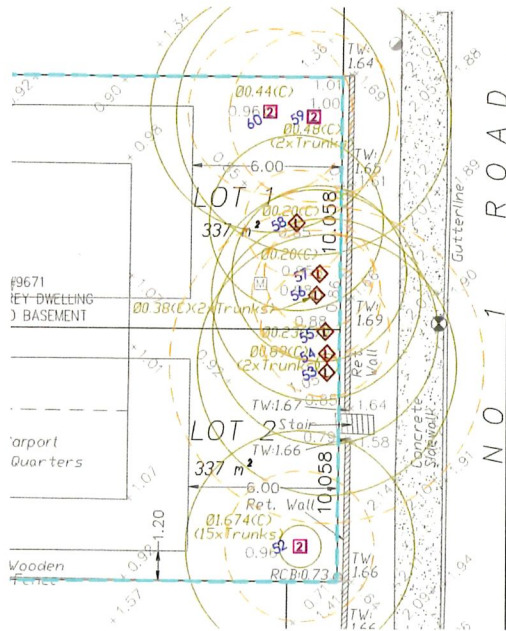
SS Section

1/8" = 1'-0"

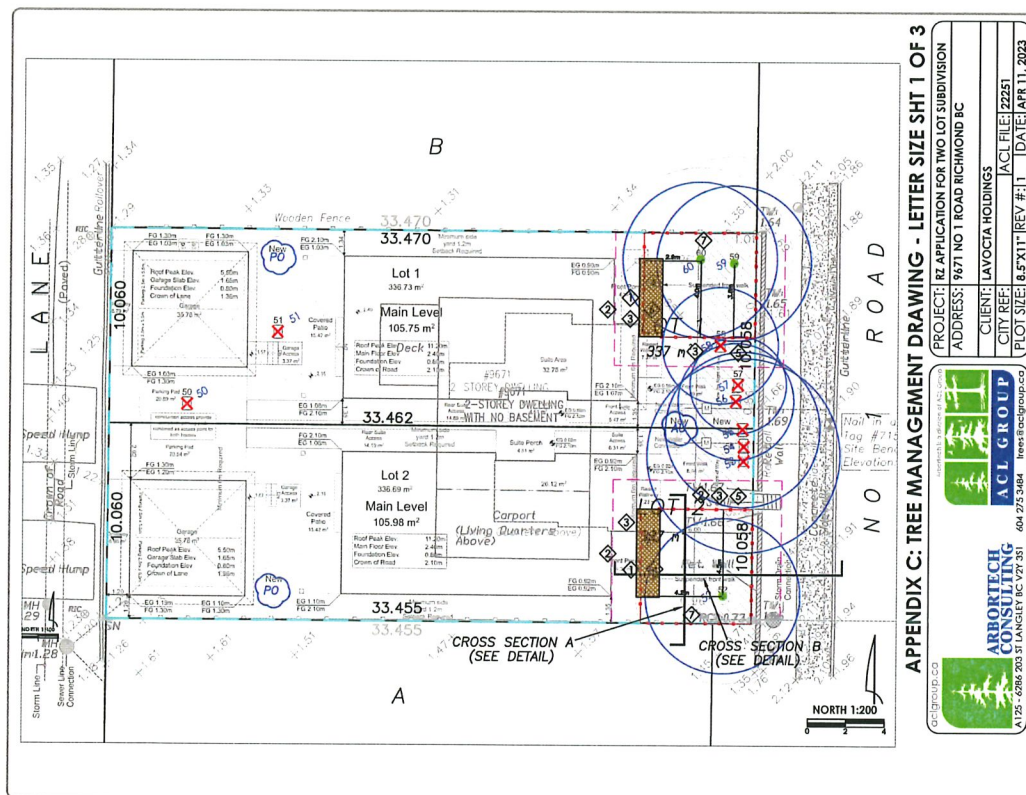
Site Servicing Corridor



Arborist's Slides







From: John Carlson
Sent: June 18, 2023 11:53 PM
To: CityClerk
Cc: Carol Day
Subject: Comments for Public Hearing: Mon., June 19/23 7 p.m.
Attachments: Public Hearing on Richmond Zoning Bylaw 8500 Amendment 10454 (RZ 21-941625).pages; Public Hearing on Richmond Zoning Bylaw 8500 Amendment 10454 (RZ 21-941625).pdf

City of Richmond Security Warning: This email was sent from an external source outside the City. Please do not click or open attachments unless you recognize the source of this email and the content is safe.

Dear Ms. Claudia Jesson, Director, City Clerk's Office

Attached are comments from Sandra Lindahl and John Carlson for the Public Hearing on Mon., June 19/23 at 7 p.m.

We have a MAC computer and sometimes the person receiving the message has trouble opening it, so I ask your patience please in that I am sending it in two formats. Hopefully you will be able to open one of them.

I plan to attend the meeting Monday evening to speak to this, but an elderly 95 year old aunt has been discharged from hospital and I may have to attend to her and may not make the meeting on time or at all. Thus I hope that my copy will be presented to the Mayor and Councillors if it turns out that I am absent.

Sincerely
Sandra Lindahl and John Carlson

Public Hearing
Mon., June 19/23
7 p.m.

Location: 10611 and 10751 River Drive

Applicant: Fougere Architecture Inc.

Purpose: To rezone the subject property from the “Industrial Storage (IS)” zone to a new “Low to Mid Rise Apartment (ZLR46) - Bridgeport” zone, to permit development of approximately 181 residential units in three buildings ranging in height from four-storeys to six-storeys.

City Contact: Sara Badyal 604-276-4282 Planning and Development Division

This submission is in response to the Notice of Public Hearing that we received concerning the proposed rezoning at 10611 and 10751 River Drive.

My name is Sandra Lindahl (SL) and I wish to speak to this issue on behalf of myself and my husband John Carlson. We live at 10766 River Drive, Richmond, B.C. V6X 1Z4. We have lived here for 43 years.

About 10 years ago, signage went up on the corner of Shell Road and River Drive indicating that a company, if I recall correctly named Bohan Development planned to put up “luxury boutique condominiums” on the piece of land across from our house. The number was minimal, again if I recall correctly about 8. We were therefore shocked to receive this Notice that 181 residential units are now being planned.

Public Hearing
Mon., June 19/23
7 p.m.

Given the huge increase in number and height of the buildings the time we have been given to prepare a response is inadequate.

Here are our comments:

Since the development on the north side of River Drive started at the west end of the section between No. 4 and Shell Roads, the traffic has increased exponentially. During the morning and evening rush hours as well as times that traffic is rerouted or detoured from Bridgeport Road (yes this frequently happens) it can be almost impossible to get in or out of our driveway. This is a problem for all residences on the south side of River Drive, but for those of us in older homes since the raising of the road, it is particularly difficult due to the steep driveways we now have to negotiate. What is the estimate of additional cars that will use River Drive from this proposal? We estimate 181 to 300, given what we have experienced as each of the phases has been completed along the road from west to east. Has anyone done a traffic study or talked to those of us on the south side of the road? Has anyone even thought of this?

As the development has moved from west to east, with each phase the disruption with regard to the construction has gotten worse. These are some of the things we have experienced:

-each time the land was cleared the rodent population moved across the road trying to find new lodging. The subsequent pest control was at our own expense.

-large number of dump, cement and other trucks have rumbled up and down the road creating noise, vibration and at times while waiting to

Public Hearing
Mon., June 19/23
7 p.m.

get into the construction sites have blocked driveways. Regular vehicle traffic is aggressive in trying to get around these trucks and there have been many close calls as they pull into the oncoming lane to pass nearly causing a head-on collision. Additionally the amount of dust and dirt has been difficult with regard to us being able to keep the house, driveway and sidewalk clean.

-as construction of previous phases of building starts, we experience flat tires, always due to nails from the framing and roofing. Specifically from the last two phases, I (SL) have had three flat tires with each phase for a total of six. One tire I (SL) was able to get repaired and the other five I had to replace at my own expense. In the forty-three years, we have lived here we have had no flat tires except when construction was happening. What precautions will the developer be required to take to ensure that nails are not left on the road and what recourse do we have if the previous pattern is repeated? Other neighbours have had the same problem, perhaps with more or less flat tires.

-we did have a small view from the second floor where we could actually see the fireworks in downtown Vancouver. With the current building going up and the buildings in this new proposal the same or higher we will not ever regain this.

The last and most important issue is whether Council will require this developer to actually build the number of low income and/or below market suites which I believe is required. Am I wrong in my understanding of this or is the requirement a myth and cash for amenities (parks, playgrounds, trails, etc) accepted in place of providing housing?

Public Hearing

Mon., June 19/23

7 p.m.

It has been our experience with two close friends, who lived in Richmond the majority of their lives, one for 35 years and the other, 55 years, have within the last year had to leave Richmond due to lack of affordable housing, either for rental or purchase. They were both devastated to have to leave. In the one case the mother of the family and I spent 3 months (hundreds of hours) looking for affordable housing in Richmond. We looked at everything possible and made hundreds of telephone calls, using information provided by the City. Not one accommodation was available despite the City's list being very long. The rentals on the City's list, excluding the B.C. Housing had to be contacted individually, a time-consuming task almost beyond possibility. Other than two or three responses by telephone and five or six by e-mail, our messages went unanswered. Those that did respond told us their wait lists were full and they were not accepting further names.

The single individual ended up in Ottawa and the family in Chilliwack. Neither has the medical or social support they need where they are now. We have never been so frustrated or so disappointed to see this happen. Richmond is certainly not the community I (SL) thought it was having grown up and lived here myself for 73 years, other than a brief 7 year hiatus in Marpole. The children of long time Richmond families now have to leave this city as it is no longer affordable either for rental or purchase. The grandchildren of my friends certainly are not able to stay in the community in which they were raised. So sad.

If this development does not provide for housing that local people from Richmond can afford, we strongly oppose this development.

For Metro Vancouver meetings on Friday, June 2, 2023

Please note these are not the official minutes. Board in Brief is an informal summary. Material relating to any of the following items is available on request from Metro Vancouver. For more information, please contact: media@metrovancover.org.

Metro Vancouver Regional District

E1.1 Regional Parks Sustainable Transportation Market Research Report Summary

RECEIVED

This report conveys the results of research that was undertaken to support more sustainable travel to regional parks. The results are based on a survey of 653 Metro Vancouver residents who visited a regional or other large natural park in the region during the last 12 months.

The *Metro Vancouver Sustainable Transportation Research* report found that while the majority of respondents used private vehicles to travel to regional or large natural parks, the results indicate that actions that improve convenience, efficiency, and safety of transit or cycling infrastructure will encourage more people to access these parks by sustainable modes of transportation. Metro Vancouver will use this information to develop strategies to reduce these barriers in collaboration with other jurisdictions.

The Board received the report for information.

E1.2 Manager's Report – Regional Parks

RECEIVED

At its May 10, 2023, meeting, the Regional Parks Committee considered the Manager's Report – Regional Parks, dated May 3, 2023. The Committee directed staff to forward the report to the MVRD Board for information, to provide an update regarding park planning, municipal rezoning, and Official Community Plan amendment for the property at Cape Roger Curtis.

The Board received the report for information.

E2.1 Barnston Island Dike Improvements – Provincial Grant

APPROVED

The Province recently provided Metro Vancouver with a \$5.25 million grant for dike improvements on Barnston Island. The grant is not sufficient to bring the entire dike up to current standards, but will enable the improvement of some of the dike components, thereby increasing the overall flood protection capability of the dike.

Metro Vancouver is the local government for Barnston Island, but it is not responsible for the dike itself, which falls to the resident-volunteer Barnston Island Diking District, which is overseen directly by the Province. Metro Vancouver will manage the consultation and procurement process for this grant project, but is not taking on additional responsibilities for the dike or its future maintenance. The project will be completed by March 2026.

The Board endorsed the use of a \$5.25-million provincial grant to make improvements to the Barnston Island dike, and affirmed that accepting the grant does not change the status of the dike's jurisdiction.

E2.2 University Endowment Lands Governance Study – Final Report

APPROVED

In March 2023, the Province released the final report on the *University Endowment Lands Services, Structure and Governance Study*. The study was initiated in 2020 in response to growing interest to determine the best way of governing the University Endowment Lands in the face of growing pressures such as future development, changing demographics, growing infrastructure and local service needs, bylaw enforcement, and local political representation.

The study presents a high-level review of four governance scenarios: provincial scenario (status quo), regional district scenario (local services provided by Metro Vancouver), inclusion scenario (amalgamation with the City of Vancouver), and incorporation scenario (become a new municipality).

While the study does not provide recommendations on which governance structure should be pursued, it does state that neither the provincial scenario nor the regional district scenario is a best-fit and long-term sustainable governance model for the future of the University Endowment Lands. Metro Vancouver staff agree.

The existing provincial scenario has several recognized challenges, including a lack of meaningful local elected representation. For Metro Vancouver, the regional district scenario would not be the best long-term governance solution, as it would require Metro Vancouver's Electoral Area Service, which currently provides a few basic services to the rural and remote parts of the region, to take on the direct provision of municipal-level services to an urban community that is expected to grow to over 7,000 people. City services are not best delivered by a regional district, and the regional district scenario would not resolve the issue of greater local representation.

The Board will write a letter to the Minister of Municipal Affairs advising that it concurs that the provincial and regional district scenarios are not the best-fit, long-term sustainable governance models for the future of the University Endowment Lands.

E3.1 Metro Vancouver's Climate 2050 Industry and Business Roadmap

APPROVED

The *Climate 2050 Industry and Business Roadmap* is one in a series of 10 *Climate 2050* roadmaps. It presents a robust pathway for industries and businesses in this region to contribute to a carbon-neutral and climate resilient region by 2050. Industrial facilities contribute approximately 17 per cent of the 15 million tonnes of greenhouse gas emissions in the Metro Vancouver region, and when all industrial and business-related activities are considered (including non-road equipment, commercial buildings, and transportation), this proportion rises to roughly half of all emissions. The *Industry and Business Roadmap* includes eight strategies and 28 actions, of which six are identified as Big Moves, to reduce emissions and to strengthen climate resilience. A draft of the *Industry and Business Roadmap* was presented to the Climate Action Committee and Board in March 2022. Staff have since completed engagement and considered and incorporated feedback in finalizing this roadmap. As the actions move to implementation, Metro Vancouver will continue to engage with relevant industry and business stakeholders.

The Board endorsed the *Climate 2050 Industry and Business Roadmap*; directed staff to continue working with member jurisdictions and other partners to implement the actions in the *Climate 2050 Industry and Business Roadmap*; and directed staff to update the roadmap, as needed, in response to changes in science, technology, and policy.

E4.1 Office Development in Metro Vancouver – 2022 Inventory and Report

RECEIVED

Actions to encourage office development in the region’s Urban Centres and areas well-served by transit is a key element of *Metro 2050*, the regional growth strategy. In support of the growth management program, Regional Planning has prepared the *Office Development in Metro Vancouver — 2022 Inventory and Report*.

The report includes an analysis of the office building inventory at the end of 2022, results from a review of relevant publications and in-depth interviews with key industry participants, a profile of factors that influence office development and occupancy decisions, along with actions for Metro Vancouver, member jurisdictions, developers, and other organizations that would encourage office development in Urban Centres. Priority actions include: streamlining the development process; encourage, but do not mandate, office components; allow general rather than overly specific office use types; simplify the permitting process for interior renovations; explore municipal incentives and reduce barriers for office development; and further research.

The Board received the report for information.

E4.2 Agricultural Ecosystem Services in Metro Vancouver

APPROVED

A recently completed study commissioned by Metro Vancouver, titled *Scoping Ecosystem Services on Agricultural Land* within Metro Vancouver, describes the many benefits provided by ecosystem services within the region’s agricultural areas including supporting resilience to climate change impacts, supporting the production of local food, and contributing to the wider livability of the region. The study also identifies approaches and provides recommendations to establish stable, long-term regulatory and financial support for the continued use of ecosystem services on agricultural land.

The Board directed staff to prepare a white paper considering the feasibility of the recommendations contained in the study.

E4.3 2023 Agriculture Awareness Grant Recommendations

APPROVED

Metro Vancouver has awarded annual grants for agriculture awareness since 2008, as recommended by the Metro Vancouver Agricultural Advisory Committee. Programs and outreach that support local sustainable food production are important contributions toward increasing awareness across the region.

The funding provided through the Agriculture Awareness Grants is particularly valuable now for those community organizations doing public outreach on the value of producing or buying food close to home.

The Board awarded a total of \$50,000 in Agricultural Awareness Grants to 14 non-profit organizations.

E5.1 2023 Budget Reserve Application – Regional Culture

APPROVED

Regional cultural grants from the Grants Reserve Fund support arts and culture organizations with creation, production, dissemination, audience development and research for eligible projects. This report is requesting the MVRD Board to approve an additional reserve application of \$150,000 from the Grants Reserve Funds to fund eligible regional arts and culture projects as part of Metro Vancouver’s regional cultural project grants program.

This Grants Reserve Fund is able to accommodate the additional application as it had a 2022 year-end balance of \$2.1 million. This application is consistent with Board direction and with the use of reserves through the adopted reserve policy. Going forward, the proposed 2024 budget for the Regional Culture Grants program will be prepared with a budget of \$300,000 for Board approval in October with financial implications for both the reserve and future requisitions.

The Board approved an additional \$150,000 reserve application from the Grants Reserve Fund to fund eligible regional arts and culture projects as part of Metro Vancouver’s regional cultural project grants program.

E6.1 Metro Vancouver External Agency Activities Status Report – May 2023

RECEIVED

The Board received for information the following submissions from Metro Vancouver representatives to external organizations:

- Agricultural Advisory Committee
- Delta Heritage Airpark Management Committee
- Fraser Basin Council Lower Mainland Flood Management Strategy Leadership Committee
- Fraser Valley Regional Library Board
- Katzie Treaty Negotiations Table
- Lower Mainland Local Government Association
- Metro Vancouver Regional Parks Foundation
- Municipal Finance Authority of BC
- National Zero Waste Council
- Sasamat Volunteer Fire Department Board of Trustees
- Union of British Columbia Municipalities Executive
- Zero Emission Innovation Centre Board of Directors

G1.1 MVRD Agricultural Boilers Emission Regulation Amendment Bylaw No. 1350, 2022

APPROVED

Metro Vancouver regulates the discharge of air contaminants through site-specific permits and emission regulations. A system of regulatory fees has been established to recover administrative costs and encourage

emission reductions based on the potential health and environmental impact of air contaminants. The MVRD Board updated the fee rates on October 29, 2021, when it adopted *MVRD Air Quality Management Fees Regulation Bylaw No. 1330, 2021* (Bylaw 1330). For the facilities regulated under the *GVRD Agricultural Boilers Emission Regulation Bylaw No. 1098, 2008* (Bylaw 1098) the annual fees would increase by less than \$2,000 for most agricultural boiler facilities and up to \$13,000 for two large facilities by 2028. Fee rate updates have been postponed until 2024 for agricultural boiler users in response to feedback during the engagement process, to allow the sector more time to explore emission reduction measures. Consequential amendments to Bylaw 1098 are needed to update fees in alignment with the fee rates in Bylaw 1330.

The Board gave first, second, and third reading to, then adopted the *Metro Vancouver Regional District Agricultural Boilers Emission Regulation Amendment Bylaw No. 1350, 2022*.

G2.1 Metro 2050 Amendment Request – Township of Langley (23699 and 23737 Fraser Highway) APPROVED

The Township of Langley is requesting a Type 2 Amendment to *Metro 2050* for 4.12 hectares of land located at 23699 and 23737 Fraser Highway, owned by Bath Investments Ltd. The proposed amendment would re-designate the regional land use designation from Rural to Industrial to permanently allow for industrial uses (open storage of building materials, parking of commercial vehicles and/or equipment, and vehicle storage) granted under a temporary use permit set to expire in May 2024, as well as allow for additional industrial uses subject to meeting certain development prerequisites.

The analysis demonstrates that on balance, the proposed amendment is supportable and is aligned with *Metro 2050's* goals and strategies. The proposed amendment:

- Allows for existing industrial uses to permanently operate on the subject properties
- Is consistent with the surrounding land use context and is in close proximity to other industrial designated uses along Fraser Highway
- Provides employment generating uses in close proximity to the Regional Truck Route Network

The Board initiated the regional growth strategy amendment process for the Township of Langley's requested regional land use designation amendment; gave first, second, and third readings to *Metro Vancouver Regional District Regional Growth Strategy Amendment Bylaw No. 1365, 2023*; and directed staff to notify affected local governments.

G3.1 Metro Vancouver Regional District Banking Authority Bylaw No. 1361, 2023 APPROVED

Board-approved bylaws for signing officers establish authority for the execution of Metro Vancouver Districts' banking and financial matters.

The existing *Banking Authority Bylaw No. 1324*, approved on September 24, 2021, requires updating to accommodate organizational and signatory title changes that have occurred in 2022. *Metro Vancouver Regional District Banking Authority Bylaw No. 1361, 2023* will repeal and replace *Metro Vancouver Regional District Banking Authority Bylaw No. 1324, 2021*. The new bylaw changes titles of individuals to their generic reference rather than specific descriptions of the function they oversee, reducing the need to amend the bylaw for minor organizational changes. The changes do not alter the bylaw framework that designates

routine, lower risk matters to management within the Financial Services Department (Class B and Class C signatories) reducing the burden on elected officials and senior executives (Class A signatories).

The bylaw ensures there continues to be proper segregation of duty, sound internal controls, and strong governance structure for approvals, while improving the efficiency of the overall processes and reduces the need for bylaw amendments when organizational changes occur.

The Board gave first, second, and third reading to, then adopted the *Metro Vancouver Regional District Banking Authority Bylaw No. 1361, 2023*.

I 1 Committee Information Items and Delegation Summaries

RECEIVED

The Board received information items and delegation summaries from standing committees.

Climate Action Committee – May 11, 2023

Information Items:

5.2 2023 Update on Liquid Waste Sustainability Innovation Fund Project

This report provides an update on eight projects that were approved for funding in 2017 through 2022 under the Sustainability Innovation Fund. These projects contribute to sustainability in the regional liquid waste system by optimizing operations to reduce energy use, enhancing resource recovery from wastewater, protecting the environment from micro-pollutants, restoring marine habitat, and producing low-carbon fuels that reduce greenhouse gas emissions. Of the eight projects, one is highlighted for a significant milestone and one has reached completion:

- Hydrothermal Processing – Biofuel Demonstration Facility. Detailed design has passed the 60 per cent milestone and is nearly at the 90 per cent milestone
- Pump Station Optimization – The Sustainability Innovation Fund project is complete, resulting in an energy-saving control strategy that will be implemented at Lynn Pump Station.

Regional Planning Committee – May 12, 2023

Delegations:

3.1 Stephen Richardson and Joel Nagtegaal

Spoke to Township of Langley *Metro 2050* Amendment Request – Township of Langley (23699 and 23737 Fraser Highway)

Finance Committee – May 18, 2023

Information Items:

5.4 Metro Vancouver Quarterly Financial Report – March 31, 2023

The results of the first quarter of 2023 indicate that Metro Vancouver's year-to-date operating surplus to budget is currently projected at \$15.2 million, but it is very early in the year. Revenues are on target with

budget, whereas expenditures are 89 per cent of the year-to-date budget. Key factors contributing to lower than expected expenditures include staff vacancies, deferred operating projects, and seasonality of expenditures. Capital spending is 24.6 per cent of the prorated budget; however, it is early in the year and it is expected that projects in the construction phase will increase in activity through the remainder of the year. Cash flow projections and accounts receivable collections are on target and remain positive in both the likely and pessimistic scenarios.

5.5 Treasury Report – January 1 to March 31, 2023

The Corporate Investment Policy requires that the Committee receive an investment update at least three times per year. To align with industry practices, Finance changed the reporting cycle to quarterly in 2022. This report covers the first quarter of 2023, from January 1 to March 31, 2023. The annualized investment returns for Metro Vancouver at March 31, 2023 were 4.68 per cent for short term, 2.96 per cent for long term, and 2.8 per cent for the Cultural Reserve Fund. Due to timing of long-term maturities, investment performance slightly lags below benchmarks. In February 2023, Metro Vancouver utilized the Municipal Finance Authority (MFA)'s temporary borrowing process for the first time to borrow \$50 million. This will be converted to long-term borrowing in MFA's June 2023 borrowing process. This is the only long-term borrowing for Metro Vancouver in June. Inflation has been trending downward for several months with March Consumer Price Index rate at 4.3 per cent, compared to its peak of 8.1 per cent in June 2022. This is still above the Bank of Canada's target inflation rate of between one per cent and three per cent, and there is sentiment that the bank will pause on any further rate increases to see if inflation continues to come down.

Metro Vancouver Housing Corporation

E1.1 Metro Vancouver Housing 10-Year Plan – Funding Update

RECEIVED

Metro Vancouver Housing (MVH) has been actively seeking funding support from all levels of government to deliver 2,000 new and redeveloped homes over the next 10 years. These efforts have resulted in several new and significant supports, which, cumulatively, substantially increase MVH's ability to deliver new homes. These financial supports include:

- A Memorandum of Understanding with BC Housing, which includes \$158 million in grants towards a first tranche of projects comprised of five priority projects delivering 660 units over the next three years, and the provision of future additional funding to support the delivery of affordable homes over the next 10 years
- CMHC portfolio funding of \$5.6 million to retrofit 560 units
- Funding of \$5.79 million through the ChildCare BC New Spaces Fund, for a total of \$9.34 million to support the creation of new childcare spaces
- MVRD's Sustainability and Innovation Fund is providing \$2.23 million over the next four years to support four innovative projects, and explore new approaches and technologies for retrofitting and decarbonizing MVH's buildings

Collectively, these sources reduce the equity required to be committed from reserve to deliver new homes and required retrofits and renewals, and will enable MVH to proceed confidently and expeditiously with the next phase of projects.

The Board received the report for information.

E1.2 Tenant Programs and Services Update

RECEIVED

This report provides an update on strategic growth in program development, partnerships, and social inclusion initiatives in line with the *Metro Vancouver Housing 10-Year Plan*.

A reframe in delivery is in progress aimed at combatting increased isolation and chronic poverty exacerbated by the COVID-19 pandemic. Tenant Programs and Services will use a human-centric approach to implement a range of programs, from after-school clubs for children and job training courses for adults to specialized care hampers for seniors.

The Board received the report for information.

Greater Vancouver Water District

E1.1 Award of Contract for RFP 22-361, Construction Management of Coquitlam Main No. 4 South Section

APPROVED

To address a shortfall in the Coquitlam source transmission system, and to meet the growing demand for drinking water in the region, construction of the proposed Coquitlam Main No. 4 is targeted for completion by 2029. The overall Coquitlam Main No. 4 program includes the Central, South, Tunnel, and Cape Horn Sections. The South Section is the first of four sections to be constructed.

RFP No. 22-361 was issued to three proponents prequalified under Request for Qualifications No. 21-154 for Construction Management of Coquitlam Main No. 4 South Section. The evaluation of proposals resulted in Stantec Consulting Ltd. as the highest ranked proponent, and best overall value to Metro Vancouver. It is recommended to award RFP No. 22-361 to Stantec in the amount of \$9,561,410 (exclusive of taxes).

The Board approved the award of a contract in the amount of \$9,561,410 (exclusive of taxes) to Stantec Consulting Ltd., subject to final review by the Commissioner.

E1.2 Drinking Water Management Plan Update

APPROVED

Metro Vancouver is updating the *Drinking Water Management Plan (DWMP)*, which is the guiding document for Metro Vancouver's drinking water utility, establishing priorities and setting the strategic direction for drinking water initiatives over the next 10 years. The DWMP will outline how Metro Vancouver and its member jurisdictions plan to work together to ensure the drinking water system can meet the needs

of current and future generations. It will include goals, strategies, and actions for both Metro Vancouver and its member jurisdictions.

Metro Vancouver has been engaging with member jurisdiction staff through technical advisory committees since 2021 on the framework to update the DWMP, and the draft guiding principles and goals. This spring, Metro Vancouver staff will begin engaging with local First Nations followed by the public in the fall of 2023.

The Board authorized staff to proceed with public engagement, as outlined in the engagement plan, to update the *Drinking Water Management Plan*.

G1.1 Greater Vancouver Water District Banking Authority Bylaw No. 259, 2023

APPROVED

Board approved bylaws for signing officers establish authority for the execution of Metro Vancouver Districts' banking and financial matters. The existing *Banking Authority Bylaw No. 255*, approved on September 24, 2021, requires updating to accommodate organizational and signatory title changes that occurred in 2022. *Greater Vancouver Water District Banking Authority Bylaw No. 259, 2023* will repeal and replace *Greater Vancouver Water District Banking Authority Bylaw No. 255, 2021*. The new bylaw changes titles of individuals to their generic reference rather than specific descriptions of the function they oversee, reducing the need to amend the bylaw for minor organizational changes. The changes do not alter the bylaw framework that designates routine, lower risk matters to management within the Financial Services Department (Class B and Class C signatories) reducing the burden on elected officials and senior executives (Class A signatories).

The revised bylaw ensures there continues to be proper segregation of duty, sound internal controls, and strong governance structure for approvals, while improving the efficiency of the overall processes and reduces the need for bylaw amendments when organizational changes occur.

The Board gave first, second, and third reading to, then adopted the *Greater Vancouver Water District Banking Authority Bylaw No. 259, 2023*.

I 1 Committee Information Items and Delegation Summaries

RECEIVED

The Board received information items from a standing committee.

Water Committee — May 17, 2023

Information Items:

5.3 Water Supply Update for Summer 2023

This report summarizes the current state of the source water supply, past trends in water use, and provides an update on current plans for operating the source reservoirs and water system during the high-demand season of 2023. It is anticipated that the existing snowpack, rainfall, and expected full-source lake storage will be sufficient to meet the water demand for the upcoming high-demand season. The rate of decline of the region's average daily water use is slowing, emphasizing the importance of promoting conservation initiatives and sustained support from member jurisdictions. The report also outlines some water

conservation initiatives that will continue in 2023. The transmission system has improved capacity to meet the high demand due to completed infrastructure projects.

5.4 Water Services Wildfire Preparedness Update

Metro Vancouver provides clean, safe drinking water to the residents of the region. An integral component of source water protection is ensuring the forested lands surrounding the Capilano, Seymour, and Coquitlam reservoirs remain intact. The water supply areas have a historically low incidence of wildfire largely due to the restricted access management approach. The primary risk for wildfire remains lightning strikes during periods of moderate or higher fire danger. To ensure fires are discovered and extinguished quickly, staff use land and helicopter patrols, real-time lightning detection, local smoke reports from the public in the urban centers or air traffic, and rapid crew deployment and response. The Water Services Protection Program has staff with expertise in wildfire management, an array of weather monitoring stations, equipment available for strategic deployment, and a provincial resource sharing agreement along with strong local fire department interagency relationships to ensure readiness for the 2023 fire season.

5.5 Douglas Road Water Main No. 2 Still Creek Tunnel

The Douglas Road Water Main No. 2 Still Creek Tunnel project in Burnaby has reached substantial completion. This tunnel section of the Douglas Road Water Main is 700 metres long, 2.4 metres in diameter, and was the highest risk component of the 14-kilometre water main due to challenging ground conditions, coupled with trenchless crossings under the Trans-Canada Highway, BNSF railway, and Still Creek. In March 2023, work on this tunnel section was completed ahead of schedule and under budget, while also successfully mitigating many of the construction impacts to the public. This water main project is an example of how careful project planning, strong member jurisdiction collaboration and active engagement with the community, combined with a reputable contractor, can help alleviate the community impacts associated with these significant infrastructure projects.

Greater Vancouver Sewage and Drainage District

E1.1 Stage Gate 2: Northwest Langley Wastewater Treatment Plant Expansion Project

APPROVED

At its October 26, 2018 meeting, the Board endorsed the Project Definition of the Northwest Langley Wastewater Treatment Plant Program — a transformative program to meet the needs of our growing population and to continue to protect public health and the environment.

This program will accommodate growth in the Fraser Sewerage Area by redirecting wastewater flows from Maple Ridge, Pitt Meadows, and areas of North Surrey to an expanded and upgraded tertiary treatment facility located in the Township of Langley.

Since 2018, work has included construction of a new river crossing, pump station, sanitary sewer overflow tank, ground improvements, and design development. Due to unexpected archeological findings, the program is expected to be completed in 2030, three years after the initial target completion date.

In 2022, a cost and design review of the wastewater treatment plant expansion led to value engineering of the design and an increase in design service population. Following the unanimous support of the expert panel, staff recommend advancing to detailed design.

That Board approved the Northwest Langley Wastewater Treatment Plant Expansion Project advancing to detailed design (Stage Gate 2).

E1.2 Annacis Island Wastewater Treatment Plant – Stage 5 Expansion and Outfall Updates

RECEIVED

The Annacis Island Wastewater Treatment Plant, located in Delta, provides secondary treatment for approximately 1.2 million people in Metro Vancouver. To accommodate growth, the plant is undergoing a major expansion, including the Stage 5 Expansion and Outfall, which will increase its capacity to serve 1.5 million people while reducing odour and remaining operational in the event of a major earthquake.

The Stage 5 expansion consists of three phases to increase the size of the plant and its ability to treat more wastewater. Phase 1 is substantially complete, Phase 2 early works is mostly complete with one final contract at approximately 32 per cent complete, and design of Phase 2 works commenced in 2022. A new Digester No. 5 and regional biosolids dryer have been added to the program to meet the needs of regional population growth and are anticipated to go through the stage gate process in late 2023. The outfall project, including tunnel excavation, is approximately 85 per cent complete and anticipated to be substantially completed in the second quarter of 2025.

The Board received the report for information.

E1.3 2023 Liquid Waste Capital Projects

RECEIVED

The GVS&DD Board approves an annual capital budget for the liquid waste system. This report provides the Board with geographical information regarding the location of the different projects that were approved for 2023.

The Board received the report for information.

G1.1 Greater Vancouver Sewerage and Drainage District Banking Authority Bylaw No. 363, 2023

APPROVED

Board-approved bylaws for signing officers establish authority for the execution of Metro Vancouver Districts' banking and financial matters. The existing *Banking Authority Bylaw No. 349*, approved on September 24, 2021, requires updating to accommodate organizational and signatory title changes that have occurred in 2022. *Greater Vancouver Sewerage and Drainage District Banking Authority Bylaw No. 363, 2023* will repeal and replace *Greater Vancouver Sewerage and Drainage District Banking Authority Bylaw No. 349, 2021*. The new bylaw changes titles of individuals to their generic reference rather than

specific descriptions of the function they oversee, reducing the need to amend the bylaw for minor organizational changes. The changes do not alter the bylaw framework that designates routine, lower risk matters to management within the Financial Services Department (Class B and Class C signatories) reducing the burden on elected officials and senior executives (Class A signatories).

The bylaw ensures there continues to be proper segregation of duty, sound internal controls, and strong governance structure for approvals, while improving the efficiency of the overall processes and reduces the need for bylaw amendments when organizational changes occur.

The Board gave first, second, and third reading to, then adopted the *Greater Vancouver Sewerage and Drainage District Banking Authority Bylaw No. 363, 2023*.

I 1 Committee Information Items and Delegation Summaries

RECEIVED

The Board received information items from a standing committee.

Zero Waste Committee — May 23, 2023

Information Items:

5.1 Solid Waste Management Plan Independent Consultation and Engagement Panel

The Solid Waste Management Plan Independent Consultation and Engagement Panel consists of four engagement experts who provide advice on the development and implementation of a robust and inclusive engagement process for the solid waste management plan update. The engagement panel was established by the GVS&DD Board in 2020 to act as an independent third party to advise staff and the Board on engagement — a measure that goes beyond provincial requirements for engagement on an updated solid waste management plan — in an effort to ensure a comprehensive engagement process. Most recently, the panel provided input on the design of the current phase of engagement on the updated solid waste management plan: vision and guiding principles.

5.2 2022 Waste Composition Data

Metro Vancouver's waste composition program includes a series of annual studies to learn about the types and quantities of waste disposed in the region. The 2022 data indicates that overall waste composition in 2022 is similar to 2018, but the 2022 results show a reduction in per-capita disposal for most material categories. Single-use item disposal increased in 2022 compared to 2021, particularly for takeout containers, cups, and utensils.

This increase corresponds to a continued return to in-person work and learning, as well as the growth of mobile ordering and delivery services. All orders of government are implementing actions to help reduce single-use items. Multi-family waste composition demonstrates that compostable organics remain the largest component of multi-family waste and a key opportunity for waste diversion in this sector. Metro Vancouver's "Food Scraps Aren't Garbage" behaviour campaign is focusing on the multi-family sector. Waste composition results help identify priorities and provide baseline data for the solid waste management plan update.

5.3 Extended Producer Responsibility in British Columbia

Extended producer responsibility is a policy approach which assigns cost and responsibility for managing end-of-life products to producers and consumers. In British Columbia, the key extended producer responsibility statute is the BC Recycling Regulation. Regulated products include beverage containers, electronics, used motor oil, and residential packaging. Local governments have an interest in encouraging recycling and diverting of these products, as well as other recyclable materials, from disposal in the garbage. Local governments may choose to get involved in extended producer responsibility programs through the operation of recycling depots or other means. Extended producer responsibility stewards report annually on their program performance, including quantities collected, recycling rates, and end-fate of all collected materials. Products that the Province has advised will be included in future regulation include mattresses, compressed canisters, and additional household hazardous products.

5.4 2023 Food Scraps Recycling "Food Scraps Aren't Garbage" Results

The 2023 "Food Scraps Aren't Garbage" campaign ran from January 9 to March 12. The campaign's objective is to increase the diversion of organic waste into the green bin. The target audience is people living in apartments and condos (couples age 25-34 and men 65+), who tend to use their greens bin less than people living in houses. Knowing that people tend to conform to the perceived norm in their community, the strategy was to communicate that using the green bin is now the common and accepted behavior in the region. The campaign performed strongly, with 38 million impressions, over 520,000 reach, close to 2,000 engagements, and nearly 13,000 webpage visits. The campaign will run again in early 2024.



Community Safety Committee

Date: Tuesday, June 13, 2023

Place: Council Chambers
Richmond City Hall

Present: Councillor Alexa Loo, Chair
Councillor Andy Hobbs
Councillor Laura Gillanders
Councillor Kash Heed

Absent: Councillor Bill McNulty

Also Present: Councillor Michael Wolfe (by teleconference)

Call to Order: The Chair called the meeting to order at 4:00 p.m.

MINUTES

It was moved and seconded

That the minutes of the meeting of the Community Safety Committee held on May 9, 2023, be adopted.

CARRIED

1. **PROPERTY USE AND PARKING ENFORCEMENT MONTHLY
ACTIVITY REPORT – APRIL 2023**

(File Ref. No. 12-8375-01) (REDMS No. 7234405)

In reply to queries from Committee, staff advised that (i) approximately one-third of noise related calls for service are connected to repeat offenders, (ii) complaints pertaining to short-term rental violations vary on a case by case basis and are resolved by either removing the short-term rental listing or by obtaining a boarding and lodging license, if permissible, (iii) there are now two regular full-time Soil Bylaw Officers, (iv) there are no specific geographical density patterns in relation to unsightly premises calls for service, and (v) boulevard calls for service relate to violations under the *Boulevard Maintenance Regulation Bylaw No. 7174* and are complaint based.

Community Safety Committee
Tuesday, June 13, 2023

It was moved and seconded

That the staff report titled “Property Use and Parking Enforcement Monthly Activity Report – April 2023”, dated May 29, 2023, from the Director, Community Bylaws & Licencing, be received for information.

CARRIED

2. ANIMAL PROTECTION SERVICES MONTHLY ACTIVITY REPORT – APRIL 2023

(File Ref. No. 09-5375-09) (REDMS No. 7204486)

It was moved and seconded

That the staff report titled “Animal Protection Services Monthly Activity Report – April 2023”, dated May 11, 2023, from the General Manager, Community Safety, be received for information.

CARRIED

3. RICHMOND FIRE-RESCUE MONTHLY ACTIVITY REPORT – APRIL 2023

(File Ref. No. 09-5140-01) (REDMS No. 7220857)

In reply to queries from Committee, Fire Chief Jim Wishlove noted that (i) the increase in medical calls for service is partly due to the aging population in Richmond and Richmond Fire-Rescue (RFR) has the capacity to respond to the increase in medical incidents, (ii) in relation to overdose/poisoning calls, outdoor locations indicate the call’s originating location, (iii) the relative density of locations for fire and medical incidents is related to densely populated areas, (iv) internal staff training includes new training to originally designated positions or a training upgrade, (v) a RFR Pool Officer is part of succession training that includes trained, qualified senior firefighters that are able to act in a supervisory position, (vi) Crane Inspection Training involves BC Construction Safety Alliance and RFR’s collaboration with WorkSafeBC, and (vii) RFR receives an annual allocation of funds through BC Construction Safety Alliance.

It was moved and seconded

That the staff report titled “Richmond Fire-Rescue Monthly Activity Report – April 2023”, dated May 10, 2023, from the Fire Chief, be received for information.

CARRIED

Community Safety Committee

Tuesday, June 13, 2023

4. **FIRE CHIEF BRIEFING**

(Verbal Report)

(i) ***Doors Open Richmond***

Chief Wishlove shared that Richmond Fire-Rescue participated in the Doors Open Richmond event on Saturday, June 3, 2023, drawing over 3,500 visitors to the No. 1 Fire Hall.

(ii) ***Public Outreach Training Program***

Chief Wishlove noted that over 40 classes across 12 different schools within the Richmond School District completed the Public Outreach training program, an online platform specifically oriented to elementary schools.

5. **RCMP MONTHLY ACTIVITY REPORT - APRIL 2023**

(File Ref. No. 09-5000-01) (REDMS No. 7216689)

In reply to queries from Committee, Chief Supt. Dave Chauhan noted that (i) suspects have been identified in the majority of serious assault events, (ii) there are challenges in quantifying certain mental health incidents, and statistics for mental health-related incidents include dementia related calls, (iii) violation tickets include tickets written by the Road Safety Unit and other members, (iv) there is no significant concern pertaining to the recent change in speed limits in specific areas, and (v) catalytic converter thefts have an impact on property crime rates and there has been recent success with arrests.

It was moved and seconded

That the report titled "RCMP Monthly Activity Report - April 2023", dated May 11, 2023, from the Officer in Charge, Richmond RCMP Detachment, be received for information.

CARRIED

6. **RCMP/OIC BRIEFING**

(Verbal Report)

Items for discussion:

None

7. **MANAGER'S REPORT**

Upcoming Community Safety Reports

Staff noted that three reports from the Community Safety Division, including reports related to Touchstone Family Association, Peace Officers and the proposed alcohol consumption in City parks, will be coming forward to the June 19, 2023 General Purposes Committee meeting.

Community Safety Committee
Tuesday, June 13, 2023

ADJOURNMENT

It was moved and seconded

That the meeting adjourn (4:37 p.m.).

CARRIED

Certified a true and correct copy of the
Minutes of the meeting of the Community
Safety Committee of the Council of the
City of Richmond held on Tuesday, June
13, 2023.

Councillor Alexa Loo
Chair

Shannon Unrau
Legislative Services Associate



General Purposes Committee

Date: Monday, June 19, 2023

Place: Council Chambers
Richmond City Hall

Present: Mayor Malcolm D. Brodie, Chair
Councillor Chak Au
Councillor Carol Day
Councillor Laura Gillanders
Councillor Kash Heed
Councillor Andy Hobbs
Councillor Bill McNulty
Councillor Michael Wolfe

Absent: Councillor Alexa Loo

Call to Order: The Chair called the meeting to order at 4:00 p.m.

MINUTES

It was moved and seconded

That the minutes of the meeting of the General Purposes Committee held on June 5, 2023, be adopted as circulated.

CARRIED

DELEGATION

1. Dr. Meena Dawar, Chief Medical Officer, Vancouver Coastal Health and Karen Barclay, Director of Operations, Vancouver Coastal Health, with the aid of a PowerPoint presentation (Copy on File, City Clerk's Office) spoke on (i) unregulated drug deaths in BC and Richmond, (ii) deaths by geography in Richmond, (iii) overdose-related emergency department visits to Richmond Hospital by substance categories, (iv) EHS call rates per 100,000 for 2022 and 2023 by CHSA in Richmond and Vancouver, (v) Decriminalization in BC: Shift approach to substance use as a health matter, (vi) Building a Provincial System of Care, (vii) Richmond Mental Health and Substance Use Community Service Expansion 2021 – 2023, and (viii) supportive housing.

General Purposes Committee
Monday, June 19, 2023

COMMUNITY SAFETY DIVISION

2. **TOUCHSTONE FAMILY ASSOCIATION RESTORATIVE JUSTICE ANNUAL PERFORMANCE OUTCOME EVALUATION REPORT**
(File Ref. No. 03-1000-05-069) (REDMS No. 7185084)

It was moved and seconded

That the staff report titled "Touchstone Family Association Restorative Justice Annual Performance Outcome Evaluation Report" dated May 9, 2023 from the General Manager, Community Safety, be received for information.

CARRIED

3. **PROPOSED AMENDMENT TO BYLAW ENFORCEMENT OFFICER BYLAW NO. 9742**
(File Ref. No. 12-8375-01) (REDMS No. 7198574)

It was moved and seconded

That Bylaw Enforcement Officer Bylaw No. 9742, Amendment Bylaw No. 10462 be introduced and given first, second and third readings.

CARRIED

4. **EXPANDING THE INTER-MUNICIPAL TNS BUSINESS LICENCE**
(File Ref. No. 12-8375-01) (REDMS No. 7208159)

It was moved and seconded

(1) *That Inter-Municipal Business Licence Agreement Bylaw No. 10134, Amendment Bylaw No. 10468, to expand the participating municipalities for ride-hailing services, be introduced and given first, second and third readings; and*

(2) *That Inter-Municipal Business Licence Bylaw No. 10159, Amendment Bylaw No. 10471, with minor housekeeping revisions, be introduced and given first, second and third readings.*

The question on the motion was not called as in reply to queries from Committee, staff noted that (i) ride hailing drivers require a class 4 drivers licence which requires a background check and a business licence, various law enforcement agencies such as Bylaws and RCMP are involved, (iii) illegal ride hailing in Richmond is related to many factors such as proximity to a major airport, and (iv) requests to the Province have been made with regards to an educational awareness campaign to deter illegal ride hailing.

The question on the motion was then called and it was **CARRIED**.

2.

General Purposes Committee

Monday, June 19, 2023

It was moved and seconded

That staff review the experience of licenced and unlicenced ride hailing services in Richmond and report back.

CARRIED

5. **SEASONAL PATIO & EXTENSION OF SERVICE HOURS -
EMPEROR'S KITCHEN LTD. DBA: GRILL PARTY - 120 – 8511
ALEXANDRA RD., RICHMOND, BC**
(File Ref. No. 12-8275-30-001) (REDMS No. 7225768)

It was moved and seconded

- (1) *That the application from Emperor's Kitchen Ltd. doing business as: Grill Party, for an amendment to Food Primary Liquor Licence No. 305936 requesting:*
- (a) *An addition of a Seasonal Patio area to permit liquor and food service between April 1 and October 31 each year with 20 seats;*
 - (b) *Total person capacity to remain the same at 98 occupants; and*
 - (c) *An increase to hours of liquor service currently set at Monday to Sunday, 9:00AM to Midnight, be supported for change to Monday to Sunday, 9:00 AM to 2:00 AM, be supported; and*
- (2) *That a letter be sent to the Liquor and Cannabis Regulation Branch, which includes the information attached as Appendix A (Attachment 1), advising that Council recommends the approval of the licence amendments for the reasons that these amendments have been determined, following public consultation, to be acceptable to the neighbouring community.*

The question on the motion was not called as in reply to queries from Committee, staff advised that (i) the applicant is requesting an extension of operating hours for inside the restaurant, (ii) the reason for the extension is for increased income and profitability, and (iii) the patio is required to close at 10 pm.

The question on the motion was then called and it was **CARRIED**.

COMMUNITY SERVICES DIVISION

6. PILOT PROJECT FOR THE CONSUMPTION OF ALCOHOL IN PUBLIC PARKS

(File Ref. No. 11-7200-20-01) (REDMS No. 7238902)

In response to queries from Committee, staff advised that (i) parks identified in the staff report were considered for their geographical spread and location in various neighbourhoods, (ii) should there be an issue or complaint, bylaws or the RCMP can be contacted, (iii) there have been no requests from the public with regards to a pilot project of this nature, (iv) should the pilot project be approved, public consultation will take place during the implementation of the pilot project, (v) the Criminal Code prohibits drinking and driving, (vi) a site selection criteria was created using pilot projects throughout the region, (vii) there is a buffer between sensitive areas and any complaints will be handled by Bylaws, (viii) a communications plan will be developed and distributed through various City social media channels, and the City's website, which will include maps as well as signage on-site, (ix) in consultation with internal City departments, the RCMP and other municipalities, no serious areas of concern were identified, and (x) the pilot project will run until September 30, 2023.

Dr. Meena Dawar, Chief Medical Officer, Vancouver Coastal Health (VCH), with the aid of a PowerPoint presentation (Copy on File, City Clerk's Office) spoke on (i) statutory responsibilities of Medical Health Officers, (ii) alcohol health impacts, (iii) increasing consumption, harm and costs, (iv) annual per capita alcohol consumption in British Columbia and Canada, (v) annual per capita alcohol consumption in Richmond, 2002-2021, (vi) alcohol-related hospitalization rates (per 100,000 pop.) in Richmond, 2007-2019, (vii) Alcohol and tobacco attributable hospitalizations in VCH, (viii) alcohol consumption driven by youth in Richmond, (ix) healthcare costs associated with substance use in BC, (x) the main drivers of alcohol consumption, (xi) different approaches needed for different public health harms, and (xii) key considerations should the pilot project be approved.

General Purposes Committee

Monday, June 19, 2023

It was moved and seconded

That a Bylaw be drafted to permit the implementation of a Pilot Project for the consumption of liquor in designated areas in a limited number of City of Richmond parks as detailed in the report "Pilot Project For the Consumption of Alcohol in Public Parks," dated May 25, 2023, from the Directors of Parks Services and Community Bylaws.

The question on the motion was not called as discussion took place on (i) testing the pilot project and seeing if its successful, (ii) redefining areas in some parks, (iii) ensuring proper signage, (iv) uses of parks, (v) drinking and driving, (vi) consulting the residents in the neighbourhoods, (vii) proximity to children and families, and (viii) potential trash problems.

As a result of the discussion, the following **amendment motion** was introduced:

It was moved and seconded

- (1) *That Minoru Park be removed from the Pilot Project;*
- (2) *That the areas in the remaining parks be reduced and better demarcations be used; and*
- (3) *That Garry Point Park be confined to the south east quadrant of the park.*

The question on the amendment motion was not called, as there was agreement to deal with Parts (1) (2) and (3) separately.

The question on Part (1) was then called and it was **DEFEATED** with Cllrs. Au, Day, Heed, McNulty and Wolfe opposed.

The question on Part (2) was then called and it was **DEFEATED** with Cllrs. Au, Day, Heed, McNulty and Wolfe opposed.

The question on Part (3) was then called and it was **DEFEATED** with Cllrs. Au, Day, Heed, McNulty and Wolfe opposed.

The question on the main motion was then called and it was **DEFEATED** with Mayor Brodie, Cllrs. Au, Hobbs, McNulty and Wolfe opposed.

General Purposes Committee
Monday, June 19, 2023

PLANNING AND DEVELOPMENT DIVISION

**7. RICHMOND ACCESSIBILITY ADVISORY COMMITTEE 2023
WORK PROGRAM**

(File Ref. No. 08-4055-05) (REDMS No. 7225033)

It was moved and seconded

That the proposed work plan for the Richmond Accessibility Advisory Committee as outlined in the staff report titled "Richmond Accessibility Advisory Committee 2023 Work Program," dated May 19, 2023, from the Director, Community Social Development, be approved.

CARRIED

ADJOURNMENT

It was moved and seconded

That the meeting adjourn (5:43 p.m.).

CARRIED

Certified a true and correct copy of the Minutes of the meeting of the General Purposes Committee of the Council of the City of Richmond held on Monday, June 19, 2023.

Mayor Malcolm D. Brodie
Chair

Sarah Goddard
Legislative Services Associate



Planning Committee

Date: Tuesday, June 20, 2023

Place: Council Chambers
Richmond City Hall

Present: Councillor Bill McNulty, Chair
Councillor Alexa Loo
Councillor Chak Au
Councillor Carol Day
Councillor Andy Hobbs

Also Present: Councillor Laura Gillanders (by teleconference)
Councillor Michael Wolfe (by teleconference)

Call to Order: The Chair called the meeting to order at 4:00 p.m.

MINUTES

It was moved and seconded

That the minutes of the meeting of the Planning Committee held on June 6, 2023, be adopted as circulated.

CARRIED

NEXT COMMITTEE MEETING DATE

July 5, 2023, (tentative date) at 4:00 p.m. in the Council Chambers.

PLANNING AND DEVELOPMENT DIVISION

1. APPLICATION BY BENITO KHO AND VERNEY KHO FOR REZONING AT 7520 ASH STREET FROM “SINGLE DETACHED (RS1/F)” ZONE TO “SINGLE DETACHED (RS2/E)” ZONE

(File Ref. No. RZ 21-945951) (REDMS No. 7227004)

Staff reviewed the application and highlighted that (i) the the property will be subdivided into two single-family lots, (ii) the site is currently occupied by an existing single-family dwelling on the western portion of the lot, which will remain on proposed Lot 1, (iii) a new single detached house with a secondary suite will be constructed on the eastern portion of the site (proposed Lot 2), (iv) there are a total of 21 trees on the subject property 18 of which are bylaw-sized, and two street trees on City property, (v) two trees located on City property along the Ash Street frontage are in good condition and are identified to be retained and protected, (vi) two trees located on the development site in the rear yard of the proposed lot fronting Armstrong Street are in good condition and are identified to be retained and protected, (vii) nine on-site trees will be removed and the 2:1 replacement ratio would require a total of 18 replacement trees, (viii) the applicant has agreed to plant five trees on proposed Lot 1 and three trees on proposed Lot 2 for a total of eight replacement trees, and (ix) the applicant has agreed to the registration of a covenant on Title that stipulates that any future development on Lot 1 must include a minimum one-bedroom secondary suite and proposes to provide a minimum one-bedroom secondary suite on proposed Lot 2.

In reply to queries from Committee, staff advised that according to the Official Community Plan and the area plan for this neighbourhood the subject properties are able to rezone to the RS2/E zone on lots fronting Ash Street but for lots fronting on Armstrong Street they are eligible to rezone to ZS14 zone which allows for smaller minimum lot size and slightly different rules regarding FAR calculations.

Staff were directed contact the owners of 7500 Ash Street to ensure understanding of future development potential.

It was moved and seconded

That Richmond Zoning Bylaw 8500, Amendment Bylaw 10472, for the rezoning of 7520 Ash Street from the “Single Family (RS1/F)” zone to the “Single Family (RS2/E)” zone, be introduced and given first reading.

CARRIED

Planning Committee
Tuesday, June 20, 2023

2. **REVISED REZONING CONSIDERATIONS FOR THE APPLICATION BY SIAN GROUP INVESTMENTS INC. FOR REZONING AT 7100 AND 7120 ASH STREET FROM THE “SINGLE DETACHED(RS1/F)” ZONE TO THE “TOWN HOUSING (ZT16) - SOUTH MCLENNAN AND ST. ALBANS SUB-AREA (CITY CENTRE)”ZONE**

(File Ref. No. RZ 18-843479) (REDMS No. 7215969)

Staff reviewed the application and noted that a revised rezoning considerations associated with the townhouse proposal is required due to changes in the condition of on-site trees since their original assessment in 2018 and an additional Public Hearing would not be required, as there is no resulting change to land use or density.

A staff memorandum will be provided with clarification on the number of trees being replaced and retention of trees.

It was moved and seconded

- (1) *That third reading of Richmond Zoning Bylaw 8500, Amendment Bylaw 10163, for the rezoning of 7100 and 7120 Ash Street, be rescinded and the associated Rezoning Considerations be revised to reflect changes to tree retention and replacement, as per Attachment D to this report; and*
- (2) *That Richmond Zoning Bylaw 8500, Amendment Bylaw 10163, for the rezoning of 7100 and 7120 Ash Street from the “Single Detached (RS1/F)” zone to the “Town Housing (ZT16) - South McLennan and St. Albans Sub-Area (City Centre)” zone, be granted third reading.*

CARRIED

3. **PROPOSED UPDATES TO THE RICHMOND COMMUNITY SERVICES ADVISORY COMMITTEE CHARTER**

(File Ref. No. 01-0100-30-RCSA1-01) (REDMS No. 7202810)

It was moved and seconded

- (1) *That the proposed updates to the Richmond Community Services Advisory Committee Charter as outlined in the staff report titled “Proposed Updates to the Richmond Community Services Advisory Committee Charter”, dated May 17, 2023, from the Director, Community Social Development, be endorsed; and*
- (2) *That the Richmond Community Services Advisory Committee Charter be renamed the Richmond Community Services Advisory Committee Terms of Reference.*

CARRIED

Planning Committee
Tuesday, June 20, 2023

4. **RESPONSE TO METRO VANCOUVER'S REFERRAL: LAND USE DESIGNATION AMENDMENT TO THE METRO 2050 REGIONAL GROWTH STRATEGY PROPOSED BY THE TOWNSHIP OF LANGLEY**

(File Ref. No. 01-0157-30-RGST1) (REDMS No. 7245335)

In reply to a query from Committee, staff advised that the Mylora Golf Course is subject to the No. 5 Road Backlands Policy which was updated in 2021 and has no implications on Regional Land Use policies.

It was moved and seconded

That staff be directed to communicate to the Metro Vancouver Regional District Board the City of Richmond's opposition and comments, as outlined in the staff report titled "Response to Metro Vancouver's Referral: Land Use Designation Amendment to the Metro 2050 Regional Growth Strategy Proposed by the Township of Langley", dated May 30, 2023 from the Director, Policy Planning.

CARRIED

5. **MANAGER'S REPORT**

(i) *Non-Farm Use Application*

Staff advised that the non-farm use application for Thrangu Monastery has been approved by the Agricultural Land Commission and comes with a three year time limit. It was then noted that the next step would be for the property owner to apply for a rezoning application.

(ii) *E-Plans*

Staff advised that the trial for the E-Plans program for single family homes will begin in the next few weeks and provisions will be made with the Building Community to ensure they are in step with the methods process.

ADJOURNMENT

It was moved and seconded

That the meeting adjourn (4:26 p.m.).

CARRIED

Planning Committee
Tuesday, June 20, 2023

Certified a true and correct copy of the Minutes of the meeting of the Planning Committee of the Council of the City of Richmond held on Tuesday, June 20, 2023.

Councillor Bill McNulty
Chair

Sarah Goddard
Legislative Services Associate



City of Richmond

Report to Committee

To: General Purposes Committee **Date:** May 19, 2023
From: Mark Corrado **File:** 12-8375-01/2023-Vol
Director, Community Bylaws and Licencing 01
Re: **Proposed Amendment to Bylaw Enforcement Officer Bylaw No. 9742**

Staff Recommendation

That Bylaw Enforcement Officer Bylaw No. 9742, Amendment Bylaw No. 10462 be introduced and given first, second and third readings.

[Handwritten signature]

Mark Corrado
Director, Community Bylaws and Licencing
(604-204-8673)

REPORT CONCURRENCE		
ROUTED TO:	CONCURRENCE	CONCURRENCE OF GENERAL MANAGER
Law	<input checked="" type="checkbox"/>	<i>[Signature]</i>
SENIOR STAFF REPORT REVIEW	INITIALS: <i>[Signature]</i>	APPROVED BY CAO <i>[Signature]</i>

Staff Report

Origin

At the Regular Council Meeting held on November 28, 2022, Council made the following referral:

That staff examine and report back on the feasibility and implications of transitioning bylaw enforcement officers to peace officer status, including outlining the difference between bylaw enforcement and peace officers duties.

This report supports Council's Strategic Plan 2022-2026 Focus Area #3 A Safe and Prepared Community:

Community safety and preparedness through effective planning, strategic partnerships and proactive programs.

3.2 Leverage strategic partnerships and community-based approaches for comprehensive safety services.

Analysis

Peace Officer Status

The courts have established that properly appointed Bylaw Enforcement Officers acting in the course of their duties may be recognized as "Peace Officers". Moreover, there is case law that suggests someone who obstructs a Bylaw Enforcement Officer from being able to enforce City Bylaws, could be found guilty of offences relating to the obstruction of a Peace Officer under Section 129 of the *Criminal Code*. These offences could carry the weight of imprisonment of up to two years.¹

Given that the above recognition by the courts is not widely known outside the justice system, some municipalities including New Westminster, Surrey, and Langford, have formally recognized their Bylaw Enforcement Officers as Peace Officers. This recognition serves the purpose of removing any ambiguity in the eyes of the public as to the potential *Criminal Code* consequences of obstructing a Bylaw Enforcement Officer.

As directed by Council, in order to establish greater clarity as to the status of Bylaw Enforcement Officers while they are conducting their duties, it is recommended that section 1.2 of the Bylaw Enforcement Officer Bylaw 9742 be amended by adding the following section:

"1.2.1 Bylaw Enforcement Officers, while acting within the limits of those powers and duties set out in section 1.2 of this Bylaw, shall be deemed

¹For relevant case law see: *R. v. Jozef Baksay*; and *R. v. Dennis Lawrence Harrison*.

https://www.bylawbc.ca/docs/baksay_case_law.pdf; https://www.bylawbc.ca/docs/baksay_case_law.pdf

to be employed for the preservation and maintenance of the public peace and shall, without adding to those powers and duties set out in section 1.2 of this Bylaw, be designated as peace officers as defined in the *Interpretation Act*, RSBC 1996, chapter 238, and in the *Criminal Code of Canada*, R.S.C. 1985, C-46.”

The above recognition of Bylaw Enforcements Officers as Peace Officers does not, however, confer any additional powers or duties other than those outlined in the Bylaw Enforcement Officer Bylaw 9742.

Financial Impact

None.

Conclusion

The recognition of Bylaw Enforcement Officers as being Peace Officers while executing their duties is well established in case law. However, to ensure clarity of this recognition beyond the justice system, it is recommend that Council adopt a Bylaw amendment that formally designates Bylaw Enforcement Officers as Peace Officers.



Mark Corrado
Director, Community Bylaws and Licencing
(604-204-8673)



**Bylaw Enforcement Officer Bylaw No. 9742,
Amendment Bylaw No. 10462**

The Council of the City of Richmond enacts as follows:

1. Bylaw Enforcement Officer Bylaw No. 9742, as amended, is further amended by adding the following after section 1.2:

“1.2.1 Bylaw Enforcement Officers, while acting within the limits of those powers and duties set out in section 1.2 of this Bylaw, shall be deemed to be employed for the preservation and maintenance of the public peace and shall, without adding to those powers and duties set out in section 1.2 of this Bylaw, be designated as peace officers as defined in the *Interpretation Act*, RSBC 1996, chapter 238, and in the *Criminal Code of Canada*, R.S.C. 1985, C-46.”
2. This Bylaw is cited as **“Bylaw Enforcement Officer Bylaw No. 9742, Amendment Bylaw No. 10462”**.

FIRST READING

SECOND READING

THIRD READING

ADOPTED

MAYOR

CORPORATE OFFICER

CITY OF RICHMOND
APPROVED for content by originating Division MC
APPROVED for legality by Solicitor BRB



City of Richmond

Report to Committee



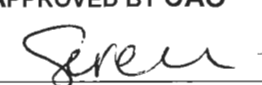
To: General Purposes Committee
From: Mark Corrado
Director, Community Bylaw & Licencing
Date: May 19, 2023
File: 12-8375-01/2023-Vol
01
Re: Expanding the Inter-Municipal TNS Business Licence

Staff Recommendations

1. That Inter-Municipal Business Licence Agreement Bylaw No. 10134, Amendment Bylaw No. 10468, to expand the participating municipalities for ride-hailing services, be introduced and given first, second and third readings; and
2. That Inter-Municipal Business Licence Bylaw No. 10159, Amendment Bylaw No. 10471, with minor housekeeping revisions, be introduced and given first, second and third readings.

— C e +

Mark Corrado
Director, Community Bylaw & Licencing
(604-276-8673)

REPORT CONCURRENCE		
ROUTED TO:	CONCURRENCE	CONCURRENCE OF GENERAL MANAGER
Law	<input checked="" type="checkbox"/>	
Transportation	<input checked="" type="checkbox"/>	
SENIOR STAFF REPORT REVIEW	INITIALS:	APPROVED BY CAO
		

Staff Report

Origin

At the March 20, 2020 Council Meeting the following referral was received:

(1) That Inter-Municipal Business Licence Agreement Bylaw No. 10134, to allow the City to enter into an agreement with partner municipalities for ride-hailing services, be introduced and given first, second and third readings;

(2) That Inter-Municipal Business Licence Bylaw No. 10159, which specifies various licensing terms for ride-hailing, be introduced and given first, second and third readings; and

(3) That staff be directed to report back on the development of a permanent inter-municipal business licence for ride-hailing services.

This report addresses section three of the referral by bringing forward bylaw amendments that further refine and expand the existing inter-municipal business licence for ride-hailing services.

This report supports Council's Strategic Plan 2022-2026 Focus Area #2 Strategic and Sustainable Community Growth:

Strategic and sustainable growth that supports long-term community needs and a well-planned and prosperous city.

2.4 Enhance Richmond's robust transportation network by balancing commercial, public, private and active transportation needs.

Focus Area #3 A Safe and Prepared Community:

Community safety and preparedness through effective planning, strategic partnerships and proactive programs.

3.2 Leverage strategic partnerships and community-based approaches for comprehensive safety services.

Background

Since April 1, 2020, the City of Richmond has been one of 25 participating municipalities in an inter-municipal business licence (IMBL) for Transportation Network Services (TNS) colloquial known as ride-hailing providers. The participating municipalities are all located in the Passenger Transportation Board's (PTB) ride-hailing boundary of Region 1¹ which encompasses Metro Vancouver, Fraser Valley, and Squamish-Lillooet. The IMBL allows companies to purchase one business licence and operate across all participating municipalities.

¹ [PTB Operating regions](#) for ride-hailing services

The City of Vancouver is the licensing authority for the TNS IMBL, which means it issues and administers the licences, and is responsible for sharing licence fee revenue with participating municipalities at the end of each calendar year. The purpose of the TNS IMBL is to simplify processes for ride-hailing businesses, as it recognizes the regional nature of travel.

Analysis

Bylaw Amendments

Three Region 1 municipalities wish to join the TNS IMBL program: The District of Hope, The District of Kent; and the City of Mission. In order to accommodate these new participants, each municipality already involved in the program must adopt a revised inter-municipal business licence agreement and bylaw. Drafts of the proposed amendments to Bylaw No. 10134 and Bylaw No. 10159 have been prepared and are recommended for adoption.

By incorporating these three new municipalities, the total number of participating municipalities in the program would increase to 28 out of the 32 potential municipal authorities within Region 1, as defined by PTB's ride-hail service boundaries. Presently, there are five TNS service providers licensed by the PTB. General housekeeping revisions have also been included based on feedback from the Region 1 IMBL working group.

Financial Impact

None.

Conclusion

Currently, there are twenty-five municipalities in Region 1 that are participating in the TNS IMBL program for ride-hailing services. To continue as a participating municipality, it is recommended that Council approve the proposed amendments to include three new municipalities and refine the existing IMBL program.



Mark Corrado
Director, Community Bylaws and Licencing
(604-204-8673)



**Inter-Municipal Business Licence Bylaw No. 10159
Amendment Bylaw No. 10471**

The Council of the City of Richmond enacts as follows:

1. **Inter-Municipal Business Licence Bylaw No. 10159**, as amended, is further amended by deleting the entirety of Section 8 and replacing it with the following:

“The annual *Inter-municipal TNS Business Licence* fee is \$155, plus \$150 for each vehicle operating under the authority of the *Inter-municipal TNS Business*, except that the per vehicle fee for *Zero Emission Vehicles* will be \$30, and there will be no per vehicle fee charged for *Accessible Vehicles*.”

FIRST READING

SECOND READING

THIRD READING

ADOPTED

CITY OF RICHMOND
APPROVED for content by originating dept.
MC
APPROVED for legality by Solicitor
LB

MAYOR

CORPORATE OFFICER



**Inter-Municipal Business Licence Agreement Bylaw No. 10134
Amendment Bylaw No. 10468**

The Council of the City of Richmond enacts as follows:

1. **Inter-Municipal Business Licence Agreement Bylaw No. 10134**, is amended by deleting Schedule “A” in its entirety and replacing it with Schedule “A” attached hereto.
2. This Bylaw is cited as “**Inter-Municipal Business License Agreement Bylaw No. 10134, Amendment Bylaw No. 10468**”.

FIRST READING

SECOND READING

THIRD READING

ADOPTED

CITY OF RICHMOND
APPROVED for content by originating dept.
MC
APPROVED for legality by Solicitor
LB

MAYOR

CORPORATE OFFICER

SCHEDULE "A"

Inter-municipal TNS Business Licence Agreement

WHEREAS the City of Abbotsford, the Village of Anmore, the Bowen Island Municipality, the City of Burnaby, the City of Chilliwack, the City of Coquitlam, the City of Delta, the Village of Harrison Hot Springs, the District of Hope, the District of Kent, the Corporation of the City of Langley, the Corporation of the Township of Langley, the Village of Lions Bay, the City of Maple Ridge, the City of Mission, the Corporation of the City of New Westminster, the Corporation of the City of North Vancouver, the Corporation of the District of North Vancouver, the City of Pitt Meadows, the Corporation of the City of Port Coquitlam, the City of Port Moody, the City of Richmond, the District of Squamish, the City of Surrey, the City of Vancouver, the Corporation of the District of West Vancouver, the Resort Municipality of Whistler, and the Corporation of the City of White Rock (the "*Participating Municipalities*"), wish to permit transportation network services ("*TNS*") businesses to operate across their jurisdictional boundaries thereby eliminating the need to obtain a separate municipal business licence in each jurisdiction;

NOW THEREFORE the *Participating Municipalities* agree as follows:

1. The *Participating Municipalities* agree to establish an *Inter-municipal TNS Business Licence* scheme among the *Participating Municipalities*, pursuant to section 14 of the *Community Charter* and section 192.1 of the *Vancouver Charter*.
2. The *Participating Municipalities* will request their respective municipal Councils to each ratify this Agreement and enact a by-law to implement an *Inter-municipal TNS Business Licence* scheme effective June 1, 2023.

3. In this Agreement:

"*Accessible Vehicle*" means a motor vehicle designed and manufactured, or converted, for the purpose of transporting persons who use mobility aids;

"*Administrative Costs*" means the direct and indirect costs and investments attributable to administering the *Inter-municipal TNS Business Licence* scheme, including wages, materials, corporate overhead and rent;

"*Business*" has the same meaning as in the *Community Charter*;

"*Community Charter*" means the *Community Charter*, S.B.C. 2003, c. 26, as may be amended or replaced from time to time;

"*Inter-municipal TNS Business*" means a *TNS Business* that has been licensed to operate in the Region 1 operating area by the Passenger Transportation Board;

"*Inter-municipal TNS Business Licence*" means a business licence that authorizes an *Inter-municipal TNS Business* to be carried on within the jurisdictional boundaries of any or all of the *Participating Municipalities*;

"Inter-municipal TNS Business Licence By-law" means the by-law adopted by the Council of each *Participating Municipality* to implement the *Inter-municipal TNS Business Licence* scheme contemplated by this Agreement;

"Mobility Aid" has the same meaning as in the *Passenger Transportation Act*, S.B.C 2004, c. 39, as may be amended or replaced from time to time;

"Municipal Business Licence" means a licence or permit, other than an *Inter-municipal TNS Business Licence*, issued by a *Participating Municipality* that authorizes a *Business* to be carried on within the jurisdictional boundaries of that *Participating Municipality*;

"Participating Municipality" means any one of the *Participating Municipalities*;

"Premises" means one or more fixed or permanent locations where the *TNS Business* ordinarily carries on *Business*;

"TNS Business" means a person carrying on the business of providing *Transportation Network Services*;

"Transportation Network Services" has the same meaning as in the *Passenger Transportation Act*, S.B.C 2004, c. 39, as may be amended or replaced from time to time;

"Vancouver Charter" means the *Vancouver Charter*, S.B.C. 1953, c. 55, as may be amended or replaced from time to time; and

"Zero Emission Vehicle" means a motor vehicle that is exclusively propelled by electricity or hydrogen from an external source.

4. Subject to the provisions of the *Inter-municipal TNS Business Licence By-law*, each *Participating Municipality* will permit a *TNS Business* that has obtained an *Inter-municipal TNS Business Licence* to carry on the *Business* of providing *Transportation Network Services* within that *Participating Municipality* for the term authorized by the *Inter-municipal TNS Business Licence* without obtaining a *Municipal Business Licence* for the *TNS Business* in that *Participating Municipality*.

5. All *Inter-municipal TNS Business Licences* will be issued by the City of Vancouver.

6. The City of Vancouver may issue an *Inter-municipal TNS Business Licence* to a *TNS Business* if the *TNS Business* is an *Inter-municipal TNS Business* and meets the requirements of the *Inter-municipal TNS Business Licence By-law*, in addition to the requirements of the City of Vancouver's Licence By-law No. 4450.

7. Notwithstanding that a *TNS Business* may hold an *Inter-municipal TNS Business Licence* that would make it unnecessary to obtain a *Municipal Business Licence* for the *TNS Business* in the *Participating Municipalities*, the *TNS Business* must still comply with all orders and regulations under any municipal business licence by-law in addition to those under any other by-laws, regulations, or provincial or federal laws that may apply within any jurisdiction in which the *TNS Business* carries on *Business*.

8. Any *Participating Municipality* may require that the holder of an *Inter-municipal TNS Business Licence* also obtain a *Municipal Business Licence* for any *Premises* that are maintained by the licence holder within the jurisdiction of the *Participating Municipality*.

9. The annual *Inter-municipal TNS Business Licence* fee is \$155, plus \$150 for each vehicle operating under the authority of the *Inter-municipal TNS Business*, except that the per vehicle fee for *Zero Emission Vehicles* will be \$30, and there will be no per vehicle fee charged for *Accessible Vehicles*.

10. The fee for any additional vehicles that begin operating under the authority of an *Inter-municipal TNS Business License* holder after the annual license fee is paid will be the per vehicle fee set out in section 9, pro-rated by dividing the applicable annual per vehicle fee by 12 and multiplying the resulting number by the number of months remaining in that calendar year, including any partial months which will be counted as whole months.

11. The City of Vancouver will distribute the revenue generated from *Inter-municipal TNS Business Licence* fees amongst all *Participating Municipalities* based on the City of Vancouver retaining an amount to cover its *Administrative Costs*, with the remaining fees to be distributed proportionally to the *Participating Municipalities*, including the City of Vancouver, based on the number of pick-ups and drop-offs in that *Participating Municipality*. The City of Vancouver will provide the other *Participating Municipalities* with an itemized accounting of the fees collected and disbursed, including an accounting of its *Administrative Costs*, at the time it distributes the remaining fees to those *Participating Municipalities*.

12. The revenue generated from *Inter-municipal TNS Business Licence* fees collected from January 1 to December 31 inclusive that is to be distributed to the *Participating Municipalities* in accordance with section 11, including the fees collected for any additional vehicles under section 10, will be distributed by the City of Vancouver by February 28 of the year following the year in which fees were collected.

13. The length of term of an *Inter-municipal TNS Business Licence* is 12 months, except that the length of term of the initial *Inter-municipal TNS Business Licence* issued to an *Inter-municipal TNS Business* by the City of Vancouver may be less than 12 months in order to harmonize the expiry date of the *Inter-municipal TNS Business Licence* with the calendar year, in which case the annual fee will be pro-rated by dividing the applicable annual license fee by 12 and multiplying the resulting number by the number of months remaining in that calendar year, including any partial months which will be counted as whole months.

14. An *Inter-municipal TNS Business Licence* will be valid within the jurisdictional boundaries of all of the *Participating Municipalities* until its term expires, unless the *Inter-municipal TNS Business Licence* is suspended or cancelled. If a *Participating Municipality* withdraws from the *Inter-municipal TNS Business Licence* scheme among the *Participating Municipalities* in accordance with the *Inter-municipal TNS Business Licence By-law*, then the *Inter-municipal TNS Business Licence* will cease to be valid within the jurisdictional boundary of that former *Participating Municipality*.

15. A *Participating Municipality* may exercise the authority of the City of Vancouver as the issuing municipality and suspend an *Inter-municipal TNS Business Licence* in relation to conduct by the holder within the *Participating Municipality* which would give rise to the power to suspend a business licence under the *Community Charter* or *Vancouver Charter* or under the business licence by-law of the *Participating Municipality*. The suspension will be in effect

throughout all of the *Participating Municipalities* and it will be unlawful for the holder to carry on the *Business* authorized by the *Inter-municipal TNS Business Licence* in any *Participating Municipality* for the period of the suspension.

16. A *Participating Municipality* may exercise the authority of the City of Vancouver as the issuing municipality and cancel an *Inter-municipal TNS Business Licence* in relation to conduct by the holder within the *Participating Municipality* which would give rise to the power to cancel a business licence under the *Community Charter* or *Vancouver Charter* or the business licence by-law of the *Participating Municipality*. The cancellation will be in effect throughout all of the *Participating Municipalities*.

17. The suspension or cancellation of an *Inter-municipal TNS Business Licence* under section 15 or 16 will not affect the authority of a *Participating Municipality* to issue a *Municipal Business Licence*, other than an *Inter-municipal TNS Business Licence*, to the holder of the suspended or cancelled *Inter-municipal TNS Business Licence*.

18. Nothing in this Agreement affects the authority of a *Participating Municipality* to suspend or cancel any *Municipal Business Licence* issued by that municipality or to enact regulations in respect of any category of *Business* under section 15 of the *Community Charter* or sections 272, 273, 279A, 279A.1, 279B, and 279C of the *Vancouver Charter*.

19. A *Participating Municipality* may, by notice in writing to each of the other *Participating Municipalities*, withdraw from the *Inter-municipal TNS Business Licence* scheme among the *Participating Municipalities*, and the notice must:

- (a) set out the date on which the withdrawing municipality will no longer recognize the validity within its boundaries of *Inter-municipal TNS Business Licences*, which date must be at least 6 months from the date of the notice; and
- (b) include a certified copy of the municipal Council resolution or by-law authorizing the municipality's withdrawal from the *Inter-municipal TNS Business Licence* scheme.

20. Nothing contained or implied in this Agreement shall fetter in any way the discretion of the Councils of the *Participating Municipalities*. Further, nothing contained or implied in this Agreement shall prejudice or affect the *Participating Municipalities'* rights, powers, duties or obligations in the exercise of their functions pursuant to the *Community Charter*, *Vancouver Charter*, or the *Local Government Act*, as amended or replaced from time to time, or act to fetter or otherwise affect the *Participating Municipalities'* discretion, and the rights, powers, duties and obligations under all public and private statutes, by-laws, orders and regulations, which may be, if each *Participating Municipality* so elects, as fully and effectively exercised as if this Agreement had not been executed and delivered by the *Participating Municipalities*.

21. Despite any other provision of this Agreement, an *Inter-municipal TNS Business Licence* granted in accordance with the *Inter-municipal TNS Business Licence Bylaw* does not grant the holder a licence to operate in any jurisdiction other than within the jurisdictional boundaries of the *Participating Municipalities*. Furthermore, a business licence granted under any other inter-municipal *TNS Business* licence scheme is deemed not to exist for the purposes of this Agreement even if a *Participating Municipality* is a participating member of the other inter-municipal *TNS Business* licence scheme.

22. This Agreement may be executed in several counterparts, each of which shall be deemed to be an original, and may be delivered by email or facsimile transmission, and each such counterpart, howsoever delivered, shall be deemed to be an original. Such counterparts together shall constitute one and the same instrument, notwithstanding that all of the *Participating Municipalities* are not signatories to the original or the same counterpart.

23. This Agreement replaces and supercedes the Inter-municipal TNS Business Licence Agreement entered into by the City of Abbotsford, the Village of Anmore, the Bowen Island Municipality, the City of Burnaby, the City of Chilliwack, the City of Coquitlam, the City of Delta, the Village of Harrison Hot Springs, the Corporation of the City of Langley, the Corporation of the Township of Langley, the Village of Lions Bay, the City of Maple Ridge, the Corporation of the City of New Westminster, the Corporation of the City of North Vancouver, the Corporation of the District of North Vancouver, the City of Pitt Meadows, the Corporation of the City of Port Coquitlam, the City of Port Moody, the City of Richmond, the District of Squamish, the City of Surrey, the City of Vancouver, the Corporation of the District of West Vancouver, the Resort Municipality of Whistler, and the Corporation of the City of White Rock in 2020.

24. In the event that the municipal Council of a *Participating Municipality* other than the City of Vancouver does not ratify this Agreement, then that municipality will not be considered a *Participating Municipality* for the purposes of this Agreement, and the terms and conditions of this Agreement shall be effective as among the other *Participating Municipalities*.

Signed and delivered on behalf of the *Participating Municipalities*, the Councils of each of which have, by By-law, ratified this Agreement and authorized their signatories to sign on behalf of the respective Councils, on the dates indicated below.

The City of Abbotsford

Mayor _____
Corporate Officer _____
Date _____

Village of Anmore

Mayor _____
Corporate Officer _____
Date _____

Bowen Island Municipality

Mayor _____
Corporate Officer _____

Date _____

City of Burnaby

City Clerk _____

Date _____

City of Chilliwack

Mayor _____

Corporate Officer _____

Date _____

City of Coquitlam

Mayor _____

City Clerk _____

Date _____

City of Delta

Mayor _____

City Clerk _____

Date _____

Village of Harrison Hot Springs

Mayor _____

Corporate Officer _____

Date _____

The District of Hope

Mayor _____

Corporate Officer _____

Date _____

The District of Kent

Mayor _____

Corporate Officer _____

Date _____

The Corporation of the City of Langley

Mayor _____

Corporate Officer _____

Date _____

The Corporation of the Township of Langley

Mayor _____

Township Clerk _____

Date _____

Village of Lions Bay

Mayor _____

Corporate Officer _____

Date _____

City of Maple Ridge

Presiding Member _____

Corporate Officer _____

Date _____

The City of Mission

Mayor _____

Corporate Officer _____

Date _____

The Corporation of the City of New Westminster

Mayor _____

City Clerk _____

Date _____

The Corporation of the City of North Vancouver

Mayor _____

City Clerk _____

Date _____

The Corporation of the District of North Vancouver

Mayor _____

Municipal Clerk _____

Date _____

The City of Pitt Meadows

Mayor _____

Corporate Officer _____

Date _____

The Corporation of the City of Port Coquitlam

Mayor _____

Corporate Officer _____

Date _____

City of Port Moody

Mayor _____

Corporate Officer _____

Date _____

The City of Richmond

Chief Administrative Officer _____

General Manager _____

Corporate and Financial Services _____

Date _____

District of Squamish

Mayor _____

Corporate Officer _____

Date _____

City of Surrey

Mayor

City Clerk

Date

The City of Vancouver

Director of Legal Services

Date

The Corporation of the District of West Vancouver

Mayor

Corporate Officer

Date

Resort Municipality of Whistler

Mayor

Municipal Clerk

Date

The Corporation of the City of White Rock

Mayor

Director of Corporate Administration

Date



City of Richmond

Report to Committee

To: General Purposes Committee **Date:** May 5, 2023
From: Mark Corrado **File:** 12-8275-30-001/2023-
Director, Community Bylaws and Licencing Vol 01
Re: Seasonal Patio & Extension of Service Hours - Emperor's Kitchen Ltd. dba:
Grill Party - 120 - 8511 Alexandra Rd., Richmond, BC

Staff Recommendations

1. That the application from Emperor's Kitchen Ltd. doing business as: Grill Party, for an amendment to Food Primary Liquor Licence No. 305936 requesting:
 - a) An addition of a Seasonal Patio area to permit liquor and food service between April 1 and October 31 each year with 20 seats;
 - b) Total person capacity to remain the same at 98 occupants; and
 - c) An increase to hours of liquor service currently set at Monday to Sunday, 9:00AM to Midnight, be supported for change to Monday to Sunday, 9:00 AM to 2:00 AM, be supported; and
2. That a letter be sent to the Liquor and Cannabis Regulation Branch, which includes the information attached as Appendix A (Attachment 1), advising that Council recommends the approval of the licence amendments for the reasons that these amendments have been determined, following public consultation, to be acceptable to the neighbouring community.

Mark Corrado
Director, Community Bylaws and Licencing
(604-204-8673)
Att. 3

REPORT CONCURRENCE		
ROUTED TO:	CONCURRENCE	CONCURRENCE OF GENERAL MANAGER
Fire Rescue	<input checked="" type="checkbox"/>	
RCMP	<input checked="" type="checkbox"/>	
SENIOR STAFF REPORT REVIEW	INITIALS:	APPROVED BY CAO

Staff Report

Origin

The Provincial Liquor and Cannabis Regulation Branch (LCRB) issues licenses in accordance with the Liquor Control and Licensing Act (Act) and the Regulations made pursuant to the Act.

This report deals with an application to the LCRB and the City of Richmond by Emperor's Kitchen Ltd., doing business as: Grill Party (hereinafter referred to as Grill Party), for an amendment to their Food-Primary Liquor Licence No. 305936 and request:

- A Seasonal Patio between April 1 and October 31 each year with a shift in occupancy of 20 seats from indoors to outdoor seating; and
- An increase to liquor service hours **from** 9:00 AM to Midnight; **to** 9:00 AM to 2:00 AM, Monday to Sunday.

Council adopted the Public Space and Seasonal Patio Programs bylaws in May of 2022. Given that the operator is requesting the serving of alcohol on a new seasonal patio as well as an extension of service hours, a Council resolution is required and must be submitted to the LCRB. The City of Richmond is given the opportunity to provide written comments by way of a resolution to the LCRB with respect to the liquor licence applications and amendments. For an amendment to a Food-Primary Liquor Licence, the process requires the local government to provide comments with respect to the following criteria:

- The potential for noise;
- The impact on the community; and
- Whether the amendment may result in the establishment being operated in a manner contrary to its primary purpose.

This application relates to an existing Food-Primary Liquor Licence for Grill Party currently covering indoor seating only for the establishment. The Seasonal Patio Permit will permit Grill Party to shift 20 of the current 98 indoor seats to outside seating to 10:00 PM, between April 1, and October 31, each year. Secondly, the applicant is requesting amendment of liquor service hours for the indoor seating from 9:00 AM to 2:00 AM, Monday to Sunday.

This report supports Council's Strategic Plan 2022-2026 Focus Area #3 A Safe and Prepared Community:

Community safety and preparedness through effective planning, strategic partnerships and proactive programs.

Analysis

Grill Party is situated at 8511 Alexandra Road, Unit 120. The property is zoned Auto-Oriented Commercial (CA). This zone provides for a mix of commercial and related uses oriented to vehicular access. This is a one business property on private property and subject to the seasonal patio processes and regulations. Grill Party has operated at this location since 2016 under current ownership.

Impact of Noise on the Community

The location of this establishment is such that there should be no noise impact on the community. The addition of a Seasonal Patio for Grill Party should not affect its operation or cause it to operate contrary to its primary purpose as a food primary establishment. This patio will be permitted from April 1 to October 31, each year and will be required to close at 10PM each night with the 20 seats shifted back indoors from November 1 to March 31 each year.

Impact on the Community

The community consultation process for reviewing applications for liquor related licences is prescribed by the Development Application Fees Bylaw No. 8951 which under Section 1.8.1 calls for:

1.8.1 Every **applicant** seeking approval from the **City** in connection with:

- (a) a licence to serve liquor under the *Liquor Control and Licensing Act and Regulations*;
must proceed in accordance with subsection 1.8.2.

1.8.2 Pursuant to an application under subsection 1.8.1, every **applicant** must:

- (b) post and maintain on the subject property a clearly visible sign which indicates:
 - (i) type of licence or amendment application;
 - (ii) proposed person capacity;
 - (iii) type of entertainment (if application is for patron participation entertainment); and
 - (iv) proposed hours of liquor service; and
- (c) publish a notice in at least three consecutive editions of a newspaper that is distributed at least weekly in the area affected by the application, providing the same information required in subsection 1.8.2(b) above.

The required signage was posted on March 16, 2023, and three advertisements were published in the Richmond News newspaper on March 16, 2023, March 23, 2023 and March 30, 2023.

In addition to the advertised signage and public notice requirements, staff sent letters to businesses, residents and property owners within a 50 meter radius of the establishment (Attachment 2). On March 16, 2023, 163 letters were sent to residents, businesses and property

owners. The letter provided information on the proposed liquor licence application and contained instructions to comment on the application. The period for commenting for all public notifications ended April 15, 2023.

As a result of the community consultation process described, the City has received no responses opposed to this application and two responses in support. (Attachment 3).

Other Agency Comments

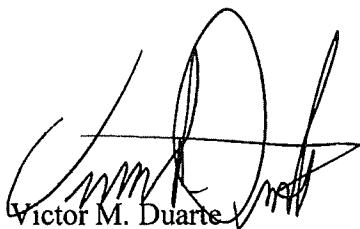
As part of the review process, staff requested comments from other agencies and departments such as Vancouver Coastal Health, Richmond RCMP, Richmond Fire-Rescue, Building Approvals Department and the Business Licence Department. These agencies and departments generally provide comments on the compliance history of the applicant's operations and premises. There are no concerns from Vancouver Coastal Health and no concerns or comments provided by Richmond RCMP or Richmond Fire-Rescue.

Financial Impact

None

Conclusion

The results of the community consultation process of Grill Party's proposed amendment to their existing Food-Primary Liquor Licence application was reviewed based on the LCRB criteria. The analysis concluded there should be no noticeable potential impact from noise, no significant impact to the community and no comments or concerns were raised from Richmond Fire-Rescue or other agencies. Grill Party has operated since 2016 under this current ownership with no issues. Based on the culmination of these factors, the application to amend the Food-Primary Liquor Licence to include a Seasonal Patio with no change to person capacity and a change to the liquor service hours of Monday to Sunday, 9:00 AM to 2:00 AM, is recommended for approval.



Victor M. Duarte
Supervisor, Business Licences
(604-276-4389)

VMD:vmd

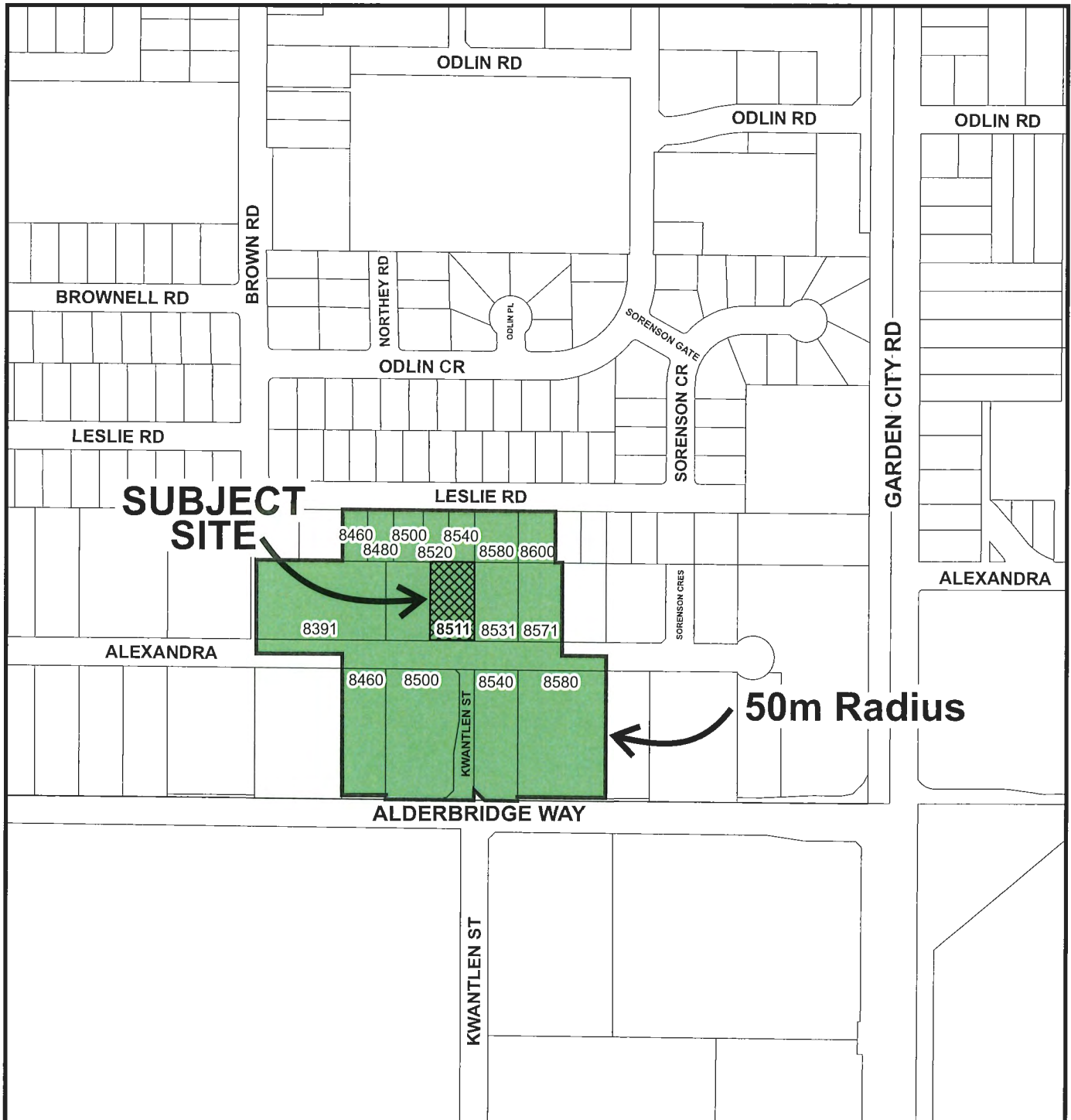
- Att. 1: Appendix A
2: Aerial Map with 50m Buffer Area
3: Letters of Support

Appendix A

Re: Application to Amend Food Primary Liquor Licence # 305936 - Extended Service Hours – Emperor’s Kitchen Ltd. DbA: Grill Party – 120 – 8511 Alexandra Rd., Richmond B.C.

1. That the application from Emperor’s Kitchen Ltd. DbA: Grill Party, operating at, 120 - 8511 Alexandra Rd., requesting an increase to hours of liquor service to the Food Primary Liquor Licence # 305936, be supported for:
 - a) An addition of a Seasonal patio area to permit liquor and food service between April 1 and October 31 each year for 20 seats and to close at 10:00 PM each night;
 - b) Total person capacity will remain the same at 98 persons;
 - c) A permanent change to hours of liquor service;
 - i) **From**, Monday to Sunday, 9:00 AM to Midnight;
 - ii) **To**, Monday to Sunday, 9:00 AM to 2:00 AM.
2. That a letter be sent to Liquor and Cannabis Regulation Branch advising that Council supports the amendment for a permanent change to hours of liquor service to the Food Primary Liquor Licence # 305936, with the hours as listed above, and;
3. Council's comments on the prescribed criteria (Section 71 of the Liquor Control and Licencing Regulations) are as follows:
 - a) The impact of additional noise and traffic in the area of the establishment was considered;
 - b) The potential impact on the community was assessed through a community consultation process; and
 - c) Given that there has been no noted incidents since operator commenced in 2016, the amendment to change hours of liquor service to the Food Primary Liquor Licence should not change the establishment such that it is operated contrary to its primary purpose;
 - d) As the operation of a licenced establishment may affect nearby residents, businesses and property owners, the City gathered the views of the community through a community consultation process as follows:
 - i) Residents, businesses and property owners within a 50 meter radius of the establishment were notified by letter. The letter provided information on the application with instructions on how to submit comments or concerns; and

- ii) Signage was posted at the subject property and three public notices were published in a local newspaper. The signage and public notice provided information on the application with instructions on how to submit comments and concerns.
- e) Council's comments on the general impact of the views of residents, businesses and property owners are as follows:
 - i) The community consultation process was completed within 90 days of the application process; and
 - ii) The community consultation process generated no comments opposed to this application and two comments in favour.
- f) Council recommends the approval of the amendment to the Food Primary Liquor Licence with extended hours of liquor service to 9:00 AM to 2 AM, Monday to Sunday, for reasons that the addition of the extended hours proposed is acceptable to the majority of the residents, businesses and property owners in the area and the community.



8511 Alexandra Rd
50 m Radius

Original Date: 03/09/23

Revision Date:

Note: Dimensions are in METRES

CITY OF RICHMOND

APR 14 2023

RECEIVED

THE CITY OF RICHMOND

Business Licence Division

LIQUOR LICENCE APPLICATIONS

6911 NO. 3 RD

RICHMOND, BC, V6Y 2C1

Re: Grill Party, operating from premises located at 120 – 8511 Alexandra Rd., Richmond, BC.

Dear Sir/Madam:

I am writing to express my enthusiastic support for restaurant Grill Party's patio project . As a frequent patron of the restaurant, I am confident that the addition of a patio will enhance the dining experience for guests and contribute to the overall vibrancy of the community. I have seen firsthand the demand for outdoor seating during the warmer months. The addition of a patio would not only increase the restaurant's seating capacity but also provide a unique atmosphere that would set it apart from other dining establishments in the area.

Moreover, I believe that the proposed patio would be an asset to the community, providing a gathering place for residents and visitors alike. As more people spend time outdoors, this project has the potential to contribute to the vibrancy and vitality of the neighborhood, attracting new customers and promoting economic growth.

In conclusion, I believe that the addition of a patio to the restaurant will not only enhance the dining experience for customers but also contribute to the local economic growth. I fully support this project .

Thank you for your time and consideration.

Zhou mo

209-8600 Ackroyd road Richmond

7782276903

The city of Richmond Business Licence Division
Liquor Licence Application
6911 NO. 3 rd Richmond, BC, V6Y 2C1

APR 14 2023

RECEIVED

Re: Grill Party, operating from premises located at 120 – 8511 Alexandra Rd.,
Richmond, BC.

Dear Sir/Madam:

We are writing as Marine bay restaurant in Richmond.

We have patronized Grill Party restaurant since it opened. We have found that Grill Party has been a welcome addition to the neighbourhood. We support the proposed change of licensing for this establishment.

Grill Party is an independent small business that should be permitted to have later hours of liquor service as well as a patio.

We have found that Grill Party has been a conscientious operator and that there have never any problems with it in terms of noise or problem patrons.

In today's increasingly diverse economy, people have different work schedules and routines. It is important that this is recognized.

We wholeheartedly support the efforts of the City and Province to modernize liquor laws, and in particular, we would like to add our names as supporting this application.

Sincerely:

Jun Liu
200-8511 Alexandra road Richmond
6043625135



City of Richmond

Report to Committee

To: General Purposes Committee
From: Kim Somerville
Director, Community Social Development
Date: May 19, 2023
File: 08-4055-05/2023-Vol 01
Re: **Richmond Accessibility Advisory Committee 2023 Work Program**

Staff Recommendation

That the proposed work plan for the Richmond Accessibility Advisory Committee as outlined in the staff report titled "Richmond Accessibility Advisory Committee 2023 Work Program," dated May 19, 2023, from the Director, Community Social Development, be approved.

Kim Somerville
Director, Community Social Development
(604-247-4671)

Att. 1

REPORT CONCURRENCE	
CONCURRENCE OF ACTING GENERAL MANAGER	
SENIOR STAFF REPORT REVIEW	INITIALS:
APPROVED BY CAO	

Staff Report

Origin

On November 28, 2022, City Council approved the creation of the Richmond Accessibility Advisory Committee (RAAC) to address one of the municipal requirements of the new Accessible British Columbia Act (the Act). The RAAC acts as a resource and provides advice to City Council to support the advancement of accessibility in the city, so people with disabilities are able to participate fully in all aspects of community life. Each year, RAAC will submit an annual report to Council for the completed year and a proposed work plan for the upcoming year. As this is the inaugural year of the RAAC, this report presents the proposed RAAC 2023 Work Program (Attachment 1).

This report supports Council's Strategic Plan 2022–2026 Focus Area #1 Proactive in Stakeholder and Civic Engagement:

Proactive stakeholder and civic engagement to foster understanding and involvement and advance Richmond's interests.

This report also supports Council's Strategic Plan 2022–2026 Focus Area #6 A Vibrant, Resilient and Active Community:

Vibrant, resilient and active communities supported by a wide variety of opportunities to get involved, build relationships and access resources.

Analysis

The RAAC is comprised of up to 12 Council-appointed, voting members who bring unique perspectives, knowledge and experiences to committee meetings. By fostering meaningful dialogue and information sharing, the RAAC provides input and advice to City Council to support and enhance the advancement of accessibility in the community. The proposed RAAC 2023 Work Program outlines the RAAC's priorities for the coming year that will further their mandate.

The proposed RAAC 2023 Work Program also aligns the Committee's efforts with the Act's requirements related to the role of accessibility advisory committees, including the requirements to:

- Assist the City with identifying barriers experienced by people with disabilities when interacting with or within the City (public and staff);
- Advise the City on how to prevent and remove these barriers; and
- Support the development of the Richmond Accessibility Plan.

Proposed 2023 Work Program

The proposed 2023 Work Program was discussed at the RAAC meeting held on April 12, 2023. In 2023, priorities for the committee include:

- Supporting the development of the new Richmond Accessibility Plan;
- Providing advice and recommendations related to the advancement of accessibility in the City, including providing input to support the development of new City strategies and initiatives; and
- Increasing RAAC members' awareness on issues and trends that impact people with disabilities in the community through guest speakers and presentations.

Throughout 2023, the RAAC will meet monthly to discuss accessibility-related matters, advise City Council and staff, and support the development of the new Richmond Accessibility Plan, which is required by the Act to outline how the City will identify, remove and prevent barriers across planning and service areas. Development of the Richmond Accessibility Plan is underway and a draft plan will be presented to Council for approval in principle in fall 2023.

The RAAC will also provide an accessibility lens to the review of related policies, plans and initiatives that work to advance accessibility in the community and will respond to requests and referrals from Council as they arise. The 2023 Work Program will be revised as necessary to respond to emerging opportunities related to the RAAC's advisory role.

The RAAC Work Program will be implemented within the committee's annual operating budget of \$7,500.

Financial Impact

None.

Conclusion

The proposed RAAC 2023 Work Program outlines the Committee's priorities for the year to fulfil its mandate of supporting the advancement of accessibility in Richmond, so that people with disabilities are able to participate fully in all aspects of community life. Staff recommend that the proposed RAAC 2023 Work Program be approved.



Melanie Burner
Program Manager, Social Development
(604-276-4390)

Att. 1: Richmond Accessibility Advisory Committee Proposed 2023 Work Program

Richmond Accessibility Advisory Committee Proposed 2023 Work Program

Richmond Accessibility Advisory Committee Work Program		
Initiative	Actions	Expected Outcome
1. Participate in a RAAC orientation.	1.1 Members participate in an orientation to the RAAC to learn about the roles and responsibilities of advisory committee members, the RAAC Terms of Reference and the City's current strategies and initiatives related to accessibility.	Members are aware of and understand the following: <ul style="list-style-type: none"> • The RAAC Terms of Reference • Their role as an appointed member of the RAAC • The City's Respectful Workplace Policy 6800 • The 2023 Work Program • Current City of Richmond strategies and initiatives related to accessibility, including the development of the Richmond Accessibility Plan
2. Act as a resource to the City by providing recommendations and perspectives on issues and opportunities related to advancing accessibility in Richmond.	2.1 Respond to City Council requests and provide advice on issues related to advancing accessibility in Richmond. 2.2 Consult and provide input on City strategies, initiatives and policies that impact accessibility in Richmond. 2.3 Provide input and feedback to City staff on the accessibility of existing City programs, services and the built environment.	The RAAC applies an accessibility lens to support the development and updating of City strategies, initiatives and policies and advises City Council and staff, as requested. The RAAC provides on-going feedback to support the identification, removal and prevention of barriers in existing City programs, services and the built environment.
3. Support the development of the Richmond Accessibility Plan.	3.1 Participate in and provide advice and recommendations related to the development of the Richmond Accessibility Plan.	The RAAC provides feedback on the development of the Richmond Accessibility Plan.

Richmond Accessibility Advisory Committee Work Program		
Initiative	Actions	Expected Outcome
	3.2 Promote and support opportunities for people with disabilities to participate in public engagement related to the development of the Richmond Accessibility Plan.	The Richmond Accessibility Plan is completed. Public engagement opportunities to support the development of the Richmond Accessibility Plan are accessible and consider a diverse range of needs.
4. Build on the RAAC's knowledge of accessibility issues through information sharing, guest speakers and educational opportunities.	<p>4.1 Invite guest speakers to present on issues and trends that impact people with disabilities in the community at regular RAAC meetings.</p> <p>4.2 Identify accessibility-related educational opportunities for members to learn about emerging issues and trends impacting people with disabilities that can inform the City's policies or practices.</p> <p>4.3 Monitor accessibility-related issues and emerging trends.</p>	<p>The RAAC is informed of trends and concerns raised by people with disabilities in the community.</p> <p>The RAAC is well equipped to provide an accessibility lens to City strategies, policies and initiatives, as requested.</p>
5. Encourage public awareness and community engagement to understand the needs and concerns of people with disabilities in Richmond.	<p>5.1 Discuss accessibility-related matters arising as a standing item on the RAAC agenda.</p> <p>5.2 Participate in information sessions, educational activities and special events open to the public that focus on issues impacting people with disabilities in Richmond.</p> <p>5.3 Promote opportunities for people with disabilities to participate in public engagement opportunities led and supported by the City.</p>	<p>RAAC is informed of trends and concerns raised by community members with disabilities.</p> <p>The City and residents continue to be well informed about the latest trends, research and advocacy efforts related to accessibility matters.</p> <p>People with disabilities are increasingly aware of engagement opportunities related to advancing accessibility in Richmond.</p>

Richmond Accessibility Advisory Committee Work Program		
Initiative	Actions	Expected Outcome
6. Support priority accessibility-related City initiatives through aligning RAAC agenda and discussion topics.	6.1 Review current and upcoming City initiatives related to accessibility and determine where RAAC participation will be most effective within the scope of the committee's advisory role.	<p>The RAAC's work and focus are aligned with Council-approved priorities related to advancing accessibility in Richmond.</p> <p>The RAAC's work informs current policy updates and initiatives from various City departments related to advancing accessibility.</p>



City of Richmond

Report to Committee

To: Planning Committee
From: Wayne Craig
Director, Development

Date: June 5, 2023
File: RZ 21-945951

Re: Application by Benito Kho and Verney Kho for Rezoning at 7520 Ash Street from
"Single Detached (RS1/F)" Zone to "Single Detached (RS2/E)" Zone

Staff Recommendation

That Richmond Zoning Bylaw 8500, Amendment Bylaw 10472, for the rezoning of 7520 Ash Street from the "Single Family (RS1/F)" zone to the "Single Family (RS2/E)" zone, be introduced and given first reading.

Wayne Craig
Director, Development
(604-247-4625)

WC:le

REPORT CONCURRENCE		
ROUTED TO:	CONCURRENCE	CONCURRENCE OF ACTING GENERAL MANAGER
Affordable Housing	<input checked="" type="checkbox"/>	

Staff Report

Origin

The owners, Benito Kho and Verney Kho has applied to the City of Richmond for permission to rezone 7520 Ash Street from the “Single Detached (RS1/F)” zone to the “Single Detached (RS2/E)” zone, to allow the property to be subdivided into two single-family lots (Attachment 1). Vehicle access to the west lot (proposed Lot 1) is proposed from Ash Street. Vehicle access to the eastern lot (Lot 2) is proposed from a new extension of Armstrong Street. The site is currently occupied by an existing single-family dwelling on the western portion of the lot, which will remain on proposed Lot 1. A site survey showing the proposed subdivision plan is included in Attachment 2.

Findings of Fact

A Development Application Data Sheet providing details about the development proposal is attached (Attachment 3).

Subject Site Existing Housing Profile

The existing single detached house is currently rented and does not contain a secondary suite. The applicant has confirmed that the existing tenants will remain in the dwelling following the rezoning and subdivision application.

Surrounding Development

Development immediately surrounding the site is as follows:

To the North: A single-family dwelling zoned “Single Detached (RS1/F)” fronting onto Ash Street.

To the South: Two single-family lots zoned “Single Detached (RS2/E)” one lot fronts onto Ash Street while the other lot fronts onto Armstrong Street, (RZ 09-500671 and SD 09-500672).

To the East: Across Armstrong Street, a single-family dwelling zoned “Single Detached (ZS14) – South McLennan (City Centre)” fronting onto Breden Avenue.

To the West: Across Ash Street, the City-owned Paulik Park.

Related Policies & Studies

Official Community Plan/City Centre Area Plan

The Official Community Plan (OCP) land use designations for the subject property is “Neighbourhood Residential” (NRES). The City Centre Area – McLennan South Sub-Area Plan land use designation for the subject property is “Residential, Historic Single Family” (Attachment 4). The Plan identifies minimum lot sizes along Ash Street (minimum 18 m [59 ft.] frontage and 550 m² [5,920 ft²] area) and along Armstrong Street (minimum 11.3 m [37 ft.] frontage and 320 m² [3,444ft²] area.)

The proposed lot along Ash Street (Lot 1) will be approximately 19.2 m (63 ft.) wide and 799 m² (8,600 ft²) in area. The proposed lot along Armstrong Street (Lot 2) will be approximately 19.2 m (63 ft.) wide and 799 m² (8,600 ft²) in area. The proposed rezoning and subdivision complies with these designations and lot configuration requirements.

Floodplain Management Implementation Strategy

The proposed redevelopment must meet the requirements of the Richmond Flood Plain Designation and Protection Bylaw 8204. Registration of a flood indemnity covenant on Title is required prior to final adoption of the rezoning bylaw.

Public Consultation

A rezoning sign has been installed on the subject property. Staff have not received any comments from the public about the rezoning application in response to the placement of the rezoning sign on the properties. The applicant has contacted the adjacent property owner to the north at 7600 Ash Street to make them aware of the application and to determine if they were interested in rezoning at this time. The applicant advised staff in writing that the property owner is aware of the proposed rezoning and has no specific objections to the rezoning application as proposed (Attachment 5).

Should the Planning Committee endorse this application and Council grant first reading to Richmond Zoning Bylaw 8500, Amendment Bylaw 10472 (the “Rezoning Bylaw”), the Rezoning Bylaw will be forwarded to a Public Hearing, where any area resident or interested party will have an opportunity to comment. Public notification for the Public Hearing will be provided as per the Local Government Act.

Analysis

Proposed Rezoning and Subdivision

This redevelopment proposes to rezone and subdivide the subject site into two single-family lots, to retain the existing single-family dwelling on the western portion of the site (proposed Lot 1), and to construct a new single detached house with a secondary suite on the eastern portion of the site (proposed Lot 2). The applicant has provided a review by a qualified professional confirming that the existing dwelling meets all of the requirements of the proposed zone upon rezoning and subdivision. This development proposal is consistent with the redevelopment along this block of Ash Street, including the adjacent property to the south, 7540 Ash Street (RZ 09-500671).

Transportation and Site Access

Vehicle access to the western lot (Lot 1) is proposed to be from Ash Street via the existing driveway location and vehicle access to the eastern lot (Lot 2) is proposed to be from the new Armstrong Street.

Tree Retention and Replacement

The applicant has submitted a Certified Arborist's Report; which identifies on-site and off-site tree species, assesses tree structure and condition, and provides recommendations on tree retention and removal relative to the proposed development. The Report assesses a total of 21 trees on the subject property 18 of which are bylaw-sized, and two street trees on City property. Of the 18 bylaw-sized trees on the subject property, seven trees are located within the required City road dedication for Armstrong Street (Attachment 6).

The City's Tree Preservation Coordinator has reviewed the Arborist's Report and supports the Arborist's findings, with the following comments:

- Two trees (tags #1 & 2) located on City property along the Ash Street frontage are in good condition and are identified to be retained and protected in the Arborist report. The applicant is required to provide tree protection as per City of Richmond Tree Protection Information Bulletin Tree-03.
- Two trees (tags #3 & 4) located on the development site in the rear yard of the proposed lot fronting Armstrong Street are in good condition and are identified to be retained and protected in the Arborist report.
- Nine trees (tags #6, 7, 8, 11, 15, 19, 21, 22, and 23) on the development site are in poor condition (sparse canopy, previously topped, Bronze Birch Borer infestation) and are proposed to be removed and replaced.
- Seven trees (tags #9, 10, 12, 14, 16, 18, and 20) are located within the future City Road (Armstrong Street). The 2:1 ratio as per the O.C.P. for replacement trees does not apply to the trees identified within a planned future neighbourhood roadway.
- Replacement trees should be at the 2:1 ratio specified in the OCP.

Tree Replacement

The applicant wishes to remove nine on-site trees (Trees #6, 7, 8, 11, 15, 19, 21, 22 and 23.) The 2:1 replacement ratio would require a total of 18 replacement trees. In addition to the two trees (Tag #3 & 4) to be retained on-site, the applicant has agreed to plant five trees on proposed Lot 1 and three trees on proposed Lot 2 for a total of eight replacement trees. Accordingly, after redevelopment, Lot 1 would contain five trees, and proposed Lot 2 would contain five trees. The required replacement trees are to be of the following minimum sizes, based on the size of the trees being removed as per Tree Protection Bylaw No. 8057.

No. of Replacement Trees	Minimum Caliper of Deciduous Replacement Tree	Minimum Height of Coniferous Replacement Tree
8	8 cm	4.0 m

To satisfy the 2:1 replacement ratio established in the OCP, the applicant will contribute \$7500.00 (\$750/per tree) to the City's Tree Compensation Fund in lieu of the remaining 10 trees that cannot be accommodated on the subject property after redevelopment.

Tree Protection

Two trees (tag #1 & 2) on City property and two trees on the subject property (tag #3 & 4) are to be retained and protected. The applicant has submitted a tree protection plan showing the trees to be retained and the measures taken to protect them during development stage (Attachment 6). To ensure that the trees identified for retention are protected at development stage, the applicant is required to complete the following items:

- Prior to final adoption of the rezoning bylaw, the applicant must submit Tree Retention Security in the amounts of: \$20,000.00 for the retention of two on-site trees, and \$20,000.00 for the retention of two trees on City property.
- Prior to final adoption of the rezoning bylaw, submission to the City of a contract with a Certified Arborist for the supervision of all works conducted within or in close proximity to tree protection zones. The contract must include the scope of work required, the number of proposed monitoring inspections at specified stages of construction, any special measures required to ensure tree protection and a provision for the arborist to submit a post-construction impact assessment to the City for review.
- Prior to demolition of the existing dwelling on the subject site, installation of tree protection fencing around all trees to be retained. Tree protection fencing must be installed to City standard in accordance with the City's Tree Protection Information Bulletin Tree-03 prior to any works being conducted on-site, and remain in place until construction and landscaping on-site are completed.

Affordable Housing Strategy

The City's Affordable Housing Strategy for single-family rezoning applications requires a secondary suite or coach house on 100 per cent of new lots created through single-family rezoning and subdivision applications; a secondary suite or coach house on 50 per cent of new lots created including a cash-in-lieu contribution towards the City's Affordable Housing Reserve Fund of the total buildable area of the remaining lots; or a cash-in-lieu contribution on the total buildable area of all lots where a secondary suite cannot be accommodated in the development.

The existing single detached dwelling which will be retained on the proposed western lot (Lot 1), does not contain a secondary suite. Consistent with the Affordable Housing Strategy, the applicant has agreed to the registration of a covenant on Title that stipulates that any future development on Lot 1 must include a minimum one-bedroom secondary suite. Registration of this legal agreement will be required prior to final adoption of the rezoning bylaw.

On the proposed eastern lot (Lot 2), the applicant proposes to provide a minimum one-bedroom secondary suite of 93 m² (1,000 ft²). To ensure that the secondary suite is built to the satisfaction of the City in accordance with the City's Affordable Housing Strategy, the applicant is required to enter into a legal agreement registered on Title, stating that no final Building Permit inspection will be granted until a minimum one-bedroom secondary suite of 93 m² is constructed to the satisfaction of the City in accordance with the BC Building Code and Richmond Zoning Bylaw 8500. Registration of this legal agreement is required prior to final adoption of the rezoning bylaw.

Site Servicing and Frontage Improvements

Prior to final adoption of the rezoning bylaw, the developer is required to provide a 9.0 m wide road dedication along the entire east property line of the subject property for the extension of Armstrong Street.

At Subdivision stage, the applicant must enter into a Servicing Agreement for the design and construction of engineering infrastructure and frontage improvements, as described in Attachment 7. Frontage improvements include, but are not limited to, the following:

- Install a new storm service connection, complete with inspection chambers near the Armstrong Street frontage to service proposed Lot 2.
- Armstrong Street: pavement widening, new 1.5 m wide concrete sidewalk at the new property line, 1.5 m wide treed/grassed boulevard and 0.15 m wide curb and gutter.
- Ash Street: road widening, new 1.75 m wide concrete sidewalk at the property line, 3.1 m wide treed/grassed boulevard and 0.15 m wide curb and gutter.

Also at Subdivision stage, the applicant is required to pay Property Taxes, Development Cost Charges, School Site Acquisition Charge, Address Assignment Fees and the costs associated with the completion of the design and construction of engineering infrastructure and frontage improvements as described in Attachment 7.

Financial Impact or Economic Impact

The rezoning application results in an insignificant Operational Budget Impact (OBI) for off-site City infrastructure (such as roadworks, waterworks, storm sewers, sanitary sewers, street lights, street trees and traffic signals).

Conclusion

The purpose of this rezoning application is to rezone the property at 7520 Ash Street from the “Single Detached (RS1/F)” zone to the “Single Detached (RS2/E)” zone to permit the property to be subdivided into two single-family lots.

This rezoning application complies with the land use designations and applicable policies contained within the OCP and Area Plan for the subject site.

The list of rezoning considerations is included in Attachment 7 which has been agreed to by the applicant (signed concurrence on file).

It is recommended that Richmond Zoning Bylaw 8500, Amendment Bylaw 10472 be introduced and given first reading.



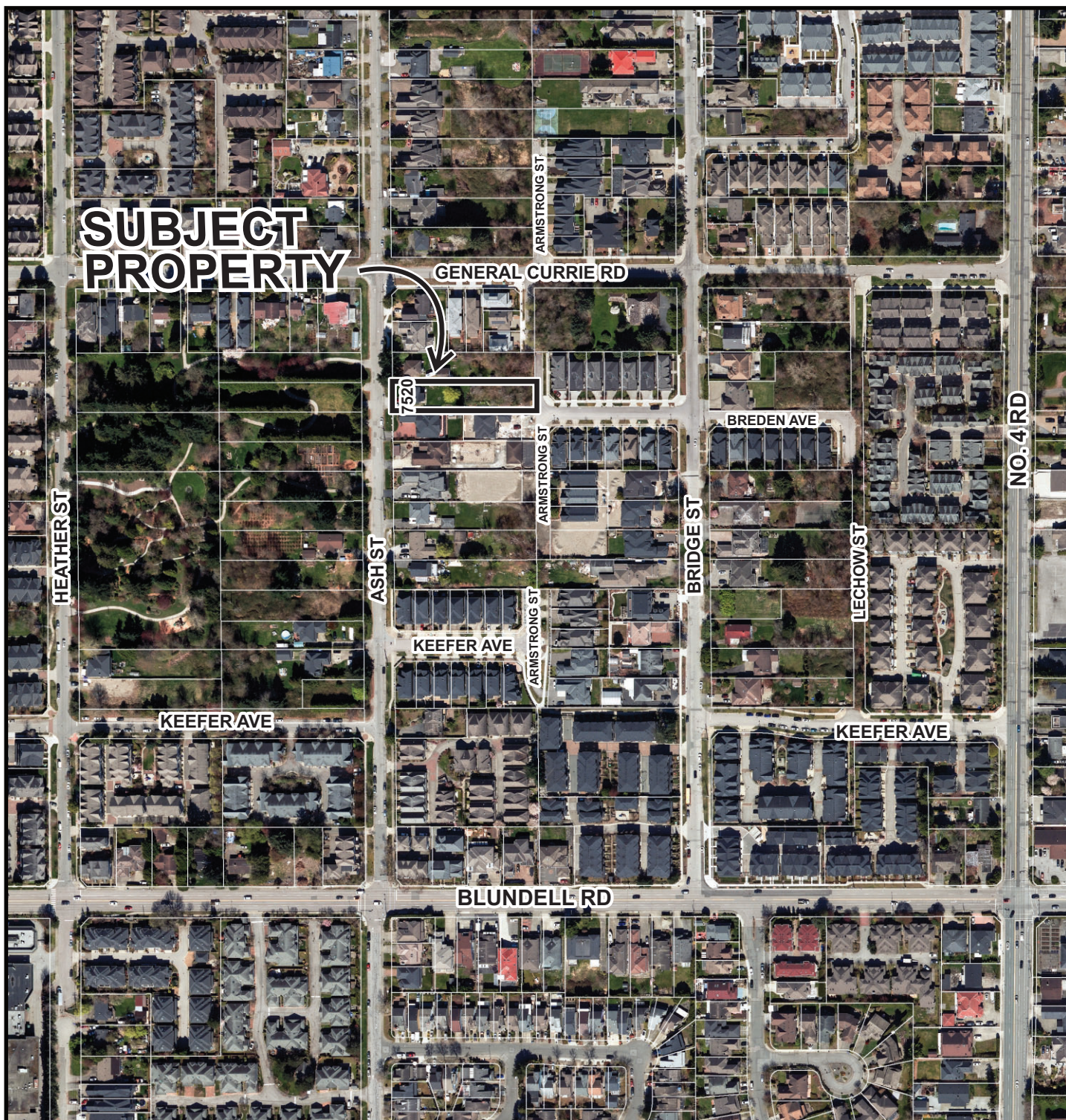
Laurel Eyton
Planning Technician
(604-276-4262)

LE:he

- Att.
- 1: Location Map
 - 2: Conceptual Development Plans
 - 3: Development Application Data Sheet
 - 4: South McLennan Sub Area Plan
 - 5: 7600 Ash St – Neighbour Letter regarding Development
 - 6: Tree Management Plan
 - 7: Rezoning Considerations



City of
Richmond

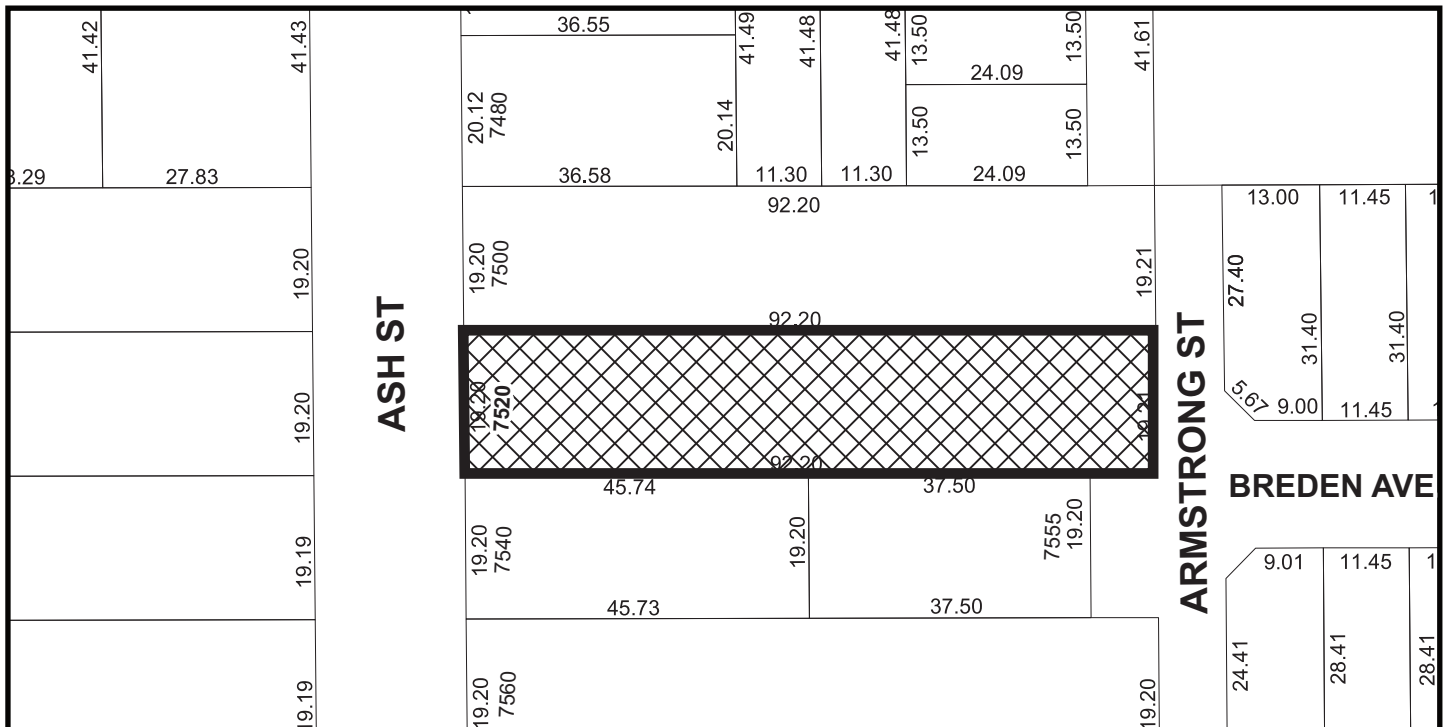


RZ 21-945951

Original Date: 01/25/22

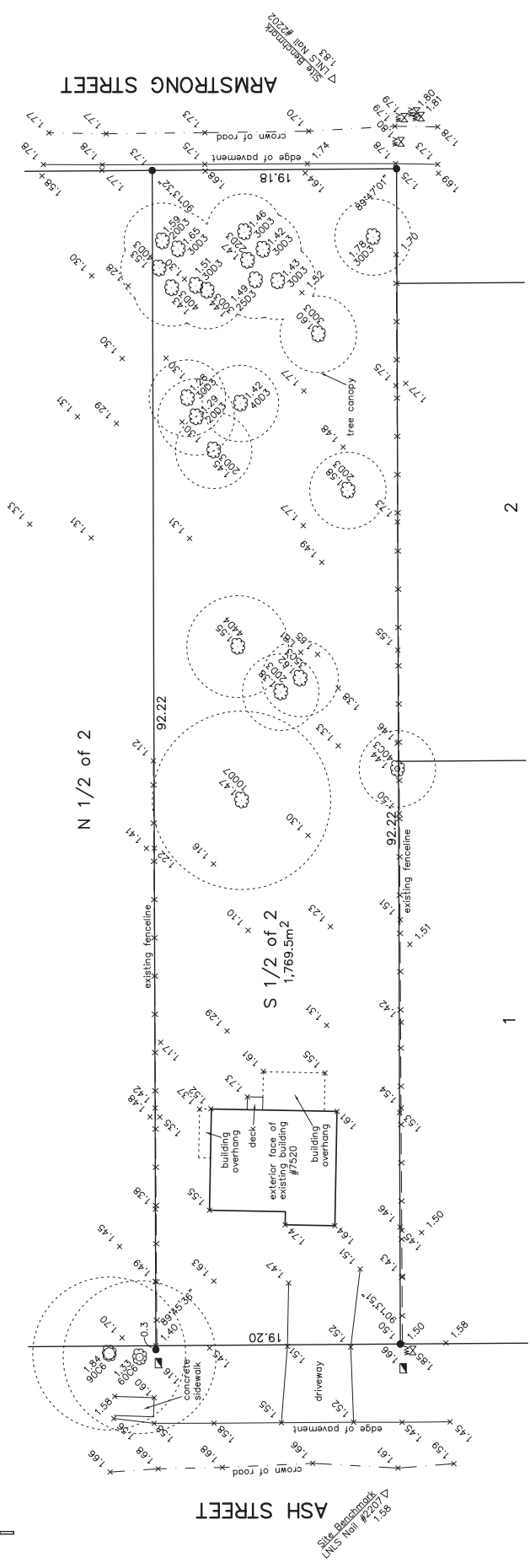
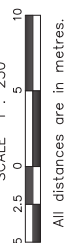
Revision Date:

Note: Dimensions are in METRES



Note: Dimensions are in METRES

SURVEY PLAN OF THE SOUTH HALF OF LOT 2
BLOCK "F", SECTION 15, BLOCK 4 NORTH, RANGE 6 WEST
NEW WESTMINSTER DISTRICT, PLAN 1207



NOTES:

- Lot dimensions are derived from field survey.
- Elevations are based on the Geocentric Datum of Richmond and are derived from control monument 94H1624 situated at the intersection of No. 5 Road and Granville Avenue. Elevation = 2.339 meters.
- For elevation control, use site benchmarks only.
- Elevation control must be checked against second source. Contractor assumes all responsibilities and risk when carrying out work using elevation control.
- Building envelope shown is just an approximate interpretation of City Zoning Bylaws. Consult Planning Department for final interpretation.
- All trees and stumps shown are required by municipal bylaws.
- All elevations along curb lines are gutter levels.
- All dimensions are to exterior faces unless otherwise noted.
- Symbols plotted are for illustrative purposes and are not representative of their true size.
- denotes standard iron post (IP).

CIVIC ADDRESS
7520 ASH STREET
RICHMOND, B.C.

ZONING: RS1/F

CERTIFIED CORRECT.
DATED THIS 4TH DAY OF OCT., 2021

IVAN NGAN

L	N	L	S	METRO VANCOUVER LAND SURVEYORS
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© LOUIS NGAN LAND SURVEYING INC., 2021

T: 604-371-1455
203-145 SCHOOLHOUSE
ST.
COQUITLAM, BC
V3K 4X8

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Rev	Description	Date
1	Initial Design	2021-11-01
2	Revised Design	2021-11-15
3	Final Design	2021-11-30
4	Construction Documents	2021-12-15
5	As-Built	2022-01-31
6	Final Review	2022-02-15
7	Final Approval	2022-03-01
8	Final Construction	2022-03-15
9	Final Completion	2022-03-31
10	Final Handover	2022-04-01
11	Final Review	2022-04-15
12	Final Approval	2022-04-30
13	Final Construction	2022-05-15
14	Final Completion	2022-05-31
15	Final Handover	2022-06-01
16	Final Review	2022-06-15
17	Final Approval	2022-06-30
18	Final Construction	2022-07-15
19	Final Completion	2022-07-31
20	Final Handover	2022-08-01

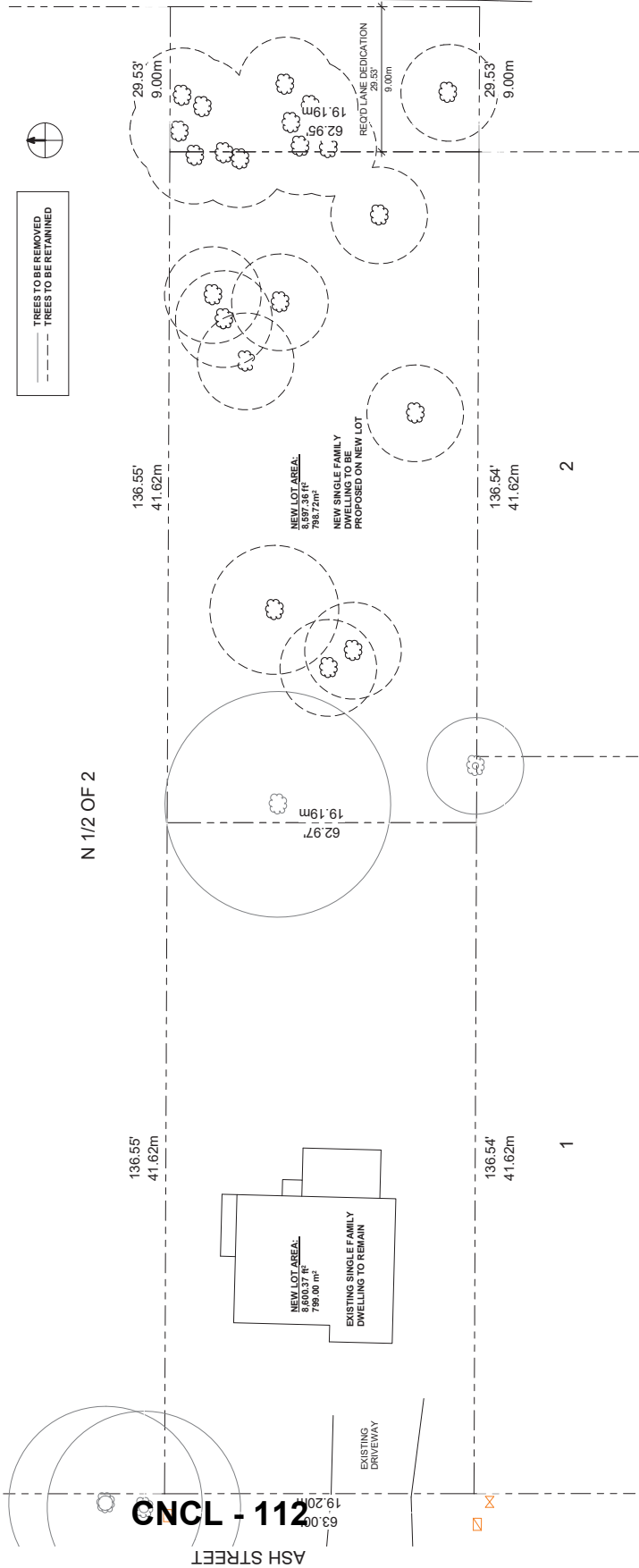
PROJECT ADDRESS

KHO
7520 ASH STREET
RICHMOND B.C.

TITLE

SUBDIVISION
PLAN

DRAWN BY	AC	DRAWING
SCALE (B/A)	3/32" = 1'-0"	A0
DATE	DECEMBER 1, 2021	





T: 604-371-1455
203-145 SCHOOLHOUSE
ST.
COQUITLAM, BC
V3K 4X8

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PROJECT & ADDRESS

KHO
7520 ASH STREET
RICHMOND B.C.

TITLE

KEY PLAN

DRAWN BY AC	A1.A
SCALE (@A1) 1/16" = 1'-0"	
DATE JAN 14, 2023	

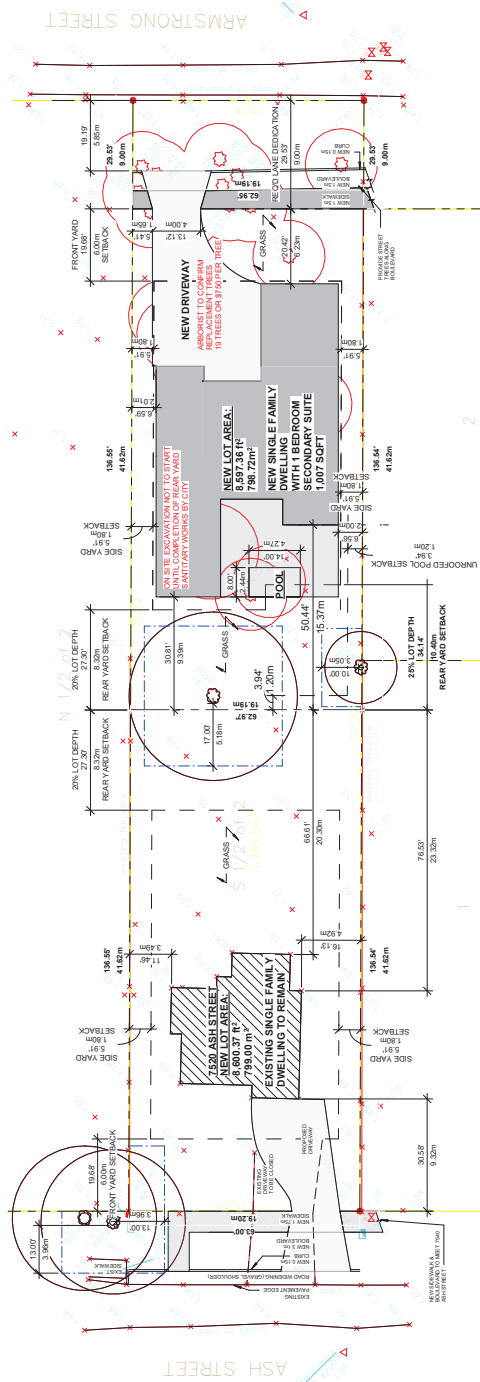
SITE PLAN LEGEND



TO BE REMOVED	TO BE RETAINED
EXISTING CONSTRUCTION	PROPERTY LINE
PROPOSED CONSTRUCTION	TREE PROTECTION BARRIER
BUILDING SETBACKS	TREE TO BE RETAINED
	TREE TO BE REMOVED
	WATER
	STORM
	SANITARY

37. ABOVE GRADE WAS INSULATION TO MEET OR EXCEED R2 EFFECTIVE AND BULKHEAD TO PROVIDE R22
 38. ATTIC AND FLOORING ON PLASTIC (R60) AND INSULATION TO MEET OR EXCEED R22 REQUIRED NAILING IN VALUES
 39. FOUNDATION WAS INSULATION TO MEET OR EXCEED R2 EFFECTIVE UNDER SLAB TO MEET OR EXCEED R12
 40. EXPOSED FLOORS ON WALL WAS INSULATION MEETS OR EXCEEDS R2 EFFECTIVE
 41. HANGER ON PLAIN WALL INSULATION MEETS OR EXCEEDS R2 EFFECTIVE
 42. CONTINUOUS INSULATION INSULATION IN FIN IS CONTINUOUS INCLUDING AROUND DUCTS OUTSIDE THE FIN
 43. AIR BARRIER AIR BARRIER IS PLAINED TO BE CONTINUOUS
 44. WINDOWS SPECIFIED WINDOWS AND GLASS TO MEET U-1 (R4.00) OR LOWER
 45. SKYLIGHTS SPECIFIED SKYLIGHTS (N/A) ARE USED 1.4 (R4.00)
 46. INSULATION ON THAT FIN WITH AIR OR BETTER SENSIBLE THAT RECOVERY IN CONDITIONED SPACE PLANTABLE FOR FILTER-MATERIALS LOCATED ON FIN
 47. FURNACE/BOILER TO MEET MINIMUM 12% EFFICIENT AREA NO SIZE VARYING
 48. HOT WATER TANK ON DEMAND CEA TO FORM THAT DOMESTIC HOT WATER HEATER MUST BE 7% OR GREATER EFFICIENCY OR AT MINIMUM SOURCE ELECTRIC TANK
 49. TO BE WRAPPED IN 1.5 (R10)
 50. THE LAST IN TANK TO MEET THE FIRST 3M FROM INSULATION INTO ALL HOT WATER SHALL HAVE PIPE WITH AN RS OF 0.30 (R2)
 51. RECIRCULATING SYSTEM CEA TO MEET THE ENTIRE PIPE SYSTEM MUST BE WRAPPED WITH PPE INSULATION WITH RS OF 0.30 (R24)
 52. DECOR OR HETABLE AREA PROVIDE 24 CROSS PULPING TO C.C. ON DECK/STAIR AND FIN AND GRAVEL ALL OTHER WATER PROOFING MEMBRANE MUST BE RE-TESTED BY ARCHITECT OR PROFESSIONAL ENGINEER
 53. ALL ENGINEERED PRODUCTS TO BE USED UNDER MANUFACTURER SPECIFICATIONS
 54. STARTING WORK SHALL MEET ACCEPTANCE OF SPECIFICATION, DIMENSIONS AND REQUIREMENTS AS WELL AS ALL SURFACE AND CONDITIONS AS BEING
 55. MAKE SCALE DRAWINGS TO THE PRECEDENCE OVER SMALLER DRAWINGS
 56. DO NOT SCALE OFF DRAWINGS

- [illegible]



CNCL-113



RZ 21-945951

Attachment 3

Address: 7520 Ash Street

Applicant: Benito Kho and Verney Kho

Planning Area(s): City Centre – McLennan South

	Existing	Proposed
Owner:	Benito Kho and Verney Kho	Lot 1: No change Lot 2: To be determined
Site Size (m²):	1769.5 m ²	Lot 1: 799 m ² Lot 2: 799 m ²
Land Uses:	Single-family residential	No change
OCP Designation:	Neighbourhood Residential	No change
Area Plan Designation:	Single Family	No change
Zoning:	Single Detached (RS1/F)	Single Detached (RS2/E)
Number of Units:	One existing Single Family Dwelling	2 Single Family Dwellings

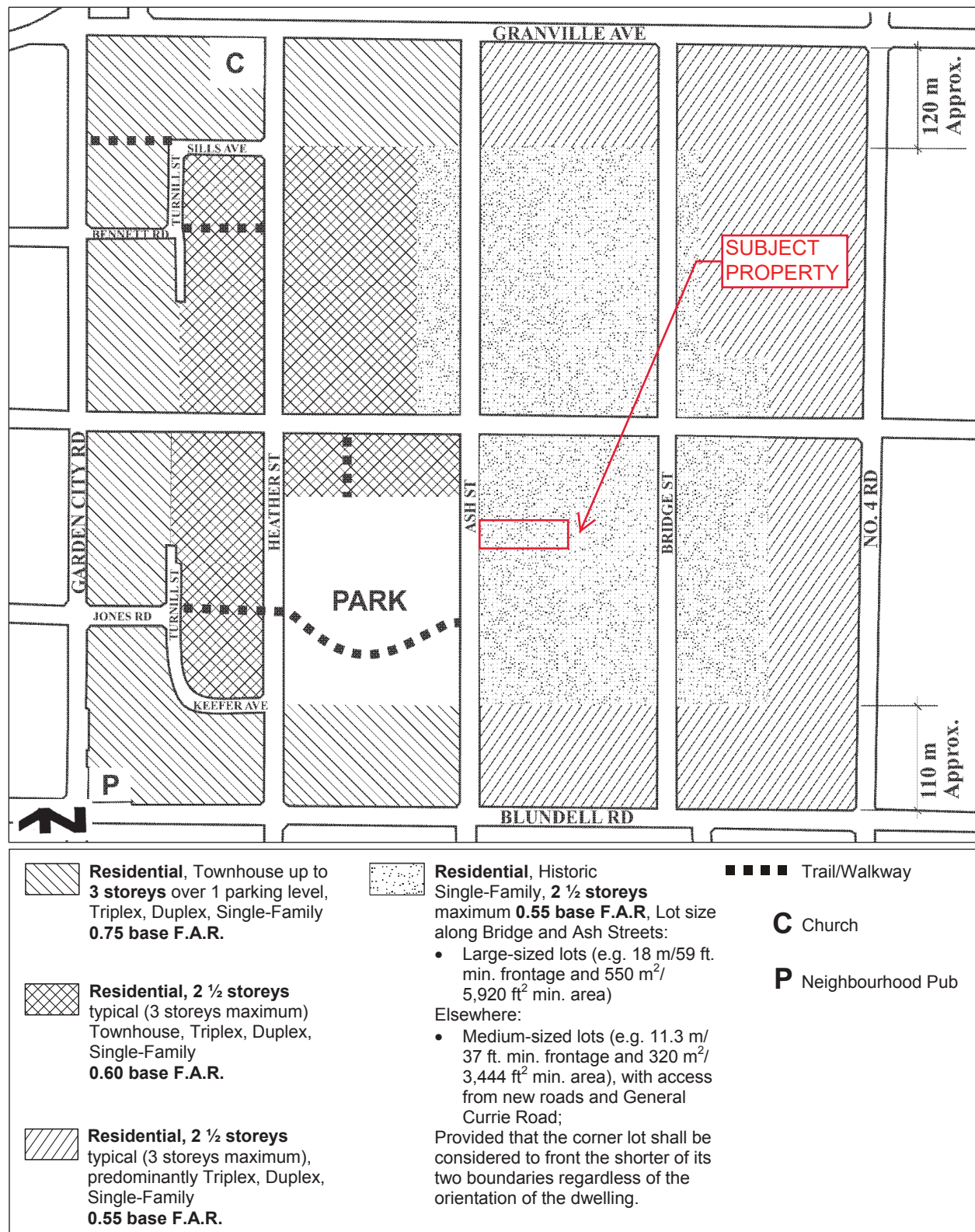
On Future Subdivided Lots	Bylaw Requirement	Proposed	Variance
Floor Area Ratio:	Max. 0.55 for lot area up to 464.5 m ² plus 0.3 for area in excess of 464.5 m ²	Max. 0.55 for lot area up to 464.5 m ² plus 0.3 for area in excess of 464.5 m ²	none permitted
Buildable Floor Area (m ²):*	Lot 1: Max. 360 m ² (3870 ft ²) Lot 2: Max. 360 m ² (3870 ft ²)	Lot 1: Max. 360 m ² (3870 ft ²) Lot 2: Max. 360 m ² (3870 ft ²)	none permitted
Lot Coverage (% of lot area):	Building: Max. 45% Non-porous Surfaces: Max. 70% Landscaping: Min. 30%	Building: Max. 45% Non-porous Surfaces: Max. 70% Landscaping: Min. 30%	none
Lot Size:	Min. 550 m ²	Lot 1: 799 m ² Lot 2: 799 m ²	none
Lot Dimensions (m):	Width: Min. 18.0 m Depth: Min. 24.0 m	Width: 19.2 m Depth: 41.6 m	none
Setbacks (m):	Front: Min. 6.0 m Rear: Min. 8.32 m (1 st storey) / 10.40m (2 nd storey) Side: Min. 1.8 m	Front: Min. 6.0 m Rear: Min. 8.32 m (1 st storey) / 10.40m (2 nd storey) Side: Min. 1.8 m	none
Height (m):	Max. 2 ½ storeys	Max. 2 ½ storeys	none

* Preliminary estimate; not inclusive of garage; exact building size to be determined through zoning bylaw compliance review at Building Permit stage.

City of Richmond

Land Use Map

Bylaw 9106
2015/09/14



Note: Sills Avenue, Le Chow Street, Keefe Avenue, and Turnill Street are commonly referred to as the “ring road”.

7500 Ash Street
Richmond, BC

May 25, 2023

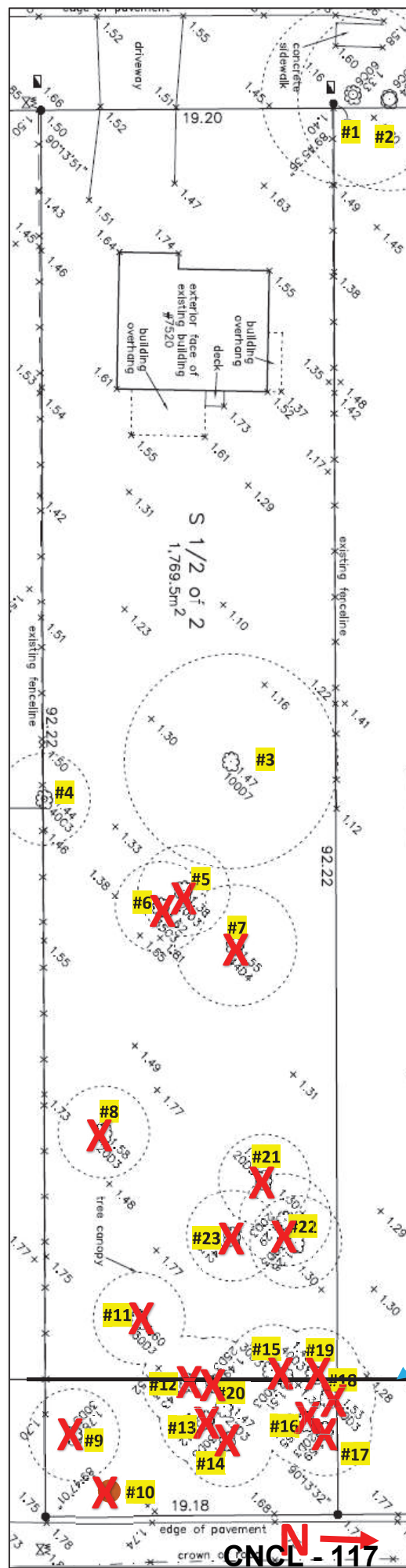
To Whom It May Concern:

I, *Sharon MacBougan*, am the owner of 7500 Ash Street Richmond.

I confirm that I am aware of the development potential of 7500 Ash Street and 7520 Ash Street together can be rezoned and subdivided into three lots fronting onto Armstrong.

I confirm that I know about the application for rezoning of 7520 Ash Street and that further development of 7520 Ash Street is going forward.

Sharon MacBougan

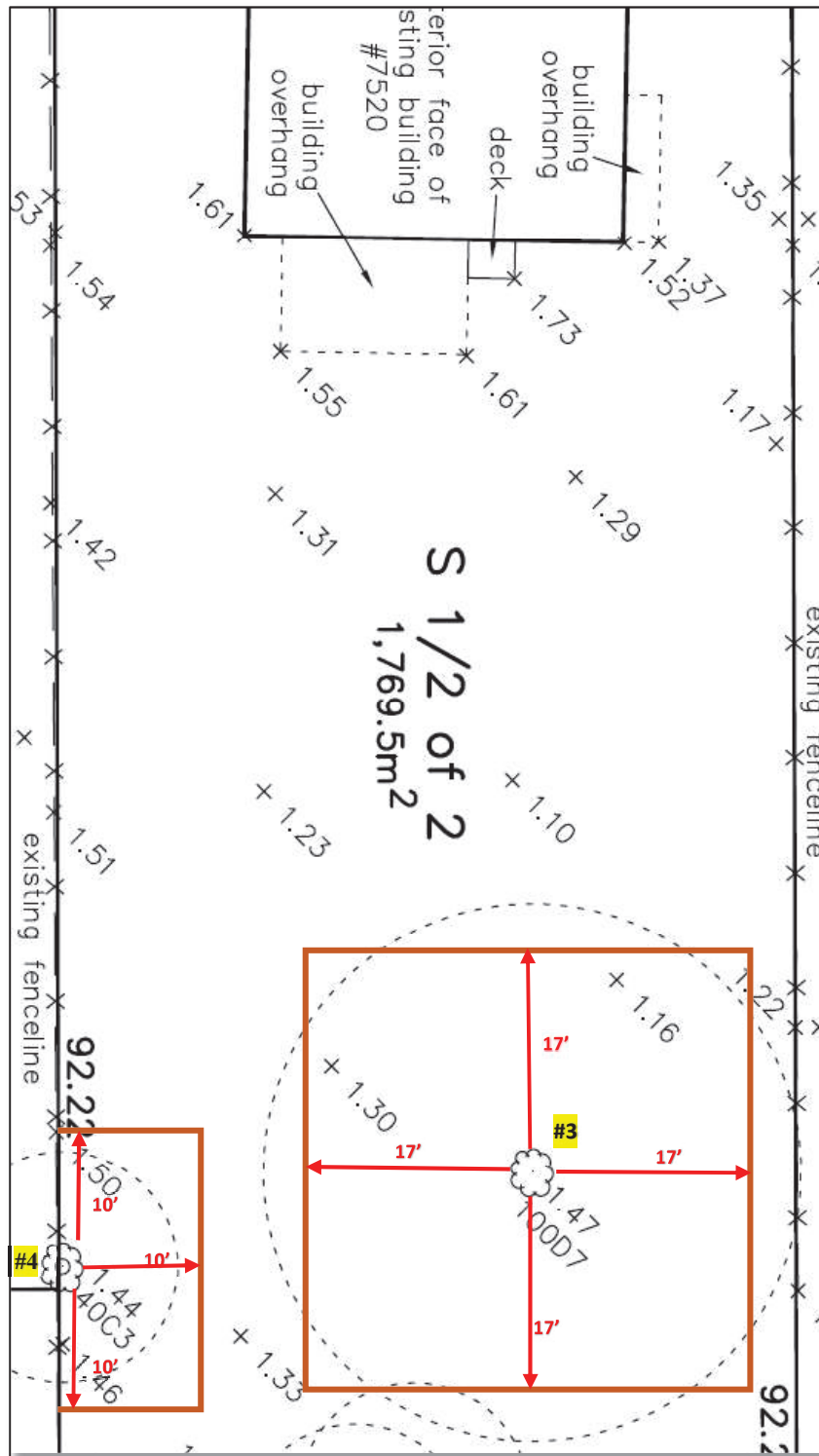


Site Survey - Not to Scale

**Proposed Road
right of Way**

Note: Tree Tags #5, #13, and #17 are not bylaw-sized.





Central Lot Tree Management Plan, Scale 1/16" = 1'



Address: 7520 Ash Street

File No.: RZ 21-945951

Prior to final adoption of Richmond Zoning Bylaw 8500, Amendment Bylaw 10472, the developer is required to complete the following:

1. Road dedication along the entire east property line measuring 9.0 m wide for the extension of Armstrong Street.
2. Submission of a Landscape Security in the amount of \$6,000.00 (\$750/tree) to ensure that five replacement trees are planted and maintained on proposed Lot 1 and three replacement trees are planted and maintained on proposed Lot 2 (minimum 8 cm deciduous caliper or 4 m high conifers). NOTE: If any of the five replacement trees required to be planted on proposed Lot 1 cannot be accommodated, the applicant is required to submit a letter from a qualified professional confirming this to the satisfaction of the Director of Development, and a cash-in-lieu contribution in the amount of \$750/tree to the City's Tree Compensation Fund may be accepted.
3. City acceptance of the developer's offer to voluntarily contribute \$7500.00 to the City's Tree Compensation Fund for the planting of 10 replacement trees within the City.
4. Submission of a Contract entered into between the applicant and a Certified Arborist for supervision of any on-site works conducted within the tree protection zone of the trees to be retained. The Contract should include the scope of work to be undertaken, including: the proposed number of site monitoring inspections, and a provision for the Arborist to submit a post-construction assessment report to the City for review.
5. Submission of a Tree Survival Security to the City in the amount of \$20,000.00 for the two trees to be retained on the subject property.
6. Submission of a Tree Survival Security to the City in the amount of \$20,000 for the two trees to be retained on City property.
7. Installation of appropriate tree protection fencing around all trees to be retained as part of the development prior to any construction activities, including building demolition, occurring on-site.
8. Registration of a flood indemnity covenant on title.
9. Registration of a legal agreement on Title to ensure that no final Building Permit inspection is granted until a minimum one-bedroom secondary suite is constructed on Lot 1, and a minimum 1 bedroom 93 m² (1000 sqft) secondary suite is constructed on Lot 2, to the satisfaction of the City in accordance with the BC Building Code and the City's Zoning Bylaw.
10. Payment of all fees in full for the cost associated with the Public Hearing Notices, consistent with the City's Consolidated Fees Bylaw No 8636, as amended.

Prior to Demolition Permit* Issuance, the developer must complete the following requirements:

1. Installation of tree protection fencing around all trees to be retained. Tree protection fencing must be installed to City standard in accordance with the City's Tree Protection Information Bulletin TREE-03 prior to any works being conducted on-site, and must remain in place until construction and landscaping on-site is completed.

At Subdivision* stage, the developer must complete the following requirements:

1. Payment of the current year's property taxes, Development Cost Charges, School Site Acquisition Charge, Address Assignment Fees, and the costs associated with the completion of the design and construction of engineering infrastructure and frontage improvements.
2. Enter into a Servicing Agreement* for the design and construction of engineering infrastructure improvements. A Letter of Credit or cash security for the value of the Service Agreement works, as determined by the City, will be required as part of entering into the Servicing Agreement. Works include, but may not be limited to:

a) *Water Works:*

Using the OCP Model, there is 444 L/s of water available at a 20 psi residual at the Ash Street frontage. Based on your proposed development, your site requires a minimum fire flow of 95 L/s.

At Developer's cost, the Developer is required to:

- b) Cut and cap the existing water service connection on Ash St and replace with a 25mm water service connection complete with water meter and water meter box, as per standard City specifications.
- c) Install a new 200mm water main extending from the existing 200mm water main located on Armstrong St and Breden Ave. Proposed water main to extend until the north PL of 7520 Ash St.
- d) Install a new water service connection complete with water meter and water meter box from the newly proposed water main extension to service the proposed east lot.
- e) Submit Fire Underwriter Survey (FUS) or International Organization for Standardization (ISO) fire flow calculations to confirm development has adequate fire flow for onsite fire protection on both frontages. Calculations must be signed and sealed by a Professional Engineer and be based on Building Permit Stage building designs.
- f) Review hydrant spacing on all road frontages and install new fire hydrants as required to meet City spacing requirements for the proposed land use.
- g) Provide a right-of-way for the water meter. Minimum right-of-way dimensions to be the size of the meter box (from the City of Richmond supplementary specifications) + any appurtenances (for example, the bypass on W20-SD) + 0.5 m on all sides. Exact right-of-way dimensions to be finalized during the building permit process (or via the servicing agreement process, if one is required).

At Developer's cost, the City will:

- h) Complete all tie-ins for the proposed works to existing City infrastructure.

Storm Sewer Works

At Developer's cost, the Developer is required to:

- i) Cut and cap the existing storm sewer service connection located at the North West corner of the site.
- j) Confirm the condition and capacity of the existing storm sewer service connection located at the south west corner of the site to be 100mm diameter or larger. If adequate to standard City specifications reuse to service the west lot.
- k) Install a new 600mm storm sewer main extending from the north face of the manhole located on Armstrong St and Breden Ave, to the north PL of 7520 Ash St.
- l) Install a new storm sewer service connection complete with inspection chamber from the newly proposed storm sewer main extension to service the proposed east lot.
- m) Provide an erosion and sediment control plan for all on-site and off-site works, to be reviewed as part of the servicing agreement design.

At Developer's cost, the City will:

- n) Complete all tie-ins for the proposed works to existing City infrastructure.

Sanitary Sewer Works:

At Developer's cost, the Developer is required to:

- o) Confirm the condition and capacity of the existing sanitary service connection located in the North West corner of the lot. Reuse if in good condition to service the west lot.
- p) Install a new 200mm sanitary sewer main extending from the north face of the manhole located on Armstrong St and Breden Ave, to the north PL of 7520 Ash St.

- q) Install a new sanitary sewer service connection complete with inspection chamber from the newly proposed sanitary main extension to service the proposed east lot.
- r) Not start onsite excavation or foundation construction until completion of rear-yard sanitary works by City crews.

At Developer's cost, the City will:

- s) Complete all tie-ins for the proposed works to existing City infrastructure.

Street Lighting:

At Developer's cost, the Developer is required to:

- t) Review street lighting levels along all road and lane frontages, and upgrade as required.

Frontage Improvements:

At Developer's cost, the Developer is required to:

- u) Complete other frontage improvements as per Transportation requirements, e.g.:
 - (1) Armstrong Street: pavement widening, new 1.5 m wide concrete sidewalk at the new property line, 1.5 m wide treed/grassed boulevard and 0.15 m wide curb and gutter. The road widening is to include +/- 6.35 m wide new pavement to meet the existing edge of pavement.
 - (2) Ash Street: road widening to meet existing pavement for a total width of 8.5m, new 1.75 m wide concrete sidewalk at the property line, 3.1 m wide treed/grassed boulevard and 0.15 m wide curb and gutter. All frontage works along the Ash Street frontage are to be designed to ensure the retention and protection of is to be two trees (Tag #1 and #2).
 - (3) Not encroach into City rights-of-ways with any proposed trees, retaining walls, or other non-removable structures. Retaining walls proposed to encroach into rights-of-ways must be reviewed by the City's Engineering Department.

Prior to Building Permit* Issuance, the developer must complete the following requirements:

1. Submission of a Construction Parking and Traffic Management Plan to the Transportation Department. Management Plan shall include location for parking for services, deliveries, workers, loading, application for any lane closures, and proper construction traffic controls as per Traffic Control Manual for works on Roadways (by Ministry of Transportation) and MMCD Traffic Regulation Section 01570.
2. Obtain a Building Permit (BP) for any construction hoarding. If construction hoarding is required to temporarily occupy a public street, the air space above a public street, or any part thereof, additional City approvals and associated fees may be required as part of the Building Permit. For additional information, contact the Building Approvals Department at 604-276-4285.

Note:

- * This requires a separate application.
- Where the Director of Development deems appropriate, the preceding agreements are to be drawn not only as personal covenants of the property owner but also as covenants pursuant to Section 219 of the Land Title Act.

All agreements to be registered in the Land Title Office shall have priority over all such liens, charges and encumbrances as is considered advisable by the Director of Development. All agreements to be registered in the Land Title Office shall, unless the Director of Development determines otherwise, be fully registered in the Land Title Office prior to enactment of the appropriate bylaw.

The preceding agreements shall provide security to the City including indemnities, warranties, equitable/rent charges, letters of credit and withholding permits, as deemed necessary or advisable by the Director of Development. All agreements shall be in a form and content satisfactory to the Director of Development.

- Additional legal agreements, as determined via the subject development's Servicing Agreement(s) and/or Development Permit(s), and/or Building Permit(s) to the satisfaction of the Director of Engineering may be required including, but not limited to, site investigation, testing, monitoring, site preparation, de-watering, drilling, underpinning, anchoring, shoring, piling, pre-loading, ground densification or other activities that may result in settlement, displacement, subsidence, damage or nuisance to City and private utility infrastructure.
- Applicants for all City Permits are required to comply at all times with the conditions of the Provincial *Wildlife Act* and Federal *Migratory Birds Convention Act*, which contain prohibitions on the removal or disturbance of both birds and their nests. Issuance of Municipal permits does not give an individual authority to contravene these legislations. The City of Richmond recommends that where significant trees or vegetation exists on site, the services of a Qualified Environmental Professional (QEP) be secured to perform a survey and ensure that development activities are in compliance with all relevant legislation.

Signed

Date



**Richmond Zoning Bylaw 8500
Amendment Bylaw 10472 (RZ 21-945951)
7520 Ash Street**

The Council of the City of Richmond, in open meeting assembled, enacts as follows:

1. The Zoning Map of the City of Richmond, which accompanies and forms part of Richmond Zoning Bylaw 8500, is amended by repealing the existing zoning designation of the following area and by designating it **“SINGLE DETACHED (RS2/E)”**.

P.I.D. 012-032-115

South Half of Lot 2, Block “F”, Section 15, Block 4 North, Range 6 West, New Westminster District, Plan 1207.

2. This Bylaw may be cited as **“Richmond Zoning Bylaw 8500, Amendment Bylaw 10472”**.

FIRST READING

A PUBLIC HEARING WAS HELD ON

SECOND READING

THIRD READING

OTHER CONDITIONS SATISFIED

ADOPTED

CITY OF RICHMOND
APPROVED by 
APPROVED by Director or Solicitor 

MAYOR

CORPORATE OFFICER



To: Planning Committee
From: Wayne Craig
Director, Development

Date: June 5, 2023
File: RZ 18-843479

Re: **Revised Rezoning Considerations for the Application by Sian Group Investments Inc. for Rezoning at 7100 and 7120 Ash Street from the "Single Detached (RS1/F)" Zone to the "Town Housing (ZT16) - South McLennan and St. Albans Sub-Area (City Centre)" Zone**

Staff Recommendation

1. That third reading of Richmond Zoning Bylaw 8500, Amendment Bylaw 10163, for the rezoning of 7100 and 7120 Ash Street, be rescinded and the associated Rezoning Considerations be revised to reflect changes to tree retention and replacement, as per Attachment D to this report; and
2. That Richmond Zoning Bylaw 8500, Amendment Bylaw 10163, for the rezoning of 7100 and 7120 Ash Street from the "Single Detached (RS1/F)" zone to the "Town Housing (ZT16) - South McLennan and St. Albans Sub-Area (City Centre)" zone, be granted third reading.

Wayne Craig
Director, Development
(604-247-4625)

WC:cl
Att. 4

REPORT CONCURRENCE

CONCURRENCE OF ACTING GENERAL MANAGER

Staff Report

Origin

Sian Group Investments Inc. has applied on behalf of the owner, 1199445 BC Ltd. (Sukhinder Kaur Sian), to rezone 7100 and 7120 Ash Street from the “Single Detached (RS1/F)” zone to the “Town Housing (ZT16) - South McLennan and St. Albans Sub-Area (City Centre)” zone to permit the development of 17 townhouses.

The original application by the previous owner was considered and the rezoning bylaw was granted third reading at the Public Hearing on May 19, 2020.

According to new information provided by the project arborist about the condition of on-site trees since their original assessment in 2018, the current applicant/owner wishes to request changes to the proposed tree retention and replacement (Attachment A).

For the rezoning application to proceed at this time, the existing rezoning bylaw (at third reading) must be rescinded and the Rezoning Considerations revised to reflect the proposed changes to the tree retention and replacement.

An additional Public Hearing would not be required, as there is no resulting change to land use or density. The applicant would be required to satisfy the revised Rezoning Considerations prior to final adoption of the rezoning bylaw.

Findings of Fact

Please refer to the original Staff Report dated March 23, 2020 for detailed information regarding the rezoning application (Attachment B).

The original Staff Report includes information on the site context, relevant City policies, public consultation prior to the original Planning Committee meeting, staff comments on-site planning, vehicle access, tree retention and replacement, site servicing and frontage improvements.

Analysis

Tree Retention and Replacement

Tree retention and replacement originally associated with this proposal was the result of an assessment by the project arborist and City review of 23 bylaw-sized trees on the subject site and 13 trees on neighbouring properties. The outcome of tree retention and replacement at that time was that four on-site trees (Trees # 364-367) and 13 trees on neighbouring properties (Trees #OS1-OS13) were to be retained together with an appropriate cash security and that 19 on-site trees were to be removed and replaced at a 2:1 ratio, consistent with the City’s Official Community Plan (OCP).

The current owner purchased the property in 2021 and has since made progress with several aspects of the proposal, including:

- installation of tree protection fencing around the four on-site trees and 13 neighbouring trees to be retained;
- obtaining a T3 Tree Removal Permit for the on-site trees identified for removal to facilitate site preparation following the Public Hearing, and submission of a tree replacement security in the amount of \$27,000.00;
- advancing the design of the required servicing and off-site improvements through the Servicing Agreement review process; and
- advancing the Development Permit (DP) application to the Development Permit Panel on September 14, 2022.

With the new information provided by the project arborist this year (Attachment A), it is understood that there has been an observed natural decline in the condition of the four on-site trees that were originally identified to be retained such that they are not expected to recover (Trees # 364-367). The applicant's Certified Arborist and Tree Risk Assessor has confirmed that the decline in health is the result of natural factors which could not have been predicted nor detected under means of industry standards. On this basis, the applicant is seeking to remove these four trees and plant an additional eight trees on-site, consistent with the 2:1 replacement ratio in the OCP. Each of the eight additional trees to be planted on-site are equal to or greater than the minimum replacement size specified in the City's Tree Protection Bylaw 8057. The \$40,000.00 tree survival security originally associated with retention of the four on-site trees is no longer required, and the eight additional replacement trees will be accounted for in the landscaping security associated with the Landscape Plan that forms part of the Development Permit.

A comparison between the original proposal and the revised proposal is provided as follows:

Original Proposal		Revised Proposal
# Trees to be retained	<ul style="list-style-type: none">• 4 on-site trees (# 364, 365, 366, 367) and the provision of a \$40,000 survival security• 13 trees on neighbouring properties (#OS1-OS13)	13 trees on neighbouring properties (#OS1-OS13)
# Trees identified for removal	19 on-site trees (# 358-363 and 368-380)	23 on-site trees (#358-380)
Replacement Tree Sizes		# Replacement Trees (and the provision of a Landscaping Security)
Min. Caliper Deciduous Tree	Min. Height Coniferous Tree	
6 cm	3.5 m	14
8 cm	4.0 m	14
9 cm	4.5-5.0 m	3
10 cm	5.5 m	3
11 cm	6.0 m	10
Total		44

Revised Site Plan and Landscape Plan

The proposed revisions to the Site Plan, Landscape Plan and Tree Management Plan are included in Attachment C, which shows the location of the four trees proposed to be removed (Trees # 364-367) and the additional eight replacement trees proposed to be planted throughout the site for a total of 44 replacement trees.

The proposed revised Landscape Plan illustrates that 10 trees are to be located along the north side of Buildings H and G, in the area where the four trees are proposed to be removed (i.e., two 3.5 m high Slender Serbian Spruce, two 9 cm caliper Green Pillar Pin Oak, two 8 cm caliper Pink Star Magnolia, and four 11 cm Chanticleer Pear). The proposed revised Landscape Plan is desirable as it provides some visual interest and screening along the interface with existing town housing to the north.

Revised Rezoning Considerations

The Rezoning Considerations have been revised to reflect the applicant's proposal to:

- remove Trees # 364-367 and the associated tree survival security;
- provide eight additional replacement trees, for a total of 44 replacement trees; and
- enable the Landscaping Security associated with the DP to be increased to account for the additional replacement trees (based on a cost estimate provided by the registered Landscape Architect prior to DP issuance).

Administrative revisions are also proposed to the Rezoning Considerations to remove the reference to items required to be submitted prior to advancing the DP application to the DP Panel for consideration and prior to advancing the DP application to Council for issuance, as the DP application has already been endorsed by the DP Panel on September 14, 2022, and there are updated conditions of DP issuance.

A red-lined version of the revised Rezoning Considerations is provided in Attachment D.

Public Consultation

Since there is no change in land use or density associated with the revised proposal, a Public Hearing is not required. On this basis, Staff recommend that third reading of Richmond Zoning Bylaw 8500, Amendment Bylaw 10163 for the rezoning of 7100 and 7120 Ash Street be rescinded and the associated Rezoning Considerations be revised to reflect changes to tree retention and replacement, and then the Bylaw be granted third reading together with the amended considerations.

However, should City Council desire to hold a Public Hearing on the revised proposal, the following recommendation could be used as an alternative to the current staff recommendation:

1. That third reading of Richmond Zoning Bylaw 8500, Amendment Bylaw 10163, for the rezoning of 7100 and 7120 Ash Street, be rescinded and the associated Rezoning Considerations be revised to reflect changes to tree retention and replacement, as per Attachment D to this report.

2. That Richmond Zoning Bylaw 8500, Amendment Bylaw 10163, for the rezoning of 7100 and 7120 Ash Street from the “Single Detached (RS1/F)” zone to the “Town Housing (ZT16) - South McLennan and St. Albans Sub-Area (City Centre)” zone, be forwarded to a Public Hearing.
3. That the applicant submits payment of the fee associated with holding an additional Public Hearing (\$952.00), consistent with Consolidated Fees Bylaw 8636.

Conclusion

Sian Group Investments Inc. has requested to revise the Rezoning Considerations associated with Richmond Zoning Bylaw 8500, Amendment Bylaw 10163, for the rezoning of 7100 and 7120 Ash Street from the “Single Detached (RS1/F)” zone to the “Town Housing (ZT16) - South McLennan and St. Albans Sub-Area (City Centre)” zone, to reflect changes to the proposed tree retention and replacement due to an observed natural decline in the condition of Trees # 364-367 such that they are not expected to recover.

It is recommended that City Council first rescind third reading of Richmond Zoning Bylaw 8500, Amendment Bylaw 10163, and then that Bylaw 10163 be granted third reading.



Cynthia Lussier
Planner 2
(604-276-4108)

CL:he

- Att. A: Letters from the applicant and Certified Arborist
 B: Original Report to Council dated March 23, 2020
 C: Revised Site Plan and Landscape Plan
 D: Revised Rezoning Considerations (red-lined version)

March 31, 2023

City of Richmond
Development Applications Department
6911 No. 3 Road, Richmond BC

Attn: Ms. Cynthia Lussier,

Dear Cynthia,

Re: Rezoning Application,
Townhouse proposal at 7100 / 7120 Ash Street, Richmond BC
RZ 18-843479

As the applicant of the above rezoning application, we would like to inform you that our arborist had reviewed the protected trees on site and found that the trees 364, 365, 366 and 367 as identified in the arborist report are declining and will not be expected to survive. It is a natural decline with symptoms changing over time. There was no ill intent or inappropriate action taken.

As the protected trees are not going to survive, we would like to apply to remove the tree retention (tag 364 – 367) in the rezoning consideration.

A copy of the revised architectural site plan and landscape drawing showing the removal of trees, and an arborist report are attached for your review.

Please contact me if you have any questions.

Yours truly,

S.K. Sian

S. K. Sian
Sian Group Investment Inc



May 2, 2023

To:
Cynthia Lussier
Planner
City of Richmond

**Re: Project RZ 18-843479 at 7100/7120 Ash Street
Regarding the observed decline of trees 364, 365, 366 and 367.**

This letter is a provision of notice that the observed decline of four trees tagged as numbers 364, 365, 366 and 367 have declined beyond expectation of recovery as a result of natural factors which could not have been predicted nor detected under means of industry standard arboriculture review.

If further information is required please let me know.

A handwritten signature in black ink that reads 'Terry Thrale'.

Terry Thrale
ISA Certified Arborist and Tree Risk Assessor PN 6766A
Woodridge Tree Consulting Arborists Ltd.
terry@woodridgetree.com



**City of
Richmond**

Report to Committee

To: Planning Committee
From: Wayne Craig
Director, Development

Date: March 23, 2020
File: RZ 18-843479

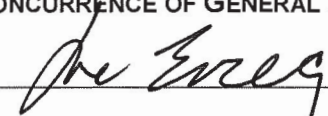
Re: Application by Fougere Architecture Inc. for Rezoning at 7100 and 7120 Ash Street from the "Single Detached (RS1/F)" Zone to the "Town Housing (ZT16) - South McLennan and St. Albans Sub-Area (City Centre)" Zone

Staff Recommendation

That Richmond Zoning Bylaw 8500, Amendment Bylaw 10163, for the rezoning of 7100 and 7120 Ash Street from the "Single Detached (RS1/F)" zone to the "Town Housing (ZT16) - South McLennan and St. Albans Sub-Area (City Centre)" zone, be introduced and given first reading.


Wayne Craig
Director, Development
(604-247-4625)

WC:jr
Att. 7

REPORT CONCURRENCE		
ROUTED TO:	CONCURRENCE	CONCURRENCE OF GENERAL MANAGER
Affordable Housing	<input checked="" type="checkbox"/>	

Staff Report

Origin

Fougere Architecture Inc. has applied to the City of Richmond for permission to rezone 7100 and 7120 Ash Street from the “Single Detached (RS1/F)” zone, to the “Town Housing (ZT16) - South McLennan and St. Albans Sub-Area (City Centre)” zone, in order to develop 17 two-storey townhouse units with vehicle access from Ash Street. A location map is provided in Attachment 1.

Findings of Fact

A Development Application Data Sheet providing details about the development proposal is provided in Attachment 2.

Subject Site Existing Housing Profile

The subject site consists of two lots, each containing a single-family dwelling. The applicant has indicated that one of the dwellings was previously owner-occupied, and one was rented. Neither dwelling contains a secondary suite. Both dwellings would be demolished.

Surrounding Development

Development immediately surrounding the subject site is as follows:

- To the North: Two-storey townhouses on a property zoned “Town Housing (ZT16) - South McLennan and St. Albans Sub-Area (City Centre)”, with access from Ash Street.
- To the South: A single-family dwelling on a property zoned “Single Detached (RS1/F)”, with access from Ash Street.
- To the East: Single-family dwellings on properties zoned “Single Detached (ZS14) – South McLennan (City Centre)”, with access from Sills Avenue.
- To the West: Across Ash Street, single-family dwellings on properties zoned “Single Detached (RS1/F)”, with access from Ash Street.

Related Policies & Studies

Official Community Plan/McLennan South Sub-Area Plan

The subject site is located in the City Centre planning area, and is designated “Neighbourhood Residential” in the Official Community Plan (OCP). The proposed rezoning is consistent with this designation.

The subject site is located in the area governed by the McLennan South Sub-Area plan, and is designated “Residential, 2 ½ Storeys”, which permits development in triplex, duplex, and single-family forms (Attachment 3). Townhouses with units arranged in duplex or triplex

clusters are considered an appropriate development form in this area. The proposed rezoning is consistent with this designation.

The McLennan South Sub-Area Plan includes requirements for implementation of a new ring-road system, which would provide for greater vehicle and pedestrian circulation through the neighbourhood (Attachment 4). The northern part of this ring-road, Sills Avenue, has been partially constructed to the east and west of the subject site. A straight alignment of Sills Avenue would require dedication and construction of the new road through a portion of the subject site.

Staff propose an off-set alignment of Sills road further south. The City owns property between Ash Street and Armstrong Street which would facilitate construction of this road in coordination with the redevelopment of adjacent properties.

The McLennan South Sub-Area Plan allows new roads to deviate from the circulation map, and an amendment to the map is not required, provided the proposed deviation:

- Does not result in significant traffic impacts on or compromise access to adjacent properties.
- Does not result in a significant net increase in the amount of new road envisioned under the circulation map.
- Results in a coherent pattern that maintains the intended pedestrian scale of the area's blocks consistent with the neighbourhood's residential character.
- Provides a recognizable benefit to the area.

Transportation staff have reviewed the application and support the proposed scheme, as it supports the Sub-Area Plan objectives of breaking up large blocks and increasing pedestrian connectivity. Furthermore, the offset alignment of Sills Avenue will provide natural traffic calming and reinforce Granville Avenue and General Currie Road as the dominant east-west traffic routes.

To break up the block and provide an additional pedestrian connection, a mixed-use pathway is provided along the south property line of subject site. This pathway would be expanded through redevelopment of the properties to the south.

Affordable Housing Strategy

As per the City's Affordable Housing Strategy, townhouse rezoning applications are required to provide a cash-in-lieu contribution of \$8.50 per buildable square foot towards the City's Affordable Housing Reserve Fund. The applicant proposes to make a cash-in-lieu contribution of \$190,468, which is consistent with the Affordable Housing Strategy.

Public Art Program Policy

The applicant will be participating in the City's Public Art Program by making a voluntary contribution to the City's Public Art Reserve Fund for City-wide projects on City lands. Since

this rezoning was received in 2018, the applicable rate for the contribution is \$0.85 per buildable square foot, for a total contribution in the amount of \$19,046.80.

Floodplain Management Implementation Strategy

The proposed redevelopment must meet the requirements of the Richmond Flood Plain Designation and Protection Bylaw 8204. Registration of a flood indemnity covenant on title is required prior to final adoption of the rezoning bylaw.

Public Consultation

A rezoning sign has been installed on the subject property. Staff have not received any comments from the public about the rezoning application in response to the placement of the rezoning sign on the property.

Should the Planning Committee endorse this application and Council grant first reading to the rezoning bylaw, the bylaw will be forwarded to a Public Hearing, where any area resident or interested party will have an opportunity to comment. Public notification for the Public Hearing will be provided as per the *Local Government Act*.

Analysis

Site Planning

The applicant proposes 17 two-storey townhouse units with a central drive aisle. Conceptual development plans are included in Attachment 5.

The proposed site layout consists of seven duplexes and one triplex, all of which contain two-storey units. Two convertible units are proposed, and would be located on either side of the common outdoor amenity area. Garbage and recycling is located in two enclosures in the front yard of the site, allowing for easy access by service vehicles.

Each unit has a private outdoor space at grade off of the living room, and a second storey balcony off of the master bedroom.

Amenity Space

The applicant is proposing a cash contribution in-lieu of providing indoor amenity space on-site, at a rate of \$1,769 per unit as per the OCP. The total contribution for this 17-unit townhouse development would be \$30,073.

A common outdoor amenity space is proposed on the south side of the drive aisle in the middle of the site. This location is centrally located, will enjoy good solar exposure, and provides an additional connection between the drive aisle and the proposed pedestrian pathway. The proposed design includes landscaping, a concrete pathway for universal access, picnic table, sandbox, playhouse, and stepping logs in order to provide for a variety of social and play opportunities for children and adults.

Further refinement of the site plan, architectural character, outdoor amenity space, and convertible unit features of the proposed development will occur through the Development Permit process.

Transportation and Site Access

Vehicle access to the subject site is provided from Ash Street. A small vehicle turnaround is provided after the first triplex, which would allow passenger vehicles and small vans to access the site, perform a three-point turn, and exit the site in a forward motion.

Each unit has a garage with two parking spaces in a side-by-side arrangement, which exceeds the minimum 1.4 spaces per unit required by Richmond Zoning Bylaw 8500 for multi-family developments in the City Centre planning area. Four visitor parking spaces are proposed on site, including one van accessible parking space. Level 2 EV charging is provided in each garage as per Zoning Bylaw requirements. Staff support the proposed number of resident and visitor parking spaces, as it reduces the demand for street parking.

Pedestrian access is provided from multiple locations. The two end units fronting Ash Street have direct access to the sidewalk. Units on the north side of the site have access from the drive aisle, and units on the south side of the site have access from both the drive aisle and a proposed pedestrian walkway.

The pedestrian pathway would connect Ash Street to the intersection of Sills Avenue and Armstrong Street, improving pedestrian circulation through the neighbourhood in a manner generally consistent with the McLennan South Sub-Area Plan. This pathway would be expanded through the future redevelopment of 7140 and 7160 Ash Street. In its interim condition, the proposed pathway would consist of a 2.0 m wide pathway, 0.5 m wide landscaped strip, and pedestrian-scale lighting. The ultimate condition would consist of a 2.5 m wide pathway, 0.75 m wide landscaped strip on both sides, and pedestrian-scale lighting on the north side only. Construction of the pathway would be through the Servicing Agreement.

Prior to final adoption of the rezoning bylaw, the applicant must provide a 2.5 m wide Statutory Right-of-Way (SRW) for Public Rights-of-Passage (PROP) for the proposed pedestrian pathway.

An approximately 8.1 m by 8.1 m road dedication is required at the southeast corner of the subject site for the intersection of Sills Avenue and Armstrong Street. Design and construction of the road works will be through a Servicing Agreement.

Tree Retention and Replacement

The applicant has submitted a Certified Arborist's Report; which identifies on-site and off-site tree species, assesses tree structure and condition, and provides recommendations on tree retention and removal relative to the proposed development. The Report assesses 23 bylaw-sized trees on the subject property and 13 trees on neighbouring properties.

The City's Tree Preservation Coordinator has reviewed the Arborist's Report and supports the Arborist's findings, with the following comments:

- Four Douglas Fir trees (Tag # 364, 365, 366, 367) located on the development site are in good condition and should be retained and protected if possible.
- Two Silver Maple trees (Tag # 358, 369) located on the development site are in poor condition and should be removed and replaced.
- Five Yellow Cedar trees (Tag # 359, 360, 361, 362, 363) located on the development site are in poor condition and should be removed and replaced.
- Ten Birch trees (Tag # 368, 370, 371, 373, 374, 375, 376, 377, 378, 379) located on the development site are in poor condition and should be removed and replaced.
- One Black Pine tree (Tag # 372) located on the development site is in poor condition and should be removed and replaced.
- One Black Pine tree (Tag # 380) is located within the future Armstrong Road right-of-way (ROW) and is in conflict with the required road works. Replacement is not required for trees within a required roadway.
- 13 trees (Tag # OS1-OS13) located on adjacent neighbouring properties are identified to be retained. Provide tree protection as per City of Richmond Tree Protection Information Bulletin Tree-03.
- Replacement trees should be specified at a 2:1 ratio as per the OCP.

Tree Replacement

The applicant wishes to remove 18 on-site trees (Tag # 358-363 and 368-379) and one tree within the future roadway (Tag # 380). The 2:1 replacement ratio would require a total of 36 replacement trees. The required replacement trees are to be of the following minimum sizes, based on the size of the trees being removed as per Tree Protection Bylaw No. 8057.

No. of Replacement Trees	Minimum Caliper of Deciduous Replacement Tree	Minimum Height of Coniferous Replacement Tree
8	11 cm	6 m
4	10 cm	5.5 m
10	8 cm	4 m
14	6 cm	3.5 m

To satisfy the 2:1 replacement ratio established in the OCP, the applicant proposes to plant a minimum of 36 replacement trees in the development. If required replacement trees cannot be accommodated on-site, a cash-in-lieu contribution in the amount of \$750/tree to the City's Tree Compensation Fund for off-site planting is required.

Tree Protection

Four trees (Tag # 364-367) on the subject site and 13 trees (Tag # OS1-OS13) on neighbouring properties are to be retained and protected. The applicant has submitted a tree protection plan showing the trees to be retained and the measures taken to protect them during development

stage (Attachment 6). To ensure that the trees identified for retention are protected at development stage, the applicant is required to complete the following items:

- Prior to final adoption of the rezoning bylaw, submission to the City of a contract with a Certified Arborist for the supervision of all works conducted within or in close proximity to tree protection zones. The contract must include the scope of work required, the number of proposed monitoring inspections at specified stages of construction, any special measures required to ensure tree protection, and a provision for the arborist to submit a post-construction impact assessment to the City for review.
- Prior to final adoption of the rezoning bylaw, submission to the City of a \$40,000 survival security for the four on-site trees to be retained.
- Prior to demolition of the existing dwellings on the subject site, installation of tree protection fencing around all trees to be retained. Tree protection fencing must be installed to City standard in accordance with the City's Tree Protection Information Bulletin Tree-03 prior to any works being conducted on-site, and remain in place until construction and landscaping on-site is completed.

Variance Requested

The proposed development is generally in compliance with the "Town Housing (ZT16) - South McLennan and St. Albans Sub-Area (City Centre)" zone in Richmond Zoning Bylaw 8500, with the exception of the following variances:

1. Reduce the minimum front yard setback from 6.0 m to 1.21 m for accessory structures only.

Staff are supportive of the proposal as it allows the garbage and recycling enclosures to be located near the entrance to the site, reducing the distance required for collection vehicles to back up out of the site. The proposal is consistent with existing development to the north of the site. Review of the design and screening of the proposed enclosures would be through the Development Permit process.

2. Reduce the minimum setback to Sills Avenue/Armstrong Street from 6.0 m to 2.53 m.

The reduced setback results from road dedication for the intersection of Sills Avenue and Armstrong Street. Staff are supportive of the proposal as it is a similar setback to what is proposed between the building and the edge of the pedestrian pathway. The building would be approximately 4.03 m from the edge of the sidewalk, which is greater than the 3.6 m setback from the building to the pedestrian pathway.

Additionally, the proposed setback is similar to with what would be achieved by the future redevelopment of the properties to the south. Single-family lots with a north-south orientation would result in the corner lot having a 3.0 m exterior side yard setback to Armstrong Street.

BC Energy Step Code

On July 26, 2018, Council adopted BC Energy Step Code requirements for all new residential developments. The proposed development consists of townhouses that staff anticipates would be designed and built in accordance with Part 9 of the BC Building Code. As such, this development would be expected to achieve Step 3 of the BC Energy Step Code for Part 9 construction (Climate Zone 4).

Site Servicing and Frontage Improvements

The applicant is required to enter into a Servicing Agreement at Building Permit stage for the design and construction of the required site servicing and frontage works, as described in Attachment 7.

Frontage improvements on Ash Street include, but may not be limited to, the following:

- Road widening to a total width of 8.5 m.
- 1.75 m wide sidewalk at the property line, approx. 2.5 m wide landscaped boulevard, and 0.15 m curb and gutter.
- Removal of the two existing driveways and replacement with a new driveway crossing and frontage works as described above,
- Relocation or undergrounding of the hydro utility pole located within the proposed new driveway.

Frontage improvements on Sills Avenue include, but may not be limited to, the following:

- 1.5 m wide sidewalk, landscaped boulevard, and 0.15 m curb and gutter along the curved alignment of the intersection of Sills Avenue and Armstrong Street.

The on-site pedestrian pathway connecting Ash Street to Sills Avenue will include, but may not be limited to:

- 0.5 m landscaped strip with lighting; and
- 2.0 m wide paved surface, or other treatment as deemed appropriate in order to retain off-site trees.

Development Permit Application

A Development Permit application is required to be processed to a satisfactory level prior to final adoption of the rezoning bylaw. Further refinements to architectural, landscape, and urban design will be completed as part of the Development Permit application review process, including, but not limited to, the following:

- Compliance with the Development Permit Guidelines for multi-family developments in the OCP and McLennan South Sub-Area Plan.
- Review of the size and species of on-site trees to ensure bylaw compliance and to achieve a mix of coniferous and deciduous species.
- Review and refinement of tree retention measures to ensure the survival of the four Douglas Fir trees located on the north side of the site, as well as the trees located on the neighbouring property to the south in close proximity to the proposed pedestrian pathway.
- Design of the common outdoor amenity space, including choice of play equipment and other features to ensure a safe and vibrant environment for children's play and social interaction.
- Design of the proposed waste enclosures within the front yard setback, to ensure an attractive streetscape and adequate screening.
- Review of accessibility features, including aging-in-place features in all units, and the provision of two convertible units.
- Review of a sustainability strategy for the development proposal, including steps to achieve Step 3 of the Energy Step Code for Part 9 construction (Climate Zone 4).

Financial Impact

The rezoning application results in an insignificant Operational Budget Impact (OBI) for off-site City infrastructure (such as roadworks, waterworks, storm sewers, sanitary sewers, street lights, street trees and traffic signals).

Conclusion

The purpose of this application is to rezone 7100 and 7120 Ash Street from the "Single Detached (RS1/F)" zone, to the "Town Housing (ZT16) - South McLennan and St. Albans Sub-Area (City Centre)" zone, in order to develop 17 two-storey townhouse units with vehicle access from Ash Street.

The rezoning application complies with the land use designations and applicable policies contained within the OCP for the subject site. Further review of the project design will be completed as part of the Development Permit application review process.

The list of rezoning considerations is included in Attachment 7, which has been agreed to by the applicant (signed concurrence on file).

It is recommended that Richmond Zoning Bylaw 8500, Amendment Bylaw 10163 be introduced and given first reading.

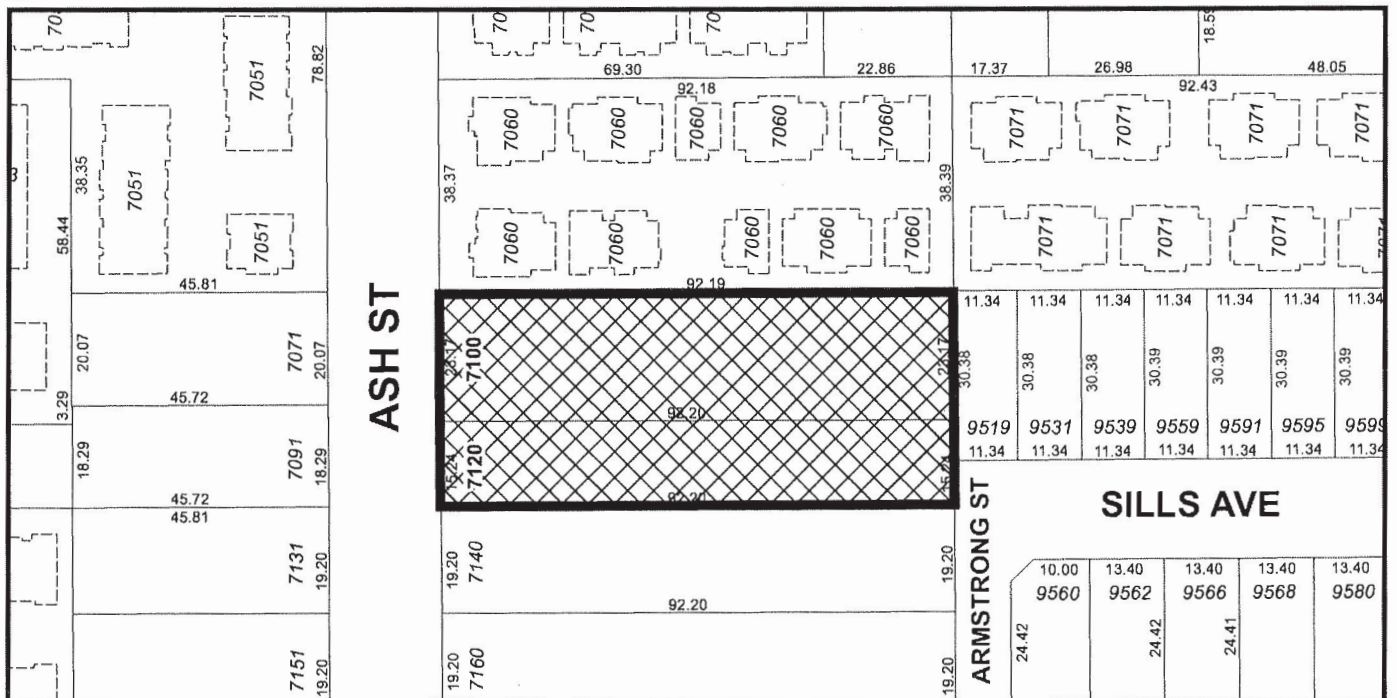


Jordan Rockerbie
Planner I
(604-276-4092)

JR:blg

- Attachment 1: Location Map and Aerial Photo
- Attachment 2: Development Application Data Sheet
- Attachment 3: McLennan South Sub-Area Plan Land Use Map
- Attachment 4: McLennan South Sub-Area Plan Circulation Map
- Attachment 5: Conceptual Development Plans
- Attachment 6: Tree Retention Plan
- Attachment 7: Rezoning Considerations

The map displays a grid of streets and various zoning districts. Key streets include Granville Ave running horizontally across the top, Ash St running vertically on the left, Bridge St running vertically in the center, Silas Ave running horizontally below Bridge St, Lechow St running vertically below Bridge St, Edgington Ave running horizontally below Silas Ave, and No. 4 Rd running vertically on the right. Zoning districts are labeled throughout the map, including SI, AG1, ZR8, ZT56, ZT60, RD1, ZR8, ZT50, ZT57, ZS16, ZS14, ZS15, ZS17, ZS18, ZS19, ZS20, ZS21, ZS22, ZS23, ZS24, ZS25, ZS26, ZS27, ZS28, ZS29, ZS30, ZS31, ZS32, ZS33, ZS34, ZS35, ZS36, ZS37, ZS38, ZS39, ZS40, ZS41, ZS42, ZS43, ZS44, ZS45, ZS46, ZS47, ZS48, ZS49, ZS50, ZS51, ZS52, ZS53, ZS54, ZS55, ZS56, ZS57, ZS58, ZS59, ZS60, ZS61, ZS62, ZS63, ZS64, ZS65, ZS66, ZS67, ZS68, ZS69, ZS70, ZS71, ZS72, ZS73, ZS74, ZS75, ZS76, ZS77, ZS78, ZS79, ZS80, ZS81, ZS82, ZS83, ZS84, ZS85, ZS86, ZS87, ZS88, ZS89, ZS90, ZS91, ZS92, ZS93, ZS94, ZS95, ZS96, ZS97, ZS98, ZS99, ZS100. A specific parcel is highlighted with a cross-hatch pattern and labeled 'PROPOSED REZONING' with an arrow pointing to it. The parcel is located at the intersection of Ash St and Bridge St, adjacent to the ZS14 and ZS15 districts.



PH - 193
CNCL - 142

Note: Dimensions are in METRES



City of Richmond



RZ 18-843479

**PH - 194
CNCL - 143**

Original Date: 01/09/19

Revision Date:

Note: Dimensions are in METRES



RZ 18-843479

Attachment 2

Address: 7100 & 7120 Ash Street

Applicant: Fougere Architecture Inc.

Planning Area(s): City Centre – McLennan South

	Existing	Proposed
Owner:	1199445 BC LTD	To be determined
Site Size (m²):	3,535.3 m ²	3,469.7 m ²
Land Uses:	Single-family	Townhouses
OCP Designation:	Neighbourhood Residential	No change
Area Plan Designation:	Residential, 2 ½ Storeys	No change
Zoning:	Single Detached (RS1/F)	Town Housing (ZT16) - South McLennan and St. Albans Sub-Area (City Centre)
Number of Units:	Two single-family dwellings	17 townhouse dwellings

On Future Subdivided Lots	Bylaw Requirement	Proposed	Variance
Floor Area Ratio:	Max. 0.60	Max. 0.60	none permitted
Buildable Floor Area (m ²):*	Max. 2,081.8 m ² (22,408 ft ²)	2,081.7 m ² (22,407 ft ²)	none permitted
Lot Coverage (% of lot area):	Building: Max. 40%	Building: Max. 40%	none
Lot Size:	No minimum	3,469.7 m ²	none
Lot Dimensions (m):	Width: No minimum Depth: No minimum	Width: 38.38 m Depth: 92.13 m	none
Setbacks (m):	Front: Min. 6.0 m Rear: Min. 3.0 m Side: Min. 3.0 m To Sills Ave: Min. 6.0 m	Front: 6.0 m for buildings, 1.21 m for accessory structures Rear: 3.02 m Side: 3.6 m To Sills Ave: 2.53 m	Front: vary by 4.79 m for accessory structures only To Sills Ave: vary by 3.47 m
Height (m):	Max. 11.0 m	Max. 11.0 m	none
Off-street Parking Spaces – Regular (R) / Visitor (V):	1.4 (R) and 0.2 (V) per unit	2 (R) and 0.24 (V) per unit	none

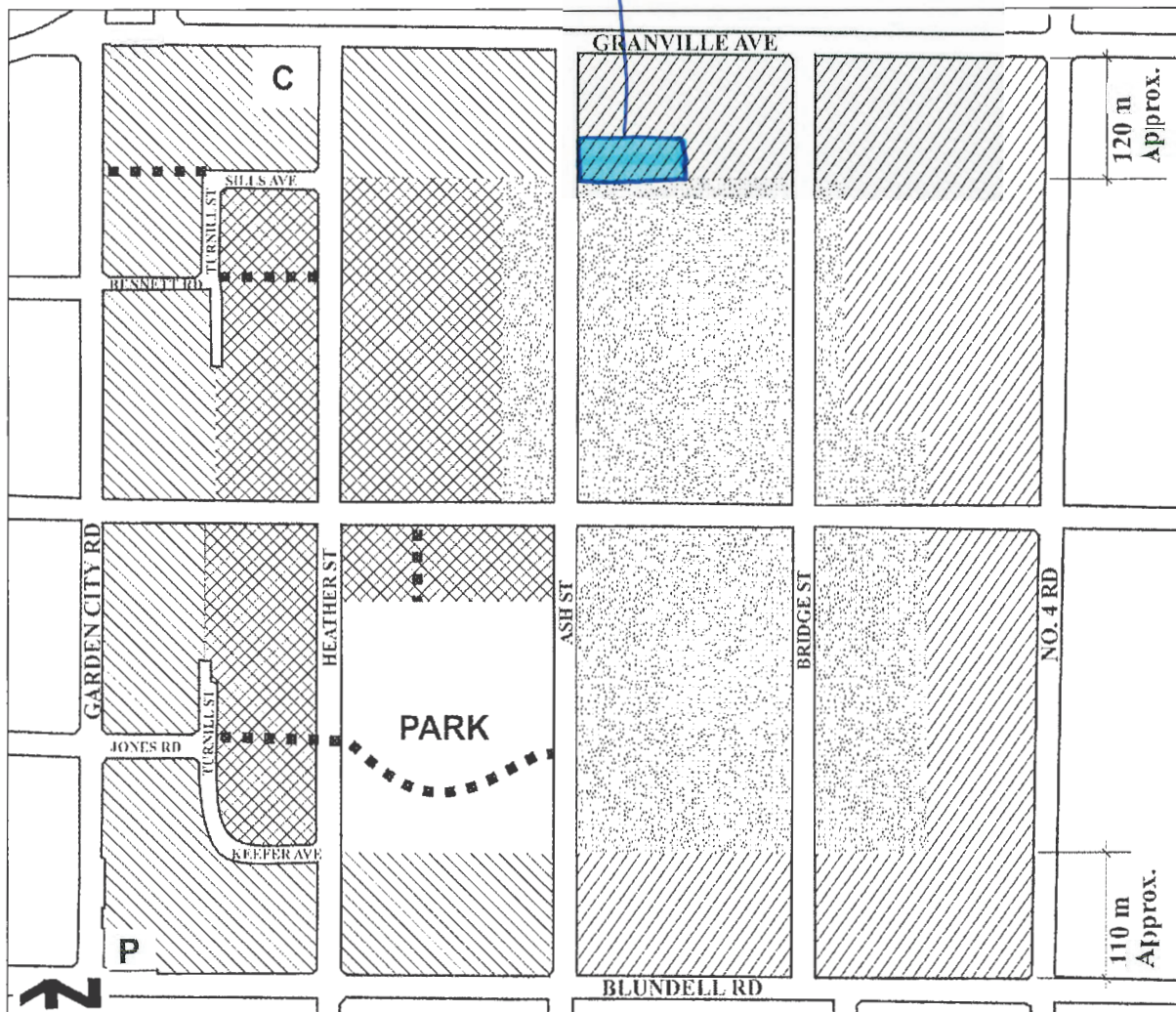
On Future Subdivided Lots	Bylaw Requirement	Proposed	Variance
Off-street Parking Spaces – Total:	24 (R) and 4 (V)	34 (R) and 4 (V)	none
Tandem Parking Spaces:	Permitted – Maximum of 50% of required spaces	0%	none
Small Car Parking Spaces:	Permitted – Maximum of 50% of required spaces	45% (17 spaces)	none
Accessible Parking Spaces:	1	1	none
Amenity Space – Indoor:	50 m ² or cash-in-lieu	Cash-in-lieu	none
Amenity Space – Outdoor:	6 m ² per unit (i.e. 102 m ²)	102 m ²	none

Other: Tree replacement compensation required for loss of significant trees.

* Preliminary estimate; not inclusive of garage; exact building size to be determined through zoning bylaw compliance review at Building Permit stage.

City of Richmond

Land Use Map

Bylaw 9106
2015/09/14

Residential, Townhouse up to 3 storeys over 1 parking level, Triplex, Duplex, Single-Family 0.75 base F.A.R.

Residential, 2 ½ storeys typical (3 storeys maximum) Townhouse, Triplex, Duplex, Single-Family 0.60 base F.A.R.

Residential, 2 ½ storeys typical (3 storeys maximum), predominantly Triplex, Duplex, Single-Family 0.55 base F.A.R.

Residential, Historic Single-Family, 2 ½ storeys maximum 0.55 base F.A.R. Lot size along Bridge and Ash Streets:

- Large-sized lots (e.g. 18 m/59 ft. min. frontage and 550 m²/5,920 ft² min. area)

Elsewhere:

- Medium-sized lots (e.g. 11.3 m/37 ft. min. frontage and 320 m²/3,444 ft² min. area), with access from new roads and General Currie Road;

Provided that the corner lot shall be considered to front the shorter of its two boundaries regardless of the orientation of the dwelling.

■■■■ Trail/Walkway

C Church

P Neighbourhood Pub

Note: Sills Avenue, Le Chow Street, Keefer Avenue, and Turnill Street are commonly referred to as the “ring road”.

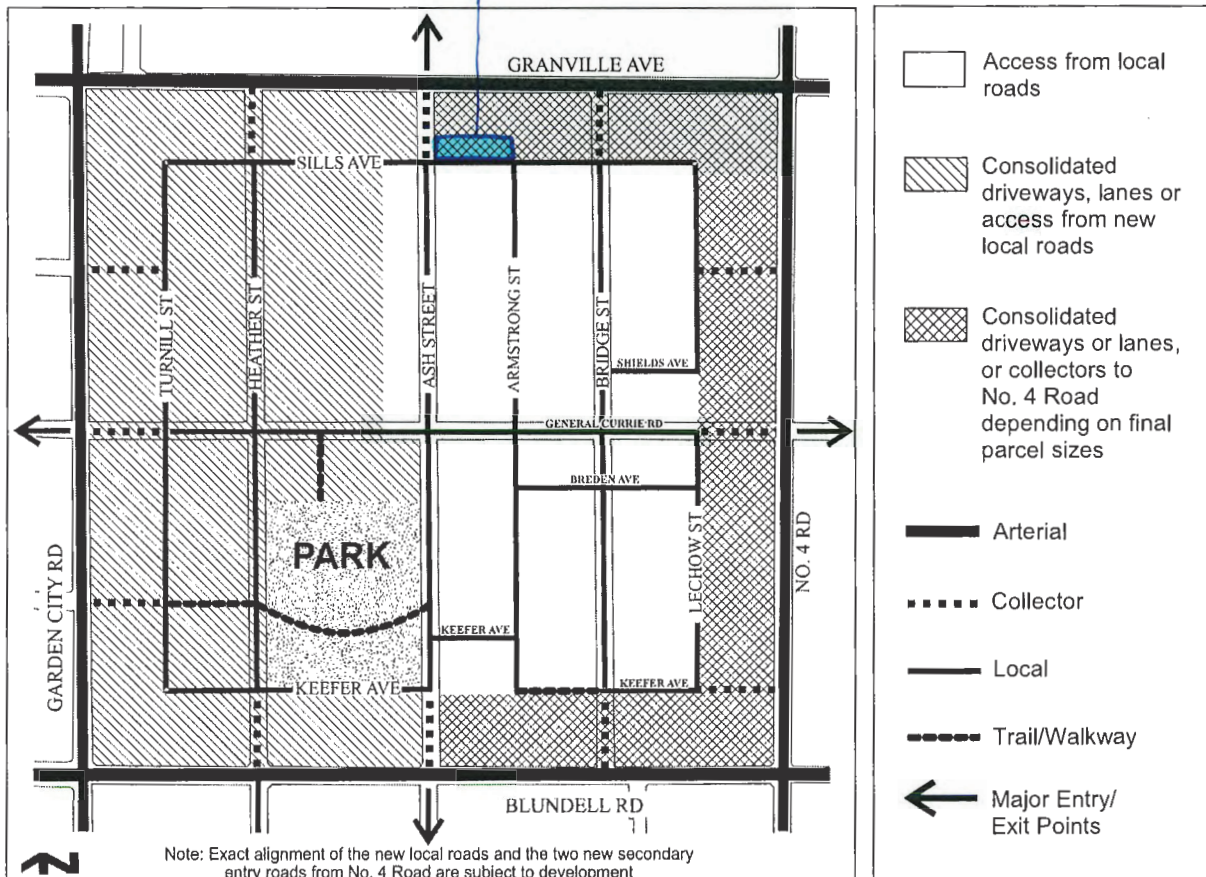
City of Richmond

- l) Encourage cycling as a means of travel by calming automobile traffic within McLennan South and supporting the City Centre policies and programs for bicycles.

Circulation Map

Bylaw 8803
2011/10/17

SUBJECT SITE





PH 199
CNCL - 148

ATTACHMENT 5

7100 ASH STREET



[illegible]

7100
ASH STREET

SILLS AVENUE

ARMSTRONG
STREET

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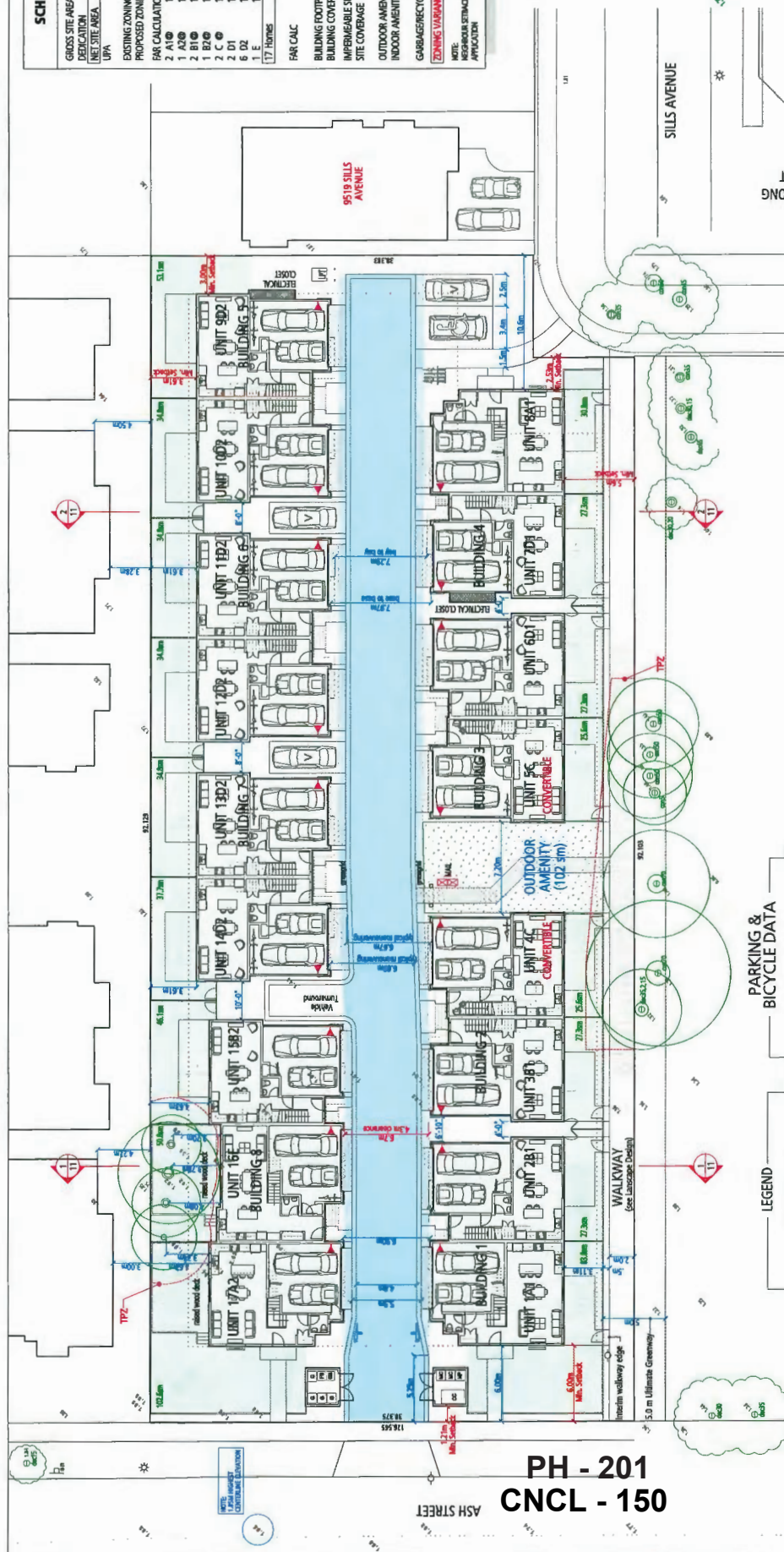
SITE PLAN

SCALE: 1:150

FEBRUARY 26, 2020



202 - 2425 Quebec Street
Montreal, QC H3T 4J6
fournisseur@bell.ca



Project: #1812 Ash

BCBC REF. Division A 1.3.3.2 (1/6)	CODE INFORMATION
Applicable code	British Columbia Building Code 2018
Major occupancy	Group C
Building area (Permitted 600 m ²)	254.2 m ² (Proposed)
Building height	2 Storeys
Shedde faced	1 Street
Flare Floor	N/A
Roof RFR	N/A
Lead bearing wall RFR	N/A
Sprinkler system required	N/A
Construction type (Permitted combustible non-combustible)	Combustible (Proposed)
Shedde required	N/A
Separation of residential suites	N/A
Fire separation between dwelling and garage	1 hr
Gas air barrier system required between unit and garage	N/A
	Yes

* Fire Resistance Rating

PARKING & BICYCLE DATA

Revised 12 month Major 12 month	34
Total Required	38
Feeling Provided	
Succulent Soil	17
Major 12 month	17
Minor Provided	4
Total Provided	38

On-site Bayleaf Feeding Requirements	
Class 1: 1.25 subunit:	22
min. 3.0% Vertical Stalk	7
Class 2: 1.1 subunit	22
Total Class 1 Stalks Required	4
Total Class 1 Stalks Provided	25
Total Class 2 Stalks Required	4
Total Class 2 Stalks Provided	4
Horizontal Stalks Provided	19
Vertical Stalks Provided	6

LEGEND -



TE: 1.5m ISLE + 1.4m x 5.5m

THE NEW YORK PUBLIC LIBRARY
ASTOR LENOX TILDEN FOUNDATION
500 5TH AVENUE
NEW YORK 10017

1.8m x 0.6m

1 BIKE STALL (Vertical)

1.0m x 0.5m

2 Electric Vehicle Plug-In
for each parking space

concept path width 4.3 m w

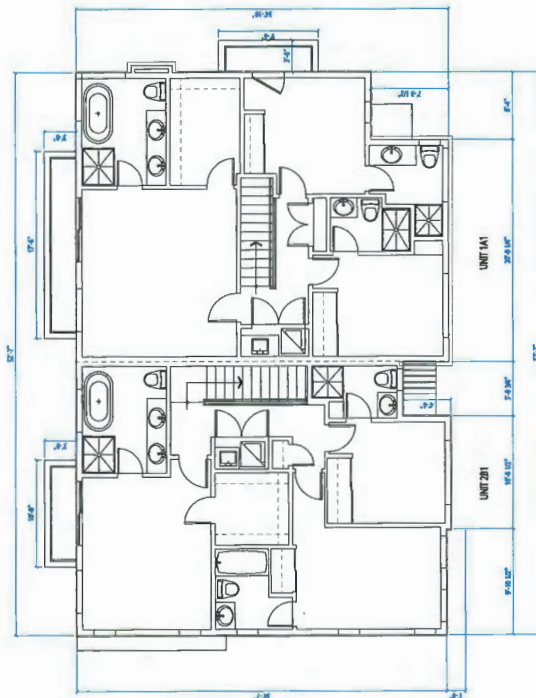
beamed drive axle & 0.35%

THE OPEN SPACE

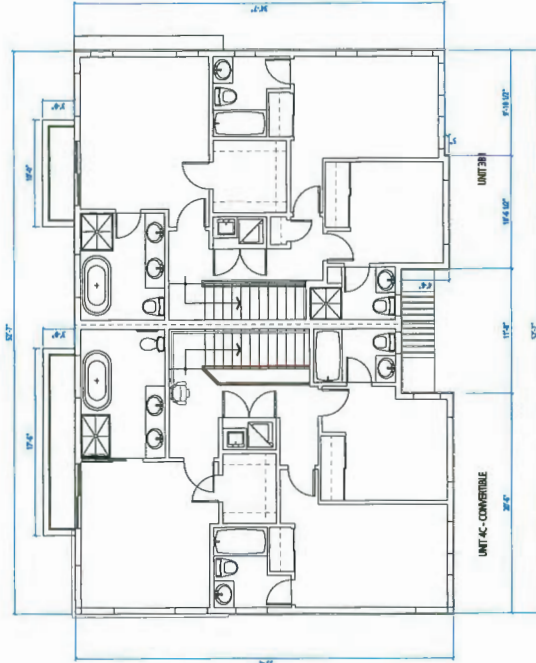
1

PH - 201
CNCL - 150

BUILDING 2



SECOND FLOOR



SECOND FLOOR

PH - 202
CNCL - 151

7100
ASH STREET

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BLOCK PLANS

BUILDINGS 1 & 2

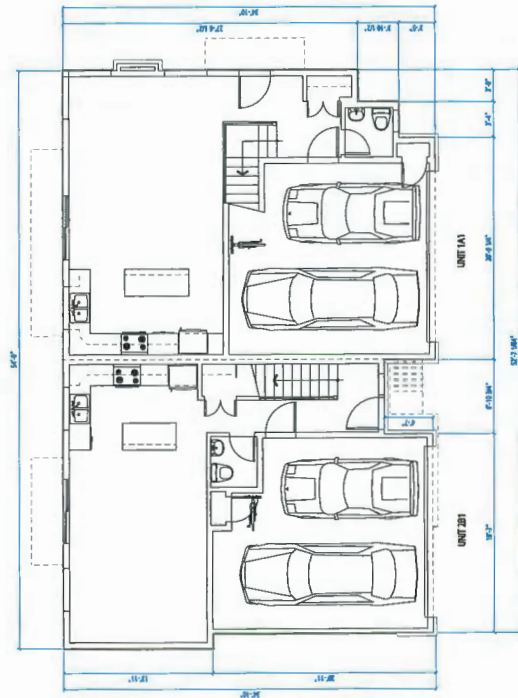
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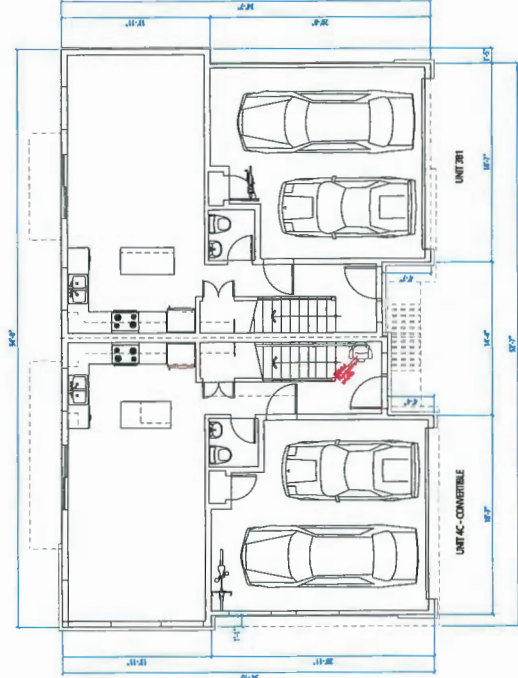


FOUGERE
architecture inc.
BRITISH COLUMBIA - ALBERTA - WASHINGTON
202-7425 Quebec Street
Vancouver, BC V6T 4L5
604.873.2597
fougere@architects.ca

5

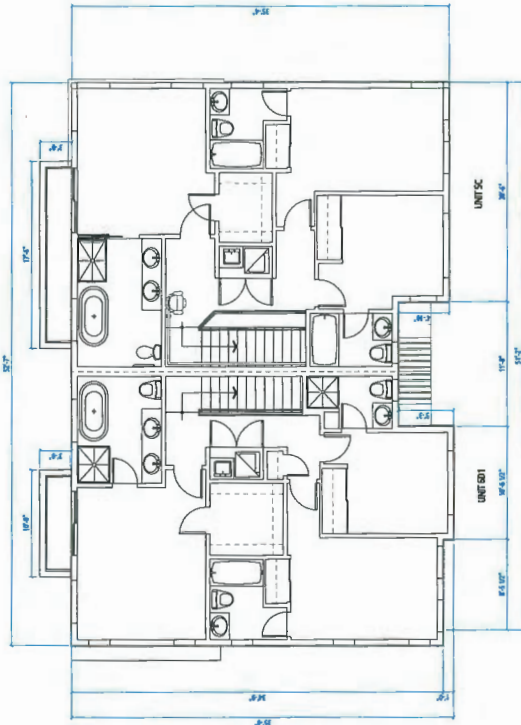


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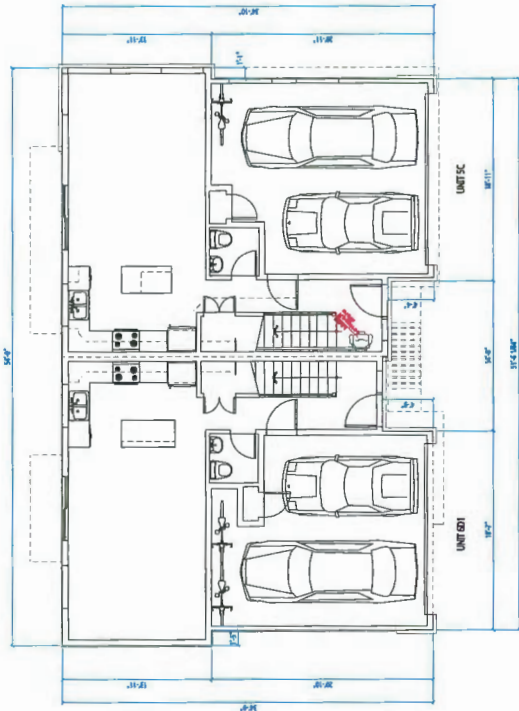


GROUND FLOOR

BUILDING 3

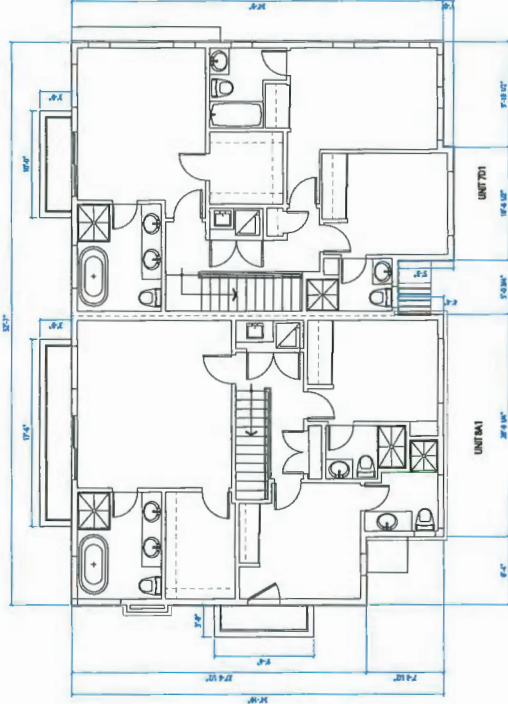


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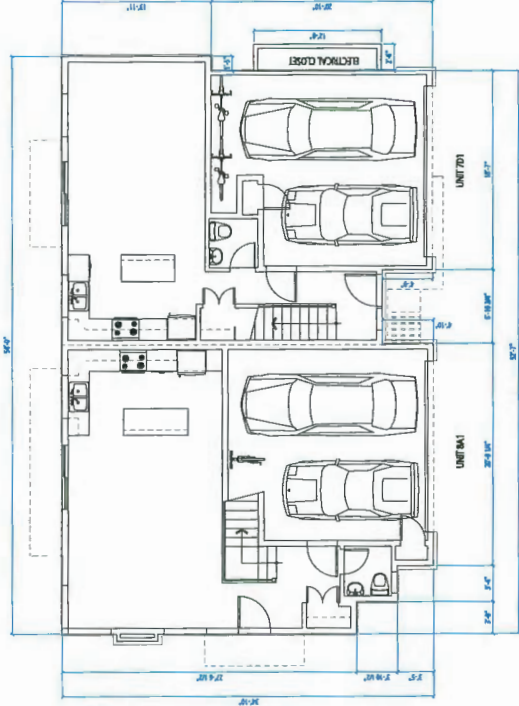


GROUND FLOOR

BUILDING 4



SECOND FLOOR



GROUND FLOOR

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BUILDINGS 3 & 4

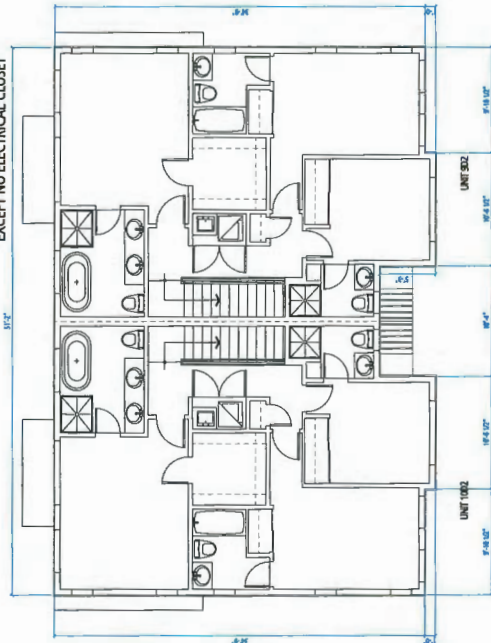
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ARCHITECTS, PLANNERS, INTERIORS
1000 COLUMBIA AVE., SUITE 100
FALLS CHURCH, VA 22033
703.773.2987
fougere.com

BUILDING 5

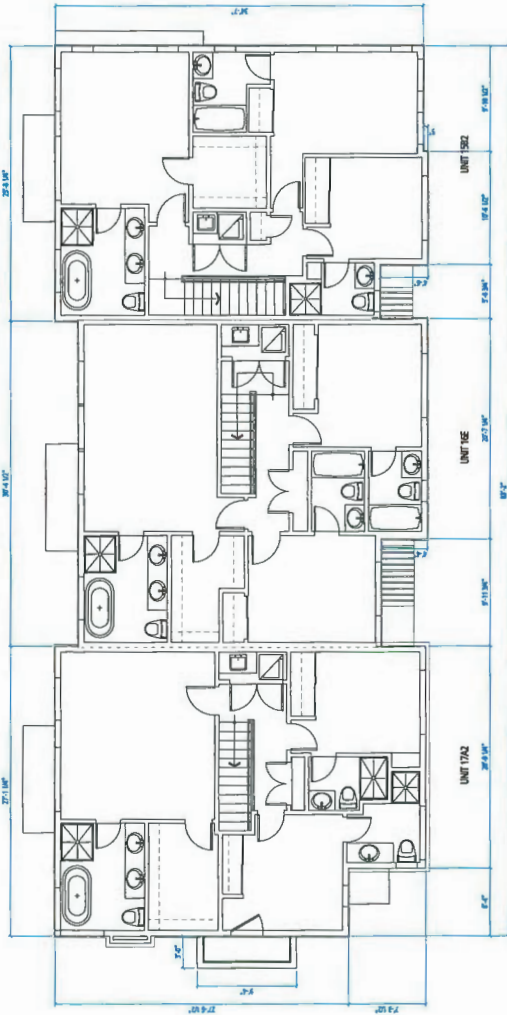
BUILDING 6 & 7 SIMILAR
EXCEPT NO ELECTRICAL CLOSET



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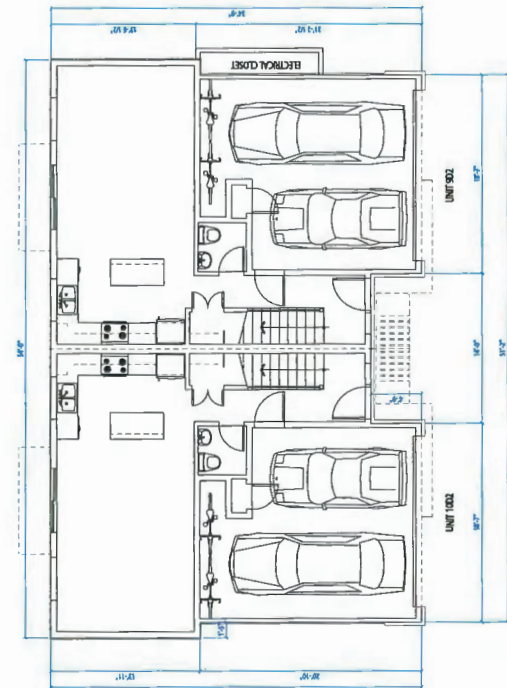
PH - 204
CNCL - 153

BUILDING 8

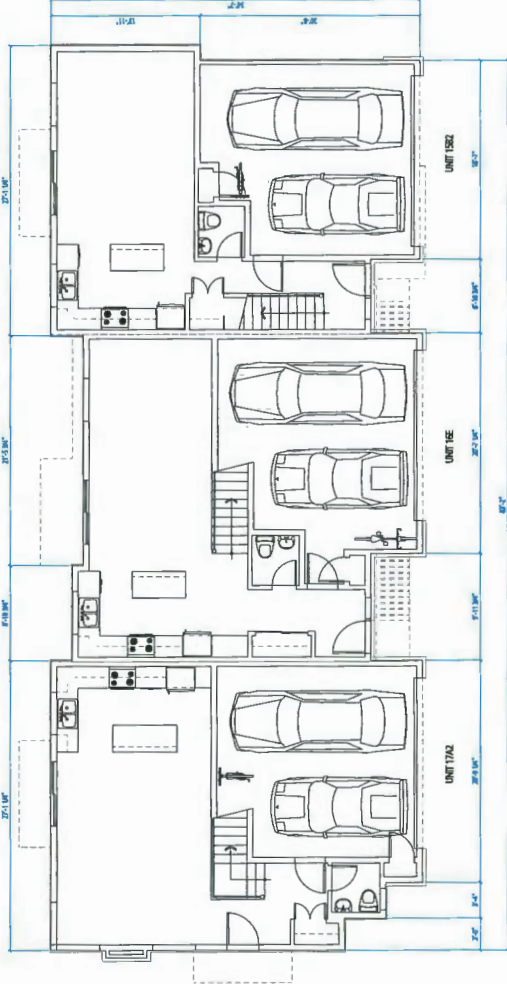


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GROUND FLOOR



GROUND FLOOR

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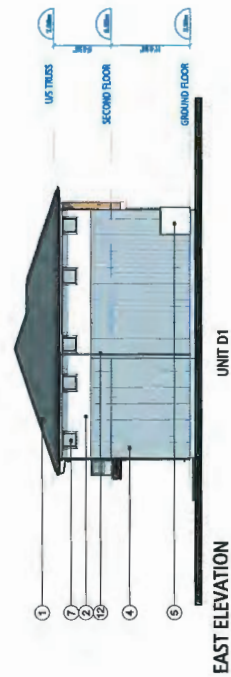
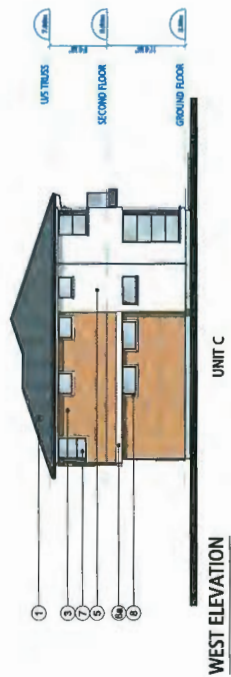
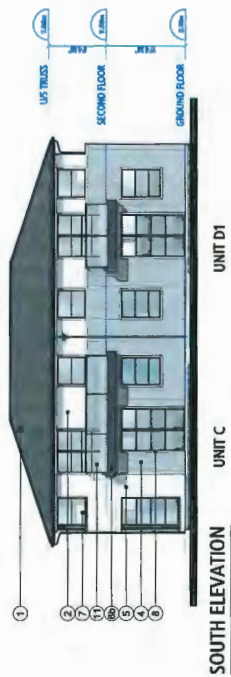
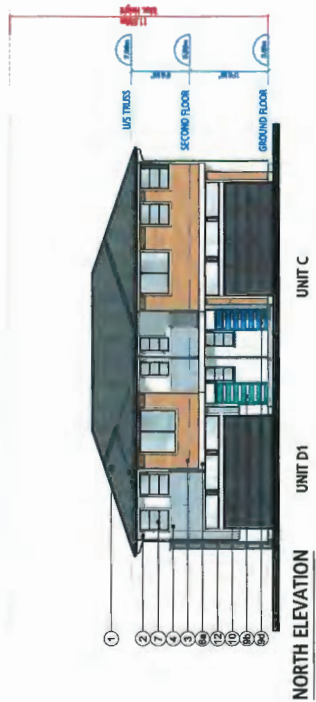
BLOCK PLANS
BUILDINGS 5 - 8

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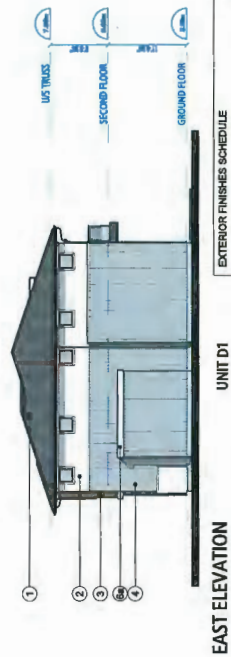
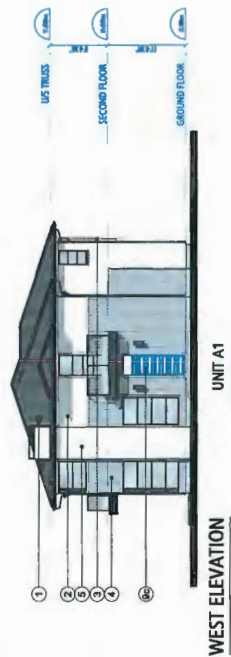
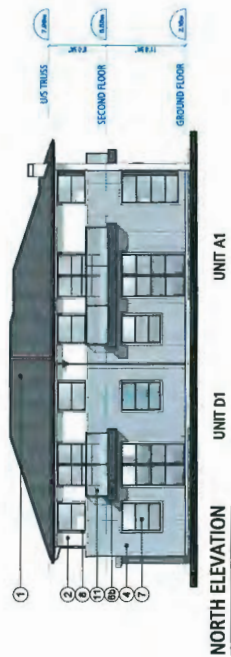
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1000 COLUMBIA AVENUE, SUITE 100
ALEXANDRIA, VA 22304
703.473.2007
fougere.com





BUILDING 3



BUILDING 4

ACCENT (DOOR) COLOURS

1	Shaw-Walton - RVT 675 Thermal Sprayed
2	Shaw-Walton - RVT 675 Thermal Sprayed
3	Shaw-Walton - RVT 675 Thermal Sprayed
4	Shaw-Walton - RVT 675 Thermal Sprayed
5	Shaw-Walton - RVT 675 Thermal Sprayed

EXTERIOR FINISHES SCHEDULE

1	APPLY FINISHES
2	HARVEST PLANK LAP SIDING
3	SHAW-WALTON - RVT 675 Thermal Sprayed
4	SHAW-WALTON - RVT 675 Thermal Sprayed
5	SHAW-WALTON - RVT 675 Thermal Sprayed
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EXTERIOR FINISHES SCHEDULE

1	APPLY FINISHES
2	HARVEST PLANK LAP SIDING
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11	SHAW-WALTON - RVT 675 Thermal Sprayed
12	SHAW-WALTON - RVT 675 Thermal Sprayed
13	SHAW-WALTON - RVT 675 Thermal Sprayed

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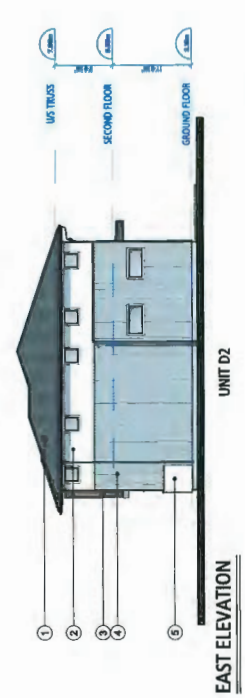
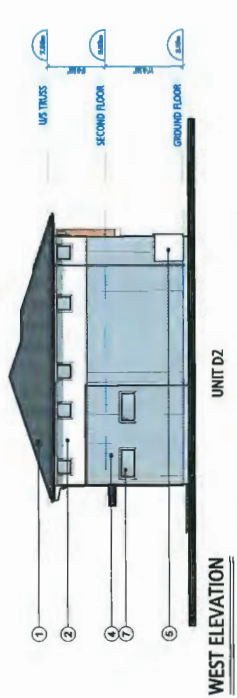
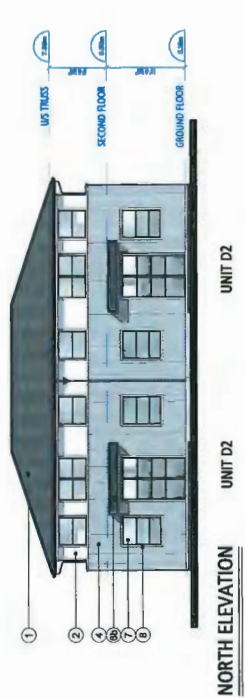
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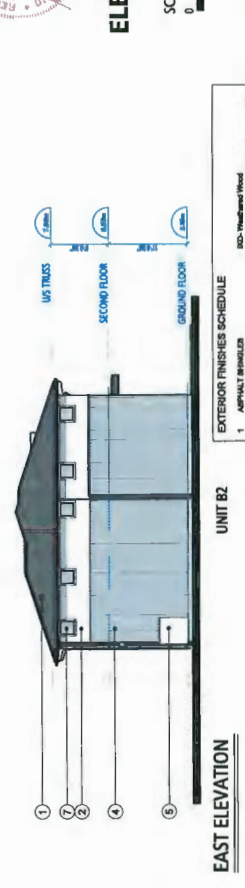
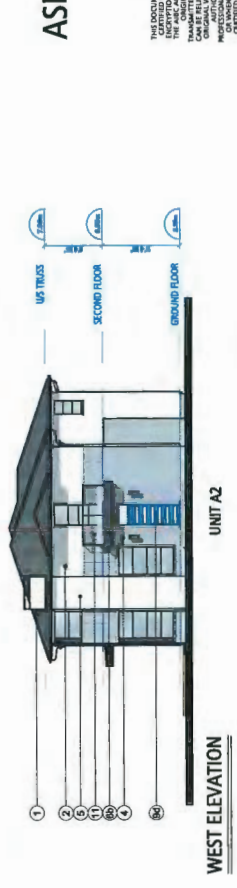
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1000 COLUMBIA AVE. SUITE 100
ALEXANDRIA, VA 22304
703.727.2727
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ACCENT DOOR COLOR
BUILDING 5 8in x 2in
BUILDING 6 8in x 2in
BUILDING 7 8in x 2in



BUILDINGS 5,6,7



BUILDING 8

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ELEVATIONS

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FEBRUARY 11, 2020

FOUGERE
architecture inc.
235 - 2425 Quebec Street
Barnstable, MA 01953
888.873.2867
fo@fofougere.com
fofougere.com

EXTERIOR FINISHES SCHEDULE	
1	ASPHALT ROOFING
2	CONCRETE
3	BRICK
4	WOOD SHAKES
5	WOOD SHAKES
6	WOOD SHAKES
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100	WOOD SHAKES

ACCENT (DOOR) COLOURS	
1	Black
2	White
3	Grey
4	Blue
5	Green
6	Yellow
7	Orange
8	Red
9	Pink
10	Purple
11	Brown
12	Gold
13	Silver
14	Black
15	White
16	Grey
17	Blue
18	Green
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50	Brown
51	Gold
52	Silver
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62	Purple
63	Brown
64	Gold
65	Silver
66	Black
67	White
68	Grey
69	Blue
70	Green
71	Yellow
72	Orange
73	Red
74	Pink
75	Purple
76	Brown
77	Gold
78	Silver
79	Black
80	White
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86	Red
87	Pink
88	Purple
89	Brown
90	Gold
91	Silver
92	Black
93	White
94	Grey
95	Blue
96	Green
97	Yellow
98	Orange
99	Red
100	Pink

PH - 207
CNCL - 156

7100
ASH STREET

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SITE SECTIONS

SCALE: 3/16" = 1'-0" UNO

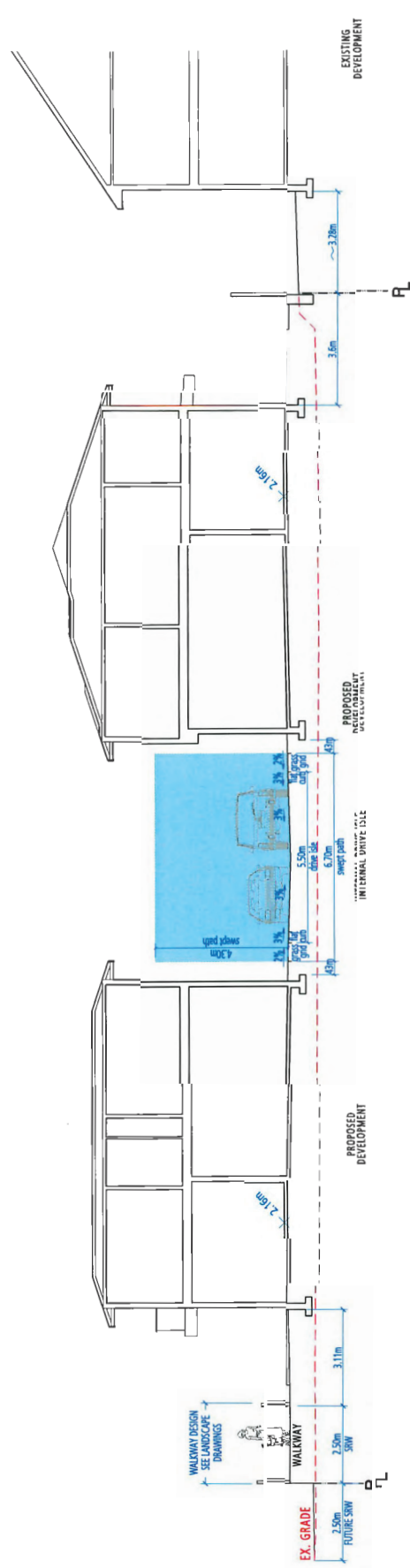
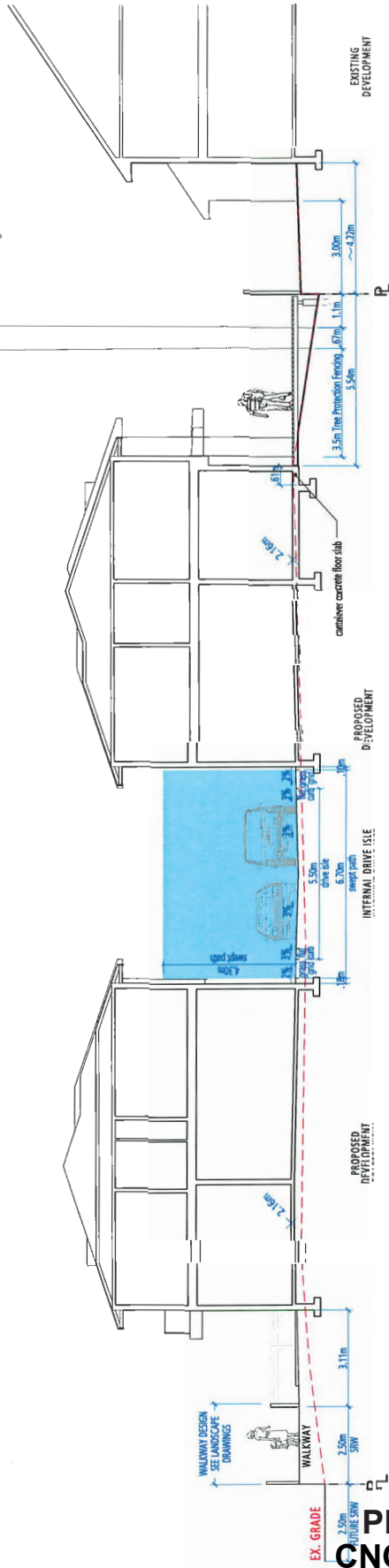


FEBRUARY 11, 2020



FOUGERE
architecture inc.
BRITISH COLUMBIA • ALBERTA • WASHINGTON
780 - 242-5700 604-877-2957
100 - 2425 Quebec Street

11 202 - 2425 Quebec Street
Vancouver BC V5T 4L6
fougen@marketburn.ca 604.177.2507



CNCL - 157



VIEW FROM WEST- ASH STREET



VIEW FROM SOUTH WEST- ASH STREET

PH - 209
CNCL - 158

7100
ASH STREET

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PERSPECTIVES



INTERIOR VIEW FROM EAST



VIEW FROM SOUTH EAST

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ASH STREET

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PERSPECTIVES
















[illegible]

Drawn TS	Stamp	Original Sheet Size 24"x36"	"NOTES TO THE USER" 1. THIS IS A PRELIMINARY DRAWING. IT IS NOT TO BE USED FOR CONSTRUCTION. IT IS FOR INFORMATION ONLY. 2. ALL DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SPECIFIED. 3. ALL ANGLES ARE IN DEGREES UNLESS OTHERWISE SPECIFIED. 4. ALL SURFACES ARE TO BE FINISHED UNLESS OTHERWISE SPECIFIED. 5. ALL MATERIALS ARE TO BE AS SPECIFIED IN THE MATERIAL SPECIFICATIONS. 6. ALL WORK IS TO BE DONE IN ACCORDANCE WITH THE LATEST EDITION OF THE AIAA STANDARD SPECIFICATIONS FOR ARCHITECTURAL DRAWINGS.
Checked TM			
Approved DJ			
Scale 1/160			

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PLANT SCHEDULE		CONT	CAL	SIZE	QTY
TREES	SCF/ANCM / COMMON NAME	50LB	form		
	Acacia grahamii / Paperbark Maple	50LB	form	4	
	Acacia grahamii / Sango Kaku / Coral Bark Maple	50LB	form	4	
	Andropogon canadensis / Canadian Savatallery	50LB	form	2	
	Cercocarpus pauciflorum / Kalmia Tree	50LB	form	4	
	Chamaecyparis obtusa / Shantou Beach Cypress	50LB	1.2m db	11	
	Cornus florida / Pink Flowering Dogwood	50LB	form	8	
	Magnolia indica / Kalmia Magnolia	50LB	form	3	
	Malus / Prunella / Pearlike Crab Apple	50LB	form	11	
	Picea glauca pendula / Weeping White Spruce	2.0m H/L		2	

			SAND
			ENGINEERED WOOD FENCE
			CEDAR PRIVACY FENCE
			SFT PICKET FENCE
			PICNIC TABLE
			BIKE RACK
			PROPOSED TREE
			REFER TO THEIR SCHEDULE

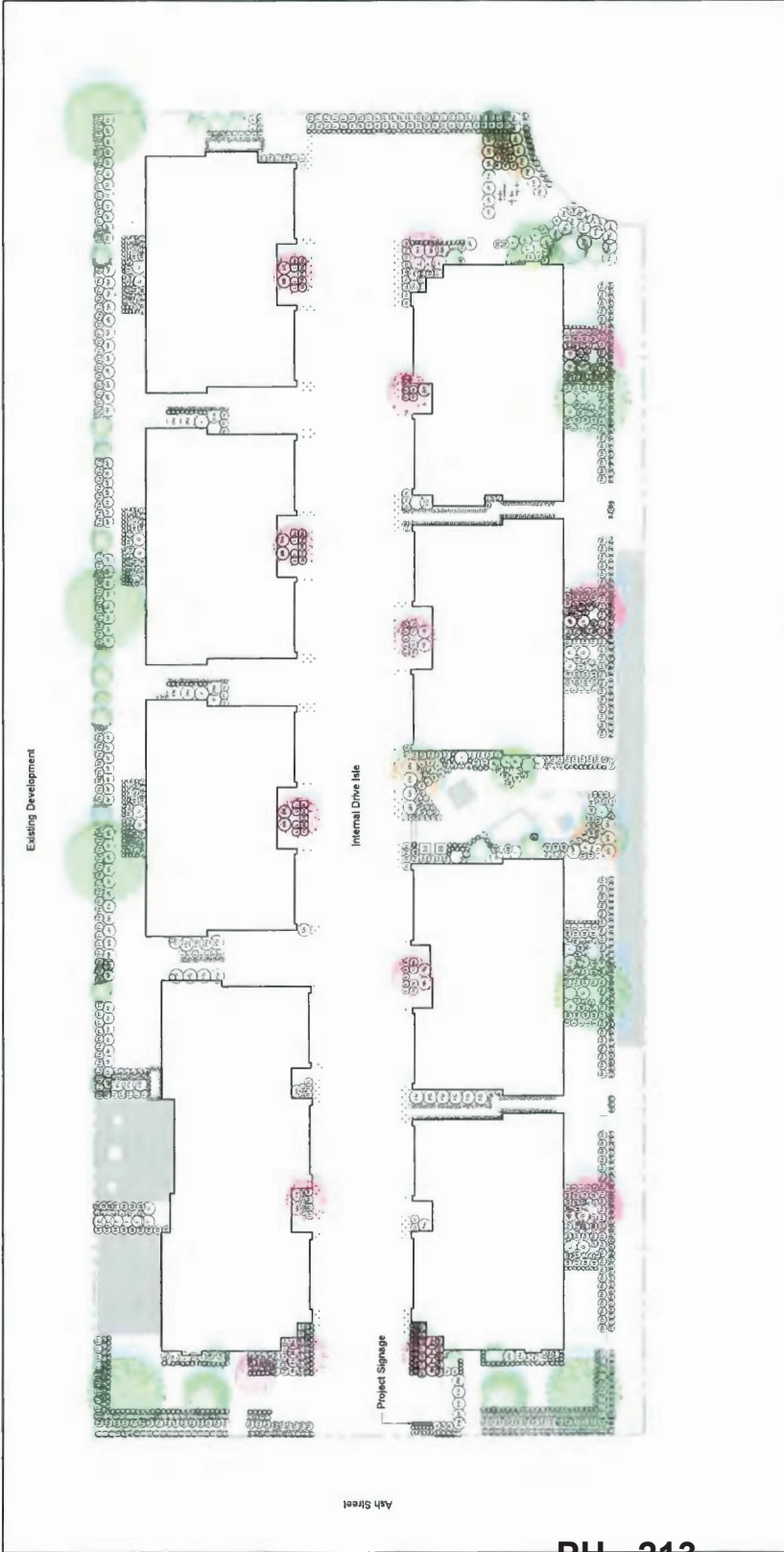
KEY	REF.	DESCRIPTION
	1 (LD-01)	CONCRETE SLAB MONOLITHIC REFER TO OTHERS
	5 (LD-01)	CONCRETE & SCREEDS (HYPOSLAB)
	4 (LD-02)	PRECAST CONCRETE SLAB Interior, Exterior, Roof Monolithic / Attached Concrete
	6 (LD-01)	STONE OR GRANULAR PAVING Interior, Exterior Color, Finish, Grout Monolithic / Attached Concrete
	7 (LD-01)	GRAVEL INTERIOR, EXTERIOR Interior, Exterior, Road Color, Finish, Grout Monolithic / Attached Concrete
	2 (LD-03)	GRASS PAVER
		GRASS
		SOIL
		SOIL WITH LANDSCAPE FINISH

PH - 211
CNCL - 160

[illegible][illegible]

Tree	Image	CONT.	SEAL	SIZE	3
Acacia gummata / Paperbark Maple		BAB	5cm	3	
Azalea japonicum / Sango Kake / Coral Bark Azalea		BAB	6cm	4	
Amelanchier canadensis / Canadian Serviceberry		BAB	5cm	2	
Cercocarpus japonicum / Katsura Tree		BAB	5cm	4	
Chamaecyparis obtusa / Gracile / Shimpri Henshi Cypress		BAB	1.2m tall	11	
Coronilla varia / Pink Flowering Dogwood		BAB	6cm	6	
Magnolia kobus / Kobus Magnolia		BAB	6cm	3	
Malus x Prunifolia / Flowering Crab Apple		BAB	6cm	11	
Quercus garciniana / Wingless White Oak		2.0m H.		2	
Pinus parviflora / Japanese Cedar		BAB		14	
Pinus parviflora / Japanese Cedar		BAB	2.0m H.	2	

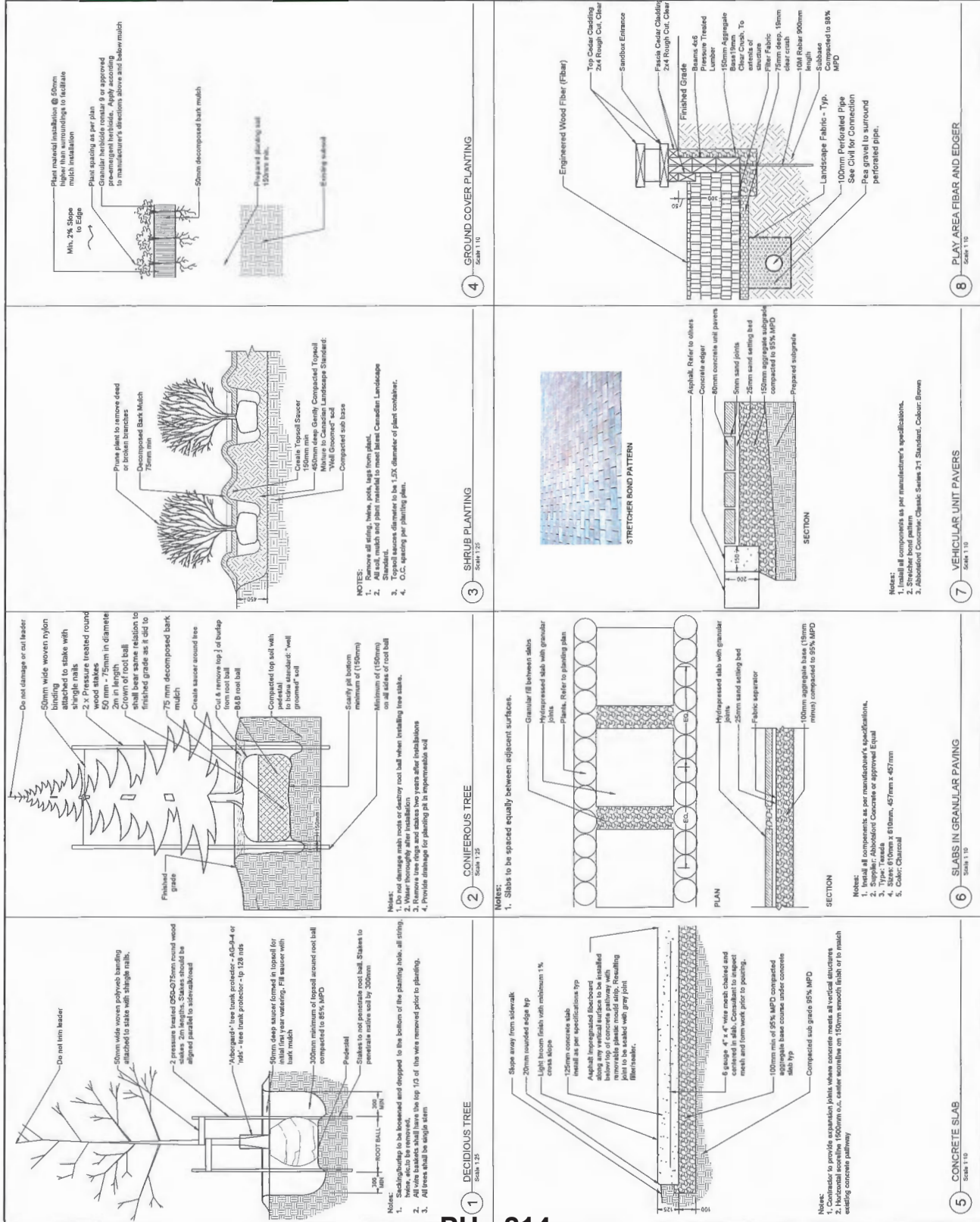




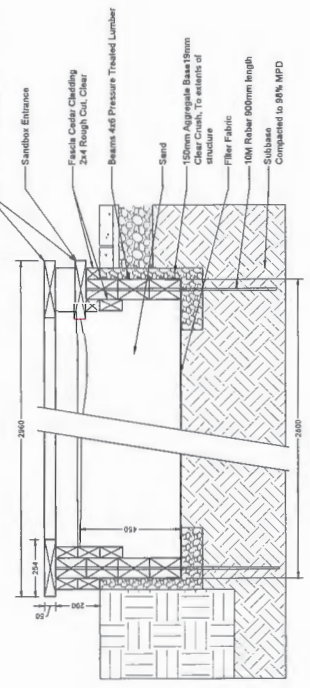
1:150 0' 1' 2' 3' 4' 5' 6' 7' 8' 9' 10' 11' 12' 13' 14' 15' 16' 17' 18' 19' 20'

PLANT SCHEDULE

SHRUBS	BOTANICAL / COMMON NAME	COMT	SPACING	QTY	SHRUBS	BOTANICAL / COMMON NAME	COMT	SPACING	QTY
AC	Asarum canadense / Black Cohosh MA Crap	#2	0.50m	108	N	Nerita oleander / Gulf Stream TM / Heavy Buds	#2	0.50m	56
AP	Aster divaricatus / Wood's Pink / Wood's Pink Aster	#2	0.50m	35	N	Phytolacca americana / Green Cap / Japanese Spurge	#2	1m	21
BB	Berberis nervosa / Laurel Bayberry	#3	1m	19	N	Potentilla alpinorum / Hardsy / Hardsy Dwarf Fourteen Green	#2	0.50m	27
BI	Blechnum spicatum / Deer Fern	#2	0.50m	120	N	Pink japonica / Mountain Pine / Mountain Pine Fern	#3	1m	4
BS	Buxus sempervirens / American Boxwood	#2	0.40m	206	N	Polydactylus nudicaulis / Western Sweet Fern	#2	0.50m	21
C	Cardinalis flammula / Three-leaved Cardinaline	#1	0.30m	143	N	Polydactylus communis / New Cap Moss	#1	0.30m	295
K	Coronilla varia / Valley Dogwood	#2	0.50m	6	R	Rhododendron / Tanager / Hardsy Rhododendron	#2	0.50m	62
L	Daphne x lewisii / Lewisii Daphne	#2	0.50m	18	S	Sarcocolla nudicaulis / Sweet Box	#2	0.40m	31
D	Dieris spectabilis / Queen of Hearts / Mandarin Heart	#1	0.35m	203	N	Sorbus japonica / Shrub / Sorbus	#2	0.50m	63
DE	Dryopteris erythrosperma / Autumn Fern	#2	0.50m	18	TH	Taxus canadensis / H&L Cedar / Elder Tree	#2	0.50m	216
E	Elaeagnus argentea / Silver Spiny Heath	#2	0.50m	78	TS	Thuja occidentalis / Emerald Green Arborvitae	#2	0.50m	146
EO	Erythronium americanum / Flower Lily	bulb	0.50m	16		Vaccinium corymbosum / Evergreen Huckleberry	#3	1m	13
G	Gaultheria procumbens / Salal	#2	0.50m	28					
LH	Lonicera ligustralis / Huckle Blue / Huckle Blue Lavender	#2	0.50m	12					



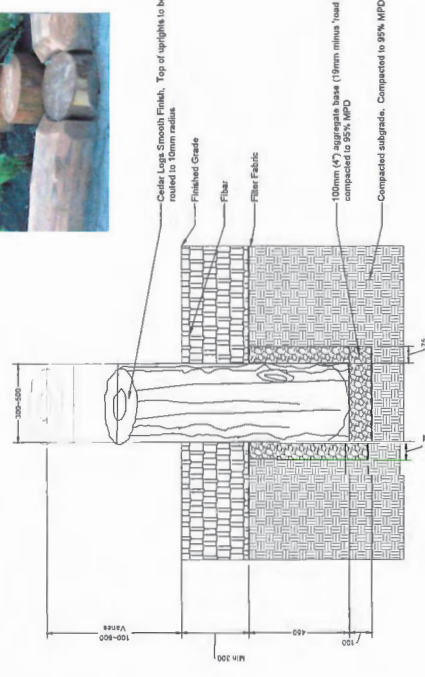
Notes:
 1. All proposed decking and fascia to be installed smooth.
 2. Apply Silbren Cold SRD to all Cedar elements. Colour: Oak.
 3. All members to be finished with hot dipped galvanized hardware.



2 SANDBOX AND EDGER
 Scale 1:10



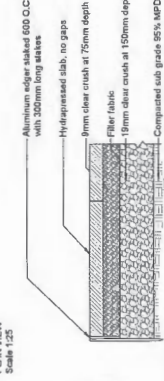
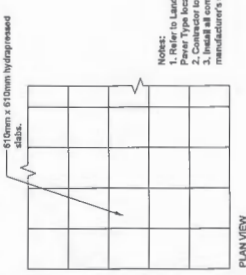
Notes:
 1. Logs to be stained with Silbren Cold SRD - Colour: RTT-Cedar or approved equal. End sealer to be used on all areas below grade. Apply as per manufacturer's specifications.
 2. All branches and root ends to be cut flush, rounded and sealed. Bark to remain intact.



1 STEPPING STONE STUMPS
 Scale 1:10



3 RAIL FENCE
 NTS



Hydropressed Slab Details:
 Type: Texada
 Size: 610mm x 610mm x 60mm
 Colour: Black
 Pattern: Slack Bone
 Manufacturer: Abbotsford Concrete Products
 www.janigatons.com 1-800-663-4091

4 PERMEABLE HYDOPRESSED SLAB AT GRADE
 Scale 1:10



5 SQUARE TREX DECK BUILT AROUND EXISTING TREES
 NTS



6 SQUARE BOARDWALK WITH KICK PLATE
 NTS

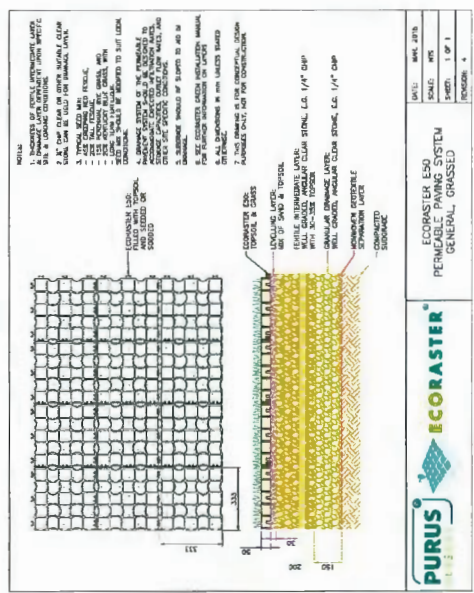
No.	Revisions	Date
1.	Issued for Planning	Feb. 20, 2020
2.	Issued for Review	Mar. 22, 2019
3.	Issued for Construction	May 22, 2019

Project:
 7100 & 7120 Ash Street
Location:
 7100 & 7120 Ash Street, Richmond BC

Drawn	Checked	Approved	Scale
TS	TM	DJ	AS SHOWN

Original Sheet Size:
 24"X36"

Scale:
 AS SHOWN



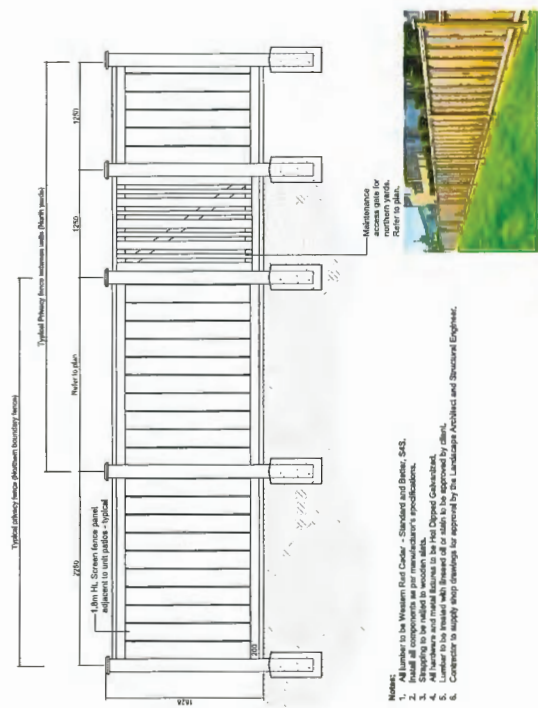
2 GRASS PAVE (WITHIN FIRE ACCESS PATH)
 NTS



6 BIKE RACK
 NTS



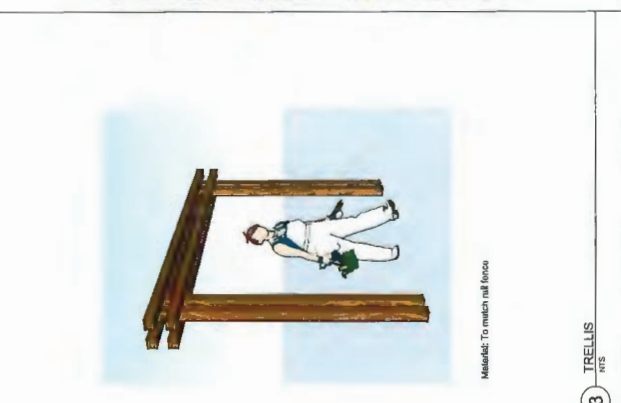
5 PICNIC TABLE
 NTS



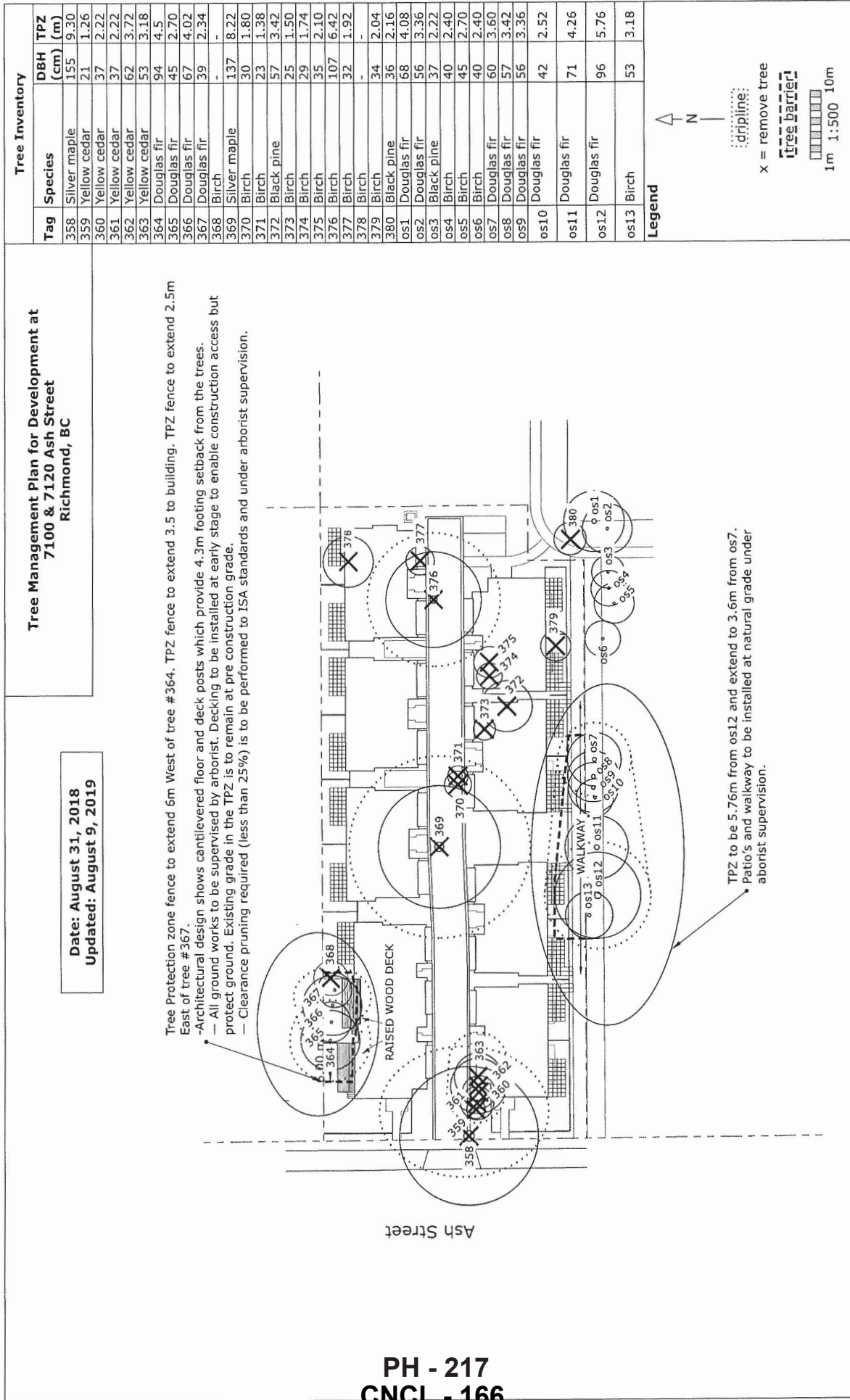
1 PRIVACY FENCE
 Scale 1/20



4 PLAY HOUSE
 NTS



3 TRELLIS
 NTS





Address: 7100 & 7120 Ash Street

File No.: RZ 18-843479

Prior to final adoption of Richmond Zoning Bylaw 8500, Amendment Bylaw 10163, the developer is required to complete the following:

1. 8.1 m by 8.1 m road dedication at the southeast corner of the site, for the extension of Sills Avenue.
2. Consolidation of all the lots into one development parcel (which will require the demolition of the existing dwellings).
3. Submission of a Contract entered into between the applicant and a Certified Arborist for supervision of any on-site works conducted within the tree protection zone of the trees to be retained. The Contract should include the scope of work to be undertaken, including: the proposed number of site monitoring inspections, and a provision for the Arborist to submit a post-construction assessment report to the City for review.
4. Submission of a Tree Survival Security to the City in the amount of \$40,000 for the four on-site trees to be retained (Tag # 364-367).
5. Installation of appropriate tree protection fencing around all trees to be retained as part of the development prior to any construction activities, including building demolition, occurring on-site.
6. Granting of an approximately 2.5 m wide statutory right-of-way for public rights-of-passage across the entire south property line for the construction of a pedestrian pathway. Design is to include 2.0 m wide pathway and 0.5 m wide landscaped shoulder with pedestrian-scale lighting.

Any works essential for public access within the required statutory right-of-way (SRW) are to be included in the Servicing Agreement (SA) and the maintenance & liability responsibility is to be clearly noted. The design must be prepared in accordance with good engineering practice with the objective to optimize public safety and after completion of the works, the Owner is required to provide a certificate of inspection for the works, prepared and sealed by the Owner's Engineer in a form and content acceptable to the City, certifying that the works have been constructed and completed in accordance with the accepted design. Works to be secured via DP (for multi-family, commercial or industrial (only those industrial sites within the City Centre Area Plan or otherwise required by the OCP DP Guidelines), or via Rezoning for single-family sites.

7. Registration of a flood indemnity covenant on title.
8. City acceptance of the developer's offer to voluntarily contribute \$\$0.85 per buildable square foot (e.g. \$19,046.80) to the City's Public Art Fund.
9. Contribution of \$1,769 per dwelling unit (e.g. \$30,073) in-lieu of on-site indoor amenity space to go towards development of City facilities.
10. City acceptance of the developer's offer to voluntarily contribute \$8.50 per buildable square foot (e.g. \$190,468) to the City's Affordable Housing Fund.
11. The submission and processing of a Development Permit* completed to a level deemed acceptable by the Director of Development.

Prior to a Development Permit* being forwarded to the Development Permit Panel for consideration, the developer is required to:

1. Submission of a Landscape Plan, prepared by a Registered Landscape Architect, to the satisfaction of the Director of Development. The Landscape Plan should:
 - comply with the guidelines of the OCP's Arterial Road Policy and should not include hedges along the front property line;
 - include a mix of coniferous and deciduous trees;
 - include the dimensions of tree protection fencing as illustrated on the Tree Retention Plan attached to this report;and

- include the 36 required replacement trees with the following minimum sizes:

No. of Replacement Trees	Minimum Caliper of Deciduous Replacement Tree	Minimum Height of Coniferous Replacement Tree
8	11 cm	6 m
4	10 cm	5.5 m
10	8 cm	4 m
14	6 cm	3.5 m

If required replacement trees cannot be accommodated on-site, a cash-in-lieu contribution in the amount of \$750/tree to the City's Tree Compensation Fund for off-site planting is required.

2. Complete a proposed townhouse energy efficiency report and recommendations prepared by a Certified Energy Advisor which demonstrates how the proposed construction will meet or exceed the required townhouse energy efficiency standards (BC Energy Step Code Step 3 or better).

Prior to Development Permit Issuance, the developer must complete the following requirements:

1. Submission of a Landscape Security based on 100% of the cost estimate provided by the Landscape Architect, including installation costs.

Prior to Demolition Permit Issuance, the developer must complete the following requirements:

1. Installation of appropriate tree protection fencing around all trees to be maintained as part of the development prior to any construction activities, including building demolition, occurring on-site. Should the developer wish to begin site preparation work after third reading of the rezoning bylaw, but prior to final adoption of the rezoning bylaw and issuance of the Development Permit, the applicant will be required to obtain a Tree Removal Permit (Rezoning in Process – T3).

Prior to Building Permit Issuance, the developer must complete the following requirements:

1. Submission of a Construction Parking and Traffic Management Plan to the Transportation Department. Management Plan shall include location for parking for services, deliveries, workers, loading, application for any lane closures, and proper construction traffic controls as per Traffic Control Manual for works on Roadways (by Ministry of Transportation) and MMCD Traffic Regulation Section 01570.
2. Incorporation of energy efficiency and accessibility measures in Building Permit (BP) plans as determined via the Rezoning and/or Development Permit processes.
3. Obtain a Building Permit (BP) for any construction hoarding. If construction hoarding is required to temporarily occupy a public street, the air space above a public street, or any part thereof, additional City approvals and associated fees may be required as part of the Building Permit. For additional information, contact the Building Approvals Department at 604-276-4285.
4. Enter into a Servicing Agreement* for the design and construction of engineering infrastructure improvements. A Letter of Credit or cash security for the value of the Service Agreement works, as determined by the City, will be required as part of entering into the Servicing Agreement. Works include, but may not be limited to, the following:

Water Works:

- a) Using the OCP Model, there is 452 L/s of water available at a 20 psi residual at the Ash Street frontage. Based on your proposed development, your site requires a minimum fire flow of 220 L/s.
- b) At Developer's cost, the Developer is required to:
 - i) Submit Fire Underwriter Survey (FUS) or International Organization for Standardization (ISO) fire flow calculations to confirm development has adequate fire flow for onsite fire protection. Calculations must be signed and sealed by a Professional Engineer and be based on Building Permit Stage building designs.
 - ii) Review hydrant spacing on all road frontages and install new fire hydrants as required to meet City spacing requirements for the proposed land use.
 - iii) Provide a right-of-way for the water meter. Minimum right-of-way dimensions to be the size of the meter box (from the City of Richmond supplementary specifications) + any appurtenances (for example, the bypass on

W2o-SD) + 0.5 m on all sides. Exact right-of-way dimensions to be finalized via the servicing agreement process.

- c) At Developer's cost, the City will:
- i) Cut, cap, and remove all existing water connections and meters serving the development site.
 - ii) Install one new water connection to serve the proposed development. The water meter and meter box shall be located onsite in a right-of-way, as described above.

Storm Sewer Works:

- a) At Developer's cost, the Developer is required to:
- i) Provide an erosion and sediment control plan for all on-site and off-site works, to be reviewed as part of the servicing agreement design.
 - ii) Upgrade approximately 40 m of storm sewer along the Ash Street frontage to minimum 600 mm diameter, from the north property line to the south property line, complete with new manholes at the tie-in points.
 - iii) Reconnect all existing services to the proposed storm sewer.
 - iv) Perform a capacity analysis to size the proposed storm sewer. The analysis shall be included in the servicing agreement drawing set.
 - v) Confirm the locations of inspection chambers STIC 43549 and STIC 43554. If the inspection chambers are located within the development site, the developer shall provide rights-of-ways to accommodate the inspection chambers. Alternatively, the developer can obtain written consent from the adjacent property owners for access to their properties to re-align the storm connections so that the inspection chambers can be relocated out of the development site. Prior to seeking consent from the adjacent property owners, the developer is required to coordinate with the City to ensure the form and content of the communication will satisfy the City's requirements.
- b) At Developer's cost, the City will:
- i) Cut, cap, and remove all existing storm connections serving the development site. The connections at the north and south property lines of the development site shall be capped at the inspection chamber and the inspection chambers retained, to keep service to the adjacent properties as described above.
 - ii) Complete all tie-ins for the proposed works to existing City infrastructure.

Sanitary Sewer Works:

- c) At Developer's cost, the City will:
- i) Cut, cap, and remove all existing sanitary connections and inspection chambers serving the development site.
 - ii) Install one new sanitary connection, complete with inspection chamber, to serve the proposed development.

Frontage Improvements:

- d) At Developer's cost, the Developer is required to:
- i) Coordinate with BC Hydro, Telus and other private communication service providers:
 - (1) To relocate or underground the hydro pole at the common property line of 7100 & 7120 Ash Street, as required to facilitate construction of the proposed driveway and sidewalk.
 - (2) To pre-duct for future hydro, telephone and cable utilities along all road frontages.
 - (3) Before relocating/modifying any of the existing power poles and/or guy wires within the property frontages.
 - (4) To underground overhead service lines.
 - ii) Locate/relocate all above ground utility cabinets and kiosks required to service the proposed development, and all above ground utility cabinets and kiosks located along the development's frontages, within the developments site (see list below for examples). A functional plan showing conceptual locations for such infrastructure shall be included in the development design review process. Please coordinate with the respective private utility companies and the project's lighting and traffic signal consultants to confirm the requirements (e.g., statutory right-of-way dimensions) and the locations for the aboveground structures. If a private utility company does not require an aboveground structure, that company shall confirm this via a letter

to be submitted to the City. The following are examples of statutory right-of-ways that shall be shown on the architectural plans/functional plan, the servicing agreement drawings, and registered prior to SA design approval:

- (1) BC Hydro PMT – 4.0 x 5.0 m
 - (2) BC Hydro LPT – 3.5 x 3.5 m
 - (3) Street light kiosk – 1.5 x 1.5 m
 - (4) Traffic signal kiosk – 2.0 x 1.5 m
 - (5) Traffic signal UPS – 1.0 x 1.0 m
 - (6) Shaw cable kiosk – 1.0 x 1.0 m
 - (7) Telus FDH cabinet – 1.1 x 1.0 m
- iii) Provide street lighting along Ash Street.
- iv) Complete frontage improvements on Ash Street including:
- (1) Road widening to a total width of 8.5 m, which will require shifting the crown of the road east to match the existing road cross-section north of the subject site;
 - (2) New 1.75 m wide concrete sidewalk next to the property line; and
 - (3) New 2.5 m wide boulevard, including grass, trees, and road lighting;
- v) Complete frontage improvements on Sills Avenue including:
- (1) Construct new curb and gutter along the curved alignment of the intersection of Sills Avenue and Armstrong Street;
 - (2) Construct a new 1.5 m wide concrete sidewalk along the curved alignment of the intersection of Sills Avenue and Armstrong Street, within the new road dedication at the southeast of the subject site;
 - (3) Construct a new grass/tree boulevard of varying width between the new sidewalk and new north curb line of Sills Avenue, and infill the area between the new sidewalk and the property lines of the subject site and 9515 Sills Avenue with a new grass/tree boulevard; and
 - (4) Reconstruct the existing driveway to 9515 Sills Avenue to City design standards to suit the new curb and sidewalk alignment described above.
- vi) Construct a pedestrian pathway along the south property line, to include:
- (1) 0.5 m landscaped shoulder with lighting; and
 - (2) 2.0 m paved pathway, or other surface treatment to the satisfaction of the City

General Items:

- e) At Developer's cost, the Developer is required to:
- i) Provide, prior to start of site preparation works or within the first servicing agreement submission, whichever comes first, a preload plan and geotechnical assessment of preload, dewatering, and soil preparation impacts on the existing utilities fronting the development site and provide mitigation recommendations. Based on the City's review of the geotechnical report, at the City's discretion, some or all of the following may be required:
 - (1) Provide a video inspection report of the existing storm and sanitary sewers fronting the development site prior to start of site preparation works or within the first servicing agreement submission, whichever comes first. A follow-up video inspection, complete with a civil engineer's signed and sealed recommendation letter, is required after site preparation works are complete (i.e. pre-load removal, completion of dewatering, etc.) to assess the condition of the existing utilities and provide recommendations to retain, replace, or repair. Any utilities damaged by the pre-load, de-watering, or other ground preparation shall be replaced or repaired at the Developer's cost.
 - (2) Conduct pre- and post-preload elevation surveys of all surrounding roads, utilities, and structures. Any damage, nuisance, or other impact to be repaired at the developer's cost. The post-preload elevation survey shall be incorporated within the servicing agreement design.
 - (3) Monitor the settlement at the adjacent utilities and structures during pre-loading, dewatering, and soil preparation works per a geotechnical engineer's recommendations, and report the settlement amounts to the City for approval.
 - ii) Coordinate the servicing agreement design for this development with the servicing agreement(s) for the adjacent development(s), both existing and in-stream. The developer's civil engineer shall submit a signed and sealed letter with each servicing agreement submission confirming that they have coordinated with civil engineer(s) of the adjacent project(s) and that the servicing agreement designs are consistent. The City will

not accept the 1st submission if it is not coordinated with the adjacent developments. The coordination letter should cover, but not be limited to, the following:

- (1) Corridors for City utilities (existing and proposed water, storm sewer, sanitary and DEU) and private utilities.
 - (2) Pipe sizes, material and slopes.
 - (3) Location of manholes and fire hydrants.
 - (4) Road grades, high points and low points.
 - (5) Alignment of ultimate and interim curbs.
 - (6) Proposed street lights design.
- iii) Enter into, if required, additional legal agreements, as determined via the subject development's Servicing Agreement(s) and/or Development Permit(s), and/or Building Permit(s) to the satisfaction of the Director of Engineering, including, but not limited to, site investigation, testing, monitoring, site preparation, de-watering, drilling, underpinning, anchoring, shoring, piling, pre-loading, ground densification or other activities that may result in settlement, displacement, subsidence, damage or nuisance to City and private utility infrastructure.

Note:

- * This requires a separate application.
- Where the Director of Development deems appropriate, the preceding agreements are to be drawn not only as personal covenants of the property owner but also as covenants pursuant to Section 219 of the Land Title Act.

All agreements to be registered in the Land Title Office shall have priority over all such liens, charges and encumbrances as is considered advisable by the Director of Development. All agreements to be registered in the Land Title Office shall, unless the Director of Development determines otherwise, be fully registered in the Land Title Office prior to enactment of the appropriate bylaw.

The preceding agreements shall provide security to the City including indemnities, warranties, equitable/rent charges, letters of credit and withholding permits, as deemed necessary or advisable by the Director of Development. All agreements shall be in a form and content satisfactory to the Director of Development.

- Additional legal agreements, as determined via the subject development's Servicing Agreement(s) and/or Development Permit(s), and/or Building Permit(s) to the satisfaction of the Director of Engineering may be required including, but not limited to, site investigation, testing, monitoring, site preparation, de-watering, drilling, underpinning, anchoring, shoring, piling, pre-loading, ground densification or other activities that may result in settlement, displacement, subsidence, damage or nuisance to City and private utility infrastructure.
- Applicants for all City Permits are required to comply at all times with the conditions of the Provincial *Wildlife Act* and Federal *Migratory Birds Convention Act*, which contain prohibitions on the removal or disturbance of both birds and their nests. Issuance of Municipal permits does not give an individual authority to contravene these legislations. The City of Richmond recommends that where significant trees or vegetation exists on site, the services of a Qualified Environmental Professional (QEP) be secured to perform a survey and ensure that development activities are in compliance with all relevant legislation.

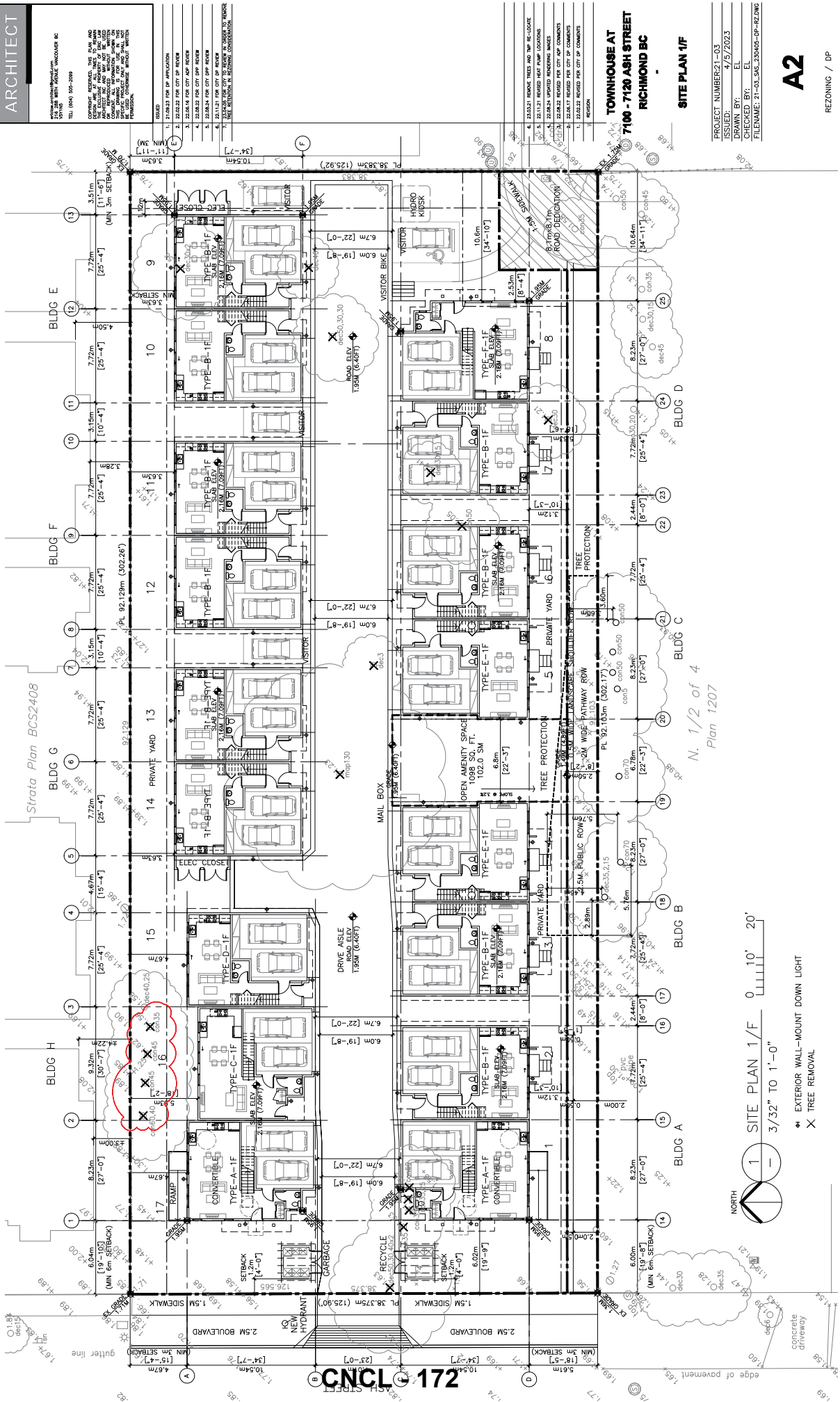
[signed concurrence on file]

Signed

Date

ERIC LAW
ARCHITECT

2500 WESTERN AVENUE
SUITE 100
VICTORIA, BC V8N 3C5
TEL (250) 555-2009
FAX (250) 555-2008
WWW.ERICLAWARCHITECT.COM
CORPORATE: 2500 WESTERN AVENUE SUITE 100 VICTORIA BC V8N 3C5
RESIDENTIAL: 2500 WESTERN AVENUE SUITE 100 VICTORIA BC V8N 3C5
COMMERCIAL: 2500 WESTERN AVENUE SUITE 100 VICTORIA BC V8N 3C5
INDUSTRIAL: 2500 WESTERN AVENUE SUITE 100 VICTORIA BC V8N 3C5
RECREATION: 2500 WESTERN AVENUE SUITE 100 VICTORIA BC V8N 3C5
EDUCATION: 2500 WESTERN AVENUE SUITE 100 VICTORIA BC V8N 3C5
HEALTHCARE: 2500 WESTERN AVENUE SUITE 100 VICTORIA BC V8N 3C5
GOVERNMENT: 2500 WESTERN AVENUE SUITE 100 VICTORIA BC V8N 3C5



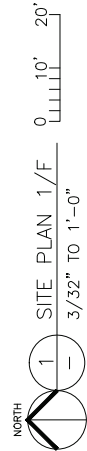
PROJECT NUMBER: 21-03
ISSUED: 4/5/2023
DRAWN BY: EL
CHECKED BY: EL
FILE NAME: 21-03_535_330405-DP-REZING

A2

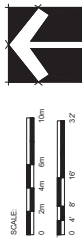
REZONING / DP

TOWNHOUSE AT
7100-7120 ASH STREET
RICHMOND BC

SITE PLAN 1/F



* EXTERIOR WALL-MOUNT DOWN LIGHT
X TREE REMOVAL



MATERIALS KEY

[illegible]

FENCE LEGEND

-  42" HT. ALUMINUM FENCE WITH GATE
-  6' HT WOOD FENCE
- 4' HT WOOD FENCE
-  4' HT WOOD FENCE WITH GATE

LIGHTING LEGEND

SYMBOL	STYLE
	BOLLARD 36" HT
	UPRLIGHT

CLIENT: RICK SIAM
WITH: Eric Law Architect Inc

PROJECT:
**17 UNIT TOWNHOUSE
DEVELOPMENT**

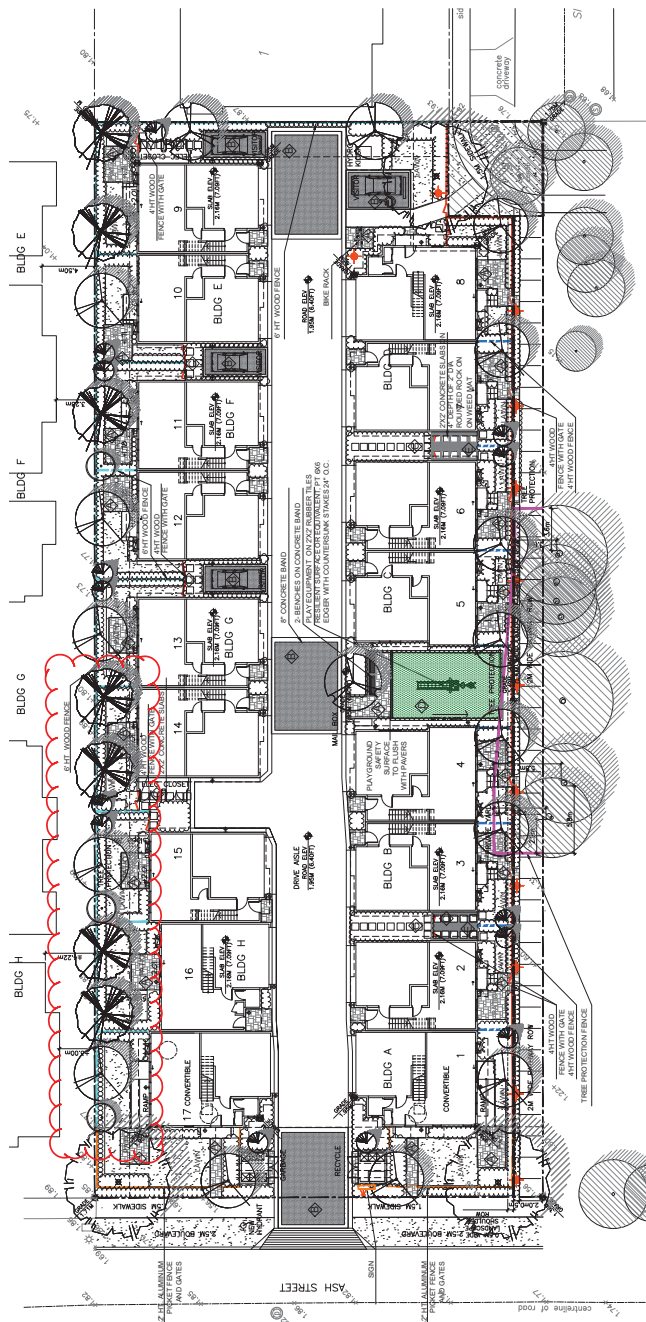
**7100 Ash Street,
RICHMOND**

DRAWING TITLE:
**LANDSCAPE
PLAN**

DATE: August 01, 2021
SCALE: 1/16"=1'-0"

1

CHKD: PCM OF5

21153-78P ZIP 21-153
PING PROJECT NUMBER:

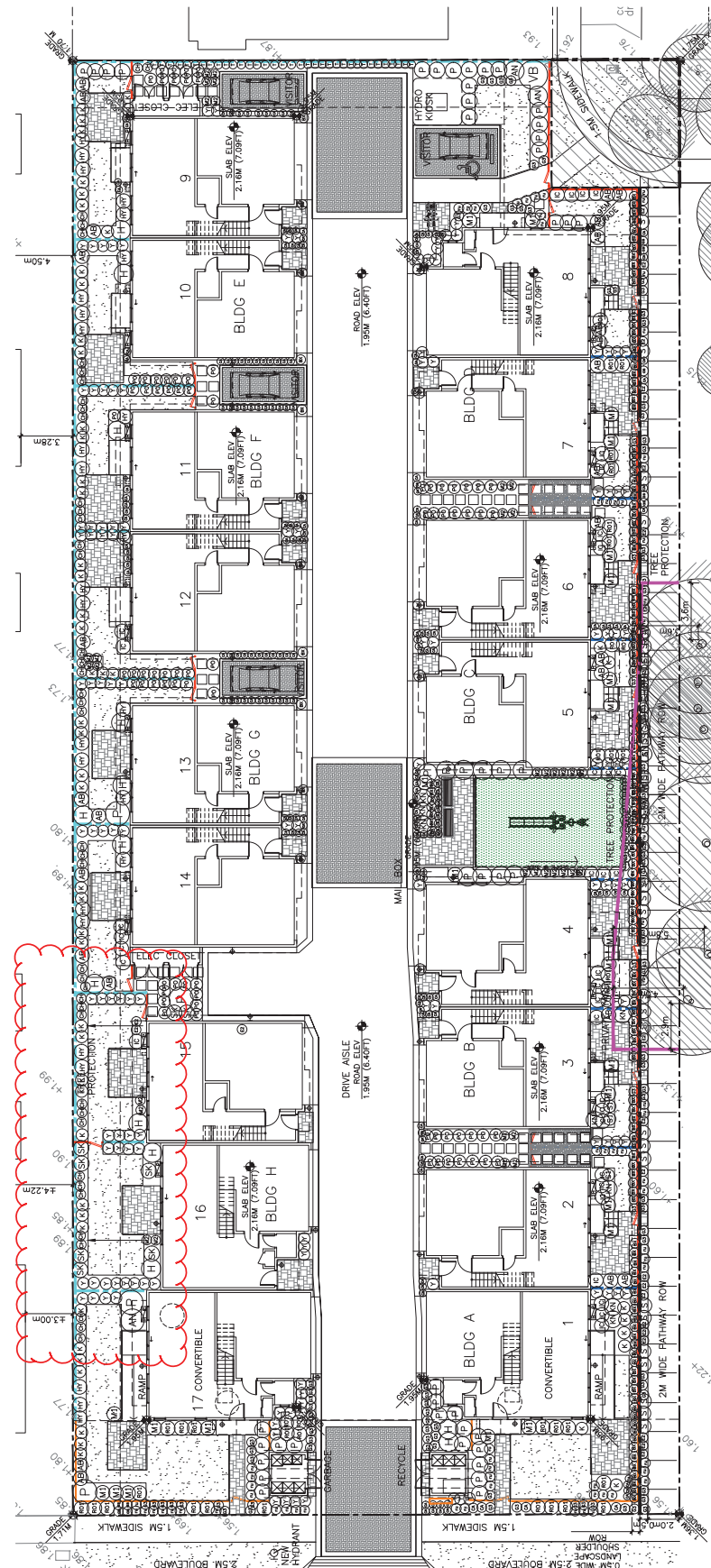
~~PLANT SCHEDULE~~

[illegible]

NOTE:

NOTE:

- All soft landscape areas to be irrigated with automatically installation to L.I.A.B.C. Standards, latest edition.



SPEC. DATA		TACTICAL NAME		COMMON NAME		PLANTED SIZE		REMARKS		PMS PROJECT NUMBER: 1-103	
SHRUB	1	1	* WAX JACQUES ANANOLA	1	COATON SERVICEBERRY	42 POT 40CM					
0000	26	26	* WAKONA NERVOSA	26	LONGLEAF WILLOW	#1 POT 30CM					
0000	35	35	* ABELA EDWARD GOUCHER	35	PINK ABELLA	#2 POT 30CM					
0000	142	142	* BUXUS EMERVENNIS GREEN VELVET	142	BOWWOOD	#3 POT 40CM					
0000	167	167	* HYDRANGEA PANICULATA LITTLE LIME	167	DRY HYDRANGEA	#2 POT 50CM					
0000	52	52	* ELIX CRANTIA CONDEVA	52	JAPANESE HOLLY	90CM HT					
0000	55	55	* PLEX JAPONICA 'CONDEVA'	55	PARCEL	#1 POT 40CM					
0000	52	52	* PLEX JAPONICA 'VALLEY FIRE'	52	VALLEY FIRE PRIBS	#1 POT 50CM					
0000	9	9	* ROSE VINCIGUOTI RUDRAZZ	9	RUDRAZZ ANOCHOUT ROSE	#2 POT					
0000	96	96	* ROSE VINCIGUOTI (KUMAJE)	96	ROSE VINCIGUOTI	#1 POT 40CM					
0000	3	3	* SPHALA JAPONICA LITTLE PRINCESS	3	LITTLE PRINCESS SPHALA PINK	#2 POT 40CM					
0000	7	7	* SPHALA X BUKALDA LITTLE MOUND	7	LITTLE MOUND SPHALA	#2 POT 40CM					
0000	1	1	* THUIA OCCIDENTALS 'SINARAGI'	1	BERNARD GREEN CEDAR	1.8M HT BAB					
0000	35	35	* 'VIBURNUM A BURKWOOD'	35	BURKWOOD VIBURNUM	#3 POT 60CM					
GRASS	19	19	* CAREX GOSHEIENSIS EVERGOLD	19	EVERGOLD JAPANESE SEDGE	#1 POT					
0000	24	24	* MISCANTHUS SINENSIS LITTLE KITTEN	24	COMPACT MAIDEN GRASS	#1 POT					
0000	114	114	* PENNISTEMUS ALPELOIDES	114	POUNTAIN GRASS	#1 POT					
PERENNIAL	13	13	* ASTILBE + ARENDSIEDER SENTINEL	13	FALSE SPIREA RED	15CM POT					
0000	5	5	* HOSTA PATRIOT	5	HOSTA GREEN AND WHITE VAREGATED	#1 POT 1 EYE					
0000	13	13	* RUBECORCA 'GOLDEN VAR SULLIVANTI'	13	GOLD CORRUSSORCA YELLOW ORANGE	15CM POT					
0000	73	73	* 'POX EYEDUM KUMTUM	73	WESTERN SWORD FERN	#1 POT 20CM					
0000	27	27	* 'POX EYEDUM JAPONICA BERNALD GALEY'	27	BLOWN WIND SILVER VAREGATED	#1 POT 20CM					

[illegible]

NOTES:
* - NATIVE PLANT SPECIES



SCALE:



0 2m 4m 6m 10m

PROJECT:
**17 UNIT TOWNHOUSE
DEVELOPMENT**

7100 Ash Street,
RICHMOND

DRAWING TITLE:
SHRUB PLAN
PLAN

DATE: August 01, 2021
SCALE: 3/32"=1'-0"

CHKD: PCM OF 5

21153-78P ZIP 21-153 PNG PROJECT NUMBER:

21-153

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pmg8
LANDSCAPE
ARCHITECTS
Suite C100 - 4185 58th Street Drive
Richmond, BC V6X 2C6
P: 604.294.0011 F: 604.294.0022

SEAL:

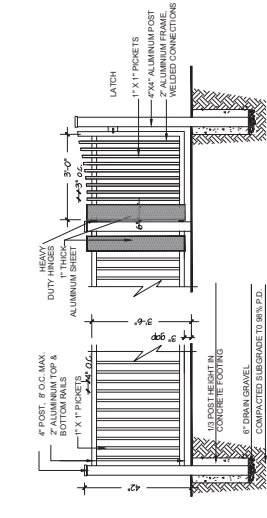
NOTES:
1. FENCES AND GATES TO HAVE 2 COATS OF POWDER COAT IN BLACK.

NOTES:
1. ALL POSTS PRESURE TREATED TO CEAS STANDARD AND END CUTS

2. TREATED WITH PRESERVATIVE.
3. ALL OTHER MEMBERS TO BE CEDAR AS CONSTRUCTION GRADE MINIMUM.
4. APPLY 2 COATS EXTERIOR STAIN TO MANUFACTURERS SPECIFICATION.
5. FINISH SELECTION AS APPROVED BY PROJECT ARCHITECT.
6. ALL FENCES TO BE LEVEL CHANGES IN GRADE TO BE IN 12" HP STEPS MAX.
7. GAPS TO GRADE TO FOLLOW FENCE GRADE UP TO BE 1/2".

NOTES:
1. TREATED WITH PRESERVATIVE.

2. ALL OTHER MEMBERS TO BE CEDAR AS CONSTRUCTION GRADE MINIMUM.
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4. APPLY 2 COATS EXTERIOR STAIN TO MANUFACTURERS SPECIFICATION.
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7. GAPS TO GRADE TO FOLLOW FENCE GRADE UP TO BE 1/2".



UNIT GATES

UNIT FENCES

42HT ALUMINUM FENCE AND GATE

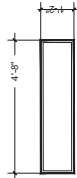
1/2" = 1'-0"

4'-0" HT 6'-0" HT SCREEN FENCE

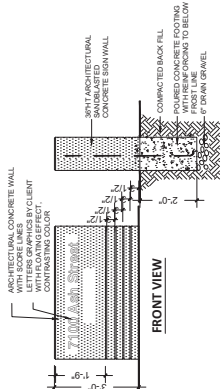
1/2" = 1'-0"

4HT WOOD FENCE WITH GATE

1/2" = 1'-0"



PLAN VIEW



38HT SIGN WALL

1/2" = 1'-0"

SECTION



NOTE: SOFTILE INSTALLATION AND BASE PREPARATION AS PER MANUFACTURER'S SPEC.

PLAYGROUND SAFETY SURFACE

1/2" = 1'-0"



NOTE:
1. ALL PAVING MUST BE APPROVED. CONTACT PROJECT ARCHITECT FOR ASSISTANCE PRIOR TO PROCEEDING.
2. PAVERS TO BE INSTALLED TO MANUFACTURERS SPECIFICATIONS.

PAVERS THROUGH ROOT ZONE

3/4\"/>

PROJECT:
**17 UNIT TOWNHOUSE
DEVELOPMENT**
7100 Ash Street,
RICHMOND

DRAWING TITLE:
**LANDSCAPE
DETAILS**

DATE: August 01, 2021

SCALE:

DRAWN: DD

DESIGN: DD

CHECK: PGM

PMO PROJECT NUMBER

2113-789-2P

DRAWING NUMBER

L3

OF 5

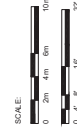
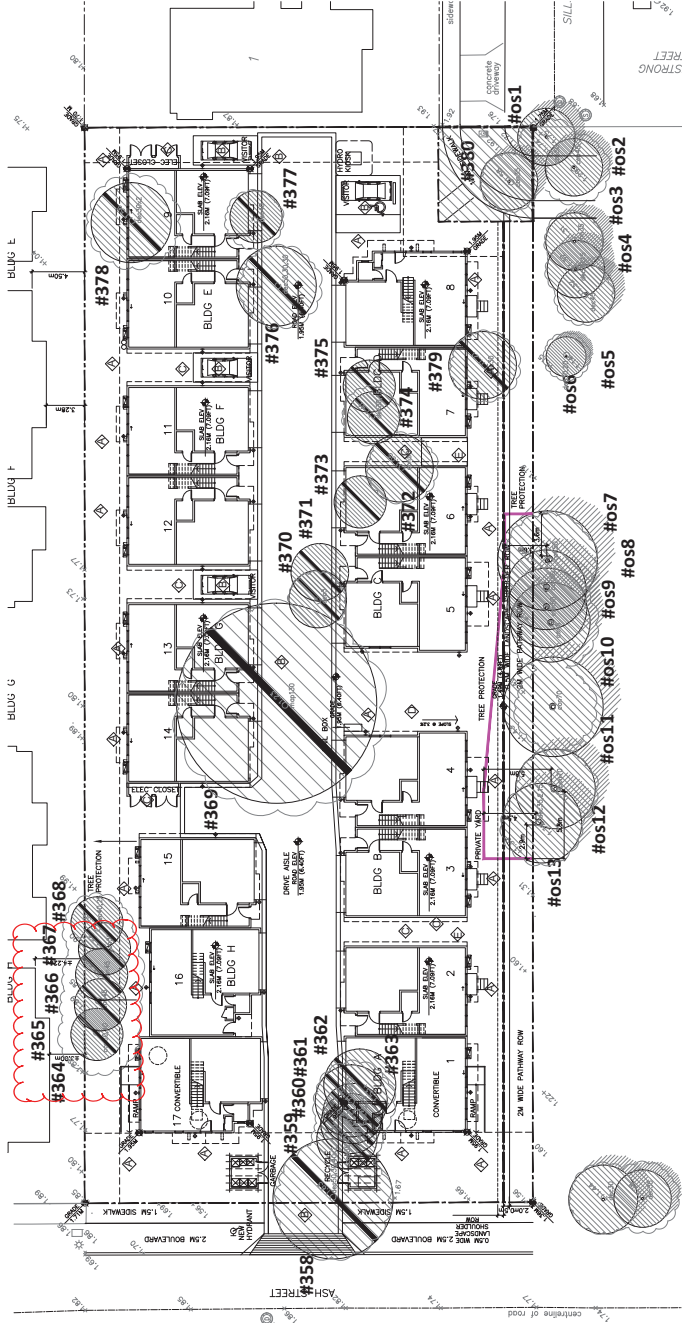
21-113

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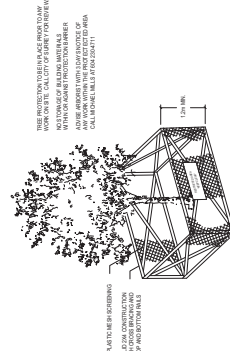
pmg8
LANDSCAPE
ARCHITECTS
Suite C100 - 4885 58th Street Drive
Richmond, BC V6X 2C6
P: 604 294-0011 F: 604 294-0022

SEAL:

CNCL - 176



- TREE TO BE RETAINED
- TREE TO BE REMOVED
- TREE PROTECTION FENCE



1.2 TREE PROTECTION BARRIER

PROJECT
**17 UNIT TOWNHOUSE
DEVELOPMENT**
7100 Ash Street,
RICHMOND

DRAWING TITLE
**TREE MANAGEMENT
PLAN**

DATE: August 01, 2021
SCALE: 1/8"=1'-0"

DRAWN: DD
DESIGN: DD
CHECK: PSM

PMO PROJECT NUMBER
21-153

21153-789-2P

L4

OF 5



Address: 7100, 7120 Ash Street

File No.: RZ 18-843479

Prior to final adoption of Richmond Zoning Bylaw 8500, Amendment Bylaw 10163, the applicant is required to complete the following:

1. 8.1 m by 8.1 m road dedication at the southeast corner of the site, for the extension of Sills Avenue.
2. Consolidation of all the lots into one development parcel (which will require the demolition of the existing dwellings).
3. Submission of a Contract entered into between the applicant and a Certified Arborist for supervision of any on-site works conducted within the tree protection zone of the trees to be retained. The Contract should include the scope of work to be undertaken, including: the proposed number of site monitoring inspections, and a provision for the Arborist to submit a post-construction assessment report to the City for review.
- ~~4. Submission of a Tree Survival Security to the City in the amount of \$40,000 for the four on-site trees to be retained (Tag # 364-367).~~
4. Installation of appropriate tree protection fencing around all trees to be retained as part of the development prior to any construction activities, including building demolition, occurring on-site.
5. ~~Submit a final Landscape Plan that provides for a total of 44 replacement trees on the subject site with the understanding that the Landscaping Security associated with the DP is to be increased to account for the additional replacement trees (based on a cost estimate provided by the registered Landscape Architect prior to DP issuance).~~
6. Granting of an approximately 2.5 m wide statutory right-of-way for public rights-of-passage across the entire south property line for the construction of a pedestrian pathway. Design is to include 2.0 m wide pathway and 0.5 m wide landscaped shoulder with pedestrian-scale lighting.

Any works essential for public access within the required statutory right-of-way (SRW) are to be included in the Servicing Agreement (SA) and the maintenance & liability responsibility is to be clearly noted. The design must be prepared in accordance with good engineering practice with the objective to optimize public safety and after completion of the works, the Owner is required to provide a certificate of inspection for the works, prepared and sealed by the Owner's Engineer in a form and content acceptable to the City, certifying that the works have been constructed and completed in accordance with the accepted design. Works to be secured via DP (for multi-family, commercial or industrial (only those industrial sites within the City Centre Area Plan or otherwise required by the OCP DP Guidelines), or via Rezoning for single-family sites.
7. Registration of a flood indemnity covenant on title.
8. City acceptance of the developer's offer to voluntarily contribute \$0.85 per buildable square foot (e.g. \$19,046.80) to the City's Public Art Fund.
9. Contribution of \$1,769 per dwelling unit (e.g. \$30,073) in-lieu of on-site indoor amenity space to go towards development of City facilities.
10. City acceptance of the developer's offer to voluntarily contribute \$8.50 per buildable square foot (e.g. \$190,468) to the City's Affordable Housing Fund.
11. The submission and processing of a Development Permit* completed to a level deemed acceptable by the Director of Development.

~~Prior to a Development Permit* being forwarded to the Development Permit Panel for consideration, the developer is required to:~~

- ~~1. Submission of a Landscape Plan, prepared by a Registered Landscape Architect, to the satisfaction of the Director of Development. The Landscape Plan should:~~

- ~~• comply with the guidelines of the OCP's Arterial Road Policy and should not include hedges along the front property line;~~
- ~~• include a mix of coniferous and deciduous trees;~~
- ~~• include the dimensions of tree protection fencing as illustrated on the Tree Retention Plan attached to this report; and~~
- ~~• include the 36 required replacement trees with the following minimum sizes:~~

No. of Replacement Trees	Minimum Caliper of Deciduous Replacement Tree	Minimum Height of Coniferous Replacement Tree
8	11 cm	6 m
4	10 cm	5.5 m
10	8 cm	4 m
14	6 cm	3.5 m

~~If required replacement trees cannot be accommodated on site, a cash in lieu contribution in the amount of \$750/tree to the City's Tree Compensation Fund for off site planting is required.~~

- ~~2. Complete a proposed townhouse energy efficiency report and recommendations prepared by a Certified Energy Advisor which demonstrates how the proposed construction will meet or exceed the required townhouse energy efficiency standards (BC Energy Step Code Step 3 or better).~~

~~Prior to Development Permit Issuance, the developer must complete the following requirements:~~

- ~~1. Submission of a Landscape Security based on 100% of the cost estimate provided by the Landscape Architect, including installation costs.~~

Prior to Demolition Permit Issuance, the developer must complete the following requirements:

1. Installation of appropriate tree protection fencing around all trees to be maintained as part of the development prior to any construction activities, including building demolition, occurring on-site. Should the developer wish to begin site preparation work after third reading of the rezoning bylaw, but prior to final adoption of the rezoning bylaw and issuance of the Development Permit, the applicant will be required to obtain a Tree Removal Permit (Rezoning in Process – T3).

Prior to Building Permit Issuance, the developer must complete the following requirements:

1. Submission of a Construction Parking and Traffic Management Plan to the Transportation Department. Management Plan shall include location for parking for services, deliveries, workers, loading, application for any lane closures, and proper construction traffic controls as per Traffic Control Manual for works on Roadways (by Ministry of Transportation) and MMCD Traffic Regulation Section 01570.
2. Incorporation of energy efficiency and accessibility measures in Building Permit (BP) plans as determined via the Rezoning and/or Development Permit processes.
3. Obtain a Building Permit (BP) for any construction hoarding. If construction hoarding is required to temporarily occupy a public street, the air space above a public street, or any part thereof, additional City approvals and associated fees may be required as part of the Building Permit. For additional information, contact the Building Approvals Department at 604-276-4285.
4. Enter into a Servicing Agreement* for the design and construction of engineering infrastructure improvements. A Letter of Credit or cash security for the value of the Service Agreement works, as determined by the City, will be required as part of entering into the Servicing Agreement. Works include, but may not be limited to, the following:

Water Works:

- a) Using the OCP Model, there is 452 L/s of water available at a 20 psi residual at the Ash Street frontage. Based on your proposed development, your site requires a minimum fire flow of 220 L/s.
- b) At Developer's cost, the Developer is required to:
 - i) Submit Fire Underwriter Survey (FUS) or International Organization for Standardization (ISO) fire flow calculations to confirm development has adequate fire flow for onsite fire protection. Calculations must be signed and sealed by a Professional Engineer and be based on Building Permit Stage building designs.

- ii) Review hydrant spacing on all road frontages and install new fire hydrants as required to meet City spacing requirements for the proposed land use.
- iii) Provide a right-of-way for the water meter. Minimum right-of-way dimensions to be the size of the meter box (from the City of Richmond supplementary specifications) + any appurtenances (for example, the bypass on W2o-SD) + 0.5 m on all sides. Exact right-of-way dimensions to be finalized via the servicing agreement process.
- c) At Developer's cost, the City will:
 - i) Cut, cap, and remove all existing water connections and meters serving the development site.
 - ii) Install one new water connection to serve the proposed development. The water meter and meter box shall be located onsite in a right-of-way, as described above.

Storm Sewer Works:

- a) At Developer's cost, the Developer is required to:
 - i) Provide an erosion and sediment control plan for all on-site and off-site works, to be reviewed as part of the servicing agreement design.
 - ii) Upgrade approximately 40 m of storm sewer along the Ash Street frontage to minimum 600 mm diameter, from the north property line to the south property line, complete with new manholes at the tie-in points.
 - iii) Reconnect all existing services to the proposed storm sewer.
 - iv) Perform a capacity analysis to size the proposed storm sewer. The analysis shall be included in the servicing agreement drawing set.
 - v) Confirm the locations of inspection chambers STIC 43549 and STIC 43554. If the inspection chambers are located within the development site, the developer shall provide rights-of-ways to accommodate the inspection chambers. Alternatively, the developer can obtain written consent from the adjacent property owners for access to their properties to re-align the storm connections so that the inspection chambers can be relocated out of the development site. Prior to seeking consent from the adjacent property owners, the developer is required to coordinate with the City to ensure the form and content of the communication will satisfy the City's requirements.
- b) At Developer's cost, the City will:
 - i) Cut, cap, and remove all existing storm connections serving the development site. The connections at the north and south property lines of the development site shall be capped at the inspection chamber and the inspection chambers retained, to keep service to the adjacent properties as described above.
 - ii) Complete all tie-ins for the proposed works to existing City infrastructure.

Sanitary Sewer Works:

- c) At Developer's cost, the City will:
 - i) Cut, cap, and remove all existing sanitary connections and inspection chambers serving the development site.
 - ii) Install one new sanitary connection, complete with inspection chamber, to serve the proposed development.

Frontage Improvements:

- d) At Developer's cost, the Developer is required to:
 - i) Coordinate with BC Hydro, Telus and other private communication service providers:
 - (1) To relocate or underground the hydro pole at the common property line of 7100 & 7120 Ash Street, as required to facilitate construction of the proposed driveway and sidewalk.
 - (2) To pre-duct for future hydro, telephone and cable utilities along all road frontages.
 - (3) Before relocating/modifying any of the existing power poles and/or guy wires within the property frontages.
 - (4) To underground overhead service lines.
 - ii) Locate/relocate all above ground utility cabinets and kiosks required to service the proposed development, and all above ground utility cabinets and kiosks located along the development's frontages, within the developments site (see list below for examples). A functional plan showing conceptual locations for such infrastructure shall be included in the development design review process. Please coordinate with the respective private utility companies and the project's lighting and traffic signal consultants to confirm the requirements (e.g., statutory right-of-way dimensions) and the locations for the aboveground structures. If a

private utility company does not require an aboveground structure, that company shall confirm this via a letter to be submitted to the City. The following are examples of statutory right-of-ways that shall be shown on the architectural plans/functional plan, the servicing agreement drawings, and registered prior to SA design approval:

- (1) BC Hydro PMT – 4.0 x 5.0 m
 - (2) BC Hydro LPT – 3.5 x 3.5 m
 - (3) Street light kiosk – 1.5 x 1.5 m
 - (4) Traffic signal kiosk – 2.0 x 1.5 m
 - (5) Traffic signal UPS – 1.0 x 1.0 m
 - (6) Shaw cable kiosk – 1.0 x 1.0 m
 - (7) Telus FDH cabinet – 1.1 x 1.0 m
- iii) Provide street lighting along Ash Street.
- iv) Complete frontage improvements on Ash Street including:
- (1) Road widening to a total width of 8.5 m, which will require shifting the crown of the road east to match the existing road cross-section north of the subject site;
 - (2) New 1.75 m wide concrete sidewalk next to the property line; and
 - (3) New 2.5 m wide boulevard, including grass, trees, and road lighting;
- v) Complete frontage improvements on Sills Avenue including:
- (1) Construct new curb and gutter along the curved alignment of the intersection of Sills Avenue and Armstrong Street;
 - (2) Construct a new 1.5 m wide concrete sidewalk along the curved alignment of the intersection of Sills Avenue and Armstrong Street, within the new road dedication at the southeast of the subject site;
 - (3) Construct a new grass/tree boulevard of varying width between the new sidewalk and new north curb line of Sills Avenue, and infill the area between the new sidewalk and the property lines of the subject site and 9515 Sills Avenue with a new grass/tree boulevard; and
 - (4) Reconstruct the existing driveway to 9515 Sills Avenue to City design standards to suit the new curb and sidewalk alignment described above.
- vi) Construct a pedestrian pathway along the south property line, to include:
- (1) 0.5 m landscaped shoulder with lighting; and
 - (2) 2.0 m paved pathway, or other surface treatment to the satisfaction of the City

General Items:

- e) At Developer's cost, the Developer is required to:
- i) Provide, prior to start of site preparation works or within the first servicing agreement submission, whichever comes first, a preload plan and geotechnical assessment of preload, dewatering, and soil preparation impacts on the existing utilities fronting the development site and provide mitigation recommendations. Based on the City's review of the geotechnical report, at the City's discretion, some or all of the following may be required:
 - (1) Provide a video inspection report of the existing storm and sanitary sewers fronting the development site prior to start of site preparation works or within the first servicing agreement submission, whichever comes first. A follow-up video inspection, complete with a civil engineer's signed and sealed recommendation letter, is required after site preparation works are complete (i.e. pre-load removal, completion of dewatering, etc.) to assess the condition of the existing utilities and provide recommendations to retain, replace, or repair. Any utilities damaged by the pre-load, de-watering, or other ground preparation shall be replaced or repaired at the Developer's cost.
 - (2) Conduct pre- and post-preload elevation surveys of all surrounding roads, utilities, and structures. Any damage, nuisance, or other impact to be repaired at the developer's cost. The post-preload elevation survey shall be incorporated within the servicing agreement design.
 - (3) Monitor the settlement at the adjacent utilities and structures during pre-loading, dewatering, and soil preparation works per a geotechnical engineer's recommendations, and report the settlement amounts to the City for approval.
 - ii) Coordinate the servicing agreement design for this development with the servicing agreement(s) for the adjacent development(s), both existing and in-stream. The developer's civil engineer shall submit a signed and sealed letter with each servicing agreement submission confirming that they have coordinated with civil engineer(s) of the adjacent project(s) and that the servicing agreement designs are consistent. The City will

not accept the 1st submission if it is not coordinated with the adjacent developments. The coordination letter should cover, but not be limited to, the following:

- (1) Corridors for City utilities (existing and proposed water, storm sewer, sanitary and DEU) and private utilities.
 - (2) Pipe sizes, material and slopes.
 - (3) Location of manholes and fire hydrants.
 - (4) Road grades, high points and low points.
 - (5) Alignment of ultimate and interim curbs.
 - (6) Proposed street lights design.
- iii) Enter into, if required, additional legal agreements, as determined via the subject development's Servicing Agreement(s) and/or Development Permit(s), and/or Building Permit(s) to the satisfaction of the Director of Engineering, including, but not limited to, site investigation, testing, monitoring, site preparation, de-watering, drilling, underpinning, anchoring, shoring, piling, pre-loading, ground densification or other activities that may result in settlement, displacement, subsidence, damage or nuisance to City and private utility infrastructure.

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- Where the Director of Development deems appropriate, the preceding agreements are to be drawn not only as personal covenants of the property owner but also as covenants pursuant to Section 219 of the Land Title Act.

All agreements to be registered in the Land Title Office shall have priority over all such liens, charges and encumbrances as is considered advisable by the Director of Development. All agreements to be registered in the Land Title Office shall, unless the Director of Development determines otherwise, be fully registered in the Land Title Office prior to enactment of the appropriate bylaw.

The preceding agreements shall provide security to the City including indemnities, warranties, equitable/rent charges, letters of credit and withholding permits, as deemed necessary or advisable by the Director of Development. All agreements shall be in a form and content satisfactory to the Director of Development.

- Additional legal agreements, as determined via the subject development's Servicing Agreement(s) and/or Development Permit(s), and/or Building Permit(s) to the satisfaction of the Director of Engineering may be required including, but not limited to, site investigation, testing, monitoring, site preparation, de-watering, drilling, underpinning, anchoring, shoring, piling, pre-loading, ground densification or other activities that may result in settlement, displacement, subsidence, damage or nuisance to City and private utility infrastructure.
- Applicants for all City Permits are required to comply at all times with the conditions of the Provincial *Wildlife Act* and Federal *Migratory Birds Convention Act*, which contain prohibitions on the removal or disturbance of both birds and their nests. Issuance of Municipal permits does not give an individual authority to contravene these legislations. The City of Richmond recommends that where significant trees or vegetation exists on site, the services of a Qualified Environmental Professional (QEP) be secured to perform a survey and ensure that development activities are in compliance with all relevant legislation.

(signed concurrence on file)

Signed _____

Date _____



**Richmond Zoning Bylaw 8500
Amendment Bylaw 10163 (RZ 18-843479)
7100 & 7120 Ash Street**

The Council of the City of Richmond, in open meeting assembled, enacts as follows:

1. The Zoning Map of the City of Richmond, which accompanies and forms part of Richmond Zoning Bylaw 8500, is amended by repealing the existing zoning designation of the following area and by designating it **"TOWN HOUSING (ZT16) - SOUTH MCLENNAN AND ST. ALBANS SUB-AREA (CITY CENTRE)"**.

P.I.D. 000-788-597

The North 76 Feet of Lot 3 Block "C" of Section 15 Block 4 North Range 6 West New Westminster District Plan 1207

P.I.D. 000-751-359

Lot 3 Except: the North 76 Feet; Block "C" Section 15 Block 4 North Range 6 West New Westminster District Plan 1207

2. This Bylaw may be cited as **"Richmond Zoning Bylaw 8500, Amendment Bylaw 10163"**.

FIRST READING

APR 14 2020

A PUBLIC HEARING WAS HELD ON

MAY 19 2020

SECOND READING

MAY 19 2020

THIRD READING

MAY 19 2020

OTHER CONDITIONS SATISFIED

ADOPTED



MAYOR

CORPORATE OFFICER



City of Richmond

Report to Committee




To: Planning Committee **Date:** May 17, 2023
From: Kim Somerville **File:** 01-0100-30-RCSA1-01/2023-Vol
Director, Community Social Development 01
Re: **Proposed Updates to the Richmond Community Services Advisory Committee Charter**

Staff Recommendations

1. That the proposed updates to the Richmond Community Services Advisory Committee Charter as outlined in the staff report titled "Proposed Updates to the Richmond Community Services Advisory Committee Charter", dated May 17, 2023, from the Director, Community Social Development, be endorsed; and
2. That the Richmond Community Services Advisory Committee Charter be renamed the Richmond Community Services Advisory Committee Terms of Reference.

Kim Somerville
Director, Community Social Development
(604-247-4671)

Att. 3

REPORT CONCURRENCE	
CONCURRENCE OF ACTING GENERAL MANAGER 	
SENIOR STAFF REPORT REVIEW	INITIALS: 
APPROVED BY CAO 	

Staff Report

Origin

The Richmond Community Services Advisory Committee (RCSAC) provides advice to City Council regarding social policies and community services that contribute to the general health, welfare and quality of life of Richmond residents. The purpose of this report is to present proposed updates to the current RCSAC Charter and to rename it the RCSAC Terms of Reference in order to align it with other City advisory committees.

This report supports City Council's Strategic Plan 2022–2026 Area #1 Proactive in Stakeholder and Civic Engagement:

Proactive stakeholder and civic engagement to foster understanding and involvement and advance Richmond's interests.

This report also supports City Council's Strategic Plan 2022–2026 Strategic #6 A Vibrant, Resilient and Active Community:

Vibrant, resilient and active communities supported by a wide variety of opportunities to get involved, build relationships and access resources.

Analysis

The RCSAC was established in 1987 to encourage and promote social policies and community services that contribute to the well-being of Richmond residents and to develop the capacity of the community service sector. While the RCSAC is an advisory committee to City Council, only two citizen representatives are Council-appointed. The majority of RCSAC members are representatives of non-profit social service agencies supporting Richmond residents, appointed by their own organizations. The City supports the RCSAC by providing an annual operating budget, a Council Liaison and a Staff Liaison.

The RCSAC Charter was approved by City Council in 2009 and has not been updated since. The current RCSAC Charter (Attachment 1) outlines the committee's mission statement, history, roles and responsibilities, mandate, the City liaisons assigned to the committee and includes an overview of the 40 Developmental Assets, which acts as a framework to support the development of youth.

Based on a review of the City's 19 advisory committees, all of the City's advisory committees have a Terms of Reference except the RCSAC which has a Charter. The Terms of Reference defines the purpose and structure of a committee, including the roles and responsibilities of those involved, and provides guidance on how the work will be undertaken and reported. Terms of Reference for advisory committees typically includes the following: purpose, mandate, composition, recruitment, selection and appointment, term, membership responsibilities, operation and process, code of conduct and resources.

Proposed RCSAC Terms of Reference

Proposed updates are being recommended to the RCSAC Charter to improve the clarity of the RCSAC's role and to align the proposed RCSAC Terms of Reference with the Terms of Reference of other advisory committees. Staff completed a review of other advisory committees to ensure that the proposed revisions reflect current practices and standards. The proposed updates to the RCSAC Charter in regards to the roles, mandate and composition are presented in Table 1.

Table 1: Proposed Updates to the RCSAC Charter

Current (Charter)	Proposed (Terms of Reference)
<p><u>Mandate</u></p> <p>The RCSAC shall advise Richmond City Council and may, in consultation with City Council, make representations to other policy-making bodies on the following:</p> <p>Section A:</p> <ol style="list-style-type: none"> 1. Policies that encourage cooperative planning and delivery of community services to ensure optimum efficiency and effectiveness; 2. Social issues/concerns that have an impact on community services, special needs groups and the quality of life in the community; 3. Community impact of governmental changes to policies and/or programs affecting Richmond's community services; and 4. Any other matters that may be referred by Richmond City Council, RCSAC member groups and the community at large. <p>Section B:</p> <ol style="list-style-type: none"> 1. Coordination of activities and information sharing between the voluntary and public sector. 	<p><u>Mandate</u></p> <p>The Richmond Community Services Advisory Committee acts as a resource and provides advice to Council regarding social policies and community services which contribute to the general health, well-being and quality of life of Richmond's community members. It also provides a forum to facilitate inter-agency networking and collaboration in order to enhance community capacity.</p>

Current (Charter)	Proposed (Terms of Reference)
<p><u>Roles</u></p> <ol style="list-style-type: none"> 1. The Richmond Community Services Advisory Committee (RCSAC) is a forum for community service agencies to meet on a regular basis in order to share information and ideas about issues of common interest, and to identify emerging needs. 2. The RCSAC will foster the development of services, through an asset building approach, to meet those needs. 3. The RCSAC will establish and monitor Task Forces to undertake activities deemed by the RCSAC to be necessary and consistent with the objectives of the RCSAC. All Task Forces will be time limited with both start and end dates, and will produce a written report. 4. The RCSAC may employ and hire such staff as deemed necessary to assist in the operation of the RCSAC, including all Task Forces. All employees will report directly to the Co-Chairs of the Executive Committee. 5. The RCSAC will provide a leadership and educational role in social issues affecting community services. 6. The RCSAC strives to work cooperatively and in a complementary manner with other City advisory committees. 	<p><u>Roles</u></p> <ol style="list-style-type: none"> 1. Act as a resource and provide advice to City Council regarding social issues affecting the Richmond community. 2. Participate in consultation processes for City strategies, initiatives and policies in response to staff's request for input. 3. Act as a conduit for feedback from the community on social matters. 4. Undertake work at the request of City Council, the RCSAC membership and the community at large that align with the RCSAC's mandate. 5. Provide a forum for social service and community organizations to network, collaborate and learn from one another through information sharing, educational opportunities and joint initiatives.
<p><u>Composition</u></p> <p>Liaison with the City of Richmond will be provided by:</p> <ul style="list-style-type: none"> • One (1) non-voting Richmond City Council Liaison; and • One (1) non-voting City Staff Liaison, provided by the Policy Planning Department. 	<p><u>Composition</u></p> <ol style="list-style-type: none"> 1. Council Liaison (Non-Voting) There shall be one Council Liaison appointed to the RCSAC. 2. City Staff Liaison (Non-Voting) There shall be one Staff Liaison assigned to the RCSAC. 3. Recording Secretary (Non-Voting) There shall be one Recording Secretary assigned to the RCSAC.

The following sections were removed from the proposed Terms of Reference as they are not typically included in the Terms of Reference of other advisory committees: mission statement, history, oral history and 40 Developmental Assets. The following sections were added to the proposed Terms of Reference to align with the Terms of Reference of other advisory committees: purpose, recruitment, selection and appointment, structure, term, membership responsibilities, operation and process, code of conduct and resources.

In order to meet the mandate of the RCSAC, the following have been added to the proposed Terms of Reference to clarify the membership of the RCSAC, term limits of Executive Committee members and the establishment of a quorum:

- Members of RCSAC shall have one designated representative and one designated alternate who can speak and make decisions on behalf of their organization, one of whom will attend meetings regularly.
- Members of the Executive Committee shall be elected at the Annual General Meeting for a two-year term. Members of the Executive Committee may re-apply for another term for a maximum of two consecutive terms or four consecutive years.
- A quorum is defined as a minimum of five members present.

Should City Council approve staff's recommendations, the new RCSAC Terms of Reference will take effect immediately, be circulated to RCSAC members and updated on the City's website.

The current RCSAC Charter is provided in Attachment 1 and the redline version showing track changes between the current RCSAC Charter and proposed RCSAC Terms of Reference is provided in Attachment 2. A complete version of the proposed RCSAC Terms of Reference with recommended changes is provided in Attachment 3.

Financial Impact

None.

Conclusion

The RCSAC provides advice to City Council regarding social issues affecting the Richmond community and fosters inter-agency relations and collaboration which enhance community capacity. If the proposed recommendations are approved by City Council, the new RCSAC Terms of Reference will be circulated to RCSAC members and updated on the City's website.

Dorothy Jo
Program Manager, Social Planning
(604-276-4391)

- Att. 1: Richmond Community Services Advisory Committee Charter
2: Redline Version of the Current RCSAC Charter and Proposed RCSAC Terms of Reference
3: Proposed Richmond Community Services Advisory Committee Terms of Reference



RCSAC | **Richmond Community Services
Advisory Committee**

Charter

September 11, 2008

Approved by Richmond City Council January 20, 2009

Table of contents

1.	<i>Mission Statement</i>	3
2.	<i>History</i>	3
3.	<i>Richmond Community Services Advisory Committee (RCSAC) in brief</i>	4
4.	<i>RCSAC Roles</i>	4
5.	<i>City Liaison</i>	4
6.	<i>Mandate</i>	5
	<i>Appendix I</i>	6
	<i>Appendix II</i>	8

1. Mission Statement

To encourage and promote those social policies and community services which contribute to the general health, welfare and quality of life of the residents of Richmond, and to increase inter-agency relations and cooperation in order to enhance community capacity.

2. History

The Richmond Community Services Advisory Committee, hereinafter referred to as "RCSAC", received formal recognition as an advisory body to Richmond City Council and its appropriate Committees on May 25, 1987. It builds on the information gathering and sharing strengths of the Richmond Community Services Council, which served the community in a similar but less formal capacity from April, 1978 to its evolution as the RCSAC in September, 1987. During several years of Community services as a voluntary collaborative of non-profit, government and private agencies and organizations in the field of social and related community services, the Richmond Community Services Council and its member organizations were instrumental in the development and establishment of:

- The municipally funded RCMP Youth Intervention Program;
- A municipal social planner position;
- Richmond Child Protection Network;
- Richmond Family Place;
- An open referral in-the-home parenting program (lost with others during the 1983 restraint measures imposed by major government funding sources);
- Collaboration in preparation of the report Preparing for a Livable Future: Recommendations by the City Center Steering Committee;
- Improved Municipal Grant application and appeal processes;
- The Child Care Advisory Committee;
- The Inventory of Social Services in Richmond;
- The Richmond Intercultural Advisory Committee; and
- An RCSAC Poverty Response Committee was established, and reports were submitted to Council. This has now become an independent committee.

Representatives from the RCSAC:

- Participated in the Community Parks, Recreational & Cultural Working Group to assist in providing City Council with a Master Plan;
- Currently participate in the Substance Abuse Task Force; and
- The Richmond Intercultural Advisory Committee.

3. Richmond Community Services Advisory Committee (RCSAC) in brief

1. Advises Richmond City Council, and/or the appropriate Council Committee.
2. Makes representations to other policy-making bodies on social policy and community services matters.
3. Provides informed comment and advice to Richmond City Council on implications for policies and services being changed and introduced.
4. Undertakes its work at the request of Richmond City Council, the RCSAC membership, and the community at large.
5. Provides a strong and active role in overall social policy and community services decisions for community representatives and nonprofit society boards.

4. RCSAC Roles

1. The Richmond Community Services Advisory Committee (RCSAC) is a forum for community service* agencies to meet on a regular basis in order to share information and ideas about issues of common interest, and to identify emerging needs.

***Community Services:** defined as those covering the general areas of health, social services, education, and other related service where the overall intent is to improve the quality of life for Richmond residents.
2. The RCSAC will foster the development of services, through an asset building approach, to meet those needs.
3. The RCSAC will establish and monitor Task Forces to undertake activities deemed by the RCSAC to be necessary and consistent with the objectives of the RCSAC. All Task Forces will be time limited with both start and end dates, and will produce a written report.
4. The RCSAC may employ and hire such staff as deemed necessary to assist in the operation of the RCSAC, including all Task Forces. All employees will report directly to the Co-Chairs of the Executive Committee.
5. The RCSAC will provide a leadership and educational role in social issues affecting community services.
6. The RCSAC strives to work cooperatively and in a complementary manner with other City advisory committees.

5. City Liaison

Liaison with the City of Richmond will be provided by:

- One (1) non-voting Richmond City Council Liaison; and

- One (1) non-voting City Staff Liaison, provided by the Policy Planning Department.

6. Mandate

Section A

The RCSAC shall advise Richmond City Council and may, in consultation with City Council, make representations to other policy-making bodies on the following:

1. Policies that encourage cooperative planning and delivery of community services to ensure optimum efficiency and effectiveness;
2. Social issues/concerns that have an impact on community services, special needs groups and the quality of life in the community;
3. Community impact of governmental changes to policies and/or programs affecting Richmond's community services; and
4. Any other matters that may be referred by Richmond City Council, RCSAC member groups and the community at large.

Section B

1. Coordination of activities and information sharing between the voluntary and public sector.

Appendix I

An Oral History of RCSC, later to become RCSAC

(Delivered by Olive Bassett at the RCSAC General meeting of December 8, 2003)

It is ten years since I have been associated with this advisory council, some of which I speak on today could be familiar to many of you but perhaps some of you are not familiar with the early history I hope it will be of interest to you. I was a member of RCSC for many years before becoming a school trustee then I was elected as their Rep. on the PAC (Policy Advisory Council) in 1990. Back in 1978, there was very little planning for social services, something had to be done, and the United Way was invited to set up some social planning for the community. There was no Social Planner at the municipal level at that time.

The Child Services Committee, a committee of the United Way, was not representative enough; its mandate was services to children 12 & under. A newly formed Child Abuse Committee was attempting to educate the public on what was happening to children; the community health nurses and social workers were the only ones going into the homes of many abused children. But the climate of the times prevented anyone from speaking out especially about sexual abuse, this was a taboo topic, no one wanted to talk about it. And there were many turf problems, everyone was working in isolation on their own particular issues and problems, this is mine that is yours, don't mix the two! Finally the United Way placed an arm's length community person in as Chair of the Child Services Committee hoping to become more effective. Something was still needed; the committee was not representative of agencies working with families, children & youth. Palmer School had just gone up in smoke, at the hands of a teen-age girl who badly needed treatment.

There were no services of the kind youth like her needed, but it was risking a teachers or a community health nurse's job to speak out on lack of services. It was so difficult to address so many social problems in the community but at that time, the thought of washing your linen in public was not to be tolerated. The School Board refused to put a family life program into the schools. The community was polarized. Many were demanding the program, just as many were in denial it was needed, and these felt the only place to teach this subject was in the home. Which was fine but those children needing the program did not come from homes where this kind of education was taught. It was a little later I believe the Richmond Youth Services Agency came into being to focus on the issues and problems facing the over 12's. And so, it was in this type of atmosphere that a major meeting was held with many of those delivering social services to families. Through this meeting, they got the endorsement needed to be something much broader than the Richmond Children's Committee.

A Steering Committee was set up that met twice a month for a solid year and what came out of that was the framework for the Richmond Community Services Council. That was in 1978, and nine years later in '87, with the assistance of a municipal councillor, a social planner had finally been hired, RCSC was restructured and given the formal title of the Richmond Community Services Advisory Council, RCSAC, as it is known today. They would make recommendations for social service issues and report those issues & concerns directly to the Municipal Council through

the Policy Advisory Council, who were elected from the Boards of the individual agencies to serve on PAC. They were the politic alarm of the RCSAC. And Council listened. In their eyes, it was no longer just staff driven. These were elected people making the recommendations. With the new structure, there was also the IAC, Inter Agency committee, made up the staff and the 'Hands On' people who worked in the field, and the Coordinating Committee overseeing both IAC & PAC. This is all in your charter, I found it very interesting to re-read, and it would be well worth your re-reading pages 20 to 24.

In 1989, the RCSAC held a "Strategy Planning and Priority Setting Meeting". This was an extremely important meeting for RCSAC. Johnny Carline, Deputy Administrator, Strategic Planning for Richmond spoke on what Richmond could look like in the future, two questions he asked of the group:

1. "What are the priorities for service provision for all of the agencies in the next three years?"
2. "What suggestions do you have for the municipality to incorporate social issues into the growth management strategy?"

A planning committee took all the suggestions, solutions, comments and concerns and brought in a final report in January 1990. Seven (7) recommendations came out of it and were presented to council, they may help you in your deliberations on the restructure process, I will leave it with Michael. Then in 1994, RCSAC sent out an excellent questionnaire to member organizations, to see if the advisory council was meeting the needs of its membership by addressing gaps, identifying issues and resources to address them and then develop an action plan. The survey was divided into six major sections: Role & Function, Participation, Community issues, Strengths & Weaknesses, Suggestions for raising the profile of RCSAC and lastly the potential for sending out a newsletter. I will also leave a copy of this with Michael, as it may prove useful. I see you are now contemplating another re-structure, perhaps some questions that you may ask yourselves are:

"What do you want to accomplish that you are not doing now?"

"When was the last time your charter was brought up to date?"

"How many agencies out there are not aware of what you do?"

"How many agencies or groups out there doing a service for the community, are you not aware of?"

In my opinion the reason RCSAC has survived while many others have not, is because community volunteers and staff have worked together for a common goal, this way everyone wins. The effectiveness of RCSAC has always been present to a greater or lesser degree. It is a tremendously important organization and the accomplishments you have gained have not come easy. It is an organization you can be proud to belong to. However, it must be supported by each and every social service organization in order to have the greatest impact for good.

Thank you.

M. Olive Bassett

Appendix II

40 Developmental Assets

Search Institute has identified the following building blocks of healthy development that help young people grow up healthy, caring, and responsible.

External Assets

Category Asset Name and Definition

Support

1. Family Support – Family life provides high levels of love and support.
2. Positive Family Communication – Young person and her or his parent(s) communicate positively, and young person is willing to seek advice and counsel from parents.
3. Other Adult Relationships – Young person receives support from three or more non-parent adults.
4. Caring Neighborhood – Young person experiences caring neighbors.
5. Caring School Climate – School provides a caring, encouraging environment.
6. Parent Involvement in Schooling – Parent(s) are actively involved in helping young person succeed in school.

Empowerment

7. Community Values Youth – Young person perceives that adults in the community value youth.
8. Youth as Resources – Young people are given useful roles in the community.
9. Service to Others – Young person serves in the community one hour or more per week.
10. Safety – Young person feels safe at home, school, and in the neighborhood.

Boundaries and Expectations

11. Family Boundaries – Family has clear rules and consequences and monitors the young person's whereabouts.
12. School Boundaries – School provides clear rules and consequences.
13. Neighborhood Boundaries – Neighbors take responsibility for monitoring young people's behavior.
14. Adult Role Models – Parent(s) and other adults model positive, responsible behavior.
15. Positive Peer Influence – Young person's best friends model responsible behavior.
16. High Expectations – Both parent(s) and teachers encourage the young person to do well.

Constructive use of time

- 17. Creative Activities – Young person spends three or more hours per week in lessons or practice in music, theatre, or other arts.
- 18. Youth Programs – Young person spends three or more hours per week in sports, clubs, or organizations at school and/or in the community.
- 19. Religious Community – Young person spends one or more hours per week in activities in a religious institution.
- 20. Time at Home – Young person is out with friends "with nothing special to do" two or fewer nights per week.

Internal Assets

Category Asset Name and Definition

Commitment to Learning

- 21. Achievement Motivation – Young person is motivated to do well in school.
- 22. School Engagement – Young person is actively engaged in learning.
- 23. Homework – Young person reports doing at least one hour of homework every school day.
- 24. Bonding to School – Young person cares about her or his school.
- 25. Reading for Pleasure – Young person reads for pleasure three or more hours per week.

Positive Values

- 26. Caring – Young person places high value on helping other people.
- 27. Equality and Social Justice – Young person places high value on promoting equality and reducing hunger and poverty.
- 28. Integrity – Young person acts on convictions and stands up for her or his beliefs.
- 29. Honesty – Young person "tells the truth even when it is not easy."
- 30. Responsibility – Young person accepts and takes personal responsibility.
- 31. Restraint – Young person believes it is important not to be sexually active or to use alcohol or other drugs.

Social Competencies

- 32. Planning and Decision Making – Young person knows how to plan ahead and make choices.
- 33. Interpersonal Competence – Young person has empathy, sensitivity, and friendship skills.
- 34. Cultural Competence – Young person has knowledge of and comfort with people of different cultural/racial/ethnic backgrounds.

- 35. Resistance Skills – Young person can resist negative peer pressure and dangerous situations.
- 36. Peaceful Conflict Resolution – Young person seeks to resolve conflict nonviolently.

Positive Identity

- 37. Personal Power – Young person feels he or she has control over "things that happen to me."
- 38. Self-Esteem – Young person reports having a high self-esteem.
- 39. Sense of Purpose – Young person reports that "my life has a purpose."
- 40. Positive View of Personal Future – Young person is optimistic about her or his personal future.

**Redline Version of the Current RCSAC Charter
and Proposed RCSAC Terms of Reference**



Richmond Community Services Advisory Committee Terms of Reference Charter

Terms of Reference Richmond Community Services Advisory Committee

1. ~~Mission Statement~~

~~To encourage and promote those social policies and community services which contribute to the general health, welfare and quality of life of the residents of Richmond, and to increase inter-agency relations and cooperation in order to enhance community capacity.~~

1. Purpose

These Terms of Reference shall apply to the "Richmond Community Services Advisory Committee" (RCSAC).

2. ~~History~~

~~The Richmond Community Services Advisory Committee, hereinafter referred to as "RCSAC", received formal recognition as an advisory body to Richmond City Council and its appropriate Committees on May 25, 1987. It builds on the information gathering and sharing strengths of the Richmond Community Services Council, which served the community in a similar but less formal capacity from April, 1978 to its evolution as the RCSAC in September, 1987. During several years of Community services as a voluntary collaborative of non-profit, government and private agencies and organizations in the field of social and related community services, the Richmond Community Services Council and its member organizations were instrumental in the development and establishment of:~~

~~The municipally funded RCMP Youth Intervention Program;
A municipal social planner position;
Richmond Child Protection Network;
Richmond Family Place;
An open referral in the home parenting program (lost with others during the 1983 restraint measures imposed by major government funding sources);
Collaboration in preparation of the report Preparing for a Livable Future:
Recommendations by the City Center Steering Committee;
Improved Municipal Grant application and appeal processes;
The Child Care Advisory Committee;
The Inventory of Social Services in Richmond;
The Richmond Intercultural Advisory Committee; and
An RCSAC Poverty Response Committee was established, and reports were submitted to Council. This has now become an independent committee.~~

~~Representatives from the RCSAC:
Participated in the Community Parks, Recreational & Cultural Working Group to assist in providing City Council with a Master Plan;
Currently participate in the Substance Abuse Task Force; and The Richmond Intercultural Advisory Committee.~~

3. Mandate

The Richmond Community Services Advisory Committee acts as a resource and provides advice to Council regarding social policies and community services which contribute to the general health, wellbeing and quality of life of Richmond's community

members. It also provides a forum to facilitate inter-agency networking and collaboration in order to enhance community capacity.

~~3. Richmond Community Services Advisory Committee (RCSAC) in brief~~

- ~~1. Advises Richmond City Council, and/or the appropriate Council Committee.~~
- ~~2. Makes representations to other policy-making bodies on social policy and community services matters.~~
- ~~3. Provides informed comment and advice to Richmond City Council on implications for policies and services being changed and introduced.~~
- ~~4. Undertakes its work at the request of Richmond City Council, the RCSAC membership, and the community at large.~~
- ~~5. Provides a strong and active role in overall social policy and community services decisions for community representatives and nonprofit society boards.~~

~~4. RCSAC Roles~~

- ~~1. The Richmond Community Services Advisory Committee (RCSAC) is a forum for community service* agencies to meet on a regular basis in order to share information and ideas about issues of common interest, and to identify emerging needs.~~

~~*Community Services: defined as those covering the general areas of health, social services, education, and other related service where the overall intent is to improve the quality of life for Richmond residents.~~

- ~~2. The RCSAC will foster the development of services, through an asset building approach, to meet those needs.~~
- ~~3. The RCSAC will establish and monitor Task Forces to undertake activities deemed by the RCSAC to be necessary and consistent with the objectives of the RCSAC. All Task Forces will be time limited with both start and end dates, and will produce a written report.~~
- ~~4. The RCSAC may employ and hire such staff as deemed necessary to assist in the operation of the RCSAC, including all Task Forces. All employees will report directly to the Co-Chairs of the Executive Committee.~~
- ~~5. The RCSAC will provide a leadership and educational role in social issues affecting community services.~~
- ~~6. The RCSAC strives to work cooperatively and in a complementary manner with other City advisory committees.~~

~~3. Role~~

~~The role of the RCSAC is to carry out the following functions:~~

- ~~3.1 Act as a resource and provide advice to City Council regarding social issues affecting the Richmond community.~~
- ~~3.2 Participate in consultation processes for City strategies, initiatives and policies in response to staff's request for input.~~
- ~~3.3 Act as a conduit for feedback from the community on social matters.~~
- ~~3.4 Undertake work at the request of City Council, the RCSAC membership and the community at large that align with the RCSAC's mandate.~~

- 3.5 Provide a forum for social service and community organizations to network, collaborate and learn from one another through information sharing, educational opportunities and joint initiatives.

City Liaison

Liaison with the City of Richmond will be provided by:

- ~~One (1) non-voting Richmond City Council Liaison; and~~
- ~~One (1) non-voting City Staff Liaison, provided by the Policy Planning Department.~~

4. Composition

4.1 Voting Members

RCSAC shall be comprised of representatives of:

- 4.1.1 Community service organizations
- 4.1.2 Individual members
- 4.1.3 Two (2) Citizens at Large appointed by Richmond City Council

Member organizations shall have one (1) designated voting member and one (1) designated alternate, to be identified in writing at the time of application for membership. Each member organization, individual member and Citizen at Large has one (1) vote.

4.2 Council Liaison (Non-Voting)

There shall be one Council Liaison appointed to the RCSAC.

4.3 City Staff Liaison (Non-Voting)

There shall be one Staff Liaison assigned to the RCSAC.

4.4 Recording Secretary (Non-Voting)

There shall be one Recording Secretary assigned to the RCSAC.

~~6. Mandate~~

~~Section A~~

~~The RCSAC shall advise Richmond City Council and may, in consultation with City Council, make representations to other policy-making bodies on the following:~~

~~Policies that encourage cooperative planning and delivery of community services to ensure optimum efficiency and effectiveness;
Social issues/concerns that have an impact on community services, special needs groups and the quality of life in the community;
Community impact of governmental changes to policies and/or programs affecting Richmond's community services; and
Any other matters that may be referred by Richmond City Council, RCSAC member groups and the community at large.~~

~~Section B~~

~~Coordination of activities and information sharing between the voluntary and public sector.~~

5. Recruitment, Selection, Appointment

5.1 Recruitment

- 5.1.1 Recruitment of Citizens at Large shall be according to Council policy and procedures (e.g. the City Clerk's office will place appropriate public advertisements in the media to ask for volunteers).
- 5.1.2 Interested organizations shall apply for membership to the RCSAC by submitting an application form. Organizations shall designate a representative and an alternate who can speak and make decisions on behalf of their organization at the time of application.
- 5.1.3 Interested individuals shall apply for membership to the RCSAC by submitting an application form.

5.2 Selection

Members of RCSAC shall be selected based on one or more of the following criteria:

5.2.1 Organizational Members

- 5.2.1.1.1 Represent a community service organization, community committee or a government agency, ministry or department;
- 5.2.1.1.2 Have a mandate or organizational goals and objectives consistent with those of the RCSAC;
- 5.2.1.1.3 Have one designated representative and one designated alternate who can speak and make decisions on behalf of their organization, one of whom will attend meetings regularly.
- 5.2.1.1.4 Able to pay the annual membership fees within six (6) weeks of notice

5.2.2 Individual Members

- 5.2.2.1.1 Must reside or work in Richmond and have a demonstrated interest or involvement in social policy and community service matters.

5.2.3 Citizens at Large

- 5.2.3.1.1 Must reside or work in Richmond and have a demonstrated interest or involvement in social policy and community services matters.

5.3 Appointment

Only Citizens at Large shall be appointed by Council. Organizational and individual members do not have to be appointed by Council. Final approval of all applications rests with the RCSAC as a whole, and is guided by the recommendations of the Executive Committee.

6. Structure

6.1 General Membership Committee

The General Membership Committee consists of the following:

- 6.1.1 Organizational representatives are appointed by member organizations and make up the majority of the membership. They represent a community service organization, community committee or a government agency, ministry or

department that have a mandate or organizational goals and objectives consistent with those of the RCSAC.

6.1.2 Individual members do not represent an organization and must reside or work in Richmond and have a demonstrated interest or involvement in social policy and community service matters.

6.1.3 Citizens-at-Large are appointed by Council.

6.2 Executive Committee

The Executive Committee is the administrative point of contact for the RCSAC and is responsible for the overall direction of the RCSAC. It consists of:

6.2.1 Two (2) Co-Chairs

6.2.2 One (1) Treasurer

6.2.3 Minimum of two (2) to a maximum of four (4) Members at Large

6.2.4 Council Liaison Staff Liaison

6.3 Subcommittees: Action Groups and Task Forces

6.3.1 Subcommittees are established by a resolution of the General Membership, which will define the Terms of Reference for the subcommittee. Unless otherwise determined, all subcommittees will be time-limited action groups or task forces.

6.3.2 All subcommittees of the RCSAC are chaired by a RCSAC member and may include non-member resource persons from government, private agencies and appropriate organizations serving the community. Unless otherwise directed by the Executive Committee, all subcommittees will automatically dissolve upon acceptance of final reports.

7. Term

7.1 Citizens at Large

7.1.1 Citizens at Large shall be appointed by Council for a term of two (2) years.

7.1.2 At the end of a term, Citizens at Large may re-apply to serve for a subsequent term.

7.1.3 Citizens at Large may serve for a maximum of four (4) consecutive terms or eight (8) consecutive years.

7.2 General Membership

7.2.1 Member organizations and individual members can apply for a one (1) year term which can be renewed every year for as long as the membership fee is paid and the member is in good standing.

7.3 Co-Chairs

7.3.1 Co-Chairs are elected for two (2) years, in alternating years. Terms may be extended for one (1) year in cases where an alternate has not been identified or volunteered for the position

7.4 Executive Committee

- 7.4.1 Members of the Executive Committee shall be elected at the Annual General Meeting for a two (2) year term. Members of the Executive Committee may re-apply for another term for a maximum of two (2) consecutive terms, or four (4) consecutive years.

8. Membership Responsibilities

8.1 Members shall:

- 8.1.1 Be familiar with the mandate, goals and work plan of the RCSAC.
- 8.1.2 Attend monthly meetings with regularity and punctuality.
- 8.1.3 Thoroughly familiarize themselves with all agenda materials in preparation for active participation in discussions.
- 8.1.4 Review and approve Communication Tools, Backgrounders and Reports conveying information and advice to Council.
- 8.1.5 Share information and identify gaps on social policies and services, service delivery and other related issues.
- 8.1.6 Be knowledgeable about issues under consideration and provide feedback and input within the scope of the RCSAC.
- 8.1.7 Pay membership dues within six (6) weeks of notice (or otherwise be at risk of losing their membership status).
- 8.1.8 Act in accordance with and uphold the City's Respectful Workplace Policy (Policy 6800).

8.2 The Co-Chairs shall:

- 8.2.1 Chair all meetings of the Executive and the General Membership
- 8.2.2 Prepare Executive and General Meeting agendas in consultation with the Executive Committee.
- 8.2.3 Represent the RCSAC at Council meetings and its appropriate committees when required/requested.
- 8.2.4 Ensure motions and decisions made by the RCSAC align with the RCSAC's mandate.
- 8.2.5 Assume responsibility of signing or authorizing all correspondence arising from Committee or Subcommittee activities.
- 8.2.6 Chair meetings according to Robert's Rules of Order, while demonstrating knowledge of the work at hand, facilitating inclusive discussions and ensuring that all members have a full and equal opportunity to participate in decision-making.
- 8.2.7 Represent the views and work of the RCSAC to City Council as and when required.

8.3 The Executive Committee shall:

- 8.3.1 Plan and monitor the work of the RCSAC.
- 8.3.2 Provide guidance for the sub-committees and action groups.
- 8.3.3 Review any recommendations coming to the RCSAC to ensure they align with the RCSAC's mandate.
- 8.3.4 Prepare an Annual Report and proposed Work Program.
- 8.3.5 Receive and refer requests/referrals from City Council and its appropriate committees to the appropriate Action Group/Task Force.

- 8.3.6 Monitor and report on all financial matters related to the work of the RCSAC as required.
- 8.3.7 Ensure that annual work programs are followed and monitored during the year to track progress.

8.4 The Subcommittee shall:

- 8.4.1 Draft Communication Tools, Backgrounders and Reports to City Council for approval by the General Membership.
- 8.4.2 Provide minutes, notes or appropriate records of meetings.
- 8.4.3 Provide a written summary of activities for inclusion in the RCSAC's annual report.

9. Operation and Process

9.1 Operation

- 9.1.1 General Meetings shall be held a minimum of six times a year either in person or via digital platform as called by the Co-Chairs.
- 9.1.2 An Annual General Meeting is held every year where the Co-Chairs and members of the Executive Committee will be elected.
- 9.1.3 Sub-committees may be created by the RCSAC as necessary.
- 9.1.4 The sub-committees will be chaired by a RCSAC member in accordance with Robert's Rules of Order and report to and take direction from the RCSAC.

9.2 Accountability

The RCSAC shall produce annual reports, work programs, budgets and other reports for Council approval.

9.3 Application and Fees

Interested community organizations and individuals shall fill out an application form and pay the corresponding membership fee to apply for RCSAC membership. Membership fees are set by the General Membership at the Annual General Meeting.

9.4 Communication

- 9.4.1 The RCSAC shall report to Council through the Staff Liaison to Planning Committee.
- 9.4.2 RCSAC General and Subcommittee meetings shall be open to the public in accordance with the Local Government Act.
- 9.4.3 Membership of the RCSAC does not preclude member organizations from submitting their own positions and reports directly to City Council, City staff or City Committees however, such reports must be on behalf of the organization they represent and not on behalf of the RCSAC.

9.5 Decision-Making Process

9.5.1. Members of RCSAC shall:

- 9.5.1.1 Follow Council decision-making policy and procedures;
- 9.5.1.2 Conduct business with a minimum of five members present, which constitutes a quorum;
- 9.5.1.3 Strive for consensus; and

- 9.5.1.4 In the absence of consensus, a decision shall be made based on a simple majority of members present.
- 9.5.2. Each member is entitled to one vote.

10. Code of Conduct

–10.1 Conflict of Interest:

- 10.1.1 A conflict of interest exists if a Committee member is a director, member or employee of an organization seeking to benefit from the City or if the Committee member has a direct or indirect pecuniary (financial) interest in the outcome of Committee deliberations.
- 10.1.2 Committee members who have a conflict of interest with a topic being discussed shall declare the conflict, describe the nature of the conflict, leave the room prior to any discussions and shall refrain from voting.
- 10.1.3 Committee members are not permitted to directly or indirectly benefit from their participation on the Committee during their tenure and for a period of twelve (12) months following their term(s).

10.2 Professionalism:

- 10.2.1 Committee members are expected to act in accordance with the City's Respectful Workplace Policy (Policy 6800), including being respectful towards other members.
- 10.2.2 Committee members must devote the necessary time and effort to prepare for meetings, arrive at meetings on time and provide feedback consistent with the Committee's mandate.
- 10.2.3 Any Committee member who is absent for three (3) meetings of the Committee without reason satisfactory to the Committee may be removed from the Committee.

10.3 Reporting and Social Media:

- 10.3.1 The Committee members may not represent themselves as having any authority beyond that delegated in the Terms of Reference approved by Council. Items will be presented to the Committee if referred by Council or staff and the standard process of communication is through staff to Council. Committee members may communicate directly to Council or the media, if the Committee members identify themselves as an individual, and not as representatives of the Committee.
- 10.3.2 Any use of social media must, as with all other forms of communication, meet principles of integrity, professionalism and privacy.

Should a Committee member violate the Code of Conduct or act outside the Terms of Reference, the Committee member may be removed from the Committee.

11. Resources

- 11.1 There shall be one Staff Liaison appointed to the RCSAC. The Staff Liaison's role is to: update the RCSAC on City initiatives that relate to social policies and issues; refer issues for advice and options; relay feedback from the RSCAC to City Departments

and City Council as appropriate; provide an orientation to new committee members; and provide administrative support as necessary.

11.2 RCSAC shall prepare and submit:

11.2.1 For the Year Completed;

11.2.1.1 an annual report, and

11.2.1.2 a financial statement

11.2.2. For the Upcoming Year

11.2.2.1. a proposed work program, and

11.2.2.1. a proposed budget.

11.3 Richmond City Council will review the RCSAC annual budget submission and may provide funding subject to City budgetary priorities.

11.4 RCSAC may incur expenses only for Council authorized items, and City policy and procedures shall be followed.

11.5 The City Staff Liaison and Recording Secretary shall be coordinated through the Community Social Development Department.

Appendix I

An Oral History of RCSC, later to become RCSAC

(Delivered by Olive Bassett at the RCSAC General meeting of December 8, 2003)

~~It is ten years since I have been associated with this advisory council, some of which I speak on today could be familiar to many of you but perhaps some of you are not familiar with the early history I hope it will be of interest to you. I was a member of RCSC for many years before becoming a school trustee then I was elected as their Rep. on the PAC (Policy Advisory Council) in 1990. Back in 1978, there was very little planning for social services, something had to be done, and the United Way was invited to set up some social planning for the community. There was no Social Planner at the municipal level at that time.~~

~~The Child Services Committee, a committee of the United Way, was not representative enough; its mandate was services to children 12 & under. A newly formed Child Abuse Committee was attempting to educate the public on what was happening to children; the community health nurses and social workers were the only ones going into the homes of many abused children. But the climate of the times prevented anyone from speaking out especially about sexual abuse, this was a taboo topic, no one wanted to talk about it. And there were many turf problems, everyone was working in isolation on their own particular issues and problems, this is mine that is yours, don't mix the two! Finally the United Way placed an arm's length community person in as Chair of the Child Services Committee hoping to become more effective. Something was still needed; the committee was not representative of agencies working with families, children & youth. Palmer School had just gone up in smoke, at the hands of a teen-age girl who badly needed treatment.~~

There were no services of the kind youth like her needed, but it was risking a teachers or a community health nurse's job to speak out on lack of services. It was so difficult to address so many social problems in the community but at that time, the thought of washing your linen in public was not to be tolerated. The School Board refused to put a family life program into the schools. The community was polarized. Many were demanding the program, just as many were in denial it was needed, and these felt the only place to teach this subject was in the home. Which was fine but those children needing the program did not come from homes where this kind of education was taught. It was a little later I believe the Richmond Youth Services Agency came into being to focus on the issues and problems facing the over 12's. And so, it was in this type of atmosphere that a major meeting was held with many of those delivering social services to families. Through this meeting, they got the endorsement needed to be something much broader than the Richmond Children's Committee.

A Steering Committee was set up that met twice a month for a solid year and what came out of that was the framework for the Richmond Community Services Council. That was in 1978, and nine years later in '87, with the assistance of a municipal councillor, a social planner had finally been hired, RCSC was restructured and given the formal title of the Richmond Community Services Advisory Council, RCSAC, as it is known today. They would make recommendations for social service issues and report those issues & concerns directly to the Municipal Council through the Policy Advisory Council, who were elected from the Boards of the individual agencies to serve on PAC. They were the politic alarm of the RCSAC. And Council listened. In their eyes, it was no longer just staff driven. These were elected people making the recommendations. With the new structure, there was also the IAC, Inter Agency committee, made up the staff and the 'Hands On' people who worked in the field, and the Coordinating Committee overseeing both IAC & PAC. This is all in your charter, I found it very interesting to re-read, and it would be well worth your re-reading pages 20 to 24.

In 1989, the RCSAC held a "Strategy Planning and Priority Setting Meeting". This was an extremely important meeting for RCSAC. Johnny Carline, Deputy Administrator, Strategic Planning for Richmond spoke on what Richmond could look like in the future, two questions he asked of the group:

1. "What are the priorities for service provision for all of the agencies in the next three years?"
2. "What suggestions do you have for the municipality to incorporate social issues into the growth management strategy?"

A planning committee took all the suggestions, solutions, comments and concerns and brought in a final report in January 1990. Seven (7) recommendations came out of it and were presented to council, they may help you in your deliberations on the restructure process, I will leave it with Michael. Then in 1994, RCSAC sent out an excellent questionnaire to member organizations, to see if the advisory council was meeting the needs of its membership by addressing gaps, identifying issues and resources to address them and then develop an action plan. The survey was divided into six major sections: Role & Function, Participation, Community issues, Strengths & Weaknesses, Suggestions for raising the profile of RCSAC and lastly the potential for sending out a newsletter. I will also leave a copy of this with Michael, as it may prove useful. I see you are now contemplating another re-structure, perhaps some questions that you may ask yourselves are:

"What do you want to accomplish that you are not doing now?"

"When was the last time your charter was brought up to date?"

"How many agencies out there are not aware of what you do?"

"How many agencies or groups out there doing a service for the community, are you not aware of?"

In my opinion the reason RCSAC has survived while many others have not, is because community volunteers and staff have worked together for a common goal, this way everyone wins. The effectiveness of RCSAC has always been present to a greater or lesser degree. It is a tremendously important organization and the accomplishments you have gained have not come easy. It is an organization you can be proud to belong to. However, it must be supported by each and every social service organization in order to have the greatest impact for good.

Thank you.

M. Olive Bassett

Appendix II

40 Developmental Assets

Search Institute has identified the following building blocks of healthy development that help young people grow up healthy, caring, and responsible.

External Assets

Category Asset Name and Definition

Support

1. Family Support—Family life provides high levels of love and support.
2. Positive Family Communication—Young person and her or his parent(s) communicate positively, and young person is willing to seek advice and counsel from parents.
3. Other Adult Relationships—Young person receives support from three or more non-parent adults.
4. Caring Neighborhood—Young person experiences caring neighbors.
5. Caring School Climate—School provides a caring, encouraging environment.
6. Parent Involvement in Schooling—Parent(s) are actively involved in helping young person succeed in school.

Empowerment

- 7. ~~Community Values Youth—Young person perceives that adults in the community value youth.~~
- 8. ~~Youth as Resources—Young people are given useful roles in the community.~~
- 9. ~~Service to Others—Young person serves in the community one hour or more per week.~~
- 10. ~~Safety—Young person feels safe at home, school, and in the neighborhood.~~

Boundaries and Expectations

- 11. ~~Family Boundaries—Family has clear rules and consequences and monitors the young person's whereabouts.~~
- 12. ~~School Boundaries—School provides clear rules and consequences.~~
- 13. ~~Neighborhood Boundaries—Neighbors take responsibility for monitoring young people's behavior.~~
- 14. ~~Adult Role Models—Parent(s) and other adults model positive, responsible behavior.~~
- 15. ~~Positive Peer Influence—Young person's best friends model responsible behavior.~~
- 16. ~~High Expectations—Both parent(s) and teachers encourage the young person to do well.~~

Constructive use of time

- 17. ~~Creative Activities—Young person spends three or more hours per week in lessons or practice in music, theatre, or other arts.~~
- 18. ~~Youth Programs—Young person spends three or more hours per week in sports, clubs, or organizations at school and/or in the community.~~
- 19. ~~Religious Community—Young person spends one or more hours per week in activities in a religious institution.~~
- 20. ~~Time at Home—Young person is out with friends "with nothing special to do" two or fewer nights per week.~~

Internal Assets

Category Asset Name and Definition

Commitment to Learning

- 21. ~~Achievement Motivation—Young person is motivated to do well in school.~~
- 22. ~~School Engagement—Young person is actively engaged in learning.~~
- 23. ~~Homework—Young person reports doing at least one hour of homework every school day.~~

24. Bonding to School—Young person cares about her or his school.

25. Reading for Pleasure—Young person reads for pleasure three or more hours per week.

Positive Values

26. Caring—Young person places high value on helping other people.

27. Equality and Social Justice—Young person places high value on promoting equality and reducing hunger and poverty.

28. Integrity—Young person acts on convictions and stands up for her or his beliefs.

29. Honesty—Young person "tells the truth even when it is not easy."

30. Responsibility—Young person accepts and takes personal responsibility.

31. Restraint—Young person believes it is important not to be sexually active or to use alcohol or other drugs.

Social Competencies

32. Planning and Decision Making—Young person knows how to plan ahead and make choices.

33. Interpersonal Competence—Young person has empathy, sensitivity, and friendship skills.

34. Cultural Competence—Young person has knowledge of and comfort with people of different cultural/racial/ethnic backgrounds.

35. Resistance Skills—Young person can resist negative peer pressure and dangerous situations.

36. Peaceful Conflict Resolution—Young person seeks to resolve conflict nonviolently.

Positive Identity

37. Personal Power—Young person feels he or she has control over "things that happen to me."

38. Self-Esteem—Young person reports having a high self-esteem.

39. Sense of Purpose—Young person reports that "my life has a purpose."

40. Positive View of Personal Future—Young person is optimistic about her or his personal future.

**Proposed
Richmond Community Services Advisory Committee
Terms of Reference**

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Richmond Community Services Advisory Committee
Terms of Reference**

1. Purpose

These Terms of Reference shall apply to the "Richmond Community Services Advisory Committee" (RCSAC).

2. Mandate

The Richmond Community Services Advisory Committee acts as a resource and provides advice to Council regarding social policies and community services which contribute to the general health, well-being and quality of life of Richmond's community members. It also provides a forum to facilitate inter-agency networking and collaboration in order to enhance community capacity.

3. Role

The role of the RCSAC is to carry out the following functions:

- 3.1 Act as a resource and provide advice to City Council regarding social issues affecting the Richmond community.
- 3.2 Participate in consultation processes for City strategies, initiatives and policies in response to staff's request for input.
- 3.3 Act as a conduit for feedback from the community on social matters.
- 3.4 Undertake work at the request of City Council, the RCSAC membership and the community at large that align with the RCSAC's mandate.
- 3.5 Provide a forum for social service and community organizations to network, collaborate and learn from one another through information sharing, educational opportunities and joint initiatives.

4. Composition

4.1 Voting Members

RCSAC shall be comprised of representatives of:

- 4.1.1 Community service organizations
- 4.1.2 Individual members
- 4.1.3 Two (2) Citizens at Large appointed by Richmond City Council

Member organizations shall have one (1) designated voting member and one (1) designated alternate, to be identified in writing at the time of application for membership. Each member organization, individual member and Citizen at Large has one (1) vote.

4.2 Council Liaison (Non-Voting)

There shall be one Council Liaison appointed to the RCSAC.

4.3 City Staff Liaison (Non-Voting)

There shall be one Staff Liaison assigned to the RCSAC.

4.4 Recording Secretary (Non-Voting)

There shall be one Recording Secretary assigned to the RCSAC.

5. Recruitment, Selection and Appointment

5.1 Recruitment

- 5.1.1 Recruitment of Citizens at Large shall be according to Council policy and procedures (e.g. the City Clerk's office will place appropriate public advertisements in the media to ask for volunteers).
 - 5.1.2 Interested organizations shall apply for membership to the RCSAC by submitting an application form. Organizations shall designate a representative and an alternate who can speak and make decisions on behalf of their organization at the time of application.
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 - 5.2.1.1.3 Have one designated representative and one designated alternate who can speak and make decisions on behalf of their organization, one of whom will attend meetings regularly; and
 - 5.2.1.1.4 Be able to pay the annual membership fees within six (6) weeks of notice.
 - 5.2.2 Individual Members
 - 5.2.2.1.1 Must reside or work in Richmond and have a demonstrated interest or involvement in social policy and community service matters.
 - 5.2.3 Citizens at Large
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- 6.2.2 One (1) Treasurer
- 6.2.3 Minimum of two (2) to a maximum of four (4) Members at Large
- 6.2.4 Council Liaison
- 6.2.5 Staff Liaison

6.3 Subcommittees: Action Groups and Task Forces

- 6.3.1 Subcommittees are established by a resolution of the General Membership, which will define the Terms of Reference for the sub-committee. Unless otherwise determined, all subcommittees will be time-limited action groups or task forces.
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- 9.5 Decision-Making Process
 - 9.5.1. Members of RCSAC shall:
 - 9.5.1.1 Follow Council decision-making policy and procedures;
 - 9.5.1.2 Conduct business with a minimum of five members present, which constitutes a quorum;
 - 9.5.1.3 Strive for consensus; and
 - 9.5.1.4 In the absence of consensus, a decision shall be made based on a simple majority of members present.
 - 9.5.2. Each member is entitled to one vote.
- 10. Code of Conduct**
 - 10.1 Conflict of Interest
 - 10.1.1 A conflict of interest exists if a Committee member is a director, member or employee of an organization seeking to benefit from the City or if the Committee member has a direct or indirect pecuniary (financial) interest in the outcome of Committee deliberations.
 - 10.1.2 Committee members who have a conflict of interest with a topic being discussed shall declare the conflict, describe the nature of the conflict, leave the room prior to any discussions and shall refrain from voting.
 - 10.1.3 Committee members are not permitted to directly or indirectly benefit from their participation on the Committee during their tenure and for a period of twelve (12) months following their term(s).

10.2 Professionalism

- 10.2.1 Committee members are expected to act in accordance with the City's Respectful Workplace Policy (Policy 6800), including being respectful towards other members.
- 10.2.2 Committee members must devote the necessary time and effort to prepare for meetings, arrive at meetings on time and provide feedback consistent with the Committee's mandate.
- 10.2.3 Any Committee member who is absent for three (3) meetings of the Committee without reason satisfactory to the Committee may be removed from the Committee.

10.3 Reporting and Social Media

- 10.3.1 The Committee members may not represent themselves as having any authority beyond that delegated in the Terms of Reference approved by Council. Items will be presented to the Committee if referred by Council or staff and the standard process of communication is through staff to Council. Committee members may communicate directly to Council or the media, if the Committee members identify themselves as an individual, and not as representatives of the Committee.
- 10.3.2 Any use of social media must, as with all other forms of communication, meet principles of integrity, professionalism and privacy.

Should a Committee member violate the Code of Conduct or act outside the Terms of Reference, the Committee member may be removed from the Committee.

11. Resources

- 11.1 There shall be one Staff Liaison appointed to the RCSAC. The Staff Liaison's role is to: update the RCSAC on City initiatives that relate to social policies and issues; refer issues for advice and options; relay feedback from the RCSAC to City Departments and City Council as appropriate; provide an orientation to new committee members; and provide administrative support as necessary.
- 11.2 RCSAC shall prepare and submit:
 - 11.2.1 For the Year Completed
 - 11.2.1.1 An annual report; and
 - 11.2.1.2 A financial statement
 - 11.2.2 For the Upcoming Year
 - 11.2.2.1 A proposed work program; and
 - 11.2.2.2 A proposed budget.
- 11.3 Richmond City Council will review the RCSAC annual budget submission and may provide funding subject to City budgetary priorities.
- 11.4 RCSAC may incur expenses only for Council authorized items, and City policy and procedures shall be followed.
- 11.5 The City Staff Liaison and Recording Secretary shall be coordinated through the Community Social Development Department.



City of Richmond

Report to Committee

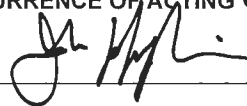


To: Planning Committee **Date:** May 30, 2023
From: John Hopkins **File:** 01-0157-30-
Director, Policy Planning RGST1/2023-Vol 01
Re: **Response to Metro Vancouver's Referral: Land Use Designation Amendment to the Metro 2050 Regional Growth Strategy Proposed by the Township of Langley**

Staff Recommendation

That staff be directed to communicate to the Metro Vancouver Regional District Board the City of Richmond's opposition and comments, as outlined in the staff report titled "Response to Metro Vancouver's Referral: Land Use Designation Amendment to the Metro 2050 Regional Growth Strategy Proposed by the Township of Langley", dated May 30, 2023 from the Director, Policy Planning.

John Hopkins
Director, Policy Planning
(604-276-4279)

Att. 1

REPORT CONCURRENCE	
CONCURRENCE OF ACTING GENERAL MANAGER 	
SENIOR STAFF REPORT REVIEW	INITIALS: 
APPROVED BY CAO 	

Staff Report

Origin

The Metro Vancouver Regional District (MVRD) Board has initiated a process to amend the Metro 2050 Regional Growth Strategy (RGS), in relation to a request from the Township of Langley.

At its April 28, 2023 regular meeting, the Board of Directors of the Metro Vancouver Regional District (Metro Vancouver) adopted the following resolution:

That the MVRD Board:

- a) initiate the regional growth strategy amendment process for the Township of Langley's requested regional land use designation amendment from Agricultural to Industrial for the lands located at 26477, 26695, 26601, 26575, 26713 – 56 Avenue; 26500 Block of 56 Avenue; 5670 – 264 Street; and 5625 – 268 Street;*
- b) give first, second, and third readings to "Metro Vancouver Regional District Regional Growth Strategy Amendment Bylaw No. 1364, 2023"; and*
- c) direct staff to notify affected local governments as per section 6.4.2 of Metro 2050.*

The Township of Langley's requested amendment to the Metro 2050 RGS involves the following:

- A regional land use designation amendment to re-designate the site from Agricultural to Industrial; and
- Move the Urban Containment Boundary to include these lands.

As part of Metro Vancouver's notification process, the City of Richmond has been invited to provide written comments on the proposed amendments to the Metro 2050 RGS by July 4, 2023 (refer to Attachment 1 for the Metro Vancouver letter and accompanying report).

This report supports Council's Strategic Plan 2022-2026 Focus Area #1 Proactive in Stakeholder and Civic Engagement:

Proactive stakeholder and civic engagement to foster understanding and involvement and advance Richmond's interests.

1.1 Continue fostering effective and strategic relationships with other levels of government and Indigenous communities.

1.2 Advocate for the needs of Richmond in collaboration with partners and stakeholders.

This report supports Council's Strategic Plan 2022-2026 Focus Area #2 Strategic and Sustainable Community Growth:

Strategic and sustainable growth that supports long-term community needs and a well-planned and prosperous city.

Findings of Fact

The proposed amendment is a Type 3 amendment in accordance with the criteria and procedures contained in the Metro 2050 RGS, which requires that an amendment bylaw be passed by the MVRD Board by a 50% +1 weighted vote.

Analysis

Summary of the Township of Langley Requested Amendment

The proposed amendment to the Metro 2050 RGS involves 14.59 ha (36 acres) of land in the Township of Langley located north of 56 Avenue between 264th Street (to the west) and 268th Street (to the east), which is adjacent to the existing Gloucester Industrial Park located to the south and east of these lands. The proposed regional land use designation amendment is from Agricultural to Industrial and to move the Urban Containment Boundary to include these lands. Refer to *Figure 1* and *Figure 2* for maps of the subject lands and existing and proposed amendments to the RGS.

Figure 1 – Existing Regional Land Use Designation and Urban Containment Boundary



Figure 2 – Proposed Regional Land Use Designation and Urban Containment Boundary



Previously, these lands were excluded from the Agricultural Land Reserve (ALR) by the Agricultural Land Commission on March 10, 2022.

Prior to the MVRD Board resolution on April 28, 2023 to notify affected local governments, the Township of Langley Council granted third reading on March 13, 2023 to a package of land use bylaws that would amend their Official Community Plan (OCP) and applicable zoning bylaw to facilitate development of the lands for industrial purposes and expand the Gloucester Industrial Park.

A general summary of the regional land use rationale contained in the Metro Vancouver report on the proposed Metro 2050 RGS amendments is summarized as follows:

- The lands are contiguous with the Urban Containment Boundary and not within the ALR (excluded in 2022) to meet the criteria to be considered a Type 3 amendment to the Metro 2050 RGS.
- The adjacent area to the south and east are currently located in the Urban Containment Boundary and contain industrial uses that are consistent with the Industrial land use designation proposed as part of the RGS amendment.
- The proposal would expand the regional supply of industrial lands which Metro Vancouver has indicated is facing a critical shortage as documented in the Regional Industrial Lands Strategy.

City of Richmond's Regional Planning Interests and Industrial Land Initiatives

This section identifies the recommended City of Richmond comments and concerns on the proposed Metro 2050 RGS amendments for the 14.59 ha (36 acres) of land in the Township of Langley.

Urban Containment Boundary and Compact Urban Area

The proposed land use amendment is a significant expansion of the Urban Containment Boundary that will allow the additional land to be used for industrial development. A concern arises in relation to the choice to expand the Urban Containment Boundary rather than focus on intensification of existing industrial land through new construction, infill and redevelopment. This choice undermines the efforts being made by Richmond and others to intensify industrial activities as demonstrated in Richmond's approval of OCP and Zoning Bylaw amendments associated with the Industrial Lands Intensification Initiative in 2021. Alternatives should be considered to accommodate industrial expansion through intensification rather than expanding the Urban Containment Boundary.

Efficient Delivery of Services and Sustainable Transportation Choices

Expansion of the Urban Containment Boundary and re-designating these lands Industrial may result in expansion of regional service infrastructure (i.e., sanitary and water) required to accommodate industrial development in this area. Furthermore, transportation options for future industrial development will be limited to vehicles as no public transit is provided for in this part of the region. Therefore, concerns arise about how future industrial development on these lands will require additional servicing and not provide for transportation options.

Given the above noted concerns, staff recommend that the City of Richmond oppose the Metro 2050 RGS amendments requested by the Township of Langley.

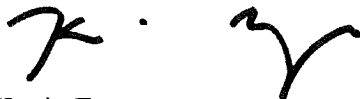
Financial Impact

None.

Conclusion

In response to the Township of Langley's request to amend the Metro 2050 RGS to change the land use designation from Agricultural to Industrial and revise the Urban Containment Boundary to include 14.59 ha (36 acres) of land, City staff have reviewed this proposal in consideration of Richmond's regional planning interests and land use policies aimed at intensifying use and development of industrial land.

Richmond's primary concerns relate to expansion of industrial land beyond the Urban Containment Boundary, which undermines efforts and supporting policy to intensify the development and usage of industrial land in Richmond and throughout the region. On this basis, it is recommended that the City of Richmond communicate its opposition to the proposed Metro 2050 RGS amendments to the MVRD Board in advance of the July 3, 2023 deadline.



Kevin Eng
Planner 3
(604-247-4626)

KE:cas

Att. 1: Metro Vancouver Letter and Accompanying Report

Office of the Chair
Tel. 604 432-6215 or via Email
CAOAdministration@metrovanancouver.org

May 16, 2023

File: CR-12-01

Mayor Malcolm Brodie and Council
City of Richmond
6911 No. 3 Road
Richmond, BC V6Y 2C1
VIA EMAIL: mbrodie@richmond.ca; cityclerk@richmond.ca

Dear Mayor Malcolm Brodie and Council:

**Land Use Designation Amendment to Metro 2050
Township of Langley – Gloucester Industrial Park**

The Township of Langley is requesting a Type 3 Amendment to *Metro 2050*, the regional growth strategy, for eight properties located at 26477, 26695, 26601, 26575, 26713 – 56 Avenue; 26500 Block of 56 Avenue; 5670 – 264 Street; and 5625 – 268 Street, totaling 14.59 hectares. The proposed regional land use designation amendment would redesignate the site from Agricultural to Industrial and move the Urban Containment Boundary to allow for the lands to be added to the Gloucester Industrial Park.

At its April 28, 2023 regular meeting, the Board of Directors of the Metro Vancouver Regional District (Metro Vancouver) adopted the following resolution:

That the MVRD Board:

- a) *initiate the regional growth strategy amendment process for the Township of Langley's requested regional land use designation amendment from Agricultural to Industrial for the lands located at 26477, 26695, 26601, 26575, 26713 – 56 Avenue; 26500 Block of 56 Avenue; 5670 – 264 Street; and 5625 – 268 Street;*
- b) *give first, second, and third readings to "Metro Vancouver Regional District Regional Growth Strategy Amendment Bylaw No. 1364, 2023"; and*
- c) *direct staff to notify affected local governments as per section 6.4.2 of Metro 2050.*

As required by both the *Local Government Act* and *Metro 2050*, the regional growth strategy amendment process requires a minimum 45-day notification period to allow all affected local governments and members of the public to provide comment on the proposed amendment. Following the comment period, the MVRD Board will review all comments received and consider adoption of the amendment bylaw.

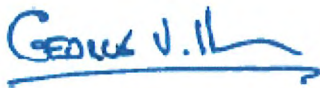
59796269

The proposed amendment is a Type 3 amendment to *Metro 2050*, which requires that an amendment bylaw be passed by the MVRD Board by a 50% +1 weighted vote. For more information on regional growth strategy amendment procedures, please refer to Sections 6.3 and 6.4 in *Metro 2050*. A Metro Vancouver staff report providing background information and an assessment of the proposed amendment regarding its consistency with *Metro 2050* is enclosed.

You are invited to provide written comments on the proposed amendment. Please provide your comments **by July 4, 2023**.

If you have any questions with respect to the proposed amendment, please contact Jonathan Cote, Deputy General Manager, Regional Planning and Housing Development, by phone at 604-432-6391 or by email at jonathan.cote@metrovanancouver.org.

Yours sincerely,



George V. Harvie
Chair, Metro Vancouver Board

GVH/JWD/hm

cc: Serena Lusk, Chief Administrative Officer, City of Richmond
John Hopkins, Director, Policy Planning, City of Richmond
Jerry W. Dobrowolny, Commissioner/Chief Administrative Officer, Metro Vancouver
Heather McNell, Deputy Chief Administrative Officer, Policy and Planning, Metro Vancouver
Jonathan Cote, Deputy General Manager, Regional Planning & Housing Development, Metro Vancouver

Encl: [Proposed Land Use Designation Amendment to Metro 2050, Township of Langley – Gloucester Industrial Park](#)

59796269

To: Regional Planning Committee

From: Victor Cheung, Senior Policy & Planning Analyst,
Regional Planning and Housing Services

Date: March 31, 2023

Meeting Date: April 14, 2023

Subject: **Land Use Designation Amendment to Metro 2050
Township of Langley – Gloucester Industrial Park**

RECOMMENDATION

That the MVRD Board:

- a) initiate the regional growth strategy amendment process for the Township of Langley's requested regional land use designation amendment from Agricultural to Industrial for the lands located at 26477, 26695, 26601, 26575, 26713 – 56 Avenue; 26500 Block of 56 Avenue; 5670 – 264 Street; and 5625 – 268 Street;
 - b) give first, second, and third readings to "Metro Vancouver Regional District Regional Growth Strategy Amendment Bylaw No. 1364, 2023"; and
 - c) direct staff to notify affected local governments as per section 6.4.2 of Metro 2050.
-

EXECUTIVE SUMMARY

The Township of Langley is requesting a Type 3 Amendment to *Metro 2050* for eight properties located at 26477, 26695, 26601, 26575, 26713 – 56 Avenue; 26500 Block of 56 Avenue; 5670 – 264 Street; and 5625 – 268 Street, totalling 14.59 hectares. The proposed regional land use designation amendment would redesignate the site from Agricultural to Industrial and move the Urban Containment Boundary to allow for the lands to be added to the Gloucester Industrial Park. The Agricultural Land Commission excluded these lands from the Agricultural Land Reserve on March 10, 2022.

The proposed amendment has been considered in relation to *Metro 2050's* goals, strategies, and policies. The analysis demonstrates that on balance, this proposed amendment is supportable and is aligned with *Metro 2050's* goals and strategies. Overall, the proposed amendment allows for new industrial uses, which is consistent with the surrounding area context and provides employment generating uses in close proximity to the Regional Truck Route Network.

PURPOSE

To provide the Regional Planning Committee and the MVRD Board with the opportunity to consider the Township of Langley's request to amend *Metro 2050* to accommodate the expansion of the Gloucester Industrial Park through a Type 3 Amendment.

BACKGROUND

On March 13, 2023, the Township of Langley Council granted third reading to the Langley Official Community Plan Bylaw 1979 No. 1842 Amendment (Gloucester Industrial Park), Bylaw 1988 No. 2556 Amendment (Rural Plan), Bylaw 1993 No. 3250 Amendment (Conwest), Bylaw No. 5706 and

Township of Langley Zoning Bylaw 1987 No. 2500 Amendment (Conwest), Bylaw No. 5707 (Attachment 1). The Township's Bylaw No. 5706 would amend the Langley Official Community Plan by altering the land use designation at the interface between the Township's Rural Plan and the Gloucester Industrial Park Plan, including municipal land use amendments, and associated boundary adjustments, from Agricultural to Industrial.

Metro Vancouver received the application to amend *Metro 2050* on March 14th, 2023. The requested *Metro 2050* Type 3 Amendment requires adoption through an affirmative 50%+1 weighted vote of the MVRD Board. As the Township of Langley is a signatory to *Metro 2050*, adoption of the amended OCP Bylaw cannot occur until the MVRD Board has adopted the amending bylaw for *Metro 2050*.

SITE CONTEXT

The eight subject properties at 26477, 26695, 26601, 26575, 26713 – 56 Avenue; 26500 Block of 56 Avenue; 5670 – 264 Street; and 5625 – 268 Street total 14.59 ha (36.0 ac) and are adjacent to the northwest boundary of the Gloucester Industrial Park. The subject lands are currently zoned Rural Zone RU-1, designated Small Farms/Country Estates in the Langley Rural Plan, and accommodate rural residential uses in the Township of Langley OCP. The current regional land use designation for the lands is Agricultural and the lands are located outside of the Urban Containment Boundary (Figure 1). Formal exclusion of the subject lands from the Agricultural Land Reserve, pursuant to a decision of the Agricultural Land Commission, occurred on March 10, 2022 (Attachment 2).

Additional site information is found in the Township of Langley's staff report (Attachment 1).

PROPOSED REGIONAL LAND USE DESIGNATION AMENDMENT

The Township of Langley can only adopt the proposed Bylaw after the MVRD Board approves the corresponding regional growth strategy amendment. The proposed Bylaw would amend the Township's OCP and the Zoning Bylaw for the subject properties to accommodate future industrial development.

The subject lands were formally granted approval for exclusion from the Agricultural Land Reserve as of March 10, 2022, pursuant to Agricultural Land Commission Resolution #109/2020. Bylaw No. 5706 amends the Township's Rural Plan by removing the properties from the Rural Plan and inserting them into the Gloucester Industrial Park Plan, and further, by designating the properties as, "Service and General Industrial," in the OCP. The new designation would permit such uses as warehousing, wholesaling and distribution, light manufacturing, technical and educational uses, office and business uses, private utilities, processing and manufacturing of goods.

Figure 1 – Existing Regional Land Use Designation



Figure 2 – Proposed Regional Land Use Designation



The proposed amendment also will be accompanied by a request for an updated Regional Context Statement (RCS) that reflects the proposed regional land use designation change. It is expected that the Township will submit the updated RCS for consideration of acceptance if the Board chooses to initiate the proposed amendment process for *Metro 2050* and gives 1st, 2nd and 3rd readings to the *Metro 2050* amendment bylaw. This process is in alignment with regional growth strategy and associated implementation guidelines. Once received, Metro Vancouver has 120 days to accept or not accept the RCS.

REGIONAL PLANNING ANALYSIS

The Township of Langley's proposed amendment has been assessed in relation to applicable *Metro 2050* goals and policies. The intent of the assessment is not to duplicate that of the municipal planning process, but rather to identify any potential regional planning implications and the regional significance of the proposed land use changes in consideration of the regional growth strategy. Below is a summary of the regional planning analysis.

Goal 1: Create a Compact Urban Area

Metro Vancouver and its member jurisdictions have committed to directing 98% of growth, to the year 2050, within the Urban Containment Boundary (UCB). The UCB is intended to be a long term, stable boundary for urban growth in the Metro Vancouver region. Regional Planning projections and analysis demonstrate that there is sufficient land within the UCB to accommodate future growth in the region to the year 2050. Therefore, any expansion to the UCB must demonstrate strong benefits to the regional federation and a strong planning rationale.

Lands that are contiguous with the Urban Containment Boundary, that are not within the Agricultural Land Reserve, and that are changing from Agricultural to Industrial and associated Urban Containment Boundary adjustment are categorized as a Type 3 Amendment per Policy 6.3.4(f) in *Metro 2050*. The subject properties meet the criteria to apply for a Type 3 Amendment.

Additionally, the proposed land use designation change is supportive of the industrial land uses directly abutting the site, which are currently located within the Urban Containment Boundary.

Goal 2: Support a Sustainable Economy

The region is facing a critical shortage of industrial lands as documented in the Regional Industrial Lands Strategy. 27 percent of the region's jobs are located on industrial lands and there continues to be significant absorption of industrial lands with severely low vacancy rates across the region. Limited industrial land supply, particularly large, flat sites proximate to the goods movement network is constraining potential economic and employment growth in the region. Consolidating industrial areas and uses is an objective in the regional growth strategy and Regional Industrial Lands Strategy.

The proposed amendment, if approved, would expand the established Gloucester Estates Industrial Park to the north and east by 14.59 ha, expanding the regional supply of industrial lands, which continues to experience strong demand. The subject properties are strategically located from a goods movement perspective, as it is proximate to the Regional Truck Route Network (Highway 1, 264 Street and 56 Avenue).

Metro 2050 recognizes the importance of agricultural land in the region and the importance of the agricultural sector as a part of the region's economy. *Metro 2050* commits to supporting and protecting the agricultural land base and the viability of agricultural land. The regional Agricultural land use designation is, for the most part, aligned with the provincial Agricultural Land Reserve, and policies in *Metro 2050* recognize the primacy of the Province's role in identifying and protecting agriculturally viable lands in the region.

Policy 2.3.4 stipulates that where the Agricultural Land Commission has provided conditional approval to exclude land from the Agricultural Land Reserve, the Metro Vancouver Board may provide conditional approval of a regional land use designation amendment for the exclusion site, subject to the Agricultural Land Commission exclusion conditions being met. The subject properties have been excluded from the Agricultural Land Reserve by the Agricultural Land Commission.

Agricultural land across the region continues to experience ongoing pressure for conversion to urban uses. If approved, the proposed amendment will result in the loss of 14.59 hectares of agriculturally-designated land in the region. In addition, lands to the north, bounded by the site, 58th Avenue and 264th Street, may experience greater pressure for conversion.

The site includes wetted areas and an unclassified watercourse which require streamside protection and enhancement areas. The applicant's voluntary community amenity contribution includes the transfer of 22710 - 96 Avenue, a 2.6 hectare lot approximately 10 kilometres from the site and located within the Agricultural Land Reserve, to the Township upon securing any and all required environmental and Agricultural Land Commission approvals and associated works. 1.0 acre of that site is identified as farmable.

Goal 3: Protect the Environment and Respond to Climate Change and Natural Hazards

The subject properties are not considered a sensitive ecosystem as per Metro Vancouver's Sensitive Ecosystem Inventory. However, the soil, trees, shrubs, and waterbodies on this site are providing ecosystem services that will be impacted by a conversion to industrial lands.

The Township's Official Community Plan Development Permit Guidelines require mitigation strategies to reduce potential environmental impact including buffer setbacks to on-site natural vegetation and protection of creek and gully areas. Site specific studies are required by the Township to determine site conditions and setback dimensions. Further, the Township's report (Attachment 1) stipulates compliance with Schedule 3 in their Official Plan, *Development Permit Area: Streamside Protection and Enhancement*, which establishes further protections for wetted areas and watercourses.

The landowner's voluntary community amenity contribution at 22710 – 96 Avenue is adjacent to the Salmon River and could be enhanced to improve fish habitat if the Township permanently protects, restores, and maintains these community benefit lands. This community amenity contribution could contribute toward region-wide efforts to protect 50% of the land base for nature by 2050.

Metro 2050 encourages land use and transportation infrastructure that reduce energy consumption and greenhouse gas (GHG) emissions, and improve air quality. Specifically, *Metro 2050* outlines regional targets to reduce GHG emissions by 45% below 2010 levels by 2030 and to achieve a carbon neutral region by 2050. Some relevant climate actions that would contribute to meeting these targets include reducing vehicle kilometres travelled, encouraging efficient goods movement, and protecting farmland from conversion to higher-GHG land uses. Should the proposed regional land use designation amendment be approved by the MVRD Board, higher GHG emissions from the subject site are likely due to the nature of the proposed industrial development, in contrast to the

existing lower-emission agricultural land use. However, the proximity of the eight subject properties to the adjacent established industrial areas and transportation network would encourage efficient goods movement, which is further explored under the analysis for Goal 5.

Goal 5: Support Sustainable Transportation Choices

The strategies under this goal encourage the coordination of land use and transportation to encourage transit, multiple-occupancy vehicles, cycling and walking, and support the safe and efficient movement of vehicles for passengers, goods and services. Land use changes can influence travel patterns. As identified in the proposal, these transportation matters are to be addressed by the Township of Langley through the development plan at a future stage of design.

The subject properties are strategically located from a goods movement perspective, as it is close to the Regional Truck Route Network (Highway 1, 264 Street and 56 Avenue). However, the site is not served by public transit and is not well-connected to the Regional Cycling Network or regional pedestrian infrastructure. The majority of trips to and from this location will be made by private vehicle.

Should the proposed regional land use designation amendment be approved by the MVRD Board, the Township of Langley is encouraged to integrate active transportation facilities into the site design and adjacent neighbourhood, while working with the applicant and TransLink to develop Transportation Demand Management programs (e.g. vanpools, secure bicycle parking) for future commuters to and from the industrial park.

IMPLICATIONS FOR METRO VANCOUVER UTILITY SERVICES

Below is a summary of anticipated impacts on Metro Vancouver's utilities.

Liquid Waste Services (GVS&DD)

The part of the regional system that would receive this flow currently has compromised capacity under wet weather conditions. Attenuation would reduce the impact of peak flows, but the volume of flow would still contribute to potential Sanitary Sewer Overflows downstream. As part of the GVS&DD Board's 2008 approval to connect East Langley (including Gloucester Estates) to the GVS&DD sewer system, the Township of Langley was required to produce a rainwater management plan outlining steps to limit Inflow and Infiltration. Metro Vancouver would expect the provisions within that plan, as well as any subsequent additional requirements, would be incorporated into the development's servicing. In general, Metro Vancouver encourages the Township of Langley (and all contributors), to take the opportunity with new development to implement good water management practices, including the use of green infrastructure where practical, to reduce impacts on regional sewerage infrastructure.

If the MVRD Board resolves that the application is consistent with the provisions of *Metro 2050*, or amends *Metro 2050* accordingly, the Township of Langley will need to submit a Fraser Sewerage Area amendment request to the GVS&DD for a full and complete technical review and GVS&DD Board consideration. Subsequent to an approved Fraser Sewerage Area amendment, Langley will need to submit a Sewer Extension Application outlining the details of each sewer extension.

Water Services (GVWD)

Exact hydraulic impacts cannot be determined as a demand forecast for the proposed development has not been included. Based on the Township of Langley's Development Servicing Bylaw, the design maximum day demand for industrial lands is 1.1 lps/ha and, as a starting point, assuming the current properties are not using any water from the municipal system, rezoning this 14.59 ha would increase demand by about 1.4 ML/day.

In 2021, the Township's total demand was 17,464 ML/year; historically, 30% to 50% of this demand is serviced by their groundwater system. The rezoning would represent a 2% increase in the Township's total water use (both groundwater and from Metro Vancouver's system). However, the Township's geographic information system appears to show that the properties do have municipal drinking water connections. As such, the increase in demand from the rezoning is likely to be less than the estimated 1.4 ML/day.

The subject properties are located within the East Langley Water System of the Township of Langley, which was connected to the GVWD water system in 2016. East Langley System is supplied by the Township's Willoughby Reservoir and Pump Station, which is predominately fed from the GVWD's Barnston Main and indirectly with water transferred from the Township's Strawberry Reservoir. The closest GVWD connection point is about 15 kilometres away. At this time, the impacts of the rezoning on the Metro Vancouver drinking water system are thought to be minimal.

The Township of Langley will be requested to provide their demand forecast, and assessment of the impacts to the municipal and regional water systems, as well as their servicing plan for this development.

REGIONAL GROWTH STRATEGY AMENDMENT PROCESS AND NEXT STEPS

If the amendment bylaw receives 1st, 2nd, and 3rd readings, it will then be referred to affected local governments and relevant agencies, as well as posted on the Metro Vancouver website for a minimum of 45 days for the opportunity for the public to provide comment. Comments received will be summarized and included in a report advancing the bylaw to the MVRD Board for consideration of final adoption. An updated Regional Context Statement from the Township will be considered at the same time as final adoption of the proposed amendment.

ALTERNATIVES

1. That MVRD Board:
 - a) initiate the regional growth strategy amendment process for the Township of Langley's requested regional land use designation amendment from Agricultural to Industrial for the lands located at 26477, 26695, 26601, 26575, 26713 – 56 Avenue; 26500 Block of 56 Avenue; 5670 – 264 Street; and 5625 – 268 Street;
 - b) give first, second, and third readings to "Metro Vancouver Regional District Regional Growth Strategy Amendment Bylaw No. 1364, 2023"; and
 - c) direct staff to notify affected local governments as per section 6.4.2 of Metro 2050.

2. That the MVRD Board decline the proposed amendment for 26477, 26695, 26601, 26575, 26713 – 56 Avenue; 26500 Block of 56 Avenue; 5670 – 264 Street; and 5625 – 268 Street and notify the Township of Langley of the decision.

FINANCIAL IMPLICATIONS

If the MVRD Board chooses Alternative 1, there are no financial implications for Metro Vancouver related to the acceptance of the Township of Langley's Type 3 Amendment. If the MVRD Board chooses Alternative 2, a dispute resolution process may take place as prescribed by the *Local Government Act*. The cost of a dispute resolution process is prescribed based on the proportion of assessed land values. Metro Vancouver would be responsible for most of the associated costs.

SUMMARY/CONCLUSION

The Township of Langley has requested that the MVRD Board consider a Type 3 amendment to *Metro 2050* for eight lots totalling 14.59 hectares located immediately northwest of the Gloucester Industrial Park. The amendment to redesignate the site from a regional land use of Agricultural to Industrial will allow for new industrial uses to be developed, and for the lands to be integrated into the Township's Industrial Park Plan.

Overall, the proposed amendment allows for additional industrial uses, which is consistent with the surrounding land use context and ensures employment generating uses in close proximity to the Regional Truck Route Network. Staff recommend Alternative 1.

Attachments

1. Township of Langley Report, dated March 13, 2023 (File: 14-07-0056)
2. Agricultural Land Commission Request for Reconsideration of a Decision, dated March 10, 2020 (File: 51725)
3. Metro Vancouver Regional District Regional Growth Strategy Amendment Bylaw No. 1364, 2023

References

1. [Township of Langley Council Agenda, dated March 13, 2023 \(File: 14-07-0056\)](#)
2. [Township of Langley Council Agenda, dated March 28, 2022 \(File: 14-07-0056\)](#)



City of Richmond

Report to Committee

To: Public Works and Transportation Committee
From: Lloyd Bie, P.Eng.
Director, Transportation
Date: May 19, 2023
File: 10-6450-09-01/2023-
Vol 01
Re: Kittiwake Drive - Traffic Calming Pilot Project Update

Staff Recommendation

That Option 3 to implement a pilot project for the temporary installation of two asphalt speed cushions on Kittiwake Drive for a trial period of six months, as described in the staff report titled "Kittiwake Drive - Traffic Calming Pilot Project Update" dated May 19, 2023 from the Director, Transportation, be endorsed.

Lloyd Bie, P.Eng.
Director, Transportation
(604-276-4131)

REPORT CONCURRENCE		
ROUTED TO: Engineering Fire Rescue RCMP	CONCURRENCE <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	CONCURRENCE OF ACTING GENERAL MANAGER
SENIOR STAFF REPORT REVIEW	INITIALS: 	APPROVED BY CAO

Staff Report

Origin

At its regular meeting of September 26, 2022, Council endorsed the following:

That Option 3 to implement a pilot project for the temporary installation of two speed cushions on Kittiwake Drive for a trial period of six months, as described in the staff report titled “Kittiwake Drive – Traffic Calming Update”, dated September 26, 2022, from the Director, Transportation, be endorsed.

This report provides the results of the temporary traffic calming installation.

This report supports Council’s Strategic Plan 2022-2026 Focus Area #3 A Safe and Prepared Community:

Community safety and preparedness through effective planning, strategic partnerships and proactive programs.

This report supports Council’s Strategic Plan 2022-2026 Focus Area #6 A Vibrant, Resilient and Active Community:

Vibrant, resilient and active communities supported by a wide variety of opportunities to get involved, build relationships and access resources.

Analysis

Background of Traffic Calming Request

Kittiwake Drive is a local street within a neighbourhood subdivision located south of Steveston Highway that connects No. 2 Road to Kingfisher Drive. There is a 50 km/h speed limit and parking is permitted on both sides of the street. Westwind Elementary School is located west of Kittiwake Drive across Kingfisher Drive.

In June 2021, staff received a petition from residents of Kittiwake Drive requesting speed cushions to address concerns of speeding motorists. Further to the request, staff conducted a traffic study and consulted with residents to develop traffic calming options. As a result of this process, temporary speed cushions were recommended at two locations on Kittiwake Drive, one at Pintail Drive and the other at Pelican Court/Plover Drive (Figure 1).

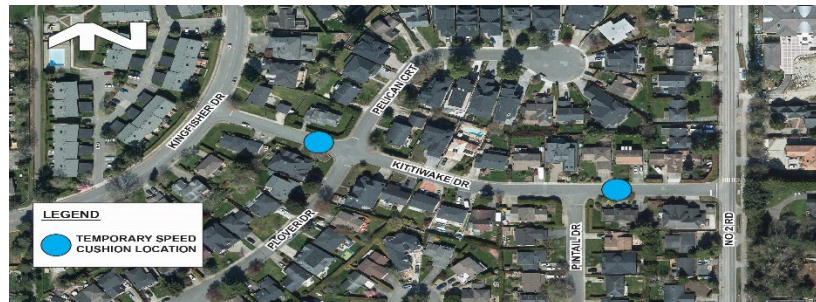


Figure 1: Kittiwake Drive Temporary Speed Cushion Locations

Speed cushions include cut-outs for passage by emergency vehicles. The raised portion of the device reduces passenger car speeds while going over the hump, while the longitudinal gaps allow fire trucks to avoid the raised cushion.

As these speed cushions were the first to be introduced on a local roadway in Richmond, temporary pre-fabricated speed cushions were installed on a trial basis for six months as approved by Council. Installation occurred on October 27, 2022 (Figure 2) and the six month pilot project is now complete.



Figure 2: Kittiwake Drive Temporary Speed Cushion

Outcome of Traffic Calming Trial

During the trial period, staff conducted a speed study to assess the effectiveness of this measure and obtained comments from residents.

- Traffic Speed Study

Before Speed Cushion Installation: A traffic speed survey was conducted prior to the installation of the speed cushions confirming a speeding issue on Kittiwake Drive. The 85th percentile speed for westbound motorists was 67 km/h while that of eastbound motorists was 55 km/h. The 85th percentile speed indicates the highest speed that 85 per cent of the vehicles are travelling at or below. This measurement is an industry standard for determining speed limits and assessing the level of action required to address speeding issues.

After Speed Cushion Installation: Counts taken during the trial period indicate an 85th percentile speed for westbound motorists as 38 km/h and that of eastbound motorists of 37 km/h. The results of the traffic speed study confirm the speed cushions have been effective at slowing drivers down on Kittiwake Drive. Vehicle speeds have reduced by 29 km/h in the westbound direction and 18 km/h in the eastbound direction.

- Resident Feedback

Within the six month trial, feedback was received from three out of the 21 residents on Kittiwake Drive. One correspondence was related to the location of the speed cushions and a preference for the eastern location to be installed closer to No. 2 Road. Two residents near Pintail Drive indicated they were not in support of the speed cushions due to perceived vibration and noise when traversed by larger vehicles.

Next Steps

The results of the traffic calming pilot project on Kittiwake Drive confirmed vehicles speed reduction through the implementation of temporary speed cushions. However, concerns have been expressed by adjacent residents regarding vibration and noise.

Based on these combined factors, staff have identified three possible traffic calming options for consideration.

Option 1: Status Quo (Not Recommended)

With the majority of the residents on Kittiwake Drive requesting traffic calming measures, as well as the results of the before and after vehicle speeds recorded on Kittiwake Drive, staff do not recommend a do nothing option.

Option 2: Traffic Circles (Not Recommended)

This option would install traffic circles on Kittiwake Drive, one at Pintail Drive and the other at Pelican Court/Plover Drive. While traffic circles are a proven device in reducing vehicle speeds, it was not supported by the majority of the residents along Kittiwake Drive during past consultation. Therefore, staff do not recommend this option at this time.

Option 3: Trial Installation of Speed Cushions (Recommended)

Staff recommend a trial installation of asphalt speed cushions that will be constructed with a lower profile than the temporary measures to address the noise and vibration concerns. The prefabricated temporary speed cushions have a height of 9 cm and the proposed profile for the asphalt speed cushions will be similar to the other asphalt speed cushions installed in the Hamilton area. The Hamilton speed cushions have been re-profiled with a reduced height of 7 cm and have been successful at addressing vibration and noise emission yet still help to discourage speeding.

Staff will monitor the vehicle speeds in response to the installation of the lower height asphalt speed cushions and will consult with residents through ongoing communication during the six month trial period. Staff will bring forward further recommendations regarding traffic calming measures on Kittiwake Drive for Council consideration after completion of the trial period.

Construction of the asphalt speed cushions are planned for summer 2023. Installation is anticipated to be substantially completed before the start of school in September.

To discourage speeding, the temporary devices will remain until construction of the asphalt version commences. Once replaced, the temporary speed cushions will be stored and staff will review opportunities to reuse this application elsewhere in the City.

Financial Impact

The cost to implement the permanent speed cushions is \$25,000, which can be funded by the approved 2023 Traffic Calming Program.

Conclusion

A pilot project to install two speed cushions on Kittiwake Drive at Pintail Drive and Pelican Court/Plover Drive, for a period six months has completed. Staff assessed the effectiveness of the traffic calming device in reducing vehicle speeds.

The result of a post installation speed study indicates a decrease in operating speed as a result of the safety intervention of 18km/h eastbound and 29 km/h westbound. Staff recommend reduced height installing asphalt speed cushions on Kittiwake Drive on a trial basis to discourage speeding. Staff will monitor the improvements to traffic safety and receive feedback regarding neighbourhood impacts during the pilot.

Upon completion a six month trial, staff will report back to Council.

Sonali Hingorani

Sonali Hingorani, P. Eng.

Manager

Transportation Planning and New Mobility
(604-276-4049)

SH:ck



City of Richmond

Report to Committee




To: Public Works and Transportation Committee **Date:** May 17, 2023
From: Suzanne Bycraft
Director, Public Works Operations **File:** 10-6000-01/2023-Vol
01
Re: 2022 Annual Water Quality Report

Staff Recommendations

1. That the annual report titled “2022 Annual Water Quality Report” dated May 17, 2023, from the Director of Public Works Operations, be endorsed; and
2. That the annual report titled “2022 Annual Water Quality Report” dated May 17, 2023, be made available to the community on the City’s website and through various communication tools including social media channels and as part of community outreach initiatives.

Suzanne Bycraft
Director, Public Works Operations
(604-233-3338)

Att. 2

REPORT CONCURRENCE	
CONCURRENCE OF GENERAL MANAGER 	
SENIOR STAFF REPORT REVIEW	INITIALS: 
APPROVED BY CAO 	

Staff Report

Origin

In 2001, the Province of British Columbia enacted the Drinking Water Protection Act, which gave authority to the Minister of Health to implement and enforce standards for water supply systems in British Columbia. In May 2003, regulations to be implemented under the Act were adopted by the legislature as the Drinking Water Protection Regulation. These Acts were updated on April 29, 2014, under Bill 18 – 2014: the Water Sustainability Act. These regulations are designed to ensure the safe supply of drinking water.

This report presents the City’s “2022 Annual Water Quality Report” (the Report), which enables the City to meet its obligations for public reporting to comply with applicable requirements in accordance with these regulations. The City was able to ensure the safe and adequate supply of essential water services throughout 2022. A summary of the Report is presented as Attachment 1, with the full report included as Attachment 2.

This report supports Council’s Strategic Plan 2022-2026 Focus Area #2 Strategic and Sustainable Community Growth:

2.3 Ensure that both built and natural infrastructure supports sustainable development throughout the city.

This report supports Council’s Strategic Plan 2022-2026 Focus Area #3 A Safe and Prepared Community:

3.3 Ensure the community is collectively prepared for emergencies and potential disasters.

3.4 Ensure civic infrastructure, assets and resources are effectively maintained and continue to meet the needs of the community as it grows.

This report supports Council’s Strategic Plan 2022-2026 Focus Area #5 A Leader in Environmental Sustainability:

5.3 Encourage waste reduction and sustainable choices in the City and community.

This report supports Council’s Strategic Plan 2022-2026 Focus Area #6 A Vibrant, Resilient and Active Community:

6.1 Advance a variety of program, services, and community amenities to support diverse needs and interests and activate the community.

Analysis

The Drinking Water Protection Regulation requires water purveyors in BC to possess an operating permit, which confirms the Drinking Water Officer for the area has approved the water supply. Vancouver Coastal Health is responsible for the placement and function of the Drinking

Water Officer, who has the authority to monitor water purveyors to ensure they are providing safe drinking water through compliance with the British Columbia Drinking Water Protection Regulation, and any other conditions of the operating permit.

Under the Regulation, the City of Richmond is required to:

- Develop and maintain a process to notify the Drinking Water Officer and the Medical Health Officer of situations or conditions that could render unsafe drinking water;
- Implement and maintain a plan for collecting, shipping and analyzing water samples that adequately represent all areas within the City, in compliance with the direction set by the Drinking Water Officer; and
- Implement and maintain a plan for reporting results to the Drinking Water Officer and to water users.

Richmond thrives on its ability to provide water to residents and businesses, and water for fire protection services. To ensure a consistent supply, the capital watermain replacement program is a proactive approach to avoiding breaks and has proven to be a reliable and valuable tool in water distribution management. In 2022, Public Works staff attended to 16 watermain breaks without compromising the integrity of the water distribution system. Repairs for a single watermain break can amount to \$100,000, in addition to damage to private properties and service disruptions to businesses and residents. As such, a proactive replacement and maintenance program is essential to minimizing costs and ensuring minimal to no disruptions in water quality and supply.

Water conservation is an important aspect of Richmond's Water Services operations. Climate change, heat events and increasingly dry summers in recent years have emphasized a critical need for City-wide water conservation efforts. The City implements various programs to promote the conservation of water and to ensure that wastage of potable water is minimized. Richmond's various water conservation programs are outlined in the Report.

Highlights of the Report include:

- Richmond residents enjoyed high-quality, safe and reliable drinking water.
- 2,048 water samples were collected to ensure water quality and each passed with exceptional results.
- Test results confirm high-quality water and demonstrate continuous improvement.
- Richmond's total water usage decreased by 2.3% from 34.1M cubic metres in 2021, to 33.3M cubic metres in 2022, despite a population increase of 1.5% from 227,146 to 230,584 over the same year.
- Richmond's 37 water fountains found on dikes and in parks provided potable water to the public while promoting tap water consumption as an alternative to bottled water.

In addition to these highlights, safety measures and response procedures were continued in compliance with COVID-19 protocols that helped ensure staff were confident in their own safety and could perform their duties and responsibilities without compromise during the pandemic.

These and many other initiatives are detailed in the Report.

Proposed Communication

Subject to Council's approval, the Report will be posted on the City's website and made available through various communication tools including social media channels and as part of community outreach activities.

Financial Impact

None

Conclusion

The Report outlines the methods in which the City manages its water system to ensure compliance with applicable provincial requirements under the Drinking Water Protection Act. In 2022, the City's water quality met and exceeded the required standards to ensure residents enjoyed high quality, reliable and safe drinking water.

This report will be reviewed and endorsed by the Medical Health Officer of Vancouver Coastal Health Authority as part of the City's reporting obligations.



Bryan Shepherd
Manager, Water Services
(604-233-3334)

BS:

- Att. 1: 2022 Annual Water Quality Report
- 2: 2022 Annual Water Quality Report Summary

City of Richmond 2022 Annual Water Quality Report



Richmond is dedicated to promoting the value of municipal tap water, maximizing opportunities for use of tap water in municipal facilities and developing strategies for making tap water the “water of choice” in our community.

Executive Summary

The purpose of this report is to fulfill the requirements set out in the British Columbia Drinking Water Protection Act (BCDWPA) by giving an overview of the water distribution system, describing the maintenance conducted, detailing some of the unique features of the system and providing the results of Richmond's water quality testing program.

Test results confirm high-quality water and demonstrate continuous improvement. Richmond's water system is provided with the highest degree of care to ensure that it's an inhospitable environment for any harmful bacteria or toxins. Utility funding contributes to proactive watermain replacement and maintenance projects that will ensure the overall health of the system well into the future.

In 2022, the City of Richmond's Water Services staff undertook the following:

- Provided 33.3 million cubic of the highest quality drinking water to over 230,584 Richmond residents.
- Between 2020 and 2022, the per capita consumption decreased by 2.4%, resulting in the conservation of about 800,000 cubic metres of water in 2022.
- Conducted 2,048 microbiological tests from 40 test locations.
- Maintained 12 pressure reducing valve (PRV) stations.
- Repaired 16 watermain breaks without compromising the integrity of the water distribution system while maintaining positive pressure.
- Discovered and repaired 90 non-visible underground leaks through Richmond's leak detection program using noise loggers measuring sound frequencies in the targeted pipe allowing any leaks to be heard and recorded.
- Provided service to Richmond's 5,109 fire hydrants to ensure water is available during an emergency.
- Repaired 205 service connections.
- Installed 4,180 metres of new capital watermain.
- Installed 170 water services for new developments.

The City of Richmond's Water Services section takes its role as a water purveyor very seriously and is proud to be the guardian of such a precious resource.



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Contents

Executive Summary	1
1.0 Introduction.....	5
2.0 Water Treatment and Supply	7
2.1 Where Richmond's Water Comes From	7
2.2 Richmond's Water System.....	8
2.3 Mobile Emergency Response Unit.....	8
3.0 Ensuring the Quality of Richmond's Drinking Water.....	11
3.1 Promoting Water Quality.....	11
3.2 Monitoring Water Quality	12
4.0 Water Conservation	17
4.1 Water Metering Programs	17
4.2 Pressure Management Program.....	18
4.3 Leak Reduction Program	18
4.4 Leak Detection Program.....	18
4.5 Toilet Rebate Program	19
4.6 Rain Barrel Sale Program	19
4.7 Lawn Watering Regulations.....	19
5.0 Community Outreach.....	21
5.1 Tap Water Initiative	21
5.2 Misting Stations	22
6.0 In Conclusion	23
Appendix A: References.....	24
Appendix B: Community Connections Article	25
Appendix C: Specific Emergency Response Plans	29
Appendix D: Water Sampling Sites	31
Appendix E: 2022 Water Quality Results	32
Appendix F: 2022 THM and HAA Test Results	64
Appendix G: 2022 Metal Levels.....	65
Appendix H: 2022 Metal Testing Results	66
Appendix I: 2022 Vinyl Chloride Results	68



1.0 Introduction

In 2002, the City of Richmond implemented a Drinking Water Quality Monitoring Program to comply with provincial and federal legislations: the British Columbia Drinking Water Protection Act (BCDWPA), the British Columbia Drinking Water Protection Regulations (BCDWPR), the Water Quality Monitoring and Reporting Plan for Metro Vancouver and the Guidelines for Canadian Drinking Water Quality (GCDWQ). Under these legislations, the City of Richmond is required to:

- Develop a process to notify the Vancouver Coastal Health (VCH) Drinking Water Officer and the VCH Medical Health Officer of any condition that could render unsafe drinking water.
- Implement a sampling program that adequately represents all areas within the City.
- Meet the requirements of the BCDWPA and ensure test results are immediately available to the VCH Medical Health Officer.
- Receive an annual construction permit for the construction, installation and extension of the water distribution system.
- Ensure that the City's water distribution system is classified under the criteria for the Environmental Operators Certification Program (EOCP) and that Water Services staff are certified to the same level as the distribution system.
- Produce an annual report detailing the results of the City's water quality monitoring program for review by VCH.

The conditions set out in the BCDWPA require all water systems in BC be classified as a Level I through IV facility. Richmond's system is classified as a Level III facility so all staff that work on the system are responsible for possessing a valid Level I to Level III EOCP certificate. To obtain and maintain a level of certification, staff must successfully complete the required training and hands-on experience. This ensures staff are able to respond appropriately and immediately to problems prior to them becoming a risk to health or property.

The following report outlines all the great work that Water Services staff perform to deliver safe and good-quality drinking water to the City's residents and the things they accomplish every day to operate and maintain a robust water infrastructure system.



Metro Vancouver Seymour Capilano Filtration Plant – Facing South

2.0 Water Treatment and Supply

The City of Richmond purchases its drinking water from Metro Vancouver Water District (Metro Vancouver), which supplies most of the region with water. Metro Vancouver supplies treated drinking water to Richmond via three large transmission mains. The water then enters the City's water distribution system through various connections throughout the City. The water is then delivered to residences and businesses through the City's distribution network and to service connections at each property. Water Services staff is in charge of taking care of the Water Distribution System to ensure that everyone in the City gets great quality water with minimal interruptions.

2.1 Where Richmond's Water Comes From

Metro Vancouver manages three local watersheds: Capilano, Seymour, and Coquitlam. The watersheds contain large collection lakes called reservoirs which collect and store rainfall and snowmelt from the mountains.

Water from the reservoirs is treated at two water treatment facilities: the Seymour Capilano Filtration Plant (SCFP), which treats water from the Seymour and Capilano reservoirs, and supplies two thirds of the region's drinking water; and the Coquitlam Water Treatment Plant (CWTP), which treats water from the Coquitlam reservoir and supplies the remaining third of the region's drinking water. The City of Richmond gets the majority of its water from the Seymour and Capilano reservoirs.



Metro Vancouver Watershed and Water Transmission Map

The SCFP is the largest filtration plant in Canada and has the capacity to filter and disinfect up to 1.8 billion litres of water per day. It is located in the Seymour watershed so water is transmitted from the Capilano reservoir to the SCFP and back by two underground watermains called "Twin Tunnels", which are over seven kilometres long and 3.8 metres in diameter. Water at this facility undergoes filtration and UV disinfection.

The CWTP is located north of the City of Coquitlam and treats 380 million litres of water per day. Water at this facility undergoes ozone and UV disinfection.

2.2 Richmond's Water System

The City of Richmond owns, operates, and maintains a water distribution system, which delivered 33.3 million cubic metres of water to the 230,584 residents and businesses in the City in 2022. Once Metro Vancouver treats the water, it is carried into Richmond via their large transmission mains; Angus Drive main, Lulu Island-Delta main and Tilbury main. Richmond then draws water through 12 connection points along Metro Vancouver's mains. Each connection has a pressure-reducing valve (PRV) station. The PRV stations are monitored from the Works Yard through a supervisory control and data acquisition (SCADA) system. Downstream of the PRV stations is the rest of the City's water distribution system consisting of distribution mains, hydrants, valves, service connections and more. An overview of Richmond's water system is shown on Figure 1.

2.3 Mobile Emergency Response Unit

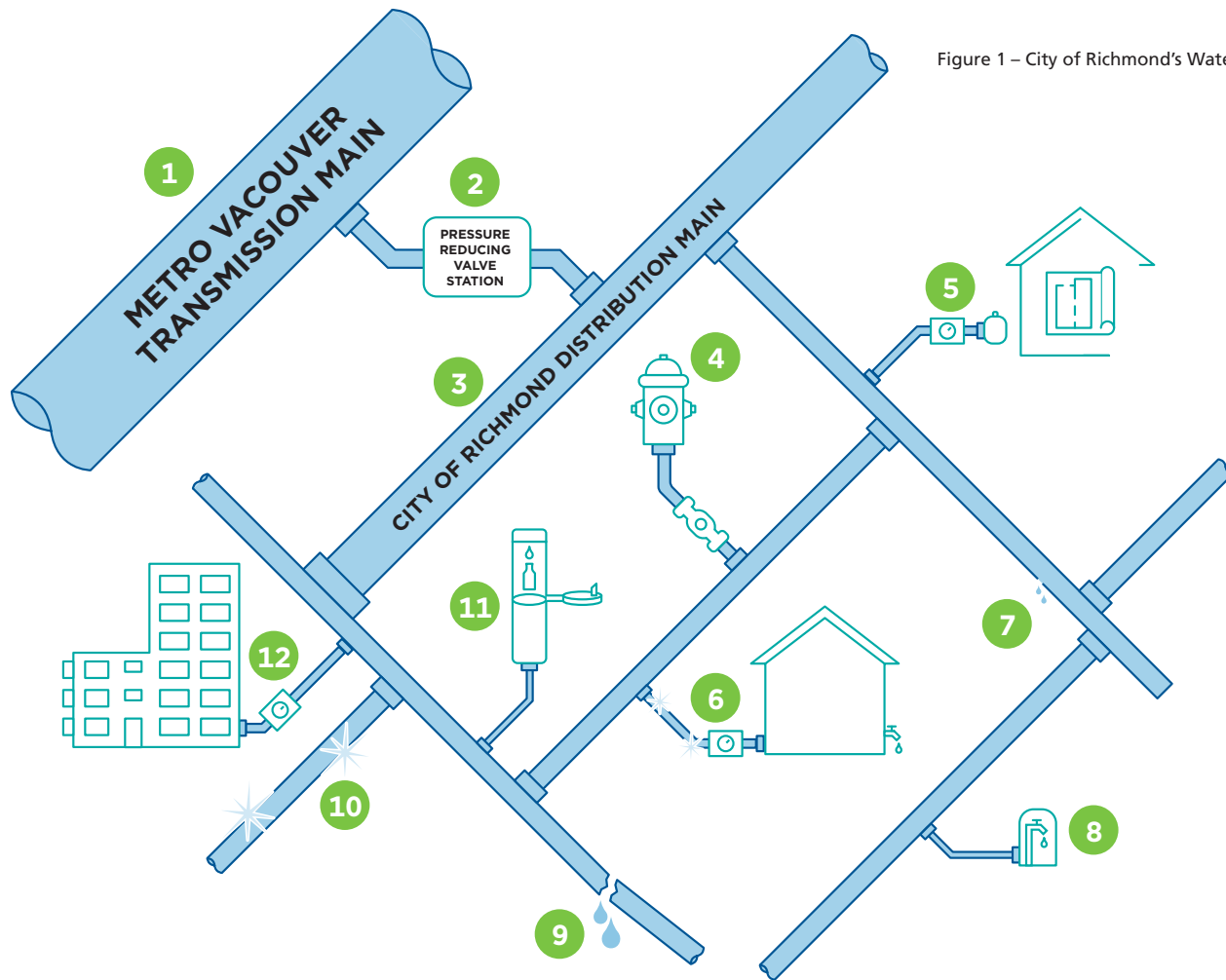
Water Services staff are trained to operate the mobile emergency water treatment trailer for use during a major emergency where the City's water is contaminated or unavailable. All components that come in contact with the treated water are compliant with the Guidelines for Canadian Drinking Water Quality (GCDWQ). Cartridges reduce turbidity, activated carbon improves taste and odour, and UV units disinfect the water. Additionally, sodium hypochlorite is added to provide a second source of disinfection and chlorine will provide residual disinfection in the water.

The treatment trailer is capable of filtering approximately 60 litres of water per minute and can draw water straight from the Fraser River. The trailer was designed with the consideration of factors such as extreme weather events, sudden loss of clean water from Metro Vancouver and seismic events. It is regularly maintained and tested by Water Services staff to ensure that the City has clean safe water for Richmond residents during an emergency.



Mobile Emergency Response Unit

Figure 1 – City of Richmond's Water System



- 1 Metro Vancouver supplies drinking water to the City of Richmond via three transmission mains.
- 2 Pressure-reducing valve (PRV) stations are the interface between Metro Vancouver's mains and the City of Richmond's water system. Water Services crews operate and maintain 12 PRV stations throughout the City.
- 3 The City of Richmond's water system is made up of 636km of watermains. The watermains are all interconnected in different ways to supply high-quality water to Richmond residents. In 2022, Water Services provided 33.3 million cubic metres of water to over 230,584 City of Richmond residents.
- 4 Fire hydrants play an important role in the City's water system. They deliver large quantities of water for fighting fires and help keep the City's drinking water safe by providing a way for water to be safely flushed out of the water system. In 2022, Water Services staff serviced and maintained 5,109 hydrants. For more information on our flushing programs, see Section 3.2.1 in this report.
- 5 Water service connections link City of Richmond's watermains to houses and businesses. Water Services crews installed 170 new service connections to properties throughout the City.
- 6 Sometimes service connections can get damaged or break due to different reasons. Water Services crews are always ready to repair water connections to prevent service disruptions to residents. In 2022, crews repaired 205 water service connections.
- 7 The City of Richmond's Leak Detection Program that uses specialized equipment to find underground leaks in the water system. In 2022, City staff discovered and repaired 90 leaks. For more information the City's Leak Detection Program, see Section 4.4 in this report.
- 8 Water Sampling Stations help Water Services staff monitor the quality of the City's drinking water. There are 40 stations located in strategic locations throughout the City. In 2022 Water Services staff took 2,048 water samples from the system. These samples were taken to a lab for analysis. The test results and discussion are contained in Section 3.2 in this report.
- 9 All pressurized systems can develop breaks due to the strain on the pipes. Water Services staff minimize breaks by replacing aging infrastructure and implementing a Pressure-Management Program (for more information, see Section 4.2 in this report). In 2022, City staff responded to and repaired 16 watermain breaks.
- 10 The City of Richmond has a watermain replacement and installation program to upgrade aging underground water infrastructure and improve the watermain network throughout the City. In 2022, Water Services crews installed 4,180 metres of watermains of various sizes.
- 11 Drinking water fountains help bring fresh drinking water to City of Richmond's residents and are a sustainable way of keeping hydrated while on-the-go. Water Services staff maintained and serviced 37 fountains along Richmond's dikes and in parks. For more information, see Section 5.1.2 of this report.
- 12 Water metering is important since it measures how much water each property has used. This makes sure that residents only pay for what they use and it also keeps residents informed of their water usage and promotes water conservation. In 2022, approximately 82% of the City's water usage was metered. For more information on the City's various Water Metering Programs, see Section 4.1 in this report.



3.0 Ensuring the Quality of Richmond's Drinking Water

Many different aspects go into ensuring the quality of Richmond's drinking water. From conducting programs and preventative maintenance, to water monitoring and testing, including taking quick action in case a watermain break or water contamination does happen.

3.1 Promoting Water Quality

Water Services staff take great pride in providing high-quality water to residents in the City. Through various programs and preventative maintenance, staff ensure that the water is safe to drink and the risk to the water quality is minimized.

3.1.1 Flushing Program

Water Services conducts a unidirectional flushing program every year. Unidirectional flushing involves forcing water in a single direction through a specific route through the pipes by closing or opening valves in a strategic way. Forcing the water in a single direction increases the velocity of the water flow and ensures that the inside of the pipes are being scoured and cleaned while the water is flushed. The water is then drained through hydrants at the end of the flushing sequence to remove the debris from the system. Cleaning the inside of the pipes is important because it prevents bacterial growth and removes possible sediment from the system.

The City also conducts regular weekly, monthly and annual flushing at lower velocities to eliminate stagnant water in dead-ends and other low-demand areas.

3.1.2 Reduce Watermain Leaks and Breaks

The City has various programs that reduce leaks and breaks in the system, which help keep Richmond's drinking water safe and clean. Whenever there is a watermain break, the system can experience a loss of pressure, which can create negative pressure. When a watermain has cracks or gaps between joints, there is a possibility that ground water can be siphoned back into the system during times of negative pressure.

Two programs that promote water conservation also help keep the City's drinking water safe by preventing this ingress of ground water. The Leak Detection and Pressure Management programs reduce watermain breaks and minimize weak spots in the distribution system where ground water can get into the pipes. You can learn more about these programs in Section 5 of this report.

3.1.3 Quick Response to Watermain Leaks and Breaks

Not only is reducing watermain breaks in a system important, but responding quickly when leaks and breaks happen is just as crucial. Quick response by staff eliminates the chance or the amount of time that groundwater can enter the system, which in turn prevents contaminants from getting into the watermain. An example of quick thinking and coordination by Water Services staff during a watermain leak is detailed in the Community Connections article in Appendix B. Water Services staff are always on call and trained to respond to all levels of watermain breaks. See Appendix C to see staff response to breaks with suspected contamination.

3.1.4 Backflow Preventer Program

To protect the City's water system and ensure great water quality, Water Services staff install a backflow preventer at every hydrant that has an active hydrant-use permit. The backflow preventer acts as a one-way valve and helps keep outside water from getting into the City's water system, which keeps possible contaminants out.

3.2 Monitoring Water Quality

The City of Richmond collects water samples on a weekly basis at 40 dedicated sampling sites. These sites are strategically located throughout the City to provide a suitable representation of the City's water quality across the whole network. In 2022, 2,048 water samples were collected by Water Services staff and sent for analysis at Metro Vancouver laboratories. These sample results were reviewed by Vancouver Coastal Health, the Health Authority in Richmond, to ensure the drinking water met the standards and parameters outlined in the British Columbia Drinking Water Protection Regulations (BCDWPR). Figure 2 – Water Sampling Stations Map shows a map of the sampling stations throughout the City and Appendix D contains a list of the sites, complete with their addresses.

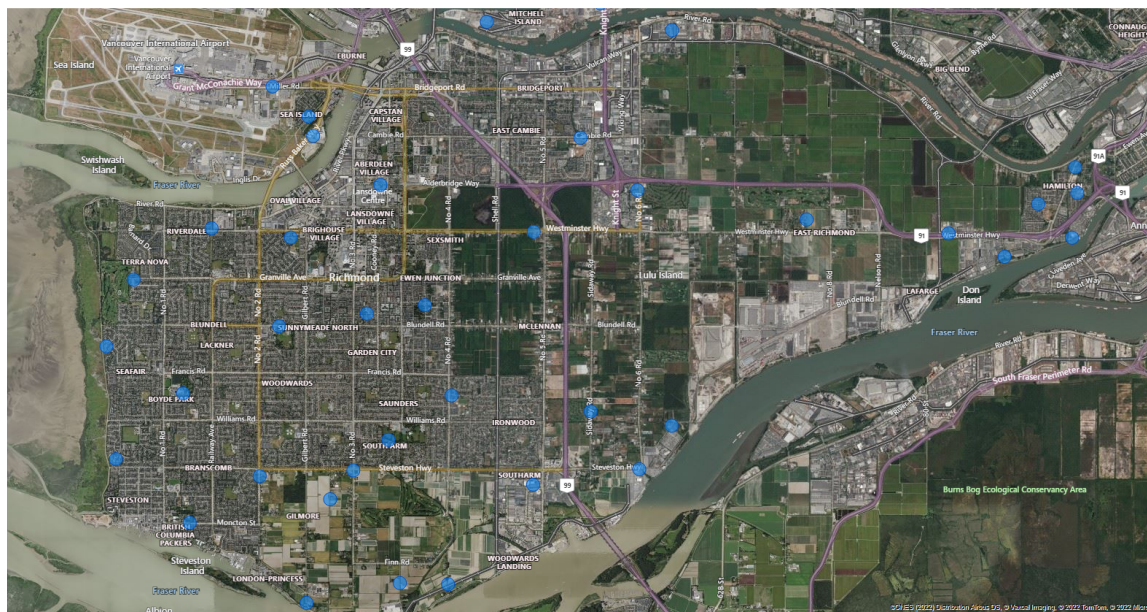


Figure 2 – Water Sampling Stations Map

3.2.1 Bacterial Parameters

The City of Richmond and Metro Vancouver conduct bacteriological tests for total coliform, fecal coliform and heterotrophic plate counts (HPC). The presence of these organisms in drinking water indicates that the water may be contaminated and may contain potentially harmful bacteria, viruses or parasites. Appendix E contains all of the City of Richmond's 2022 water test results.

Total Coliforms

Total coliform bacteria reproduce in water, soil or digestive systems of animals. The presence of total coliforms indicates water may have been contaminated or that the disinfection process is inadequate.

The number, frequency and location of samples for total coliform testing will vary depending on the type and size of the system and jurisdictional requirements. Provincial standards state that no sample contain more than 10 total coliforms per 100 ml, and that 90% of samples must have zero coliform bacteria in a sample over a 30-day period. In 2022, the City of Richmond's water met the drinking water requirement for total coliforms.

Fecal Coliforms

Fecal coliforms are present in large numbers in the feces and intestinal tracts of humans and other warm-blooded animals, and can enter bodies of water and water systems through contamination by human and animal waste. Due to the high risk of diseases and parasites, provincial standards state there can be no detectable fecal coliforms per 100 ml sample. In 2022, the City of Richmond's water met the drinking water requirement for fecal coliforms.

Heterotrophic Plate Count

Heterotrophic plate count (HPC) tests measure the level of the heterotrophic microorganism population in the City's drinking water. HPC tests indicate the presence of nutrients that could facilitate the growth of harmful bacteria, and can be a sign of changes in water quality if levels are elevated during treatment and distribution. Higher than normal HPC levels inform operators that there is an unusual increase of stagnant water or low chlorine residuals in the water mains. By reducing the HPC levels through the City's flushing programs, the possibility of bacteriological growth is decreased because the pipes become an inhospitable environment for bacteria to thrive. The small amount of free chlorine residual in the water also disinfects and eliminates harmful substances within the distribution system.

In 2022, three of the 2,048 water samples exceeded regulated levels for HPC's at 500 CFU/mls. Water Services staff flushed the corresponding section of the system until an acceptable result was obtained and verified through additional sampling procedures.

3.2.2 Chemical Parameters

Testing is done for chemicals in the water to ensure the proper amount of chlorine is in the system, to confirm that by-products from the disinfection process do not remain in the water and to ensure that naturally-occurring chemicals in the water are at acceptable levels.

Chlorine Residual

Chlorine residual is a measurement of the free chlorine remaining in the distribution system at the point of delivery to the customer. Chlorine is added to the City's drinking water by Metro Vancouver as part of the disinfection process to prevent bacterial growth during distribution. When the source lakes experience high turbidity (like during a storm), Metro Vancouver will increase the chlorine that's added to the water at their plants to ensure that the water quality is maintained despite the higher-than-desired turbidity. Typically, the slightly higher concentration of free chlorine in the system dissipates by the time it reaches the City's system. Sometimes the higher concentration remains in the system and can cause a chlorine taste and smell in the water. Despite the increased chlorine, the water is still safe to drink.

There also needs to be a minimum level of chlorine residual to protect Richmond's water supply from bacteriological contamination or growth. The minimum parameter for free chlorine residual in the water is 0.2 mg/L. In recent years, the City has made great progress in improving chlorine residuals by executing various flushing programs to clean and flush the water mains. In 2022, all of the water samples met the requirement of at least 0.2 mg/L. All of the 2022 chlorine residual results can be found in Appendix E.

Disinfection By-Products

Disinfection by-products are potentially harmful compounds produced by the reaction of a water disinfectant (such as chlorine or ozone) with naturally occurring organic matter in water. Two common chlorination by-products are Trihalomethanes (THMs) and Haloacetic Acids (HAAs).

THMs that are present in drinking water can enter the human body via multiple routes of exposure. These include ingestion by consuming water and inhalation and skin absorption from showering and bathing. Under the Guidelines for Canadian Drinking Water Quality (GCDWQ), the maximum acceptable concentration for THMs is 100 parts per billion (ppb). The maximum level for THMs is based on a running annual average of samples taken every three months. High levels on a particular day are not of concern unless they are consistently high over the latest four samples. Typically, THM levels will be highest in the summer and lowest in the winter months.

Under the GCDWD, the maximum acceptable concentration for HAAs is 80 parts per billion (ppb). Like THMs, HAAs are also monitored quarterly and are calculated on a running annual average of samples taken every three months.

The City utilizes the Metro Vancouver laboratory to perform quarterly tests for HAAs and THMs. These were carried out at representative sampling sites in accordance with a joint Metro Vancouver and City of Richmond monitoring plan. In 2022, all results were within acceptable levels as defined in the GCDWQ. See Appendix F for all test results and current running levels of THM and HAA in the system.



Testing a Water Sample

Acidity (pH Value)

The measurement of acidity is known as pH. A pH below 7.0 is considered acidic, above 7.0 is considered basic, with 7.0 being neutral. It is recognized that acidic water will accelerate the corrosion of metal pipes, often causing blue-green staining in household fixtures.

The acidity of the City's water is controlled by Metro Vancouver. The Seymour-Capilano filtration plant includes pH adjustment and corrosion control in its treatment processes. It is expected that the pH of drinking water will rise in the coming years as the filtration plant reaches its full capacity. Since natural acidity in water corrodes metal pipes over time, the pH increase will extend the lifespan of water plumbing systems and enhance water quality.

Metals

The City's water quality program also includes testing for metals that can be present in natural water sources like copper, iron, lead, and zinc. Appendices E and F contain a list of the metal limits stated by the GCDWQ and the results from the samples taken in 2022. All results were within or below the GCDWQ limits.

3.2.3 Physical Parameters

The water in Richmond's distribution system is tested for turbidity and temperature on a weekly basis. Information is also collected on the taste and odour of Richmond's water by actively tracking water quality complaints. The 2022 temperature and turbidity test results can be found in Appendix E.

Turbidity

Turbidity is a measure of water clarity and cloudiness in the water, and is caused by dissolved substances that are present in the water. Turbidity is measured in Nephelometric Turbidity Units (NTU). The guideline for turbidity should not exceed 5 NTUs in a distribution system providing that source water protection, monitoring, and water treatment requirements are met including increased levels of residual chlorine. Turbidity is a concern because increased turbidity compromises the drinking water disinfection process, and can allow microbes to grow or indicate that there is a presence of microbes in the system.

In general, sites with elevated turbidity are located in sections of the distribution network where there is low demand on the water system or where dead-end watermain exists. The increase may be attributed to sediment disturbance in the distribution system. In 2022, 12 samples out of 2,048 had turbidity levels that exceeded 1 NTU and of those, two exceeded 5 NTUs. If a sample indicates a turbidity level greater than 5 NTUs in the distribution system, affected watermain in the test area are flushed and re-tested until a satisfactory result is obtained.

Temperature

High temperatures in the distribution system can affect the amount of chlorine residual and can contribute to bacterial growth. Typically, the temperature of drinking water in the distribution system rises during summer months. Records indicate that one customer complaint was received regarding Richmond's water temperature in 2022. Water Services staff responded by flushing and testing the water at a nearby hydrant. In 2022, of the 2,048 samples taken, 278 exceeded the aesthetic guideline of 15°C. The highest temperature recorded was 19°C. The vast majority of these elevated temperatures were recorded during the summer months and "heat wave" events.



Testing Water Temperature

Taste and Odour

Taste and odour are monitored through customer complaints. If the water quality meets all the other parameters set out in this report, the taste and odour of the water should not change. Most of the time the different taste and odour will be the result of an increase in free chlorine, which is safe to drink. However, it's important for the City and Water Services staff to track and react to complaints because it could mean that contamination has occurred somewhere in the system.

Records indicate that 14 complaints were received regarding taste and four complaints were received regarding odour in 2022. These complaints generally relate to high levels of chlorine residual in that part of the system at that particular time. Residents who complained about taste or odour problems were advised to flush their internal system by running their taps. If the problem was not resolved, Water Services staff were dispatched to the location until a satisfactory result was obtained and verified through laboratory analysis.

3.2.4 Failed Samples

It is important for City staff to deal with failed sample results are dealt with right away. The City's standard response to a failed water sample is:

- Re-sample from the same station.
- Flush the watermain extensively.
- Re-sample again from the same station.
- Isolate the watermain to one feed until test results confirm compliance with the British Columbia Drinking Water Protection Regulations (BCDWPR).

3.2.5 Notifications

Under the Drinking Water Protection Act, the Metro Vancouver laboratory must immediately inform the City of Richmond, the Drinking Water Officer and the Medical Health Officer if a water supply system result fails to meet established guidelines. Immediate action and precautions are taken and notifications are given. If any threats are made to the water supply, the Drinking Water Officer must be notified immediately.

Water safety situations such as chemical or biological contamination, turbidity over 5 NTU, disinfection failure, loss of pressure due to high demand, or a watermain break where there is suspected contamination, would be considered an emergency and immediate action would be taken. The Drinking Water Officer and Medical Health Officer would be notified immediately. See Appendix C for more details about the actions taken by Water Services staff.

Water quality advisories are issued to the general public when necessary. Similarly, if there is construction or a service being done that will affect the quality of the drinking water, a notification will be issued to the affected residents.

4.0 Water Conservation

Water conservation efforts are important to ensure that the regional system can keep up with the growing population in the area, to safeguard the region's water supply and to help maintain the area's beautiful environment. Climate change and increasingly dry summers have expedited the need for city-wide water conservation efforts.

The City of Richmond continues to succeed in reducing annual water consumption despite a growing population by implementing corporate and community-wide initiatives. These include water metering, pressure management, leak reduction and detection programs, a toilet rebate program and a rain barrel sale program.

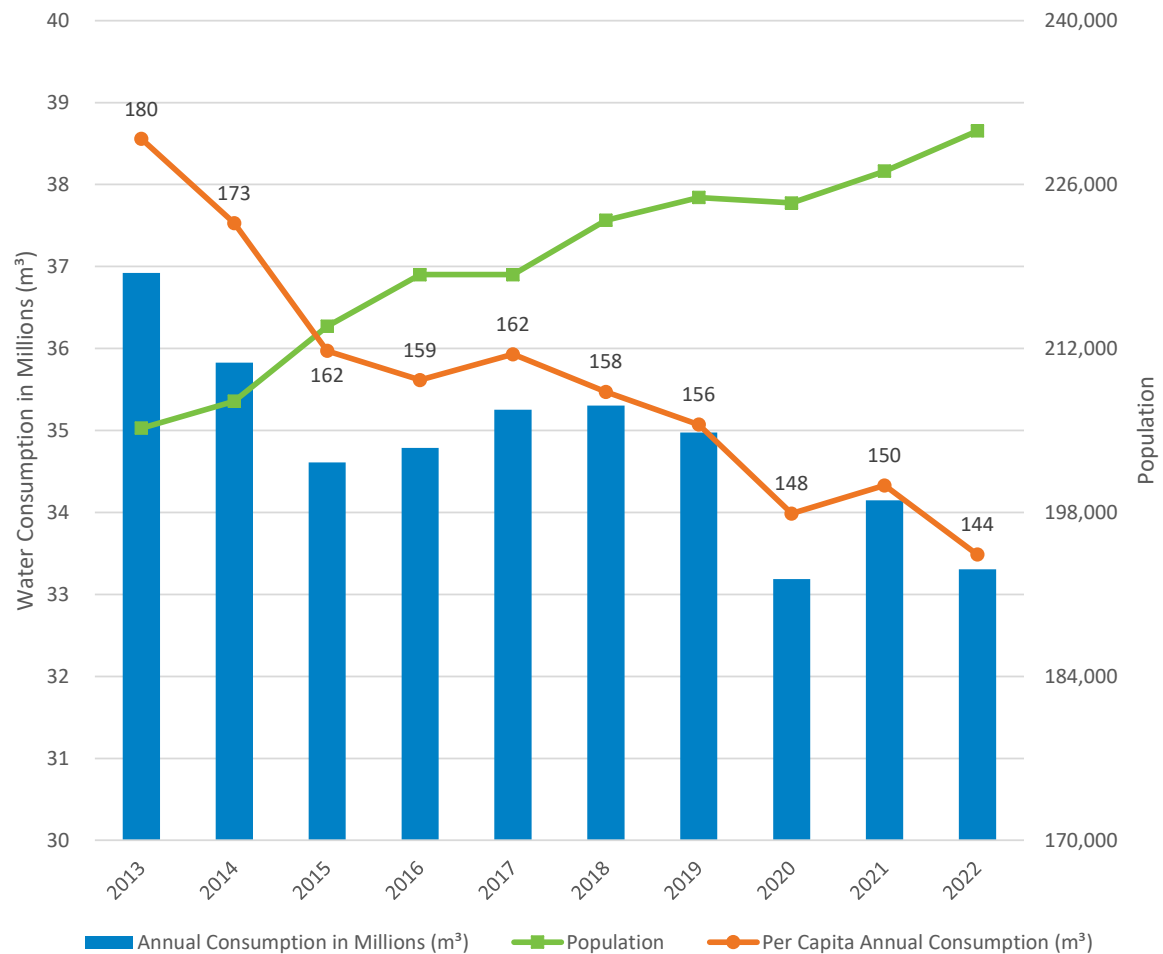


Figure 3 – Water Consumption vs Population (2013 to 2022)

The graph in Figure 3 shows how the City of Richmond has been conserving water despite an increase in population over the years. Other than in 2021, the City's water consumption per capita has been steadily decreasing since 2017; when the single-family water meter program was completed. Between 2020 and 2022, the per capita consumption decreased by 2.4%, resulting in the conservation of about 800,000 cubic metres of water in 2022. In 2021, the whole region saw a spike in water consumption due to the heat events that were experienced during the summer.

Water conservation has become more critical in recent years due to heat events, dry summers, and climate change. As more water conservation programs are developed, water consumption in the City will decrease further to support the region's push to conserve water.

4.1 Water Metering Programs

Water metering plays a significant role in the City's water management program as it promotes water conservation and charges residents for their water usage in a fair and equitable way. Water meters allow residents and businesses to pay for the actual amount of water they use, rather than being billed on the flat-rate system. Approximately 82% of the City's water usage was metered in 2022.

In Richmond, 100% of single-family residential homes are metered since the completion of the universal single-family water meter program in 2017. Additionally, 100% of industrial, commercial and institutional properties are metered.

Starting in 2022, in line with the City's dedication to water conservation efforts in the region, Water Services staff are gradually implementing mandatory metering for multi-family properties. Currently, 56% of multi-family complexes in Richmond, including all new developments, are metered. All remaining unmetered properties are scheduled to be metered over the next 15 years.



Multi-Family Water Meter Installation

4.2 Pressure Management Program

Using the Pressure Reducing Valve (PRV) stations, the City of Richmond reduces water pressure by 10 PSI from October to May, causing the system pressure to change from 90 PSI to 80 PSI. The purpose of this practice is to reduce the volume of leakage during a lower demand period and extend the life of the City's water infrastructure. During summer months, a timer-based system lowers the pressure from 90 PSI to 80 PSI from 1:00 to 5:00am. A decrease in nighttime flows, leakage, and watermain breaks have been observed since the inception of this program.

4.3 Leak Reduction Program

The City's Leak Reduction Program involves using the fixed-base metering system to detect single-family properties with continuous water consumption. City staff identify the properties and educate the homeowners about the continuous usage, which could indicate a leak in their private system. The program can significantly reduce overall private property leakage since leaks can be detected by the system earlier than when they become visible or obvious.

4.4 Leak Detection Program

The leak detection program discovers non-visible underground leaks within the City's distribution system using noise loggers measuring sound frequencies in the targeted pipe allowing any leaks to be heard and recorded.

4.5 Toilet Rebate Program

The City of Richmond's Toilet Rebate Program provides a utility account rebate of \$100 to homeowners who install a low-flush toilet. Single and multi-family homeowners are eligible to apply for a lifetime maximum of two rebates per property. Industrial, commercial and other non-residential properties are not eligible at this time. This program encourages homeowners to replace older, high-volume toilets with low-flush toilets to conserve water and to reduce costs. In 2022, there were 627 rebates submitted and processed.

4.6 Rain Barrel Sale Program

Rain barrels are excellent outdoor water-saving devices that collect and store rainwater from rooftops for lawn and garden use. Rainwater is a great water source for lawns, plants and gardens. For metered households, using rainwater will reduce the amount of tap water used for your garden therefore decreasing the utility bill. In 2022, 206 rain barrels were sold to Richmond residents.

Rain barrels are available for purchase at the City's Recycling Depot by Richmond residents only. The barrels can hold up to 208 litres. Installation instructions are included.



Rain Barrel Connected to Roof Spout and Hose

4.7 Lawn Watering Regulations

To help manage the high demand for drinking water during the hot and dry summer months, Metro Vancouver imposed stage one lawn watering regulations from May 1 to October 31, 2022. The planned regulations were originally set to end on October 15, but due to the unusually dry September, the restrictions were extended to ensure the volume of water in the reservoirs was adequate to meet the region's demand.

The graph in Figure 4 shows the monthly consumption in the City compared with the average maximum temperature and the total monthly precipitation.

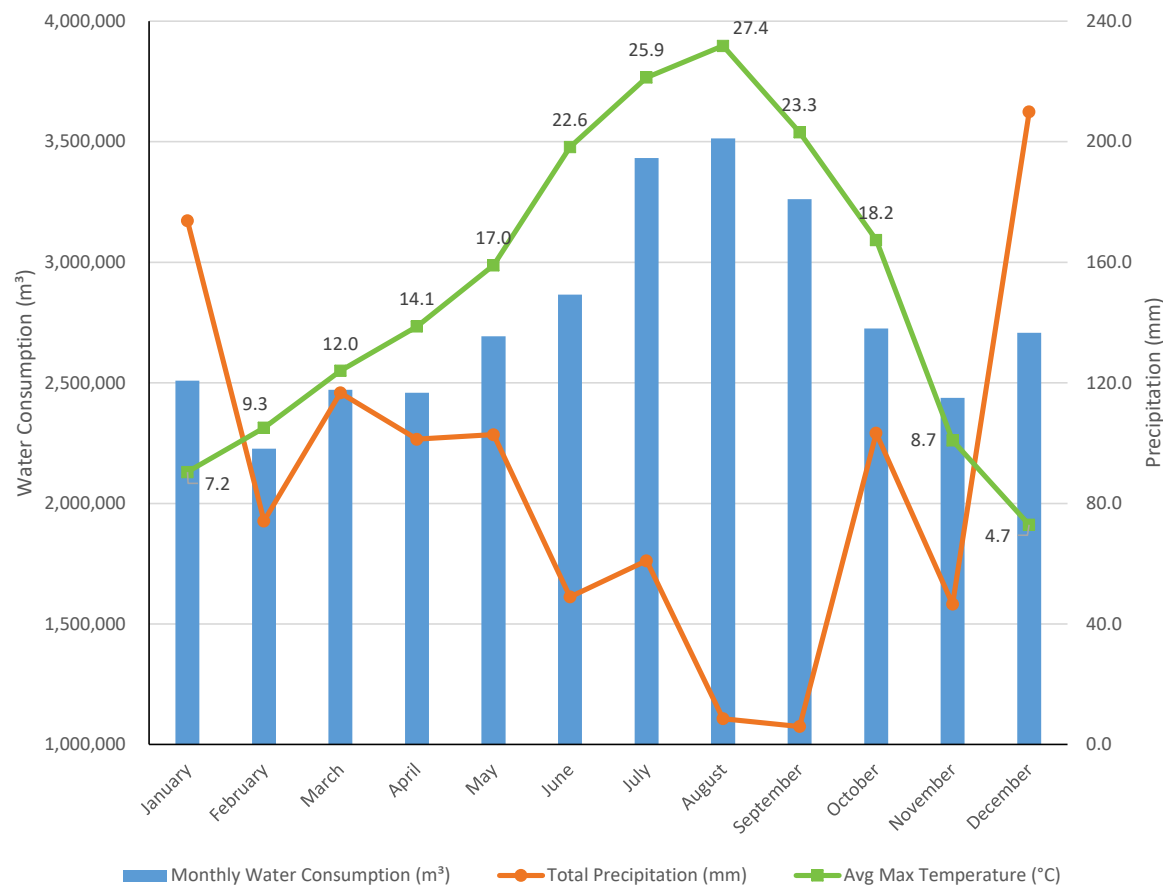


Figure 4 – 2022 Monthly Water Consumption and Climate Information

As the temperature increases, the City-wide consumption increases with it. The higher demand combined with the decrease in precipitation during summer months results in the Metro Vancouver reservoirs water levels decreasing at a greater pace during the summer months. Water conservation, especially in the summer, is vital in order to maintain a minimum amount of water in the reservoirs in case of emergency and to preserve the natural environment.

5.0 Community Outreach

Initiatives to promote City of Richmond's clean drinking water and encourage sustainability are also present throughout the City. As part of Water Services' community outreach, staff are prepared to deploy misting stations at strategic locations to assist the public in staying cool during extreme weather events.

5.1 Tap Water Initiative

Metro Vancouver's tap water campaign is an initiative to encourage tap water consumption by the public and highlight public drinking fountains so that people can refill water bottles or simply get a drink of high-quality water. The City of Richmond is dedicated to promoting the value of tap water, maximizing opportunities for use of tap water in facilities and developing strategies for making tap water the water of choice.

5.1.1 Portable Drinking Water Units

To support the Tap Water Initiative, Richmond's Water Services section is proud to maintain portable drinking units that are used at numerous community events. The units provide the public with potable tap water and to promote tap water usage as an alternative to bottled water consumption. Samples are tested upon installation to ensure good quality water for the public to enjoy. In 2022, Water Services staff maintained four portable drinking fountain units, installed units at 44 community events, which were used for 100 total days.



Portable Drinking Water Unit at Gateway Theatre



Permanent Drinking Fountain with Dog Bowl

5.1.2 Permanent Drinking Water Fountains

The 37 water fountains found on Richmond's dikes and in parks are maintained by Water Services. They are tested and inspected regularly to ensure accessible high-quality drinking water. The fountains are turned off in winter months to prevent freezing and costly damage and are turned back on in the spring for the public to enjoy. An auto-flushing unit was installed on one of the longer service pipes connected to a fountain to ensure water quality and maintain adequate chlorine residual. The fountains allow people out in the community to enjoy high-quality water. Some of the City's water fountains even have an additional bowl at ground level to make sure pets can also stay hydrated.

5.2 Misting Stations

In response to recurring extreme hot weather, Water Services staff designed and built misting stations that can be placed at a potable water source, like a hydrant, and provide a way for people to cool down. In coordination with Emergency Programs, misting stations were deployed in parks and popular outdoor locations during three heat events during the 2022 summer to provide heat relief. Misting stations were also deployed outside of heat events throughout the City.



Misting Station at Aberdeen Neighbourhood Park

6.0 In Conclusion

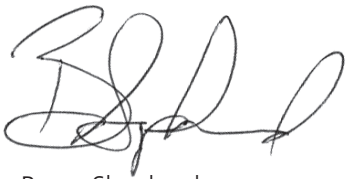
In 2022, Richmond residents enjoyed high-quality drinking water. From the protected watersheds to the local taps, both Metro Vancouver and the City of Richmond focus on providing safe high-quality drinking water.

Test results confirm our commitment to maintaining our water quality and system at an exceptional level and demonstrate our aim for continuous improvement. Richmond's water system is operated and maintained to the highest degree of care to ensure that it's free from any harmful bacteria or toxins. The City of Richmond's Water Services section takes its role as a water purveyor very seriously and is proud to be the guardian of such a precious resource.

Water Services staff continue to employ best management practices in the operation and maintenance of the water system. Staff are EOCP certified, meet all requirements of the British Columbia Drinking Water Protection Act and are well equipped to operate and maintain all aspects of the water system from the source to property lines.

The City values the strong working relationship with Vancouver Coastal Health and acknowledges them as important partners in maintaining high-quality drinking water throughout Richmond.

Sincerely,

A handwritten signature in black ink, appearing to read 'B. Shepherd', with a stylized flourish at the end.

Bryan Shepherd
Manager, Water Services
City of Richmond
604-233-3334
bshepherd@richmond.ca

APPENDIX A: REFERENCES

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CONNECTING COMMUNITY:

Pipe repair in the air

When an air valve broke on a pipe connecting the River Road area of Richmond to Mitchell Island, it triggered a repair process involving multiple organizations, innovative solutions and extensive safety measures.

Why? Because the watermain pipe runs under the Knight Street bridge, more than six storeys (or 26.5 metres) above the Fraser River.

When City of Richmond staff were made aware of a leak under the bridge, they went to the area immediately and found water pouring out into the river. Water is chlorinated to keep it safe for drinking, but it is not permitted in natural water sources like the river. To stop the chlorinated water from running into the river, a Water Services crew quickly throttled down the water pressure to minimize the flow of water going through the damaged pipe. The City continued to provide a reliable water supply to Mitchell Island using a secondary pipe, as the City has two pipes in place to ensure there is backup in place for a secure water supply.

“We acted quickly to mitigate the environmental concerns from the chlorinated water leaking into the river as an interim measure,” says Bryan Shepherd, Manager, Water Services, Engineering & Public Works for the City of Richmond. “But we also knew that the complexity of the work under the bridge would take time to plan and complete due to a variety of challenges present. This also meant it would require a team effort.”

Continued on next page



Right from the planning stages, the pipe repair in the air project exemplified the City's core values by focusing on the power of teams who share a common goal. Everyone involved demonstrated concern for each other while building on their individual and collective knowledge.

OBTAINING ACCESS AND SAFETY PLANNING

The first challenge was how to gain access to damaged pipe. TransLink owns the Knight Street Bridge, so the City required permission from TransLink to perform any repairs. In addition, the pipe needing repair was only accessible through a vertical ladder on one of the piers and a series of suspended catwalk systems under the bridge. These areas required up-to-date safety certifications.

Making repairs up in the air also required extensive safety measures. The City's Occupational Health and Safety (OHS) team members, Anastasia Riabkova and David Richards, coordinated with TransLink to confirm that the required annual inspections of the ladder and catwalk lifelines certifications were up to date. Next, they developed a plan for a safe working procedure. The inspections and safety plan were required prior to start of work to ensure the equipment would protect workers from a fatal fall and keep everyone safe on the job site.

The safe work procedure was also a key step for the City to obtain an Indemnity Inspection Agreement with TransLink, which allowed the City to access the horizontal and vertical lifelines and perform necessary maintenance and repair work.

The Indemnity Inspection Agreement also required the City to provide a High Angle Rescue Agreement. Kevin Gray, Deputy Fire Chief, Richmond Fire Rescue worked together with Riabkova and Richards to create the High Angle Rescue Agreement. The City's legal team then reviewed and finalized the Indemnity Inspection Agreement.

"Chief Gray and his team went above and beyond to support this repair project," says Shepherd. "They offered to provide the Public Works crew with a pre-entry inspection, on-site rescue support, and a means to transport materials from the ground to the catwalk using ropes. Richmond Fire Rescue crews also leveraged this repair project to practice their high angle training."

APPLYING INNOVATION AND TRAINING

While City staff worked together to complete the agreement with TransLink and establish safety measures, the Water Services crew wanted a better look at the damage to assess what caused the leak and what would be needed for repairs. Fortunately, the City has staff who are trained to fly drones so they could apply innovative technology to make their task easier. After getting approval from the Vancouver Port Authority, a pilot flew a drone to assess the damaged area and confirmed that a broken air valve was the source of the leak.

Continued on next page

With the source of the leak confirmed, the Water Services crew could start planning the repair. Not surprisingly, the first big challenge that needed to be addressed was the height and ensuring the safety of the crew who would be under the bridge.

The Occupational Health and Safety team, Richmond Water Services and Richmond Fire Rescue worked together to ensure that workers performing this task had all the necessary fall protection training, fall protection equipment and a fall plan.

Murray Barstow, Water Services Supervisor for the City, organized a team that was trained in fall protection, ticketed with utility repair and comfortable with working 26.5 metres up in the air. As well, certified firefighters would work with the repair crew, both up on the bridge and on the ground.

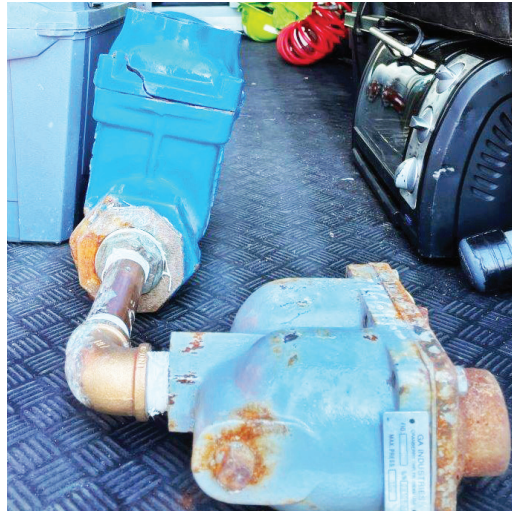
“We needed to use Water Services staff as they are trained and ticketed for our utility, but we also asked for volunteers. They would be working close to 100 feet in the air, so you can’t just assign a task like this,” says Shepherd. “The two people who volunteered were already trained and certified in fall arrest, they already had harnesses that were fit to them, and they were not afraid of heights.”

SHARING THE SPACE WITH THE LOCAL WILDLIFE

Another challenge that the City encountered was the presence of peregrine falcons in the area.

“When we were assessing the damage, a falcon was dive-bombing the drone so we knew the birds were in the area, and it was close to nesting season when we would be doing the work,” says Shepherd. “There were also concerns that the falcons may attack our crews, so we needed to bring on someone with expertise in this area.”

An environmental consultant was brought onto the project to ensure the safety of both the birds and the workers.



REPAIRS IN THE AIR

After two months of planning, getting required approvals, ensuring all safety measures were in place and taking steps to protect the falcons, the repairs could finally proceed safely and in compliance with all provincial and federal regulations.

Water Services staff, Colin Hutchinson and Ken Laboucane, performed the repair work on the bridge while two Fire Rescue staff stayed on the catwalk on standby in case rescue was needed. They replaced the air valve, which is about the size of a basketball, installed a shut-off valve and replaced about four feet of pipe where the air valve was located. This took about four hours to complete.

Eight Fire Rescue staff remained on the ground to assist further in the event of an emergency and helped raise and lower equipment using a rope pulley system.

The environmental consultant used binoculars to observe the behaviour of the birds. During the repair work, the falcons began to fly around and make noise to indicate they were concerned and unhappy with the presence of workers.

Continued on next page



Work was halted for 30 minutes to allow for the falcons to calm down and prevent provoking an attack on the workers. The environmental consultant assessed whether the falcons were being adversely impacted and if the job site needed to be shut down. Fortunately, after the 30 minutes had passed, the falcons were calm and perched on a nearby tree.

"It's exciting work. It's challenging. It's scary. And after completion it's rewarding," says Shepherd, who, having done work under the bridge in the past, would know. "I think there's a lot of adrenaline. When everyone gets back down safely, it's a huge sense of accomplishment."

While the aerial adventure portion of the work was completed, additional work was still needed before the water could be turned back on. The Water Services crew injected about 40 litres of high concentration chlorine into the water running through the 450 mm pipe and let it sit for 24 hours to disinfect the pipe before water could be turned back on.

"We take continuous measurements until its dark purple on the litmus paper to show a high concentration of the chlorine, and then we let it sit so it can eat up any bacteria, dirt or other contaminants that may have entered the pipe," says Shepherd.

When the chlorine was released from the pipe, the crew ran it through vitamin C pucks, which dissipates the chlorine so it could safely be released into a gravel lot. Next, they did water quality testing. After about three days, the results were in, and the water quality test came back clear, so they turned the water back on.

The City takes over 2,000 samples each year to test the water to ensure the water quality is good.

"Our job is to supply water to Richmond residents, regardless of the height or how hard the work is," notes Shepherd. "Our crews enjoy their work, and are thrilled to provide the Richmond community with clean water."

Thanks to collaboration, training, and innovation, the repairs to the watermain were completed safely and the pipe connecting two communities in Richmond is again secure and fully operational.

"I'm proud of the crew's accomplishment and the collaboration of the different parties involved," adds Shepherd. "It seemed like they had fun. I went to school with Darren Rowley, a Company Officer and Lieutenant with Fire Rescue, and I know he was very proud of his team too. Overall, it was a really good repair, and this is one we'll talk about for years."



APPENDIX C: SPECIFIC EMERGENCY RESPONSE PLANS

Positive Response for E. Coli or Fecal Coliform

In the event of possible E. Coli or fecal coliform contamination, all steps to ensure public health and safety will be taken, including banning water usage if necessary. If a water sample tests positive for fecal coliform, the following response plan will occur:

- The City of Richmond's water quality staff, the Drinking Water Officer and the Medical Health Officer will be notified by the Metro Vancouver laboratory
- Interim samples from the site will be examined. Interim samples are samples in the period between when the fecal positive sample was taken and when it was determined to be fecal positive
- Arrangements will be made for the immediate collection of a repeat sample including, where possible, samples from upstream and downstream of the fecal positive sample
- Chlorine residual for the sample noted on the sampler's data sheet will be reviewed to determine if a localized loss of disinfectant occurred
- Water Services staff will be contacted to determine if there was any loss of pressure or other unusual events that may have led to contaminants entering the system
- The need for a boil-water advisory will be evaluated by the City, the Drinking Water Officer and the Medical Health Officer. If a boil water advisory is deemed necessary, the municipality will carry out various means to inform the public. Metro Vancouver will be informed of this public advisory
- The City, in consultation with the Medical Health Officer, will determine the need and extent for a boil water advisory
- The Metro Vancouver laboratory will initiate procedures to identify species of the fecal positive organism with standard biochemical tests
- The Medical Health Officer will be contacted with the repeat sample results and the results of the species identification on the fecal positive sample when these tests are complete

Chemical or Biological Contamination Response

In the event of chemical or biological contamination, in source waters or the City's distribution system, the following actions will be taken by the City of Richmond and Metro Vancouver:

- Immediately notify Vancouver Coastal Health
- Identify the chemical and any public health risk factors associated with its presence in potable water
- Isolate the contaminated zone area and determine the level of contamination
- Issue a public advisory in consultation with the Drinking Water Officer and Medical Health Officer

In the event of possible biological or chemical contamination, all steps to safety will be taken to ensure public health, including banning water usage if necessary.

Turbidity Response

Turbidity (cloudy water) occurs during periods of heavy rain at and surrounding Metro Vancouver water sources. The City of Richmond, in collaboration with Vancouver Coastal Health, developed a turbidity response plan, which considers the City's responsibility for due diligence without unreasonably constraining the water utility's ability to operate the system.

Should there be a turbidity event, the results will be assessed and staff will:

- Begin a rigorous sampling program for microbiological activity and residual chlorine
- Monitor the City's supervisory control and data acquisition (SCADA) system with updates sent to Vancouver Coastal Health on a predetermined schedule
- Flush areas and re-test

- If necessary (in consultation with Vancouver Coastal Health), issue a public communication and issue a boil-water advisory to residents receiving turbid water

Response to Interruption of Primary and/or Secondary Disinfection

Upon notification by Metro Vancouver Operations that an interruption in disinfection has occurred:

- Staff will monitor residual levels of chlorine at strategic locations in the Metro Vancouver supply area
- The City's SCADA system will be monitored with updates sent to Vancouver Coastal Health on a predetermined schedule, as set by the health authority
- In cases where chlorine residual is less than 0.2 ppm, City crews will flush the affected area until an acceptable level is achieved

These actions will continue until disinfection is resumed and adequate levels of residual chlorine have been reached in the distribution system

Response to Loss of Pressure Due to High Demand

In the event of a pressure loss due to high demand:

- City staff will attempt to rectify the problem as soon as possible using various demand management techniques and by supplementing supply to problem areas
- Metro Vancouver, the Drinking Water Officer and the Medical Health Officer will be notified of any water quality issues
- City staff will perform chlorine residual tests at various locations to determine if adequate disinfectant is present in the distribution
- All water quality complaints from the public will be thoroughly investigated due to the potential for water contamination during low water pressure

Response to Watermain Breaks with Suspected Contamination

All watermain breaks where chemical or microbiological contamination of the system is suspected will be immediately reported to the Drinking Water Officer and the Medical Health Officer. The municipality will isolate the contaminated section from the rest of the distribution system. Once the watermain has been repaired, chlorine residual testing will be conducted at various locations affected by the main break. If low chlorine residuals are found, necessary actions to increase the levels of free chlorine will be carried out. If bacterial contamination is suspected, water samples will be analyzed and appropriate action taken.

APPENDIX D: WATER SAMPLING SITES

	Sampling Station Number	Water Sampling Sites
Monday	RMD-250	6071 Azure Road
	RMD-251	5951 McCallan Road
	RMD-252	9751 Pendleton Road
	RMD-253	11051 No. 3 Road
	RMD-254	5300 No. 3 Road
	RMD-255	6000 Blk. Miller Road
	RMD-256	1000 Blk. McDonald Road
	RMD-269	14951 Triangle Road
	RMD-270	8200 Jones Road
	RMD-271	3800 Cessna Drive
	RMD-272	751 Catalina Crescent
	RMD-273	Opp. 8331 Fairfax Place
	RMD-274	10920 Springwood Court
Wednesday	RMD-257	6640 Blundell Road
	RMD-258	7000 Blk. Dyke Road
	RMD-259	10020 Amethyst Avenue
	RMD-260	11111 Horseshoe Way
	RMD-261	9911 Sidaway Road
	RMD-262	13799 Commerce Parkway
	RMD-263	12560 Cambie Road
	RMD-264	13100 Mitchell Road
	RMD-266	9380 General Currie Road
	RMD-268	13800 No. 3 Road
	RMD-277	Opp. 11280 Twigg Place
	RMD-278	6651 Fraserwood Place
	RMD-279	Opp. 20371 Westminster Highway
Friday	RMD-202	1500 Valmont Way
	RMD-203	23260 Westminster Highway
	RMD-204	3180 Granville Avenue
	RMD-205	13851 Steveston Highway
	RMD-206	4251 Moncton Street
	RMD-208	13200 No. 4 Road
	RMD-212	Opp. 8600 Ryan Road
	RMD-214	11720 Westminster Highway
	RMD-216	11080 No. 2 Road
	RMD-267	17240 Fedoruk Road
	RMD-249	23000 Block Dyke Road
	RMD-275	5180 Smith Crescent
	RMD-276	22271 Cochrane Drive
	RMD-280	11500 McKenzie Road

APPENDIX E: 2022 WATER QUALITY RESULTS

Sample Type	Water Sampling Station Number	Water Sampling Station Address	Sampled Date	Temperature (°C)	Turbidity (NTU)	Chlorine Free (mg/L)	HPC (CFU/mL)	E. coli (CFU/100mLs)	Total Coliform (CFU/100mLs)	E. coli (MPN/100mLs)	Total Coliform (MPN/100mLs)
GRAB	RMD-202	1500 Valemont Way	2022-01-07 09:35	7	0.16	0.84	<2	<1	<1	-	-
GRAB	RMD-202	1500 Valemont Way	2022-01-13 09:20	6	0.18	1.04	<2	<1	<1	-	-
GRAB	RMD-202	1500 Valemont Way	2022-01-21 09:25	6	0.2	0.85	<2	<1	<1	-	-
GRAB	RMD-202	1500 Valemont Way	2022-01-27 09:20	6	0.16	0.94	<2	<1	<1	-	-
GRAB	RMD-202	1500 Valemont Way	2022-02-04 09:20	6	0.23	0.95	<2	<1	<1	-	-
GRAB	RMD-202	1500 Valemont Way	2022-02-10 09:25	5	0.17	0.97	<2	<1	<1	-	-
GRAB	RMD-202	1500 Valemont Way	2022-02-18 09:25	5	0.12	1.08	<2	<1	<1	-	-
GRAB	RMD-202	1500 Valemont Way	2022-02-24 09:25	7	0.15	0.86	<2	<1	<1	-	-
GRAB	RMD-202	1500 Valemont Way	2022-03-04 09:20	6	0.25	0.82	<2	<1	<1	-	-
GRAB	RMD-202	1500 Valemont Way	2022-03-10 09:25	6	0.18	0.81	<2	<1	<1	-	-
GRAB	RMD-202	1500 Valemont Way	2022-03-18 09:20	7	0.2	0.76	<2	<1	<1	-	-
GRAB	RMD-202	1500 Valemont Way	2022-03-24 09:20	7	0.2	0.88	<2	<1	<1	-	-
GRAB	RMD-202	1500 Valemont Way	2022-04-01 09:20	7	0.14	0.93	<2	<1	<1	-	-
GRAB	RMD-202	1500 Valemont Way	2022-04-07 09:30	8	0.18	0.68	<2	<1	<1	-	-
GRAB	RMD-202	1500 Valemont Way	2022-04-14 09:20	8	0.14	0.85	<2	<1	<1	-	-
GRAB	RMD-202	1500 Valemont Way	2022-04-21 09:20	8	0.11	0.68	<2	<1	<1	-	-
GRAB	RMD-202	1500 Valemont Way	2022-04-29 09:25	8	0.15	0.74	2	<1	<1	-	-
GRAB	RMD-202	1500 Valemont Way	2022-05-05 09:30	8	0.14	1.19	<2	<1	<1	-	-
GRAB	RMD-202	1500 Valemont Way	2022-05-13 09:25	9	0.1	0.71	<2	<1	<1	-	-
GRAB	RMD-202	1500 Valemont Way	2022-05-19 09:25	9	0.13	0.69	<2	<1	<1	-	-
GRAB	RMD-202	1500 Valemont Way	2022-05-27 09:30	9	0.15	0.63	<2	<1	<1	-	-
GRAB	RMD-202	1500 Valemont Way	2022-06-02 09:25	10	0.15	0.67	<2	<1	<1	-	-
GRAB	RMD-202	1500 Valemont Way	2022-06-10 09:30	10	0.13	0.6	<2	<1	<1	-	-
GRAB	RMD-202	1500 Valemont Way	2022-06-16 09:20	11	0.12	0.62	<2	<1	<1	-	-
GRAB	RMD-202	1500 Valemont Way	2022-06-24 09:20	10	0.13	0.61	<2	<1	<1	-	-
GRAB	RMD-202	1500 Valemont Way	2022-06-29 09:30	11	0.12	0.69	2	<1	<1	-	-
GRAB	RMD-202	1500 Valemont Way	2022-07-08 09:30	13	0.14	0.69	<2	<1	<1	-	-
GRAB	RMD-202	1500 Valemont Way	2022-07-14 09:30	13	0.11	0.65	<2	<1	<1	-	-
GRAB	RMD-202	1500 Valemont Way	2022-07-22 09:25	13	0.14	0.69	2	<1	<1	-	-
GRAB	RMD-202	1500 Valemont Way	2022-07-28 09:40	13	0.52	0.77	<2	<1	<1	-	-
GRAB	RMD-202	1500 Valemont Way	2022-08-05 09:20	15	0.15	0.55	<2	<1	<1	-	-
GRAB	RMD-202	1500 Valemont Way	2022-08-11 09:30	15	0.14	0.58	10	<1	<1	-	-
GRAB	RMD-202	1500 Valemont Way	2022-08-19 11:00	15	0.13	0.73	4	<1	<1	-	-
GRAB	RMD-202	1500 Valemont Way	2022-08-25 09:20	15	0.16	0.7	6	<1	<1	-	-
GRAB	RMD-202	1500 Valemont Way	2022-09-02 09:40	16	0.1	0.65	4	<1	<1	-	-
GRAB	RMD-202	1500 Valemont Way	2022-09-08 09:40	16	0.09	0.67	<2	<1	<1	-	-
GRAB	RMD-202	1500 Valemont Way	2022-09-16 09:14	16	0.12	0.58	6	<1	<1	-	-
GRAB	RMD-202	1500 Valemont Way	2022-09-22 09:30	16	0.12	0.54	<2	<1	<1	-	-
GRAB	RMD-202	1500 Valemont Way	2022-09-29 09:25	15	0.13	0.55	4	<1	<1	-	-
GRAB	RMD-202	1500 Valemont Way	2022-10-06 09:20	16	0.16	0.53	4	<1	<1	-	-
GRAB	RMD-202	1500 Valemont Way	2022-10-14 09:20	16	0.12	0.5	2	<1	<1	-	-
GRAB	RMD-202	1500 Valemont Way	2022-10-20 09:30	15	0.15	0.59	<2	<1	<1	-	-
GRAB	RMD-202	1500 Valemont Way	2022-10-28 09:20	14	0.13	0.64	4	<1	<1	-	-
GRAB	RMD-202	1500 Valemont Way	2022-11-02 09:24	10	0.15	0.59	<2	<1	<1	-	-
GRAB	RMD-202	1500 Valemont Way	2022-11-10 09:30	10	0.14	0.62	<2	<1	<1	-	-
GRAB	RMD-202	1500 Valemont Way	2022-11-17 09:25	9	0.11	0.8	2	<1	<1	-	-
GRAB	RMD-202	1500 Valemont Way	2022-11-25 09:20	9	0.16	0.68	<2	<1	<1	-	-
GRAB	RMD-202	1500 Valemont Way	2022-12-01 09:30	8	0.2	0.73	<2	<1	<1	-	-
GRAB	RMD-202	1500 Valemont Way	2022-12-09 09:25	7	0.19	0.64	<2	<1	<1	-	-
GRAB	RMD-202	1500 Valemont Way	2022-12-15 09:25	7	0.14	0.93	<2	<1	<1	-	-
GRAB	RMD-202	1500 Valemont Way	2022-12-22 13:30	5	0.15	0.83	NA	<1	<1	-	-
GRAB	RMD-203	23260 Westminster Highway	2022-01-07 11:15	7	0.16	0.66	<2	<1	<1	-	-
GRAB	RMD-203	23260 Westminster Highway	2022-01-13 11:00	6	0.16	0.93	<2	<1	<1	-	-
GRAB	RMD-203	23260 Westminster Highway	2022-01-21 11:00	5	0.21	0.96	<2	<1	<1	-	-
GRAB	RMD-203	23260 Westminster Highway	2022-01-27 11:00	6	0.17	0.66	<2	<1	<1	-	-
GRAB	RMD-203	23260 Westminster Highway	2022-02-04 11:00	6	0.13	0.71	<2	<1	<1	-	-
GRAB	RMD-203	23260 Westminster Highway	2022-02-10 11:00	6	0.16	0.69	2	<1	<1	-	-
GRAB	RMD-203	23260 Westminster Highway	2022-02-18 11:00	6	0.2	0.74	<2	<1	<1	-	-
GRAB	RMD-203	23260 Westminster Highway	2022-02-24 11:00	6	0.14	0.74	<2	<1	<1	-	-
GRAB	RMD-203	23260 Westminster Highway	2022-03-04 11:20	6	0.13	0.88	<2	<1	<1	-	-
GRAB	RMD-203	23260 Westminster Highway	2022-03-10 11:00	6	0.23	0.82	<2	<1	<1	-	-
GRAB	RMD-203	23260 Westminster Highway	2022-03-18 11:20	7	0.12	0.85	<2	<1	<1	-	-
GRAB	RMD-203	23260 Westminster Highway	2022-03-24 11:15	7	0.11	0.83	<2	<1	<1	-	-
GRAB	RMD-203	23260 Westminster Highway	2022-04-01 11:20	7	0.12	0.86	<2	<1	<1	-	-

Sample Type	Water Sampling Station Number	Water Sampling Station Address	Sampled Date	Temperature (°C)	Turbidity (NTU)	Chlorine Free (mg/L)	HPC (CFU/mL)	Ecoli (CFU/100mLs)	Total Coliform (CFU/100mLs)	Ecoli (MPN/100mLs)	Total Coliform (MPN/100mLs)
GRAB	RMD-203	23260 Westminster Highway	2022-04-07 11:10	8	0.15	0.75	<2	<1	<1	-	-
GRAB	RMD-203	23260 Westminster Highway	2022-04-14 11:20	8	0.11	0.78	<2	<1	<1	-	-
GRAB	RMD-203	23260 Westminster Highway	2022-04-21 11:00	9	0.1	0.73	<2	<1	<1	-	-
GRAB	RMD-203	23260 Westminster Highway	2022-04-29 10:45	8	0.1	0.78	<2	<1	<1	-	-
GRAB	RMD-203	23260 Westminster Highway	2022-05-05 11:00	8	0.08	0.84	<2	<1	<1	-	-
GRAB	RMD-203	23260 Westminster Highway	2022-05-13 11:00	9	0.09	0.7	2	<1	<1	-	-
GRAB	RMD-203	23260 Westminster Highway	2022-05-19 11:00	9	0.13	0.69	<2	<1	<1	-	-
GRAB	RMD-203	23260 Westminster Highway	2022-05-27 11:10	9	0.13	0.65	2	<1	<1	-	-
GRAB	RMD-203	23260 Westminster Highway	2022-06-02 11:00	10	0.12	0.75	<2	<1	<1	-	-
GRAB	RMD-203	23260 Westminster Highway	2022-06-10 11:10	9	0.16	0.65	<2	<1	<1	-	-
GRAB	RMD-203	23260 Westminster Highway	2022-06-16 11:00	9	0.34	0.82	<2	<1	<1	-	-
GRAB	RMD-203	23260 Westminster Highway	2022-06-24 11:00	12	0.13	0.78	<2	<1	<1	-	-
GRAB	RMD-203	23260 Westminster Highway	2022-06-29 11:10	10	0.12	0.78	<2	<1	<1	-	-
GRAB	RMD-203	23260 Westminster Highway	2022-07-08 11:10	11	0.16	0.76	<2	<1	<1	-	-
GRAB	RMD-203	23260 Westminster Highway	2022-07-22 11:00	12	0.17	0.72	<2	<1	<1	-	-
GRAB	RMD-203	23260 Westminster Highway	2022-07-28 11:30	13	0.53	0.87	<2	<1	<1	-	-
GRAB	RMD-203	23260 Westminster Highway	2022-08-05 11:20	15	0.2	0.6	<2	<1	<1	-	-
GRAB	RMD-203	23260 Westminster Highway	2022-08-11 11:10	14	0.19	0.77	<2	<1	<1	-	-
GRAB	RMD-203	23260 Westminster Highway	2022-08-19 11:30	16	0.17	0.69	<2	<1	<1	-	-
GRAB	RMD-203	23260 Westminster Highway	2022-08-25 11:15	15	0.14	0.7	<2	<1	<1	-	-
GRAB	RMD-203	23260 Westminster Highway	2022-09-02 11:30	16	0.22	0.79	<2	<1	<1	-	-
GRAB	RMD-203	23260 Westminster Highway	2022-09-08 11:30	16	0.12	0.77	48	<1	<1	-	-
GRAB	RMD-203	23260 Westminster Highway	2022-09-16 11:30	16	0.12	0.68	<2	<1	<1	-	-
GRAB	RMD-203	23260 Westminster Highway	2022-09-22 11:10	15	0.31	0.65	<2	<1	<1	-	-
GRAB	RMD-203	23260 Westminster Highway	2022-09-29 11:00	15	0.22	0.7	<2	<1	<1	-	-
GRAB	RMD-203	23260 Westminster Highway	2022-10-06 11:00	16	0.19	0.65	<2	<1	<1	-	-
GRAB	RMD-203	23260 Westminster Highway	2022-10-14 11:00	16	0.12	0.67	<2	<1	<1	-	-
GRAB	RMD-203	23260 Westminster Highway	2022-10-20 11:10	14	0.16	0.72	<2	<1	<1	-	-
GRAB	RMD-203	23260 Westminster Highway	2022-10-28 11:15	14	0.22	0.67	<2	<1	<1	-	-
GRAB	RMD-203	23260 Westminster Highway	2022-11-02 11:00	11	0.15	0.75	<2	<1	<1	-	-
GRAB	RMD-203	23260 Westminster Highway	2022-11-10 11:10	9	0.12	0.69	2	<1	<1	-	-
GRAB	RMD-203	23260 Westminster Highway	2022-11-17 11:00	8	0.13	0.71	<2	<1	<1	-	-
GRAB	RMD-203	23260 Westminster Highway	2022-11-25 11:10	9	0.12	0.71	<2	<1	<1	-	-
GRAB	RMD-203	23260 Westminster Highway	2022-12-01 11:10	7	0.18	0.73	<2	<1	<1	-	-
GRAB	RMD-203	23260 Westminster Highway	2022-12-09 11:00	8	0.17	0.67	<2	<1	<1	-	-
GRAB	RMD-203	23260 Westminster Highway	2022-12-15 11:00	6	0.12	0.81	2	<1	<1	-	-
GRAB	RMD-203	23260 Westminster Highway	2022-12-22 15:00	6	0.32	0.58	NA	<1	<1	-	-
GRAB	RMD-204	3180 Granville Avenue	2022-01-07 07:30	7	0.13	0.74	<2	<1	<1	-	-
GRAB	RMD-204	3180 Granville Avenue	2022-01-13 07:30	6	0.14	0.98	<2	<1	<1	-	-
GRAB	RMD-204	3180 Granville Avenue	2022-01-21 07:30	6	0.13	0.85	<2	<1	<1	-	-
GRAB	RMD-204	3180 Granville Avenue	2022-01-27 07:30	6	0.12	0.74	<2	<1	<1	-	-
GRAB	RMD-204	3180 Granville Avenue	2022-02-04 07:30	6	0.37	0.74	<2	<1	<1	-	-
GRAB	RMD-204	3180 Granville Avenue	2022-02-10 07:30	6	0.15	0.83	<2	<1	<1	-	-
GRAB	RMD-204	3180 Granville Avenue	2022-02-18 07:30	6	0.11	0.86	<2	<1	<1	-	-
GRAB	RMD-204	3180 Granville Avenue	2022-02-24 07:30	6	0.11	0.79	<2	<1	<1	-	-
GRAB	RMD-204	3180 Granville Avenue	2022-03-04 07:30	6	0.12	0.73	<2	<1	<1	-	-
GRAB	RMD-204	3180 Granville Avenue	2022-03-10 07:30	7	0.25	0.75	<2	<1	<1	-	-
GRAB	RMD-204	3180 Granville Avenue	2022-03-18 07:30	7	0.17	0.85	<2	<1	<1	-	-
GRAB	RMD-204	3180 Granville Avenue	2022-03-24 07:30	7	0.16	0.76	<2	<1	<1	-	-
GRAB	RMD-204	3180 Granville Avenue	2022-04-01 07:30	7	0.13	0.86	<2	<1	<1	-	-
GRAB	RMD-204	3180 Granville Avenue	2022-04-07 07:30	8	0.14	0.7	<2	<1	<1	-	-
GRAB	RMD-204	3180 Granville Avenue	2022-04-14 07:30	8	0.1	0.73	<2	<1	<1	-	-
GRAB	RMD-204	3180 Granville Avenue	2022-04-21 07:30	8	0.13	0.69	<2	<1	<1	-	-
GRAB	RMD-204	3180 Granville Avenue	2022-04-29 07:30	9	0.11	1	6	<1	<1	-	-
GRAB	RMD-204	3180 Granville Avenue	2022-05-05 07:30	8	0.12	0.83	<2	<1	<1	-	-
GRAB	RMD-204	3180 Granville Avenue	2022-05-13 07:30	10	0.33	1.18	<2	<1	<1	-	-
GRAB	RMD-204	3180 Granville Avenue	2022-05-19 07:30	9	0.14	0.68	<2	<1	<1	-	-
GRAB	RMD-204	3180 Granville Avenue	2022-05-27 07:30	9	0.12	0.64	<2	<1	<1	-	-
GRAB	RMD-204	3180 Granville Avenue	2022-06-02 07:30	9	0.12	0.72	<2	<1	<1	-	-
GRAB	RMD-204	3180 Granville Avenue	2022-06-10 07:30	10	0.12	0.65	<2	<1	<1	-	-
GRAB	RMD-204	3180 Granville Avenue	2022-06-16 07:30	10	0.11	0.68	<2	<1	<1	-	-
GRAB	RMD-204	3180 Granville Avenue	2022-06-24 07:30	13	0.23	0.71	<2	<1	<1	-	-
GRAB	RMD-204	3180 Granville Avenue	2022-06-29 07:30	11	0.08	0.68	<2	<1	<1	-	-
GRAB	RMD-204	3180 Granville Avenue	2022-07-08 07:30	13	0.13	0.61	<2	<1	<1	-	-

Sample Type	Water Sampling Station Number	Water Sampling Station Address	Sampled Date	Temperature (°C)	Turbidity (NTU)	Chlorine Free (mg/L)	HPC (CFU/mL)	Ecoli (CFU/100mLs)	Total Coliform (CFU/100mLs)	Ecoli (MPN/100mLs)	Total Coliform (MPN/100mLs)
GRAB	RMD-204	3180 Granville Avenue	2022-07-14 07:30	14	0.11	0.68	4	<1	<1	-	-
GRAB	RMD-204	3180 Granville Avenue	2022-07-22 07:30	12	0.15	0.7	<2	<1	<1	-	-
GRAB	RMD-204	3180 Granville Avenue	2022-07-28 07:30	13	0.13	0.74	2	<1	<1	-	-
GRAB	RMD-204	3180 Granville Avenue	2022-08-05 07:30	15	0.1	0.55	<2	<1	<1	-	-
GRAB	RMD-204	3180 Granville Avenue	2022-08-11 07:30	15	0.12	0.63	<2	<1	<1	-	-
GRAB	RMD-204	3180 Granville Avenue	2022-08-19 07:30	16	0.12	0.7	2	<1	<1	-	-
GRAB	RMD-204	3180 Granville Avenue	2022-08-25 07:30	16	0.11	0.66	4	<1	<1	-	-
GRAB	RMD-204	3180 Granville Avenue	2022-09-02 07:45	17	0.12	0.69	2	<1	<1	-	-
GRAB	RMD-204	3180 Granville Avenue	2022-09-08 07:45	18	0.1	0.64	24	<1	<1	-	-
GRAB	RMD-204	3180 Granville Avenue	2022-09-16 07:45	16	0.18	0.63	2	<1	<1	-	-
GRAB	RMD-204	3180 Granville Avenue	2022-09-22 07:30	17	0.11	0.7	30	<1	<1	-	-
GRAB	RMD-204	3180 Granville Avenue	2022-09-29 07:30	16	0.1	0.85	<2	<1	<1	-	-
GRAB	RMD-204	3180 Granville Avenue	2022-10-06 07:30	17	0.12	0.66	6	<1	<1	-	-
GRAB	RMD-204	3180 Granville Avenue	2022-10-14 07:30	16	0.12	0.54	<2	<1	<1	-	-
GRAB	RMD-204	3180 Granville Avenue	2022-10-20 07:30	15	0.14	0.66	<2	<1	<1	-	-
GRAB	RMD-204	3180 Granville Avenue	2022-10-28 07:30	15	0.12	0.65	<2	<1	<1	-	-
GRAB	RMD-204	3180 Granville Avenue	2022-11-03 07:30	12	0.15	0.52	2	<1	<1	-	-
GRAB	RMD-204	3180 Granville Avenue	2022-11-10 07:30	10	0.18	0.62	<2	<1	<1	-	-
GRAB	RMD-204	3180 Granville Avenue	2022-11-17 07:30	9	0.11	0.52	2	<1	<1	-	-
GRAB	RMD-204	3180 Granville Avenue	2022-11-25 07:30	9	0.12	0.73	<2	<1	<1	-	-
GRAB	RMD-204	3180 Granville Avenue	2022-12-01 07:30	8	0.17	0.57	<2	<1	<1	-	-
GRAB	RMD-204	3180 Granville Avenue	2022-12-09 07:30	8	0.19	0.47	<2	<1	<1	-	-
GRAB	RMD-204	3180 Granville Avenue	2022-12-15 07:30	7	0.13	0.91	<2	<1	<1	-	-
GRAB	RMD-204	3180 Granville Avenue	2022-12-22 12:30	6	0.13	0.81	NA	<1	<1	-	-
GRAB	RMD-205	13851 Steveston Highway	2022-01-07 09:15	7	0.16	0.83	<2	<1	<1	-	-
GRAB	RMD-205	13851 Steveston Highway	2022-01-13 09:00	6	0.25	0.99	<2	<1	<1	-	-
GRAB	RMD-205	13851 Steveston Highway	2022-01-21 09:00	5	0.19	0.91	<2	<1	<1	-	-
GRAB	RMD-205	13851 Steveston Highway	2022-01-27 09:00	5	0.18	0.82	<2	<1	<1	-	-
GRAB	RMD-205	13851 Steveston Highway	2022-02-04 09:00	6	0.16	0.66	<2	<1	<1	-	-
GRAB	RMD-205	13851 Steveston Highway	2022-02-10 09:00	6	0.17	0.72	<2	<1	<1	-	-
GRAB	RMD-205	13851 Steveston Highway	2022-02-18 09:00	5	0.12	0.75	<2	<1	<1	-	-
GRAB	RMD-205	13851 Steveston Highway	2022-02-24 09:00	6	0.12	0.83	<2	<1	<1	-	-
GRAB	RMD-205	13851 Steveston Highway	2022-03-04 09:00	6	0.12	0.75	<2	<1	<1	-	-
GRAB	RMD-205	13851 Steveston Highway	2022-03-10 09:00	6	0.16	0.77	<2	<1	<1	-	-
GRAB	RMD-205	13851 Steveston Highway	2022-03-18 09:00	6	0.11	0.72	<2	<1	<1	-	-
GRAB	RMD-205	13851 Steveston Highway	2022-03-24 09:00	7	0.14	0.83	<2	<1	<1	-	-
GRAB	RMD-205	13851 Steveston Highway	2022-04-01 09:00	7	0.1	0.97	2	<1	<1	-	-
GRAB	RMD-205	13851 Steveston Highway	2022-04-07 09:15	8	0.13	0.69	<2	<1	<1	-	-
GRAB	RMD-205	13851 Steveston Highway	2022-04-14 09:00	8	0.09	0.74	<2	<1	<1	-	-
GRAB	RMD-205	13851 Steveston Highway	2022-04-21 09:00	8	0.1	0.67	<2	<1	<1	-	-
GRAB	RMD-205	13851 Steveston Highway	2022-04-29 09:00	8	0.15	0.74	<2	<1	<1	-	-
GRAB	RMD-205	13851 Steveston Highway	2022-05-05 09:10	8	0.08	1.21	<2	<1	<1	-	-
GRAB	RMD-205	13851 Steveston Highway	2022-05-13 09:00	9	0.09	0.68	<2	<1	<1	-	-
GRAB	RMD-205	13851 Steveston Highway	2022-05-19 09:00	9	0.11	0.62	<2	<1	<1	-	-
GRAB	RMD-205	13851 Steveston Highway	2022-05-27 09:15	9	0.15	0.71	<2	<1	<1	-	-
GRAB	RMD-205	13851 Steveston Highway	2022-06-02 09:00	10	0.15	0.68	<2	<1	<1	-	-
GRAB	RMD-205	13851 Steveston Highway	2022-06-10 09:15	9	0.19	0.66	<2	<1	<1	-	-
GRAB	RMD-205	13851 Steveston Highway	2022-06-16 09:00	10	0.16	0.7	<2	<1	<1	-	-
GRAB	RMD-205	13851 Steveston Highway	2022-06-24 09:00	10	0.13	0.7	<2	<1	<1	-	-
GRAB	RMD-205	13851 Steveston Highway	2022-06-29 09:15	11	0.14	0.8	<2	<1	<1	-	-
GRAB	RMD-205	13851 Steveston Highway	2022-07-08 09:15	11	0.19	0.69	<2	<1	<1	-	-
GRAB	RMD-205	13851 Steveston Highway	2022-07-14 09:15	11	0.11	0.67	<2	<1	<1	-	-
GRAB	RMD-205	13851 Steveston Highway	2022-07-22 09:00	12	0.31	0.71	<2	<1	<1	-	-
GRAB	RMD-205	13851 Steveston Highway	2022-07-28 09:20	12	0.2	0.66	<2	<1	<1	-	-
GRAB	RMD-205	13851 Steveston Highway	2022-08-05 09:00	14	0.16	0.56	<2	<1	<1	-	-
GRAB	RMD-205	13851 Steveston Highway	2022-08-11 09:15	15	0.18	0.62	<2	<1	<1	-	-
GRAB	RMD-205	13851 Steveston Highway	2022-08-19 09:00	14	0.18	0.72	2	<1	<1	-	-
GRAB	RMD-205	13851 Steveston Highway	2022-08-25 09:00	15	0.13	0.65	<2	<1	<1	-	-
GRAB	RMD-205	13851 Steveston Highway	2022-09-02 09:20	16	0.2	0.77	<2	<1	<1	-	-
GRAB	RMD-205	13851 Steveston Highway	2022-09-08 09:20	16	0.24	0.69	<2	<1	<1	-	-
GRAB	RMD-205	13851 Steveston Highway	2022-09-16 09:20	15	0.14	0.64	<2	<1	<1	-	-
GRAB	RMD-205	13851 Steveston Highway	2022-09-22 09:15	15	0.23	0.58	2	<1	<1	-	-
GRAB	RMD-205	13851 Steveston Highway	2022-09-29 09:00	15	0.28	0.54	2	<1	<1	-	-
GRAB	RMD-205	13851 Steveston Highway	2022-10-06 09:00	16	0.11	0.81	<2	<1	<1	-	-

Sample Type	Water Sampling Station Number	Water Sampling Station Address	Sampled Date	Temperature (°C)	Turbidity (NTU)	Chlorine Free (mg/L)	HPC (CFU/mL)	Ecoli (CFU/100mLs)	Total Coliform (CFU/100mLs)	Ecoli (MPN/100mLs)	Total Coliform (MPN/100mLs)
GRAB	RMD-205	13851 Steveston Highway	2022-10-14 09:00	16	0.13	0.68	<2	<1	<1	-	-
GRAB	RMD-205	13851 Steveston Highway	2022-10-20 09:15	14	0.14	0.71	4	<1	<1	-	-
GRAB	RMD-205	13851 Steveston Highway	2022-10-28 09:00	14	0.23	0.68	<2	<1	<1	-	-
GRAB	RMD-205	13851 Steveston Highway	2022-11-03 09:00	11	0.16	0.66	<2	<1	<1	-	-
GRAB	RMD-205	13851 Steveston Highway	2022-11-10 09:15	9	0.15	0.69	2	<1	<1	-	-
GRAB	RMD-205	13851 Steveston Highway	2022-11-17 09:00	8	0.14	0.74	<2	<1	<1	-	-
GRAB	RMD-205	13851 Steveston Highway	2022-11-25 09:00	9	0.11	0.67	2	<1	<1	-	-
GRAB	RMD-205	13851 Steveston Highway	2022-12-01 09:15	8	0.15	0.71	<2	<1	<1	-	-
GRAB	RMD-205	13851 Steveston Highway	2022-12-09 09:00	7	0.12	0.62	<2	<1	<1	-	-
GRAB	RMD-205	13851 Steveston Highway	2022-12-15 09:00	6	0.13	0.78	<2	<1	<1	-	-
GRAB	RMD-205	13851 Steveston Highway	2022-12-22 13:30	5	0.15	0.8	NA	<1	<1	-	-
GRAB	RMD-206	4251 Moncton Street	2022-01-07 07:45	6	0.14	0.87	<2	<1	<1	-	-
GRAB	RMD-206	4251 Moncton Street	2022-01-13 07:45	6	0.12	1.08	<2	<1	<1	-	-
GRAB	RMD-206	4251 Moncton Street	2022-01-21 07:45	6	0.13	0.79	<2	<1	<1	-	-
GRAB	RMD-206	4251 Moncton Street	2022-01-27 07:45	6	0.13	0.76	<2	<1	<1	-	-
GRAB	RMD-206	4251 Moncton Street	2022-02-04 07:45	6	0.13	0.69	2	<1	<1	-	-
GRAB	RMD-206	4251 Moncton Street	2022-02-10 07:45	6	0.15	0.84	<2	<1	<1	-	-
GRAB	RMD-206	4251 Moncton Street	2022-02-18 07:45	6	0.16	0.81	<2	<1	<1	-	-
GRAB	RMD-206	4251 Moncton Street	2022-02-24 07:45	6	0.11	0.77	<2	<1	<1	-	-
GRAB	RMD-206	4251 Moncton Street	2022-03-04 07:45	6	0.11	0.74	<2	<1	<1	-	-
GRAB	RMD-206	4251 Moncton Street	2022-03-10 07:45	6	0.27	0.85	<2	<1	<1	-	-
GRAB	RMD-206	4251 Moncton Street	2022-03-18 07:45	6	0.2	0.67	<2	<1	<1	-	-
GRAB	RMD-206	4251 Moncton Street	2022-03-24 07:45	7	0.16	0.82	<2	<1	<1	-	-
GRAB	RMD-206	4251 Moncton Street	2022-04-01 07:45	7	0.24	1.04	<2	<1	<1	-	-
GRAB	RMD-206	4251 Moncton Street	2022-04-07 07:45	8	0.15	0.73	<2	<1	<1	-	-
GRAB	RMD-206	4251 Moncton Street	2022-04-14 07:45	8	0.14	0.73	<2	<1	<1	-	-
GRAB	RMD-206	4251 Moncton Street	2022-04-21 07:45	8	0.14	0.67	<2	<1	<1	-	-
GRAB	RMD-206	4251 Moncton Street	2022-04-29 07:45	8	0.13	0.64	4	<1	<1	-	-
GRAB	RMD-206	4251 Moncton Street	2022-05-05 07:45	8	0.14	0.73	<2	<1	<1	-	-
GRAB	RMD-206	4251 Moncton Street	2022-05-13 07:45	9	0.1	0.67	2	<1	<1	-	-
GRAB	RMD-206	4251 Moncton Street	2022-05-19 07:45	9	0.13	0.69	<2	<1	<1	-	-
GRAB	RMD-206	4251 Moncton Street	2022-05-27 07:50	10	0.29	0.75	<2	<1	<1	-	-
GRAB	RMD-206	4251 Moncton Street	2022-06-02 07:45	10	0.32	0.74	<2	<1	<1	-	-
GRAB	RMD-206	4251 Moncton Street	2022-06-10 07:50	9	0.18	0.68	<2	<1	<1	-	-
GRAB	RMD-206	4251 Moncton Street	2022-06-16 07:45	9	0.12	0.72	<2	<1	<1	-	-
GRAB	RMD-206	4251 Moncton Street	2022-06-24 07:45	10	0.27	0.72	<2	<1	<1	-	-
GRAB	RMD-206	4251 Moncton Street	2022-06-29 07:50	10	0.14	0.78	6	<1	<1	-	-
GRAB	RMD-206	4251 Moncton Street	2022-07-08 07:50	11	0.31	0.71	<2	<1	<1	-	-
GRAB	RMD-206	4251 Moncton Street	2022-07-14 07:50	11	0.31	0.66	4	<1	<1	-	-
GRAB	RMD-206	4251 Moncton Street	2022-07-22 07:45	12	0.27	0.68	<2	<1	<1	-	-
GRAB	RMD-206	4251 Moncton Street	2022-07-28 07:45	12	0.4	0.74	<2	<1	<1	-	-
GRAB	RMD-206	4251 Moncton Street	2022-08-05 07:45	14	0.12	0.56	<2	<1	<1	-	-
GRAB	RMD-206	4251 Moncton Street	2022-08-11 07:50	14	0.12	0.64	<2	<1	<1	-	-
GRAB	RMD-206	4251 Moncton Street	2022-08-19 07:45	14	0.11	0.72	<2	<1	<1	-	-
GRAB	RMD-206	4251 Moncton Street	2022-08-25 07:45	15	0.15	0.7	<2	<1	<1	-	-
GRAB	RMD-206	4251 Moncton Street	2022-09-02 08:00	15	0.21	0.7	<2	<1	<1	-	-
GRAB	RMD-206	4251 Moncton Street	2022-09-08 08:00	16	0.26	0.68	<2	<1	<1	-	-
GRAB	RMD-206	4251 Moncton Street	2022-09-16 08:00	16	0.37	0.65	4	<1	<1	-	-
GRAB	RMD-206	4251 Moncton Street	2022-09-22 07:50	16	0.14	0.87	<2	<1	<1	-	-
GRAB	RMD-206	4251 Moncton Street	2022-09-29 07:45	15	0.37	0.68	<2	<1	<1	-	-
GRAB	RMD-206	4251 Moncton Street	2022-10-06 07:45	16	0.18	0.63	<2	<1	<1	-	-
GRAB	RMD-206	4251 Moncton Street	2022-10-14 07:45	16	0.69	0.73	<2	<1	<1	-	-
GRAB	RMD-206	4251 Moncton Street	2022-10-20 07:50	15	0.17	0.57	<2	<1	<1	-	-
GRAB	RMD-206	4251 Moncton Street	2022-10-28 07:45	14	4.5	0.8	2	<1	<1	-	-
GRAB	RMD-206	4251 Moncton Street	2022-11-03 07:45	11	1.8	0.71	4	<1	<1	-	-
GRAB	RMD-206	4251 Moncton Street	2022-11-10 07:50	9	0.17	0.57	2	<1	<1	-	-
GRAB	RMD-206	4251 Moncton Street	2022-11-17 07:45	8	0.11	0.66	2	<1	<1	-	-
GRAB	RMD-206	4251 Moncton Street	2022-11-25 07:45	9	0.21	0.76	<2	<1	<1	-	-
GRAB	RMD-206	4251 Moncton Street	2022-12-01 07:50	8	0.14	0.56	<2	<1	<1	-	-
GRAB	RMD-206	4251 Moncton Street	2022-12-09 07:45	7	0.12	0.89	2	<1	<1	-	-
GRAB	RMD-206	4251 Moncton Street	2022-12-15 07:45	7	0.13	0.92	<2	<1	<1	-	-
GRAB	RMD-206	4251 Moncton Street	2022-12-22 12:30	5	0.17	0.75	NA	<1	<1	-	-
GRAB	RMD-208	13200 No. 4 Road	2022-01-07 08:55	7	0.15	0.75	<2	<1	<1	-	-
GRAB	RMD-208	13200 No. 4 Road	2022-01-13 08:45	5	0.21	1.06	<2	<1	<1	-	-

Sample Type	Water Sampling Station Number	Water Sampling Station Address	Sampled Date	Temperature (°C)	Turbidity (NTU)	Chlorine Free (mg/L)	HPC (CFU/mL)	Ecoli (CFU/100mLs)	Total Coliform (CFU/100mLs)	Ecoli (MPN/100mLs)	Total Coliform (MPN/100mLs)
GRAB	RMD-208	13200 No. 4 Road	2022-01-21 08:45	5	0.16	1.01	<2	<1	<1	-	-
GRAB	RMD-208	13200 No. 4 Road	2022-01-27 08:45	6	0.12	0.88	<2	<1	<1	-	-
GRAB	RMD-208	13200 No. 4 Road	2022-02-04 08:45	6	0.14	0.84	<2	<1	<1	-	-
GRAB	RMD-208	13200 No. 4 Road	2022-02-10 08:45	7	0.19	0.91	<2	<1	<1	-	-
GRAB	RMD-208	13200 No. 4 Road	2022-02-18 08:45	6	0.17	0.91	<2	<1	<1	-	-
GRAB	RMD-208	13200 No. 4 Road	2022-02-24 08:45	6	0.12	0.89	2	<1	<1	-	-
GRAB	RMD-208	13200 No. 4 Road	2022-03-04 08:45	6	0.17	0.9	<2	<1	<1	-	-
GRAB	RMD-208	13200 No. 4 Road	2022-03-10 08:45	6	0.25	0.81	<2	<1	<1	-	-
GRAB	RMD-208	13200 No. 4 Road	2022-03-18 08:45	7	0.13	0.79	<2	<1	<1	-	-
GRAB	RMD-208	13200 No. 4 Road	2022-03-24 08:45	7	0.16	0.92	<2	<1	<1	-	-
GRAB	RMD-208	13200 No. 4 Road	2022-04-01 08:45	7	0.13	0.89	<2	<1	<1	-	-
GRAB	RMD-208	13200 No. 4 Road	2022-04-07 08:50	8	0.14	0.72	<2	<1	<1	-	-
GRAB	RMD-208	13200 No. 4 Road	2022-04-14 08:45	8	0.11	0.86	<2	<1	<1	-	-
GRAB	RMD-208	13200 No. 4 Road	2022-04-21 08:45	8	0.1	0.7	<2	<1	<1	-	-
GRAB	RMD-208	13200 No. 4 Road	2022-04-29 08:45	9	0.13	0.7	<2	<1	<1	-	-
GRAB	RMD-208	13200 No. 4 Road	2022-05-05 08:50	8	0.62	1.23	<2	<1	<1	-	-
GRAB	RMD-208	13200 No. 4 Road	2022-05-13 08:45	9	0.09	0.79	<2	<1	<1	-	-
GRAB	RMD-208	13200 No. 4 Road	2022-05-19 08:45	9	0.11	0.71	4	<1	<1	-	-
GRAB	RMD-208	13200 No. 4 Road	2022-05-27 08:55	9	0.14	0.57	<2	<1	<1	-	-
GRAB	RMD-208	13200 No. 4 Road	2022-06-02 08:45	10	0.14	0.58	<2	<1	<1	-	-
GRAB	RMD-208	13200 No. 4 Road	2022-06-10 08:55	11	0.17	0.71	<2	<1	<1	-	-
GRAB	RMD-208	13200 No. 4 Road	2022-06-16 08:45	12	0.1	0.58	<2	<1	<1	-	-
GRAB	RMD-208	13200 No. 4 Road	2022-06-24 08:45	10	0.6	0.69	<2	<1	<1	-	-
GRAB	RMD-208	13200 No. 4 Road	2022-06-29 08:55	12	0.1	0.74	<2	<1	<1	-	-
GRAB	RMD-208	13200 No. 4 Road	2022-07-08 08:55	13	0.09	0.74	<2	<1	<1	-	-
GRAB	RMD-208	13200 No. 4 Road	2022-07-14 08:55	12	0.11	0.58	2	<1	<1	-	-
GRAB	RMD-208	13200 No. 4 Road	2022-07-22 08:45	12	0.16	0.63	<2	<1	<1	-	-
GRAB	RMD-208	13200 No. 4 Road	2022-07-28 09:00	14	0.13	0.74	2	<1	<1	-	-
GRAB	RMD-208	13200 No. 4 Road	2022-08-05 08:45	17	0.13	0.59	10	<1	<1	-	-
GRAB	RMD-208	13200 No. 4 Road	2022-08-11 08:55	15	0.13	0.52	<2	<1	<1	-	-
GRAB	RMD-208	13200 No. 4 Road	2022-08-19 08:45	16	0.14	0.8	<2	<1	<1	-	-
GRAB	RMD-208	13200 No. 4 Road	2022-08-25 08:45	15	0.12	0.6	2	<1	<1	-	-
GRAB	RMD-208	13200 No. 4 Road	2022-09-02 09:00	16	0.09	0.68	2	<1	<1	-	-
GRAB	RMD-208	13200 No. 4 Road	2022-09-08 09:00	16	0.11	0.51	<2	<1	<1	-	-
GRAB	RMD-208	13200 No. 4 Road	2022-09-16 09:00	16	0.12	0.64	<2	<1	<1	-	-
GRAB	RMD-208	13200 No. 4 Road	2022-09-22 08:55	17	0.15	0.34	2	<1	<1	-	-
GRAB	RMD-208	13200 No. 4 Road	2022-09-29 08:45	16	1	0.34	44	<1	<1	-	-
GRAB	RMD-208	13200 No. 4 Road	2022-10-06 08:45	16	0.12	0.61	2	<1	<1	-	-
GRAB	RMD-208	13200 No. 4 Road	2022-10-14 08:45	16	0.11	0.5	8	<1	<1	-	-
GRAB	RMD-208	13200 No. 4 Road	2022-10-20 08:55	16	0.14	0.56	<2	<1	<1	-	-
GRAB	RMD-208	13200 No. 4 Road	2022-10-28 08:45	14	0.13	0.4	<2	<1	<1	-	-
GRAB	RMD-208	13200 No. 4 Road	2022-11-03 08:45	11	0.11	0.58	2	<1	<1	-	-
GRAB	RMD-208	13200 No. 4 Road	2022-11-10 08:55	10	0.12	0.57	<2	<1	<1	-	-
GRAB	RMD-208	13200 No. 4 Road	2022-11-17 08:45	8	0.09	0.68	2	<1	<1	-	-
GRAB	RMD-208	13200 No. 4 Road	2022-11-25 08:45	9	0.1	0.59	<2	<1	<1	-	-
GRAB	RMD-208	13200 No. 4 Road	2022-12-01 08:55	8	0.18	0.57	<2	<1	<1	-	-
GRAB	RMD-208	13200 No. 4 Road	2022-12-09 08:45	7	0.1	0.55	<2	<1	<1	-	-
GRAB	RMD-208	13200 No. 4 Road	2022-12-15 08:45	7	0.1	0.86	<2	<1	<1	-	-
GRAB	RMD-208	13200 No. 4 Road	2022-12-22 13:10	6	0.18	0.81	NA	<1	<1	-	-
GRAB	RMD-212	Opp. 8600 Ryan Road	2022-01-07 08:40	7	0.13	0.77	<2	<1	<1	-	-
GRAB	RMD-212	Opp. 8600 Ryan Road	2022-01-13 08:30	6	0.18	1.17	<2	<1	<1	-	-
GRAB	RMD-212	Opp. 8600 Ryan Road	2022-01-21 08:30	5	0.13	0.91	<2	<1	<1	-	-
GRAB	RMD-212	Opp. 8600 Ryan Road	2022-01-27 08:30	7	0.11	0.77	<2	<1	<1	-	-
GRAB	RMD-212	Opp. 8600 Ryan Road	2022-02-04 08:30	6	0.14	0.9	<2	<1	<1	-	-
GRAB	RMD-212	Opp. 8600 Ryan Road	2022-02-10 08:30	6	0.14	0.95	<2	<1	<1	-	-
GRAB	RMD-212	Opp. 8600 Ryan Road	2022-02-18 08:30	6	0.13	1.02	<2	<1	<1	-	-
GRAB	RMD-212	Opp. 8600 Ryan Road	2022-02-24 08:30	5	0.12	0.92	<2	<1	<1	-	-
GRAB	RMD-212	Opp. 8600 Ryan Road	2022-03-04 08:30	6	0.1	0.87	<2	<1	<1	-	-
GRAB	RMD-212	Opp. 8600 Ryan Road	2022-03-10 08:30	6	0.23	0.85	2	<1	<1	-	-
GRAB	RMD-212	Opp. 8600 Ryan Road	2022-03-18 08:30	6	0.18	0.71	2	<1	<1	-	-
GRAB	RMD-212	Opp. 8600 Ryan Road	2022-03-24 08:30	7	0.12	0.86	<2	<1	<1	-	-
GRAB	RMD-212	Opp. 8600 Ryan Road	2022-04-01 08:30	7	0.12	0.9	<2	<1	<1	-	-
GRAB	RMD-212	Opp. 8600 Ryan Road	2022-04-07 08:35	8	0.16	0.71	2	<1	<1	-	-
GRAB	RMD-212	Opp. 8600 Ryan Road	2022-04-14 08:30	8	0.11	0.89	2	<1	<1	-	-

Sample Type	Water Sampling Station Number	Water Sampling Station Address	Sampled Date	Temperature (°C)	Turbidity (NTU)	Chlorine Free (mg/L)	HPC (CFU/mL)	Ecoli (CFU/100mLs)	Total Coliform (CFU/100mLs)	Ecoli (MPN/100mLs)	Total Coliform (MPN/100mLs)
GRAB	RMD-212	Opp. 8600 Ryan Road	2022-04-21 08:30	8	0.16	0.68	<2	<1	<1	-	-
GRAB	RMD-212	Opp. 8600 Ryan Road	2022-04-29 08:30	8	0.12	0.73	<2	<1	<1	-	-
GRAB	RMD-212	Opp. 8600 Ryan Road	2022-05-05 08:35	8	0.11	1.22	<2	<1	<1	-	-
GRAB	RMD-212	Opp. 8600 Ryan Road	2022-05-13 08:30	9	0.1	0.77	<2	<1	<1	-	-
GRAB	RMD-212	Opp. 8600 Ryan Road	2022-05-19 08:30	9	0.11	0.71	<2	<1	<1	-	-
GRAB	RMD-212	Opp. 8600 Ryan Road	2022-05-27 08:40	9	0.14	0.7	2	<1	<1	-	-
GRAB	RMD-212	Opp. 8600 Ryan Road	2022-06-02 08:30	10	0.12	0.83	<2	<1	<1	-	-
GRAB	RMD-212	Opp. 8600 Ryan Road	2022-06-10 08:40	9	0.17	0.78	<2	<1	<1	-	-
GRAB	RMD-212	Opp. 8600 Ryan Road	2022-06-16 08:30	10	0.11	0.87	<2	<1	<1	-	-
GRAB	RMD-212	Opp. 8600 Ryan Road	2022-06-24 08:30	10	0.13	0.71	<2	<1	<1	-	-
GRAB	RMD-212	Opp. 8600 Ryan Road	2022-06-29 08:40	10	0.12	0.69	<2	<1	<1	-	-
GRAB	RMD-212	Opp. 8600 Ryan Road	2022-07-08 08:40	12	0.11	0.74	2	<1	<1	-	-
GRAB	RMD-212	Opp. 8600 Ryan Road	2022-07-14 08:40	12	0.1	0.79	<2	<1	<1	-	-
GRAB	RMD-212	Opp. 8600 Ryan Road	2022-07-22 08:30	13	0.17	0.83	<2	<1	<1	-	-
GRAB	RMD-212	Opp. 8600 Ryan Road	2022-07-28 08:40	12	0.13	0.7	2	<1	<1	-	-
GRAB	RMD-212	Opp. 8600 Ryan Road	2022-08-05 08:30	15	0.13	0.7	<2	<1	<1	-	-
GRAB	RMD-212	Opp. 8600 Ryan Road	2022-08-11 08:40	14	0.12	0.76	<2	<1	<1	-	-
GRAB	RMD-212	Opp. 8600 Ryan Road	2022-08-19 08:30	15	0.11	0.68	<2	<1	<1	-	-
GRAB	RMD-212	Opp. 8600 Ryan Road	2022-08-25 08:30	15	0.12	0.83	<2	<1	<1	-	-
GRAB	RMD-212	Opp. 8600 Ryan Road	2022-09-02 08:45	16	0.1	0.77	<2	<1	<1	-	-
GRAB	RMD-212	Opp. 8600 Ryan Road	2022-09-08 08:45	16	0.09	0.81	<2	<1	<1	-	-
GRAB	RMD-212	Opp. 8600 Ryan Road	2022-09-16 08:45	16	0.12	0.81	<2	<1	<1	-	-
GRAB	RMD-212	Opp. 8600 Ryan Road	2022-09-22 08:40	16	0.12	0.75	8	<1	<1	-	-
GRAB	RMD-212	Opp. 8600 Ryan Road	2022-09-29 08:30	15	0.2	0.6	6	<1	<1	-	-
GRAB	RMD-212	Opp. 8600 Ryan Road	2022-10-06 08:30	16	0.14	0.72	10	<1	<1	-	-
GRAB	RMD-212	Opp. 8600 Ryan Road	2022-10-14 08:30	16	0.2	0.66	<2	<1	<1	-	-
GRAB	RMD-212	Opp. 8600 Ryan Road	2022-10-20 08:40	15	0.15	0.68	2	<1	<1	-	-
GRAB	RMD-212	Opp. 8600 Ryan Road	2022-10-28 08:30	14	0.13	0.77	2	<1	<1	-	-
GRAB	RMD-212	Opp. 8600 Ryan Road	2022-11-03 08:30	11	0.17	0.76	6	<1	<1	-	-
GRAB	RMD-212	Opp. 8600 Ryan Road	2022-11-10 08:40	9	0.11	0.76	<2	<1	<1	-	-
GRAB	RMD-212	Opp. 8600 Ryan Road	2022-11-17 08:30	8	0.22	0.64	<2	<1	<1	-	-
GRAB	RMD-212	Opp. 8600 Ryan Road	2022-11-25 08:30	9	0.34	0.79	<2	<1	<1	-	-
GRAB	RMD-212	Opp. 8600 Ryan Road	2022-12-01 08:40	8	0.15	0.71	<2	<1	<1	-	-
GRAB	RMD-212	Opp. 8600 Ryan Road	2022-12-09 08:30	8	0.16	0.72	<2	<1	<1	-	-
GRAB	RMD-212	Opp. 8600 Ryan Road	2022-12-15 08:30	7	0.13	0.93	<2	<1	<1	-	-
GRAB	RMD-212	Opp. 8600 Ryan Road	2022-12-22 13:10	5	0.14	0.92	NA	<1	<1	-	-
GRAB	RMD-214	11720 Westminster Highway	2022-01-07 09:55	7	0.18	1.18	<2	<1	<1	-	-
GRAB	RMD-214	11720 Westminster Highway	2022-01-13 09:40	5	0.13	1.09	<2	<1	<1	-	-
GRAB	RMD-214	11720 Westminster Highway	2022-01-21 09:45	5	0.15	0.83	<2	<1	<1	-	-
GRAB	RMD-214	11720 Westminster Highway	2022-01-27 09:40	6	0.2	1	2	<1	<1	-	-
GRAB	RMD-214	11720 Westminster Highway	2022-02-04 09:40	6	0.19	0.96	<2	<1	<1	-	-
GRAB	RMD-214	11720 Westminster Highway	2022-02-10 09:40	5	0.17	0.95	<2	<1	<1	-	-
GRAB	RMD-214	11720 Westminster Highway	2022-02-18 09:45	5	0.15	0.93	<2	<1	<1	-	-
GRAB	RMD-214	11720 Westminster Highway	2022-02-24 09:45	6	0.12	0.87	<2	<1	<1	-	-
GRAB	RMD-214	11720 Westminster Highway	2022-03-04 09:40	6	0.17	0.9	<2	<1	<1	-	-
GRAB	RMD-214	11720 Westminster Highway	2022-03-10 09:45	6	0.15	0.79	2	<1	<1	-	-
GRAB	RMD-214	11720 Westminster Highway	2022-03-18 09:40	6	0.14	0.85	<2	<1	<1	-	-
GRAB	RMD-214	11720 Westminster Highway	2022-03-24 09:40	7	0.2	0.84	<2	<1	<1	-	-
GRAB	RMD-214	11720 Westminster Highway	2022-04-01 09:40	7	0.16	0.92	<2	<1	<1	-	-
GRAB	RMD-214	11720 Westminster Highway	2022-04-07 09:50	8	0.17	0.71	<2	<1	<1	-	-
GRAB	RMD-214	11720 Westminster Highway	2022-04-14 09:40	7	0.14	0.89	<2	<1	<1	-	-
GRAB	RMD-214	11720 Westminster Highway	2022-04-21 09:40	8	0.2	0.71	<2	<1	<1	-	-
GRAB	RMD-214	11720 Westminster Highway	2022-04-29 09:45	8	0.17	0.76	<2	<1	<1	-	-
GRAB	RMD-214	11720 Westminster Highway	2022-05-05 09:45	8	0.15	1	<2	<1	<1	-	-
GRAB	RMD-214	11720 Westminster Highway	2022-05-13 09:45	8	0.12	0.76	<2	<1	<1	-	-
GRAB	RMD-214	11720 Westminster Highway	2022-05-19 09:45	9	0.18	0.74	<2	<1	<1	-	-
GRAB	RMD-214	11720 Westminster Highway	2022-05-27 09:50	9	0.18	0.68	<2	<1	<1	-	-
GRAB	RMD-214	11720 Westminster Highway	2022-06-02 09:45	10	0.16	0.76	<2	<1	<1	-	-
GRAB	RMD-214	11720 Westminster Highway	2022-06-10 09:50	9	0.22	0.64	<2	<1	<1	-	-
GRAB	RMD-214	11720 Westminster Highway	2022-06-16 09:40	10	0.12	0.81	<2	<1	<1	-	-
GRAB	RMD-214	11720 Westminster Highway	2022-06-24 09:40	10	0.24	0.73	<2	<1	<1	-	-
GRAB	RMD-214	11720 Westminster Highway	2022-06-29 09:50	10	0.12	0.7	2	<1	<1	-	-
GRAB	RMD-214	11720 Westminster Highway	2022-07-08 09:50	11	0.15	0.86	<2	<1	<1	-	-
GRAB	RMD-214	11720 Westminster Highway	2022-07-14 09:50	11	0.11	0.8	<2	<1	<1	-	-

Sample Type	Water Sampling Station Number	Water Sampling Station Address	Sampled Date	Temperature (°C)	Turbidity (NTU)	Chlorine Free (mg/L)	HPC (CFU/mL)	Ecoli (CFU/100mLs)	Total Coliform (CFU/100mLs)	Ecoli (MPN/100mLs)	Total Coliform (MPN/100mLs)
GRAB	RMD-214	11720 Westminster Highway	2022-07-22 09:45	12	0.19	0.78	<2	<1	<1	-	-
GRAB	RMD-214	11720 Westminster Highway	2022-07-28 10:00	11	0.18	0.77	2	<1	<1	-	-
GRAB	RMD-214	11720 Westminster Highway	2022-08-05 09:40	15	0.1	0.58	<2	<1	<1	-	-
GRAB	RMD-214	11720 Westminster Highway	2022-08-11 09:50	15	0.17	0.83	<2	<1	<1	-	-
GRAB	RMD-214	11720 Westminster Highway	2022-08-19 09:20	14	0.12	0.77	<2	<1	<1	-	-
GRAB	RMD-214	11720 Westminster Highway	2022-08-25 09:40	15	0.15	0.79	<2	<1	<1	-	-
GRAB	RMD-214	11720 Westminster Highway	2022-09-02 10:00	15	0.12	0.83	<2	<1	<1	-	-
GRAB	RMD-214	11720 Westminster Highway	2022-09-08 10:00	16	0.13	0.84	<2	<1	<1	-	-
GRAB	RMD-214	11720 Westminster Highway	2022-09-16 10:00	16	0.16	0.78	<2	<1	<1	-	-
GRAB	RMD-214	11720 Westminster Highway	2022-09-22 09:50	15	0.2	0.84	<2	<1	<1	-	-
GRAB	RMD-214	11720 Westminster Highway	2022-09-29 09:45	15	0.2	0.72	<2	<1	<1	-	-
GRAB	RMD-214	11720 Westminster Highway	2022-10-06 09:40	16	0.18	0.77	<2	<1	<1	-	-
GRAB	RMD-214	11720 Westminster Highway	2022-10-14 09:40	16	0.22	0.63	<2	<1	<1	-	-
GRAB	RMD-214	11720 Westminster Highway	2022-10-20 09:50	15	0.18	0.81	<2	<1	<1	-	-
GRAB	RMD-214	11720 Westminster Highway	2022-10-28 09:40	13	0.17	0.87	<2	<1	<1	-	-
GRAB	RMD-214	11720 Westminster Highway	2022-11-03 09:45	11	0.15	0.7	<2	<1	<1	-	-
GRAB	RMD-214	11720 Westminster Highway	2022-11-10 09:50	8	0.2	0.73	<2	<1	<1	-	-
GRAB	RMD-214	11720 Westminster Highway	2022-11-17 09:45	8	0.1	0.67	6	<1	<1	-	-
GRAB	RMD-214	11720 Westminster Highway	2022-11-25 09:40	8	0.16	0.85	<2	<1	<1	-	-
GRAB	RMD-214	11720 Westminster Highway	2022-12-01 09:50	7	0.14	0.73	<2	<1	<1	-	-
GRAB	RMD-214	11720 Westminster Highway	2022-12-09 09:40	7	0.14	0.87	<2	<1	<1	-	-
GRAB	RMD-214	11720 Westminster Highway	2022-12-15 09:45	6	0.18	0.77	<2	<1	<1	-	-
GRAB	RMD-214	11720 Westminster Highway	2022-12-22 14:00	5	0.28	0.87	NA	<1	<1	-	-
GRAB	RMD-216	11080 No. 2 Road	2022-01-07 08:00	6	0.14	1.13	<2	<1	<1	-	-
GRAB	RMD-216	11080 No. 2 Road	2022-01-13 08:00	6	0.12	1.22	<2	<1	<1	-	-
GRAB	RMD-216	11080 No. 2 Road	2022-01-21 08:00	6	0.13	0.89	<2	<1	<1	-	-
GRAB	RMD-216	11080 No. 2 Road	2022-01-27 08:00	6	0.12	0.85	<2	<1	<1	-	-
GRAB	RMD-216	11080 No. 2 Road	2022-02-04 08:00	6	0.16	0.92	<2	<1	<1	-	-
GRAB	RMD-216	11080 No. 2 Road	2022-02-10 08:00	6	0.15	0.92	2	<1	<1	-	-
GRAB	RMD-216	11080 No. 2 Road	2022-02-18 08:00	5	0.17	1.05	<2	<1	<1	-	-
GRAB	RMD-216	11080 No. 2 Road	2022-02-24 08:00	6	0.1	0.84	<2	<1	<1	-	-
GRAB	RMD-216	11080 No. 2 Road	2022-03-04 08:00	6	0.17	0.8	<2	<1	<1	-	-
GRAB	RMD-216	11080 No. 2 Road	2022-03-10 08:00	6	0.24	0.94	<2	<1	<1	-	-
GRAB	RMD-216	11080 No. 2 Road	2022-03-18 08:00	7	0.15	0.71	<2	<1	<1	-	-
GRAB	RMD-216	11080 No. 2 Road	2022-03-24 08:00	7	0.14	0.8	<2	<1	<1	-	-
GRAB	RMD-216	11080 No. 2 Road	2022-04-01 08:00	7	0.15	0.75	<2	<1	<1	-	-
GRAB	RMD-216	11080 No. 2 Road	2022-04-07 08:00	7	0.16	0.72	<2	<1	<1	-	-
GRAB	RMD-216	11080 No. 2 Road	2022-04-14 08:00	8	0.12	0.69	<2	<1	<1	-	-
GRAB	RMD-216	11080 No. 2 Road	2022-04-21 08:00	8	0.11	0.74	<2	<1	<1	-	-
GRAB	RMD-216	11080 No. 2 Road	2022-04-29 08:00	9	0.13	0.72	LA	<1	<1	-	-
GRAB	RMD-216	11080 No. 2 Road	2022-05-05 08:00	8	0.14	0.83	<2	<1	<1	-	-
GRAB	RMD-216	11080 No. 2 Road	2022-05-13 08:00	9	0.1	0.69	<2	<1	<1	-	-
GRAB	RMD-216	11080 No. 2 Road	2022-05-19 08:00	10	0.33	0.94	<2	<1	<1	-	-
GRAB	RMD-216	11080 No. 2 Road	2022-05-27 08:05	9	0.19	0.64	<2	<1	<1	-	-
GRAB	RMD-216	11080 No. 2 Road	2022-06-02 08:00	10	0.13	0.75	<2	<1	<1	-	-
GRAB	RMD-216	11080 No. 2 Road	2022-06-10 08:05	9	0.13	0.77	<2	<1	<1	-	-
GRAB	RMD-216	11080 No. 2 Road	2022-06-16 08:00	9	0.1	0.73	<2	<1	<1	-	-
GRAB	RMD-216	11080 No. 2 Road	2022-06-24 08:00	10	0.19	0.75	<2	<1	<1	-	-
GRAB	RMD-216	11080 No. 2 Road	2022-06-29 08:05	10	1.4	0.71	2	<1	<1	-	-
GRAB	RMD-216	11080 No. 2 Road	2022-07-08 08:05	11	0.1	0.68	<2	<1	<1	-	-
GRAB	RMD-216	11080 No. 2 Road	2022-07-14 08:05	12	0.12	0.7	<2	<1	<1	-	-
GRAB	RMD-216	11080 No. 2 Road	2022-07-22 08:00	12	0.14	0.72	<2	<1	<1	-	-
GRAB	RMD-216	11080 No. 2 Road	2022-07-28 08:00	12	0.12	0.99	<2	<1	<1	-	-
GRAB	RMD-216	11080 No. 2 Road	2022-08-05 08:00	15	0.15	0.55	<2	<1	<1	-	-
GRAB	RMD-216	11080 No. 2 Road	2022-08-11 08:05	14	0.16	0.83	<2	<1	<1	-	-
GRAB	RMD-216	11080 No. 2 Road	2022-08-19 08:00	15	0.11	0.79	<2	<1	<1	-	-
GRAB	RMD-216	11080 No. 2 Road	2022-08-25 08:00	15	0.11	0.76	<2	<1	<1	-	-
GRAB	RMD-216	11080 No. 2 Road	2022-09-02 08:15	15	0.1	0.75	2	<1	<1	-	-
GRAB	RMD-216	11080 No. 2 Road	2022-09-08 08:15	16	0.1	0.77	<2	<1	<1	-	-
GRAB	RMD-216	11080 No. 2 Road	2022-09-16 08:15	16	0.16	0.53	<2	<1	<1	-	-
GRAB	RMD-216	11080 No. 2 Road	2022-09-22 08:05	16	0.14	0.64	<2	<1	<1	-	-
GRAB	RMD-216	11080 No. 2 Road	2022-09-29 08:00	15	0.13	0.58	8	<1	<1	-	-
GRAB	RMD-216	11080 No. 2 Road	2022-10-06 08:00	16	0.14	0.7	2	<1	<1	-	-
GRAB	RMD-216	11080 No. 2 Road	2022-10-14 08:00	15	0.16	0.84	<2	<1	<1	-	-

Sample Type	Water Sampling Station Number	Water Sampling Station Address	Sampled Date	Temperature (°C)	Turbidity (NTU)	Chlorine Free (mg/L)	HPC (CFU/mL)	Ecoli (CFU/100mLs)	Total Coliform (CFU/100mLs)	Ecoli (MPN/100mLs)	Total Coliform (MPN/100mLs)
GRAB	RMD-216	11080 No. 2 Road	2022-10-20 08:05	15	0.14	0.64	4	<1	<1	-	-
GRAB	RMD-216	11080 No. 2 Road	2022-10-28 08:00	14	0.17	0.7	<2	<1	<1	-	-
GRAB	RMD-216	11080 No. 2 Road	2022-11-03 08:00	11	0.15	0.63	<2	<1	<1	-	-
GRAB	RMD-216	11080 No. 2 Road	2022-11-10 08:05	9	0.14	0.64	<2	<1	<1	-	-
GRAB	RMD-216	11080 No. 2 Road	2022-11-17 08:00	8	0.16	0.89	<2	<1	<1	-	-
GRAB	RMD-216	11080 No. 2 Road	2022-11-25 08:00	9	0.15	0.72	<2	<1	<1	-	-
GRAB	RMD-216	11080 No. 2 Road	2022-12-01 08:05	7	0.14	0.72	<2	<1	<1	-	-
GRAB	RMD-216	11080 No. 2 Road	2022-12-09 08:00	7	0.14	0.82	2	<1	<1	-	-
GRAB	RMD-216	11080 No. 2 Road	2022-12-15 08:00	7	0.15	0.64	<2	<1	<1	-	-
GRAB	RMD-216	11080 No. 2 Road	2022-12-22 12:50	5	0.24	0.79	NA	<1	<1	-	-
GRAB	RMD-249	23000 Blk. Dyke Road	2022-01-07 10:30	8	0.2	0.62	2	<1	<1	-	-
GRAB	RMD-249	23000 Blk. Dyke Road	2022-01-13 10:15	6	0.17	0.78	<2	<1	<1	-	-
GRAB	RMD-249	23000 Blk. Dyke Road	2022-01-21 10:15	7	0.16	0.67	4	<1	<1	-	-
GRAB	RMD-249	23000 Blk. Dyke Road	2022-01-27 10:15	6	0.13	0.88	<2	<1	<1	-	-
GRAB	RMD-249	23000 Blk. Dyke Road	2022-02-04 10:15	6	0.17	0.72	<2	<1	<1	-	-
GRAB	RMD-249	23000 Blk. Dyke Road	2022-02-10 10:15	6	0.17	0.72	<2	<1	<1	-	-
GRAB	RMD-249	23000 Blk. Dyke Road	2022-02-18 10:15	7	0.14	0.68	<2	<1	<1	-	-
GRAB	RMD-249	23000 Blk. Dyke Road	2022-02-24 10:15	6	0.19	0.73	<2	<1	<1	-	-
GRAB	RMD-249	23000 Blk. Dyke Road	2022-03-04 10:20	6	0.13	0.73	<2	<1	<1	-	-
GRAB	RMD-249	23000 Blk. Dyke Road	2022-03-10 10:15	7	0.14	0.74	4	<1	<1	-	-
GRAB	RMD-249	23000 Blk. Dyke Road	2022-03-18 10:20	8	0.1	0.72	<2	<1	<1	-	-
GRAB	RMD-249	23000 Blk. Dyke Road	2022-03-24 10:20	7	0.15	0.71	<2	<1	<1	-	-
GRAB	RMD-249	23000 Blk. Dyke Road	2022-04-01 10:20	7	0.12	0.74	<2	<1	<1	-	-
GRAB	RMD-249	23000 Blk. Dyke Road	2022-04-07 10:25	9	0.12	0.6	<2	<1	<1	-	-
GRAB	RMD-249	23000 Blk. Dyke Road	2022-04-14 10:20	8	0.1	0.61	<2	<1	<1	-	-
GRAB	RMD-249	23000 Blk. Dyke Road	2022-04-21 10:15	9	0.19	0.63	<2	<1	<1	-	-
GRAB	RMD-249	23000 Blk. Dyke Road	2022-04-29 10:15	9	0.1	0.59	<2	<1	<1	-	-
GRAB	RMD-249	23000 Blk. Dyke Road	2022-05-05 10:15	9	0.11	0.88	4	<1	<1	-	-
GRAB	RMD-249	23000 Blk. Dyke Road	2022-05-13 10:15	10	0.1	0.61	42	<1	<1	-	-
GRAB	RMD-249	23000 Blk. Dyke Road	2022-05-19 10:15	10	0.21	0.58	4	<1	<1	-	-
GRAB	RMD-249	23000 Blk. Dyke Road	2022-05-27 10:25	9	0.14	0.56	<2	<1	<1	-	-
GRAB	RMD-249	23000 Blk. Dyke Road	2022-06-02 10:15	12	0.16	0.6	20	<1	<1	-	-
GRAB	RMD-249	23000 Blk. Dyke Road	2022-06-10 10:25	13	0.16	0.5	12	<1	<1	-	-
GRAB	RMD-249	23000 Blk. Dyke Road	2022-06-16 10:20	14	0.1	0.66	8	<1	<1	-	-
GRAB	RMD-249	23000 Blk. Dyke Road	2022-06-24 10:15	14	0.13	0.57	8	<1	<1	-	-
GRAB	RMD-249	23000 Blk. Dyke Road	2022-06-29 10:25	12	0.09	0.61	8	<1	<1	-	-
GRAB	RMD-249	23000 Blk. Dyke Road	2022-07-08 10:25	15	0.11	0.64	10	<1	<1	-	-
GRAB	RMD-249	23000 Blk. Dyke Road	2022-07-14 10:25	15	0.13	0.61	18	<1	<1	-	-
GRAB	RMD-249	23000 Blk. Dyke Road	2022-07-22 10:15	16	0.28	0.66	14	<1	<1	-	-
GRAB	RMD-249	23000 Blk. Dyke Road	2022-07-28 10:40	17	0.13	0.71	4	<1	<1	-	-
GRAB	RMD-249	23000 Blk. Dyke Road	2022-08-05 10:20	16	0.17	0.57	4	<1	<1	-	-
GRAB	RMD-249	23000 Blk. Dyke Road	2022-08-11 10:25	15	0.15	0.56	98	<1	<1	-	-
GRAB	RMD-249	23000 Blk. Dyke Road	2022-08-19 10:00	16	0.11	0.57	6	<1	<1	-	-
GRAB	RMD-249	23000 Blk. Dyke Road	2022-08-25 10:20	16	0.11	0.6	4	<1	<1	-	-
GRAB	RMD-249	23000 Blk. Dyke Road	2022-09-02 10:40	17	0.13	0.64	<2	<1	<1	-	-
GRAB	RMD-249	23000 Blk. Dyke Road	2022-09-08 10:40	17	0.14	0.57	6	<1	<1	-	-
GRAB	RMD-249	23000 Blk. Dyke Road	2022-09-16 10:40	19	0.12	0.55	2	<1	<1	-	-
GRAB	RMD-249	23000 Blk. Dyke Road	2022-09-22 10:25	16	0.43	0.64	<2	<1	<1	-	-
GRAB	RMD-249	23000 Blk. Dyke Road	2022-09-29 10:15	18	0.13	0.56	10	<1	<1	-	-
GRAB	RMD-249	23000 Blk. Dyke Road	2022-10-06 10:15	17	0.11	0.64	8	<1	<1	-	-
GRAB	RMD-249	23000 Blk. Dyke Road	2022-10-14 10:15	17	0.26	0.51	68	<1	<1	-	-
GRAB	RMD-249	23000 Blk. Dyke Road	2022-10-20 10:25	15	0.14	0.61	4	<1	<1	-	-
GRAB	RMD-249	23000 Blk. Dyke Road	2022-10-28 10:20	14	0.13	0.54	4	<1	<1	-	-
GRAB	RMD-249	23000 Blk. Dyke Road	2022-11-03 10:15	13	0.18	0.59	<2	<1	<1	-	-
GRAB	RMD-249	23000 Blk. Dyke Road	2022-11-10 10:25	9	0.14	0.58	<2	<1	<1	-	-
GRAB	RMD-249	23000 Blk. Dyke Road	2022-11-17 10:15	8	0.18	0.67	12	<1	<1	-	-
GRAB	RMD-249	23000 Blk. Dyke Road	2022-11-25 10:20	9	0.21	0.57	<2	<1	<1	-	-
GRAB	RMD-249	23000 Blk. Dyke Road	2022-12-01 10:25	8	0.16	0.65	6	<1	<1	-	-
GRAB	RMD-249	23000 Blk. Dyke Road	2022-12-09 10:15	7	0.19	0.65	<2	<1	<1	-	-
GRAB	RMD-249	23000 Blk. Dyke Road	2022-12-15 10:15	6	0.13	0.68	<2	<1	<1	-	-
GRAB	RMD-249	23000 Blk. Dyke Road	2022-12-22 14:30	5	0.24	0.61	NA	<1	<1	-	-
GRAB	RMD-250	6071 Azure Road	2022-01-04 15:45	5	0.13	0.92	<2	<1	<1	-	-
GRAB	RMD-250	6071 Azure Road	2022-01-10 15:45	5	0.11	0.9	<2	<1	<1	-	-
GRAB	RMD-250	6071 Azure Road	2022-01-17 15:45	7	0.11	0.72	<2	<1	<1	-	-

Sample Type	Water Sampling Station Number	Water Sampling Station Address	Sampled Date	Temperature (°C)	Turbidity (NTU)	Chlorine Free (mg/L)	HPC (CFU/mL)	Ecoli (CFU/100mLs)	Total Coliform (CFU/100mLs)	Ecoli (MPN/100mLs)	Total Coliform (MPN/100mLs)
GRAB	RMD-250	6071 Azure Road	2022-01-24 15:45	6	0.12	1.19	<2	<1	<1	-	-
GRAB	RMD-250	6071 Azure Road	2022-02-01 15:45	6	0.13	0.84	<2	<1	<1	-	-
GRAB	RMD-250	6071 Azure Road	2022-02-07 15:45	6	0.13	0.75	<2	<1	<1	-	-
GRAB	RMD-250	6071 Azure Road	2022-02-14 15:45	6	0.19	0.72	<2	<1	<1	-	-
GRAB	RMD-250	6071 Azure Road	2022-02-22 15:45	6	0.11	0.9	<2	<1	<1	-	-
GRAB	RMD-250	6071 Azure Road	2022-02-28 15:45	6	0.12	0.87	<2	<1	<1	-	-
GRAB	RMD-250	6071 Azure Road	2022-03-07 15:45	6	0.1	0.79	<2	<1	<1	-	-
GRAB	RMD-250	6071 Azure Road	2022-03-14 15:45	6	0.13	0.77	<2	<1	<1	-	-
GRAB	RMD-250	6071 Azure Road	2022-03-21 15:50	7	0.13	1	<2	<1	<1	-	-
GRAB	RMD-250	6071 Azure Road	2022-03-28 15:45	7	0.14	0.96	<2	<1	<1	-	-
GRAB	RMD-250	6071 Azure Road	2022-04-04 15:45	7	0.08	0.81	<2	<1	<1	-	-
GRAB	RMD-250	6071 Azure Road	2022-04-11 15:45	8	0.09	0.72	<2	<1	<1	-	-
GRAB	RMD-250	6071 Azure Road	2022-04-19 15:45	8	0.1	0.71	4	<1	<1	-	-
GRAB	RMD-250	6071 Azure Road	2022-04-25 15:45	8	0.1	0.76	<2	<1	<1	-	-
GRAB	RMD-250	6071 Azure Road	2022-05-02 15:45	9	0.12	0.68	<2	<1	<1	-	-
GRAB	RMD-250	6071 Azure Road	2022-05-09 15:45	10	0.13	0.74	<2	<1	<1	-	-
GRAB	RMD-250	6071 Azure Road	2022-05-16 15:45	9	0.11	0.61	<2	<1	<1	-	-
GRAB	RMD-250	6071 Azure Road	2022-05-24 15:45	9	0.36	0.77	<2	<1	<1	-	-
GRAB	RMD-250	6071 Azure Road	2022-05-30 15:45	9	0.13	0.55	<2	<1	<1	-	-
GRAB	RMD-250	6071 Azure Road	2022-06-06 14:15	11	0.1	0.76	2	<1	<1	-	-
GRAB	RMD-250	6071 Azure Road	2022-06-13 15:45	12	0.14	0.69	<2	<1	<1	-	-
GRAB	RMD-250	6071 Azure Road	2022-06-20 15:45	11	0.09	1.12	<2	<1	<1	-	-
GRAB	RMD-250	6071 Azure Road	2022-06-27 15:45	12	0.17	0.77	<2	<1	<1	-	-
GRAB	RMD-250	6071 Azure Road	2022-07-04 15:45	12	0.11	0.66	4	<1	<1	-	-
GRAB	RMD-250	6071 Azure Road	2022-07-11 15:45	13	0.12	0.71	<2	<1	<1	-	-
GRAB	RMD-250	6071 Azure Road	2022-07-18 15:45	14	0.19	0.69	2	<1	<1	-	-
GRAB	RMD-250	6071 Azure Road	2022-07-25 15:45	13	0.11	0.83	4	<1	<1	-	-
GRAB	RMD-250	6071 Azure Road	2022-08-02 15:45	16	0.2	0.74	<2	<1	<1	-	-
GRAB	RMD-250	6071 Azure Road	2022-08-08 15:45	16	0.1	0.69	6	<1	<1	-	-
GRAB	RMD-250	6071 Azure Road	2022-08-15 15:45	16	0.1	0.64	<2	<1	<1	-	-
GRAB	RMD-250	6071 Azure Road	2022-08-22 15:45	14	0.11	0.79	8	<1	<1	-	-
GRAB	RMD-250	6071 Azure Road	2022-08-29 15:45	17	0.1	0.66	8	<1	<1	-	-
GRAB	RMD-250	6071 Azure Road	2022-09-06 15:45	16	0.09	0.67	10	<1	<1	-	-
GRAB	RMD-250	6071 Azure Road	2022-09-12 15:45	17	0.13	0.74	8	<1	<1	-	-
GRAB	RMD-250	6071 Azure Road	2022-09-20 15:45	17	0.1	0.62	10	<1	<1	-	-
GRAB	RMD-250	6071 Azure Road	2022-09-26 15:45	16	0.09	0.72	14	<1	<1	-	-
GRAB	RMD-250	6071 Azure Road	2022-10-03 15:45	16	0.08	0.76	20	<1	<1	-	-
GRAB	RMD-250	6071 Azure Road	2022-10-11 15:45	16	0.11	0.63	18	<1	<1	-	-
GRAB	RMD-250	6071 Azure Road	2022-10-17 15:45	15	0.12	0.65	8	<1	<1	-	-
GRAB	RMD-250	6071 Azure Road	2022-10-24 15:45	15	0.17	0.72	10	<1	<1	-	-
GRAB	RMD-250	6071 Azure Road	2022-10-31 15:45	13	0.12	0.69	2	<1	<1	-	-
GRAB	RMD-250	6071 Azure Road	2022-11-07 15:45	12	0.1	0.72	<2	<1	<1	-	-
GRAB	RMD-250	6071 Azure Road	2022-11-14 15:45	11	0.1	0.67	22	<1	<1	-	-
GRAB	RMD-250	6071 Azure Road	2022-11-21 15:45	9	0.12	0.6	<2	<1	<1	-	-
GRAB	RMD-250	6071 Azure Road	2022-11-28 15:45	9	0.1	0.73	<2	<1	<1	-	-
GRAB	RMD-250	6071 Azure Road	2022-12-05 15:45	7	0.14	0.81	<2	<1	<1	-	-
GRAB	RMD-250	6071 Azure Road	2022-12-12 15:45	7	0.15	0.8	<2	<1	<1	-	-
GRAB	RMD-251	5951McCallan Road	2022-01-04 12:30	5	0.17	0.86	<2	<1	<1	-	-
GRAB	RMD-251	5951McCallan Road	2022-01-10 12:30	4	0.12	0.82	<2	<1	<1	-	-
GRAB	RMD-251	5951McCallan Road	2022-01-17 12:30	7	0.12	0.84	<2	<1	<1	-	-
GRAB	RMD-251	5951McCallan Road	2022-01-24 12:30	5	0.14	1.12	<2	<1	<1	-	-
GRAB	RMD-251	5951McCallan Road	2022-02-01 12:30	5	0.1	0.69	<2	<1	<1	-	-
GRAB	RMD-251	5951McCallan Road	2022-02-07 12:30	6	0.14	0.79	<2	<1	<1	-	-
GRAB	RMD-251	5951McCallan Road	2022-02-14 12:30	6	0.13	0.81	<2	<1	<1	-	-
GRAB	RMD-251	5951McCallan Road	2022-02-22 12:30	6	0.12	0.92	<2	<1	<1	-	-
GRAB	RMD-251	5951McCallan Road	2022-02-28 12:30	6	0.13	0.86	<2	<1	<1	-	-
GRAB	RMD-251	5951McCallan Road	2022-03-07 12:30	6	0.12	0.78	<2	<1	<1	-	-
GRAB	RMD-251	5951McCallan Road	2022-03-14 12:30	6	0.33	0.72	<2	<1	<1	-	-
GRAB	RMD-251	5951McCallan Road	2022-03-21 12:30	7	0.14	1.03	<2	<1	<1	-	-
GRAB	RMD-251	5951McCallan Road	2022-03-28 12:30	7	0.13	0.87	<2	<1	<1	-	-
GRAB	RMD-251	5951McCallan Road	2022-04-04 12:30	7	0.15	0.82	<2	<1	<1	-	-
GRAB	RMD-251	5951McCallan Road	2022-04-11 12:30	7	0.09	0.71	<2	<1	<1	-	-
GRAB	RMD-251	5951McCallan Road	2022-04-19 12:30	8	0.1	0.67	<2	<1	<1	-	-
GRAB	RMD-251	5951McCallan Road	2022-04-25 12:30	8	0.11	0.8	<2	<1	<1	-	-

Sample Type	Water Sampling Station Number	Water Sampling Station Address	Sampled Date	Temperature (°C)	Turbidity (NTU)	Chlorine Free (mg/L)	HPC (CFU/mL)	Ecoli (CFU/100mLs)	Total Coliform (CFU/100mLs)	Ecoli (MPN/100mLs)	Total Coliform (MPN/100mLs)
GRAB	RMD-251	5951McCallan Road	2022-05-02 12:30	9	0.11	0.72	<2	<1	<1	-	-
GRAB	RMD-251	5951McCallan Road	2022-05-09 12:30	8	0.14	0.73	<2	<1	<1	-	-
GRAB	RMD-251	5951McCallan Road	2022-05-16 12:30	8	0.1	0.7	8	<1	<1	-	-
GRAB	RMD-251	5951McCallan Road	2022-05-24 12:30	9	0.26	0.68	<2	<1	<1	-	-
GRAB	RMD-251	5951McCallan Road	2022-05-30 12:30	9	0.16	0.85	<2	<1	<1	-	-
GRAB	RMD-251	5951McCallan Road	2022-06-06 14:30	10	0.13	0.78	<2	<1	<1	-	-
GRAB	RMD-251	5951McCallan Road	2022-06-13 12:30	9	0.13	0.57	<2	<1	<1	-	-
GRAB	RMD-251	5951McCallan Road	2022-06-20 12:30	11	0.09	0.7	<2	<1	<1	-	-
GRAB	RMD-251	5951McCallan Road	2022-06-27 12:30	9	0.18	0.84	4	<1	<1	-	-
GRAB	RMD-251	5951McCallan Road	2022-07-04 12:30	12	0.09	0.8	<2	<1	<1	-	-
GRAB	RMD-251	5951McCallan Road	2022-07-11 12:30	10	0.12	0.79	16	<1	<1	-	-
GRAB	RMD-251	5951McCallan Road	2022-07-18 12:30	12	0.11	0.7	<2	<1	<1	-	-
GRAB	RMD-251	5951McCallan Road	2022-07-25 12:30	12	0.11	0.67	<2	<1	<1	-	-
GRAB	RMD-251	5951McCallan Road	2022-08-02 12:30	14	0.15	0.76	<2	<1	<1	-	-
GRAB	RMD-251	5951McCallan Road	2022-08-08 12:30	13	0.14	0.71	<2	<1	<1	-	-
GRAB	RMD-251	5951McCallan Road	2022-08-15 12:30	14	0.11	0.74	2	<1	<1	-	-
GRAB	RMD-251	5951McCallan Road	2022-08-22 12:30	13	0.11	0.84	<2	<1	<1	-	-
GRAB	RMD-251	5951McCallan Road	2022-08-29 12:30	15	0.12	0.68	<2	<1	<1	-	-
GRAB	RMD-251	5951McCallan Road	2022-09-06 12:30	15	0.17	0.71	2	<1	<1	-	-
GRAB	RMD-251	5951McCallan Road	2022-09-12 12:30	15	0.12	0.7	LA	<1	<1	-	-
GRAB	RMD-251	5951McCallan Road	2022-09-20 12:30	16	0.13	0.68	<2	<1	<1	-	-
GRAB	RMD-251	5951McCallan Road	2022-09-26 12:30	15	0.1	0.75	<2	<1	<1	-	-
GRAB	RMD-251	5951McCallan Road	2022-10-03 12:30	16	0.08	0.75	<2	<1	<1	-	-
GRAB	RMD-251	5951McCallan Road	2022-10-11 12:30	16	0.11	0.69	<2	<1	<1	-	-
GRAB	RMD-251	5951McCallan Road	2022-10-17 12:30	15	0.17	0.68	<2	<1	<1	-	-
GRAB	RMD-251	5951McCallan Road	2022-10-24 12:30	14	0.13	0.85	<2	<1	<1	-	-
GRAB	RMD-251	5951McCallan Road	2022-10-31 12:30	11	0.12	0.64	<2	<1	<1	-	-
GRAB	RMD-251	5951McCallan Road	2022-11-07 12:30	12	0.2	0.68	<2	<1	<1	-	-
GRAB	RMD-251	5951McCallan Road	2022-11-14 12:30	10	0.1	0.71	<2	<1	<1	-	-
GRAB	RMD-251	5951McCallan Road	2022-11-21 12:30	8	0.1	0.73	<2	<1	<1	-	-
GRAB	RMD-251	5951McCallan Road	2022-11-28 12:30	8	0.1	0.85	<2	<1	<1	-	-
GRAB	RMD-251	5951McCallan Road	2022-12-05 12:30	7	0.15	0.65	<2	<1	<1	-	-
GRAB	RMD-251	5951McCallan Road	2022-12-12 12:30	7	0.13	0.75	<2	<1	<1	-	-
GRAB	RMD-252	9751 Pendleton Road	2022-01-04 13:00	6	0.16	0.66	<2	<1	<1	-	-
GRAB	RMD-252	9751 Pendleton Road	2022-01-10 13:00	5	0.19	0.68	<2	<1	<1	-	-
GRAB	RMD-252	9751 Pendleton Road	2022-01-17 13:00	6	0.12	0.83	<2	<1	<1	-	-
GRAB	RMD-252	9751 Pendleton Road	2022-01-24 13:00	6	0.12	0.81	<2	<1	<1	-	-
GRAB	RMD-252	9751 Pendleton Road	2022-02-01 13:00	6	0.12	0.79	<2	<1	<1	-	-
GRAB	RMD-252	9751 Pendleton Road	2022-02-07 13:00	6	0.13	0.69	<2	<1	<1	-	-
GRAB	RMD-252	9751 Pendleton Road	2022-02-14 13:00	6	0.11	0.89	<2	<1	<1	-	-
GRAB	RMD-252	9751 Pendleton Road	2022-02-22 13:00	6	0.11	0.89	<2	<1	<1	-	-
GRAB	RMD-252	9751 Pendleton Road	2022-02-28 13:00	6	0.11	0.85	<2	<1	<1	-	-
GRAB	RMD-252	9751 Pendleton Road	2022-03-07 13:00	6	0.11	0.9	<2	<1	<1	-	-
GRAB	RMD-252	9751 Pendleton Road	2022-03-14 13:00	6	0.13	0.85	<2	<1	<1	-	-
GRAB	RMD-252	9751 Pendleton Road	2022-03-21 13:00	7	0.13	0.91	<2	<1	<1	-	-
GRAB	RMD-252	9751 Pendleton Road	2022-03-28 13:00	7	0.12	0.93	<2	<1	<1	-	-
GRAB	RMD-252	9751 Pendleton Road	2022-04-04 13:00	7	0.12	0.77	<2	<1	<1	-	-
GRAB	RMD-252	9751 Pendleton Road	2022-04-11 13:00	8	0.09	0.71	<2	<1	<1	-	-
GRAB	RMD-252	9751 Pendleton Road	2022-04-19 13:00	8	0.1	0.67	2	<1	<1	-	-
GRAB	RMD-252	9751 Pendleton Road	2022-04-25 13:00	7	0.12	0.73	<2	<1	<1	-	-
GRAB	RMD-252	9751 Pendleton Road	2022-05-02 13:00	9	0.09	0.64	<2	<1	<1	-	-
GRAB	RMD-252	9751 Pendleton Road	2022-05-09 13:00	9	0.12	0.69	2	<1	<1	-	-
GRAB	RMD-252	9751 Pendleton Road	2022-05-16 13:00	9	0.11	0.68	<2	<1	<1	-	-
GRAB	RMD-252	9751 Pendleton Road	2022-05-24 13:00	9	0.51	0.63	<2	<1	<1	-	-
GRAB	RMD-252	9751 Pendleton Road	2022-05-30 13:00	9	0.1	0.59	LA	<1	<1	-	-
GRAB	RMD-252	9751 Pendleton Road	2022-06-06 14:45	11	0.11	0.64	<2	<1	<1	-	-
GRAB	RMD-252	9751 Pendleton Road	2022-06-13 13:00	11	0.15	0.56	2	<1	<1	-	-
GRAB	RMD-252	9751 Pendleton Road	2022-06-20 13:00	11	0.1	0.74	<2	<1	<1	-	-
GRAB	RMD-252	9751 Pendleton Road	2022-06-27 13:00	11	0.37	0.73	2	<1	<1	-	-
GRAB	RMD-252	9751 Pendleton Road	2022-07-04 13:00	13	0.29	0.67	<2	<1	<1	-	-
GRAB	RMD-252	9751 Pendleton Road	2022-07-11 13:00	13	0.12	0.66	<2	<1	<1	-	-
GRAB	RMD-252	9751 Pendleton Road	2022-07-18 13:00	14	0.12	0.66	2	<1	<1	-	-
GRAB	RMD-252	9751 Pendleton Road	2022-07-25 13:00	13	0.18	0.71	<2	<1	<1	-	-
GRAB	RMD-252	9751 Pendleton Road	2022-08-02 13:00	15	0.18	0.87	<2	<1	<1	-	-

Sample Type	Water Sampling Station Number	Water Sampling Station Address	Sampled Date	Temperature (°C)	Turbidity (NTU)	Chlorine Free (mg/L)	HPC (CFU/mL)	Ecoli (CFU/100mLs)	Total Coliform (CFU/100mLs)	Ecoli (MPN/100mLs)	Total Coliform (MPN/100mLs)
GRAB	RMD-252	9751 Pendleton Road	2022-08-08 13:00	15	0.12	0.64	2	<1	<1	-	-
GRAB	RMD-252	9751 Pendleton Road	2022-08-15 13:00	15	0.09	0.56	<2	<1	<1	-	-
GRAB	RMD-252	9751 Pendleton Road	2022-08-22 13:00	15	0.44	0.73	<2	<1	<1	-	-
GRAB	RMD-252	9751 Pendleton Road	2022-08-29 13:00	16	0.12	0.57	22	<1	<1	-	-
GRAB	RMD-252	9751 Pendleton Road	2022-09-06 13:00	17	0.1	0.64	12	<1	<1	-	-
GRAB	RMD-252	9751 Pendleton Road	2022-09-12 13:00	17	0.09	0.6	<2	<1	<1	-	-
GRAB	RMD-252	9751 Pendleton Road	2022-09-20 13:00	16	0.23	0.58	2	<1	<1	-	-
GRAB	RMD-252	9751 Pendleton Road	2022-09-26 13:00	16	0.09	0.65	<2	<1	<1	-	-
GRAB	RMD-252	9751 Pendleton Road	2022-10-03 13:00	16	0.11	0.61	<2	<1	<1	-	-
GRAB	RMD-252	9751 Pendleton Road	2022-10-11 13:00	16	0.32	0.69	2	<1	<1	-	-
GRAB	RMD-252	9751 Pendleton Road	2022-10-17 13:00	15	0.18	0.54	<2	<1	<1	-	-
GRAB	RMD-252	9751 Pendleton Road	2022-10-24 13:00	15	0.13	0.68	8	<1	<1	-	-
GRAB	RMD-252	9751 Pendleton Road	2022-10-31 13:00	12	0.11	0.53	<2	<1	<1	-	-
GRAB	RMD-252	9751 Pendleton Road	2022-11-07 13:00	12	0.2	0.61	<2	<1	<1	-	-
GRAB	RMD-252	9751 Pendleton Road	2022-11-14 13:00	11	0.1	0.67	<2	<1	<1	-	-
GRAB	RMD-252	9751 Pendleton Road	2022-11-21 13:00	8	0.16	0.61	<2	<1	<1	-	-
GRAB	RMD-252	9751 Pendleton Road	2022-11-28 13:00	10	0.12	0.68	<2	<1	<1	-	-
GRAB	RMD-252	9751 Pendleton Road	2022-12-05 13:00	7	0.13	0.69	<2	<1	<1	-	-
GRAB	RMD-252	9751 Pendleton Road	2022-12-12 13:00	7	0.18	0.69	<2	<1	<1	-	-
GRAB	RMD-253	11051 No. 3 Road	2022-01-04 13:40	5	0.18	0.96	<2	<1	<1	-	-
GRAB	RMD-253	11051 No. 3 Road	2022-01-10 13:30	5	0.13	1.25	<2	<1	<1	-	-
GRAB	RMD-253	11051 No. 3 Road	2022-01-17 13:35	6	0.12	0.96	<2	<1	<1	-	-
GRAB	RMD-253	11051 No. 3 Road	2022-01-24 13:30	6	0.13	1.08	<2	<1	<1	-	-
GRAB	RMD-253	11051 No. 3 Road	2022-02-01 13:35	6	0.12	0.9	<2	<1	<1	-	-
GRAB	RMD-253	11051 No. 3 Road	2022-02-07 13:30	6	0.17	0.83	<2	<1	<1	-	-
GRAB	RMD-253	11051 No. 3 Road	2022-02-14 13:30	6	0.13	0.95	<2	<1	<1	-	-
GRAB	RMD-253	11051 No. 3 Road	2022-02-22 13:30	6	0.17	1.01	<2	<1	<1	-	-
GRAB	RMD-253	11051 No. 3 Road	2022-02-28 13:30	6	0.15	0.84	<2	<1	<1	-	-
GRAB	RMD-253	11051 No. 3 Road	2022-03-07 13:30	6	0.12	0.94	<2	<1	<1	-	-
GRAB	RMD-253	11051 No. 3 Road	2022-03-14 13:30	6	0.17	0.8	6	<1	<1	-	-
GRAB	RMD-253	11051 No. 3 Road	2022-03-21 13:30	7	0.15	1.01	<2	<1	<1	-	-
GRAB	RMD-253	11051 No. 3 Road	2022-03-28 13:30	7	0.14	0.91	<2	<1	<1	-	-
GRAB	RMD-253	11051 No. 3 Road	2022-04-04 13:30	7	0.17	0.77	<2	<1	<1	-	-
GRAB	RMD-253	11051 No. 3 Road	2022-04-11 13:30	7	0.12	0.76	<2	<1	<1	-	-
GRAB	RMD-253	11051 No. 3 Road	2022-04-19 13:30	8	0.12	0.67	2	<1	<1	-	-
GRAB	RMD-253	11051 No. 3 Road	2022-04-25 13:30	8	0.11	0.74	22	<1	<1	-	-
GRAB	RMD-253	11051 No. 3 Road	2022-05-02 13:30	9	0.16	0.73	<2	<1	<1	-	-
GRAB	RMD-253	11051 No. 3 Road	2022-05-09 13:30	8	0.13	0.77	<2	<1	<1	-	-
GRAB	RMD-253	11051 No. 3 Road	2022-05-16 13:30	9	0.13	0.7	<2	<1	<1	-	-
GRAB	RMD-253	11051 No. 3 Road	2022-05-24 13:30	9	0.18	0.69	<2	<1	<1	-	-
GRAB	RMD-253	11051 No. 3 Road	2022-05-30 13:30	9	0.14	0.6	<2	<1	<1	-	-
GRAB	RMD-253	11051 No. 3 Road	2022-06-06 15:30	10	0.1	0.79	<2	<1	<1	-	-
GRAB	RMD-253	11051 No. 3 Road	2022-06-13 13:30	9	0.14	0.59	<2	<1	<1	-	-
GRAB	RMD-253	11051 No. 3 Road	2022-06-20 13:30	10	0.13	0.73	<2	<1	<1	-	-
GRAB	RMD-253	11051 No. 3 Road	2022-06-27 13:30	10	0.21	0.67	<2	<1	<1	-	-
GRAB	RMD-253	11051 No. 3 Road	2022-07-04 13:30	12	0.12	0.8	<2	<1	<1	-	-
GRAB	RMD-253	11051 No. 3 Road	2022-07-11 13:30	11	0.16	0.75	<2	<1	<1	-	-
GRAB	RMD-253	11051 No. 3 Road	2022-07-18 13:30	13	0.12	0.76	2	<1	<1	-	-
GRAB	RMD-253	11051 No. 3 Road	2022-07-25 13:30	12	0.14	0.93	<2	<1	<1	-	-
GRAB	RMD-253	11051 No. 3 Road	2022-08-02 13:30	14	0.11	0.74	<2	<1	<1	-	-
GRAB	RMD-253	11051 No. 3 Road	2022-08-08 13:30	14	0.14	0.73	40	<1	<1	-	-
GRAB	RMD-253	11051 No. 3 Road	2022-08-15 13:30	14	0.11	0.75	<2	<1	<1	-	-
GRAB	RMD-253	11051 No. 3 Road	2022-08-22 13:30	13	0.09	0.68	<2	<1	<1	-	-
GRAB	RMD-253	11051 No. 3 Road	2022-08-29 13:30	15	0.1	0.74	4	<1	<1	-	-
GRAB	RMD-253	11051 No. 3 Road	2022-09-06 13:30	16	0.11	0.78	2	<1	<1	-	-
GRAB	RMD-253	11051 No. 3 Road	2022-09-12 13:30	16	0.12	0.74	8	<1	<1	-	-
GRAB	RMD-253	11051 No. 3 Road	2022-09-20 13:30	16	0.13	0.74	12	<1	<1	-	-
GRAB	RMD-253	11051 No. 3 Road	2022-09-26 13:30	15	0.12	0.74	2	<1	<1	-	-
GRAB	RMD-253	11051 No. 3 Road	2022-10-03 13:30	16	0.11	0.69	<2	<1	<1	-	-
GRAB	RMD-253	11051 No. 3 Road	2022-10-11 13:30	16	0.12	0.66	<2	<1	<1	-	-
GRAB	RMD-253	11051 No. 3 Road	2022-10-17 13:30	15	0.18	0.75	<2	<1	<1	-	-
GRAB	RMD-253	11051 No. 3 Road	2022-10-24 13:30	14	0.19	0.83	2	<1	<1	-	-
GRAB	RMD-253	11051 No. 3 Road	2022-10-31 13:30	12	0.15	0.77	2	<1	<1	-	-
GRAB	RMD-253	11051 No. 3 Road	2022-11-07 13:30	11	0.21	0.77	<2	<1	<1	-	-

Sample Type	Water Sampling Station Number	Water Sampling Station Address	Sampled Date	Temperature (°C)	Turbidity (NTU)	Chlorine Free (mg/L)	HPC (CFU/mL)	Ecoli (CFU/100mLs)	Total Coliform (CFU/100mLs)	Ecoli (MPN/100mLs)	Total Coliform (MPN/100mLs)
GRAB	RMD-253	11051 No. 3 Road	2022-11-14 13:30	11	0.11	0.78	2	<1	<1	-	-
GRAB	RMD-253	11051 No. 3 Road	2022-11-21 13:30	8	0.1	0.84	<2	<1	<1	-	-
GRAB	RMD-253	11051 No. 3 Road	2022-11-28 13:30	8	0.12	0.86	<2	<1	<1	-	-
GRAB	RMD-253	11051 No. 3 Road	2022-12-05 13:30	7	0.67	0.88	<2	<1	<1	-	-
GRAB	RMD-253	11051 No. 3 Road	2022-12-12 13:30	6	0.14	0.78	<2	<1	<1	-	-
GRAB	RMD-254	5300 No. 3 Road	2022-01-04 14:30	6	0.14	0.93	<2	<1	<1	-	-
GRAB	RMD-254	5300 No. 3 Road	2022-01-10 14:25	5	0.11	0.86	<2	<1	<1	-	-
GRAB	RMD-254	5300 No. 3 Road	2022-01-17 14:25	7	0.11	0.74	<2	<1	<1	-	-
GRAB	RMD-254	5300 No. 3 Road	2022-01-24 14:25	6	0.12	0.83	<2	<1	<1	-	-
GRAB	RMD-254	5300 No. 3 Road	2022-02-01 14:30	6	0.11	0.83	<2	<1	<1	-	-
GRAB	RMD-254	5300 No. 3 Road	2022-02-07 14:30	6	0.11	0.74	<2	<1	<1	-	-
GRAB	RMD-254	5300 No. 3 Road	2022-02-14 14:30	6	0.12	0.85	<2	<1	<1	-	-
GRAB	RMD-254	5300 No. 3 Road	2022-02-22 14:30	6	0.12	1.04	<2	<1	<1	-	-
GRAB	RMD-254	5300 No. 3 Road	2022-02-28 14:30	6	0.11	0.83	<2	<1	<1	-	-
GRAB	RMD-254	5300 No. 3 Road	2022-03-07 14:30	6	0.13	0.87	<2	<1	<1	-	-
GRAB	RMD-254	5300 No. 3 Road	2022-03-14 14:30	6	0.13	0.73	<2	<1	<1	-	-
GRAB	RMD-254	5300 No. 3 Road	2022-03-21 14:30	7	0.12	0.88	<2	<1	<1	-	-
GRAB	RMD-254	5300 No. 3 Road	2022-03-28 14:30	7	0.12	0.92	<2	<1	<1	-	-
GRAB	RMD-254	5300 No. 3 Road	2022-04-04 14:30	7	0.13	0.74	<2	<1	<1	-	-
GRAB	RMD-254	5300 No. 3 Road	2022-04-11 14:30	7	0.09	0.73	<2	<1	<1	-	-
GRAB	RMD-254	5300 No. 3 Road	2022-04-19 14:30	8	0.1	0.73	<2	<1	<1	-	-
GRAB	RMD-254	5300 No. 3 Road	2022-04-25 14:30	9	0.11	0.88	<2	<1	<1	-	-
GRAB	RMD-254	5300 No. 3 Road	2022-05-02 14:30	9	0.12	0.63	<2	<1	<1	-	-
GRAB	RMD-254	5300 No. 3 Road	2022-05-09 14:30	10	0.12	0.67	<2	<1	<1	-	-
GRAB	RMD-254	5300 No. 3 Road	2022-05-16 14:30	10	0.11	0.7	<2	<1	<1	-	-
GRAB	RMD-254	5300 No. 3 Road	2022-05-24 14:30	9	0.21	0.57	<2	<1	<1	-	-
GRAB	RMD-254	5300 No. 3 Road	2022-05-30 14:30	8	0.13	0.6	2	<1	<1	-	-
GRAB	RMD-254	5300 No. 3 Road	2022-06-06 13:00	10	0.1	0.76	<2	<1	<1	-	-
GRAB	RMD-254	5300 No. 3 Road	2022-06-13 14:30	12	0.15	0.5	<2	<1	<1	-	-
GRAB	RMD-254	5300 No. 3 Road	2022-06-20 14:30	11	0.09	0.87	4	<1	<1	-	-
GRAB	RMD-254	5300 No. 3 Road	2022-06-27 14:30	11	0.16	0.77	2	<1	<1	-	-
GRAB	RMD-254	5300 No. 3 Road	2022-07-04 14:30	12	0.12	0.69	<2	<1	<1	-	-
GRAB	RMD-254	5300 No. 3 Road	2022-07-11 14:30	13	0.14	0.69	2	<1	<1	-	-
GRAB	RMD-254	5300 No. 3 Road	2022-07-18 14:25	13	0.14	0.79	6	<1	<1	-	-
GRAB	RMD-254	5300 No. 3 Road	2022-07-25 14:30	14	0.14	0.67	2	<1	<1	-	-
GRAB	RMD-254	5300 No. 3 Road	2022-08-02 14:30	15	0.15	0.73	<2	<1	<1	-	-
GRAB	RMD-254	5300 No. 3 Road	2022-08-08 14:30	15	0.13	0.66	8	<1	<1	-	-
GRAB	RMD-254	5300 No. 3 Road	2022-08-15 14:30	16	0.27	0.66	80	<1	<1	-	-
GRAB	RMD-254	5300 No. 3 Road	2022-08-22 14:30	15	0.1	0.84	<2	<1	<1	-	-
GRAB	RMD-254	5300 No. 3 Road	2022-08-29 14:30	16	0.11	0.63	4	<1	<1	-	-
GRAB	RMD-254	5300 No. 3 Road	2022-09-06 14:25	16	0.1	0.69	64	<1	<1	-	-
GRAB	RMD-254	5300 No. 3 Road	2022-09-12 14:25	17	0.61	0.66	230	<1	<1	-	-
GRAB	RMD-254	5300 No. 3 Road	2022-09-20 14:30	15	0.12	0.58	78	<1	<1	-	-
GRAB	RMD-254	5300 No. 3 Road	2022-09-26 14:30	16	0.11	0.6	120	<1	<1	-	-
GRAB	RMD-254	5300 No. 3 Road	2022-10-03 14:25	16	0.1	0.68	90	<1	<1	-	-
GRAB	RMD-254	5300 No. 3 Road	2022-10-11 14:25	16	0.11	0.61	44	<1	<1	-	-
GRAB	RMD-254	5300 No. 3 Road	2022-10-17 14:25	15	0.2	0.68	34	<1	<1	-	-
GRAB	RMD-254	5300 No. 3 Road	2022-10-24 14:30	15	0.16	0.66	72	<1	<1	-	-
GRAB	RMD-254	5300 No. 3 Road	2022-10-31 14:30	12	0.11	0.64	4	<1	<1	-	-
GRAB	RMD-254	5300 No. 3 Road	2022-11-07 14:25	11	0.23	0.74	<2	<1	<1	-	-
GRAB	RMD-254	5300 No. 3 Road	2022-11-14 14:25	10	0.15	0.75	4	<1	<1	-	-
GRAB	RMD-254	5300 No. 3 Road	2022-11-21 14:30	13	0.12	0.7	<2	<1	<1	-	-
GRAB	RMD-254	5300 No. 3 Road	2022-11-28 14:30	9	0.13	0.81	<2	<1	<1	-	-
GRAB	RMD-254	5300 No. 3 Road	2022-12-05 14:30	7	0.11	0.66	<2	<1	<1	-	-
GRAB	RMD-254	5300 No. 3 Road	2022-12-12 14:30	7	0.12	0.81	<2	<1	<1	-	-
GRAB	RMD-255	6000 Blk. Miller Road	2022-01-04 15:00	5	0.23	0.87	<2	<1	<1	-	-
GRAB	RMD-255	6000 Blk. Miller Road	2022-01-10 14:55	4	0.15	1.11	<2	<1	<1	-	-
GRAB	RMD-255	6000 Blk. Miller Road	2022-01-17 14:55	6	0.12	0.74	<2	<1	<1	-	-
GRAB	RMD-255	6000 Blk. Miller Road	2022-01-24 14:55	5	0.16	0.94	<2	<1	<1	-	-
GRAB	RMD-255	6000 Blk. Miller Road	2022-02-01 15:00	5	0.14	0.91	<2	<1	<1	-	-
GRAB	RMD-255	6000 Blk. Miller Road	2022-02-07 15:00	5	0.17	0.84	<2	<1	<1	-	-
GRAB	RMD-255	6000 Blk. Miller Road	2022-02-14 15:00	5	0.15	0.9	<2	<1	<1	-	-
GRAB	RMD-255	6000 Blk. Miller Road	2022-02-22 15:00	5	0.14	1.09	<2	<1	<1	-	-
GRAB	RMD-255	6000 Blk. Miller Road	2022-02-28 15:00	5	0.18	0.77	<2	<1	<1	-	-

Sample Type	Water Sampling Station Number	Water Sampling Station Address	Sampled Date	Temperature (°C)	Turbidity (NTU)	Chlorine Free (mg/L)	HPC (CFU/mL)	Ecoli (CFU/100mLs)	Total Coliform (CFU/100mLs)	Ecoli (MPN/100mLs)	Total Coliform (MPN/100mLs)
GRAB	RMD-255	6000 Blk. Miller Road	2022-03-07 15:00	5	0.19	1.01	<2	<1	<1	-	-
GRAB	RMD-255	6000 Blk. Miller Road	2022-03-14 15:00	5	0.33	0.89	<2	<1	<1	-	-
GRAB	RMD-255	6000 Blk. Miller Road	2022-03-21 15:00	6	0.17	0.91	<2	<1	<1	-	-
GRAB	RMD-255	6000 Blk. Miller Road	2022-03-28 15:00	6	0.17	0.95	<2	<1	<1	-	-
GRAB	RMD-255	6000 Blk. Miller Road	2022-04-04 15:00	6	0.16	0.73	<2	<1	<1	-	-
GRAB	RMD-255	6000 Blk. Miller Road	2022-04-11 15:00	7	0.13	0.78	<2	<1	<1	-	-
GRAB	RMD-255	6000 Blk. Miller Road	2022-04-19 15:00	7	0.15	0.71	<2	<1	<1	-	-
GRAB	RMD-255	6000 Blk. Miller Road	2022-04-25 15:00	8	0.13	0.77	<2	<1	<1	-	-
GRAB	RMD-255	6000 Blk. Miller Road	2022-05-02 15:00	8	0.19	0.72	<2	<1	<1	-	-
GRAB	RMD-255	6000 Blk. Miller Road	2022-05-09 15:00	8	0.27	0.73	<2	<1	<1	-	-
GRAB	RMD-255	6000 Blk. Miller Road	2022-05-16 15:00	8	0.17	0.74	<2	<1	<1	-	-
GRAB	RMD-255	6000 Blk. Miller Road	2022-05-24 15:00	9	0.2	0.58	<2	<1	<1	-	-
GRAB	RMD-255	6000 Blk. Miller Road	2022-05-30 15:00	9	0.33	0.77	<2	<1	<1	-	-
GRAB	RMD-255	6000 Blk. Miller Road	2022-06-06 13:35	9	0.16	0.92	<2	<1	<1	-	-
GRAB	RMD-255	6000 Blk. Miller Road	2022-06-13 15:00	10	0.24	0.64	<2	<1	<1	-	-
GRAB	RMD-255	6000 Blk. Miller Road	2022-06-20 15:00	10	0.15	0.89	<2	<1	<1	-	-
GRAB	RMD-255	6000 Blk. Miller Road	2022-06-27 15:00	9	0.27	0.74	<2	<1	<1	-	-
GRAB	RMD-255	6000 Blk. Miller Road	2022-07-04 15:00	11	0.21	0.87	<2	<1	<1	-	-
GRAB	RMD-255	6000 Blk. Miller Road	2022-07-11 15:00	10	0.2	0.84	<2	<1	<1	-	-
GRAB	RMD-255	6000 Blk. Miller Road	2022-07-18 14:55	13	0.17	0.84	<2	<1	<1	-	-
GRAB	RMD-255	6000 Blk. Miller Road	2022-07-25 15:00	12	0.25	0.89	<2	<1	<1	-	-
GRAB	RMD-255	6000 Blk. Miller Road	2022-08-02 15:00	13	0.21	0.77	2	<1	<1	-	-
GRAB	RMD-255	6000 Blk. Miller Road	2022-08-08 15:00	13	0.22	0.6	4	<1	<1	-	-
GRAB	RMD-255	6000 Blk. Miller Road	2022-08-15 15:00	14	0.27	0.7	<2	<1	<1	-	-
GRAB	RMD-255	6000 Blk. Miller Road	2022-08-22 15:00	13	0.14	0.79	<2	<1	<1	-	-
GRAB	RMD-255	6000 Blk. Miller Road	2022-08-29 15:00	15	0.16	0.86	<2	<1	<1	-	-
GRAB	RMD-255	6000 Blk. Miller Road	2022-09-06 14:55	15	0.14	0.8	<2	<1	<1	-	-
GRAB	RMD-255	6000 Blk. Miller Road	2022-09-12 15:00	15	0.18	0.75	<2	<1	<1	-	-
GRAB	RMD-255	6000 Blk. Miller Road	2022-09-20 15:00	15	0.17	0.72	6	<1	<1	-	-
GRAB	RMD-255	6000 Blk. Miller Road	2022-09-26 15:00	15	0.18	0.88	6	<1	<1	-	-
GRAB	RMD-255	6000 Blk. Miller Road	2022-10-03 15:00	15	0.15	0.71	4	<1	<1	-	-
GRAB	RMD-255	6000 Blk. Miller Road	2022-10-11 14:55	15	0.12	0.79	2	<1	<1	-	-
GRAB	RMD-255	6000 Blk. Miller Road	2022-10-17 15:00	15	0.19	0.82	<2	<1	<1	-	-
GRAB	RMD-255	6000 Blk. Miller Road	2022-10-24 15:00	14	0.26	0.83	2	<1	<1	-	-
GRAB	RMD-255	6000 Blk. Miller Road	2022-10-31 15:00	11	0.24	0.78	<2	<1	<1	-	-
GRAB	RMD-255	6000 Blk. Miller Road	2022-11-07 15:00	10	0.22	0.79	<2	<1	<1	-	-
GRAB	RMD-255	6000 Blk. Miller Road	2022-11-14 15:00	9	0.14	0.78	<2	<1	<1	-	-
GRAB	RMD-255	6000 Blk. Miller Road	2022-11-21 15:00	8	0.2	0.65	<2	<1	<1	-	-
GRAB	RMD-255	6000 Blk. Miller Road	2022-11-28 15:00	8	0.13	0.81	<2	<1	<1	-	-
GRAB	RMD-255	6000 Blk. Miller Road	2022-12-05 15:00	6	0.24	0.53	<2	<1	<1	-	-
GRAB	RMD-255	6000 Blk. Miller Road	2022-12-12 15:00	6	0.16	0.91	<2	<1	<1	-	-
GRAB	RMD-256	1000 Blk. McDonald Road	2022-01-04 14:45	5	0.2	0.78	<2	<1	<1	-	-
GRAB	RMD-256	1000 Blk. McDonald Road	2022-01-10 14:40	5	0.12	0.68	<2	<1	<1	-	-
GRAB	RMD-256	1000 Blk. McDonald Road	2022-01-17 14:40	7	0.11	0.7	<2	<1	<1	-	-
GRAB	RMD-256	1000 Blk. McDonald Road	2022-01-24 14:40	7	0.13	0.8	<2	<1	<1	-	-
GRAB	RMD-256	1000 Blk. McDonald Road	2022-02-01 14:45	6	0.11	0.72	<2	<1	<1	-	-
GRAB	RMD-256	1000 Blk. McDonald Road	2022-02-07 14:25	6	0.16	0.73	<2	<1	<1	-	-
GRAB	RMD-256	1000 Blk. McDonald Road	2022-02-14 14:45	6	0.11	0.84	<2	<1	<1	-	-
GRAB	RMD-256	1000 Blk. McDonald Road	2022-02-22 14:45	5	0.12	1.2	<2	<1	<1	-	-
GRAB	RMD-256	1000 Blk. McDonald Road	2022-02-28 14:45	6	0.13	0.88	2	<1	<1	-	-
GRAB	RMD-256	1000 Blk. McDonald Road	2022-03-07 14:45	6	0.12	0.75	<2	<1	<1	-	-
GRAB	RMD-256	1000 Blk. McDonald Road	2022-03-14 14:45	6	0.16	0.75	<2	<1	<1	-	-
GRAB	RMD-256	1000 Blk. McDonald Road	2022-03-21 14:45	7	0.13	0.74	<2	<1	<1	-	-
GRAB	RMD-256	1000 Blk. McDonald Road	2022-03-28 14:45	7	0.12	1.01	<2	<1	<1	-	-
GRAB	RMD-256	1000 Blk. McDonald Road	2022-04-04 14:45	7	0.17	0.87	<2	<1	<1	-	-
GRAB	RMD-256	1000 Blk. McDonald Road	2022-04-11 14:45	8	0.14	0.77	<2	<1	<1	-	-
GRAB	RMD-256	1000 Blk. McDonald Road	2022-04-19 14:45	8	0.16	0.7	<2	<1	<1	-	-
GRAB	RMD-256	1000 Blk. McDonald Road	2022-04-25 14:45	8	0.15	0.8	<2	<1	<1	-	-
GRAB	RMD-256	1000 Blk. McDonald Road	2022-05-02 14:45	9	0.12	0.69	<2	<1	<1	-	-
GRAB	RMD-256	1000 Blk. McDonald Road	2022-05-09 14:45	9	0.17	0.57	2	<1	<1	-	-
GRAB	RMD-256	1000 Blk. McDonald Road	2022-05-16 14:45	9	0.11	0.67	4	<1	<1	-	-
GRAB	RMD-256	1000 Blk. McDonald Road	2022-05-24 14:45	10	0.12	0.99	<2	<1	<1	-	-
GRAB	RMD-256	1000 Blk. McDonald Road	2022-05-30 14:45	10	0.14	0.73	<2	<1	<1	-	-
GRAB	RMD-256	1000 Blk. McDonald Road	2022-06-06 13:20	12	0.12	0.63	<2	<1	<1	-	-

Sample Type	Water Sampling Station Number	Water Sampling Station Address	Sampled Date	Temperature (°C)	Turbidity (NTU)	Chlorine Free (mg/L)	HPC (CFU/mL)	Ecoli (CFU/100mLs)	Total Coliform (CFU/100mLs)	Ecoli (MPN/100mLs)	Total Coliform (MPN/100mLs)
GRAB	RMD-256	1000 Blk. McDonald Road	2022-06-13 14:45	13	0.14	0.46	<2	<1	<1	-	-
GRAB	RMD-256	1000 Blk. McDonald Road	2022-06-20 14:45	12	0.11	0.58	<2	<1	<1	-	-
GRAB	RMD-256	1000 Blk. McDonald Road	2022-06-27 14:45	13	0.21	0.76	2	<1	<1	-	-
GRAB	RMD-256	1000 Blk. McDonald Road	2022-07-04 14:45	13	0.13	0.67	2	<1	<1	-	-
GRAB	RMD-256	1000 Blk. McDonald Road	2022-07-11 14:45	13	0.12	0.8	4	<1	<1	-	-
GRAB	RMD-256	1000 Blk. McDonald Road	2022-07-18 14:40	14	0.1	0.68	2	<1	<1	-	-
GRAB	RMD-256	1000 Blk. McDonald Road	2022-07-25 14:45	14	0.13	0.68	4	<1	<1	-	-
GRAB	RMD-256	1000 Blk. McDonald Road	2022-08-02 14:45	16	0.14	0.66	4	<1	<1	-	-
GRAB	RMD-256	1000 Blk. McDonald Road	2022-08-08 14:45	15	0.16	0.64	26	<1	<1	-	-
GRAB	RMD-256	1000 Blk. McDonald Road	2022-08-15 14:45	15	0.12	0.62	10	<1	<1	-	-
GRAB	RMD-256	1000 Blk. McDonald Road	2022-08-22 14:45	16	0.13	0.83	18	<1	<1	-	-
GRAB	RMD-256	1000 Blk. McDonald Road	2022-08-29 14:45	16	0.1	0.69	22	<1	<1	-	-
GRAB	RMD-256	1000 Blk. McDonald Road	2022-09-06 14:40	18	0.1	0.65	32	<1	<1	-	-
GRAB	RMD-256	1000 Blk. McDonald Road	2022-09-12 14:45	17	0.15	0.63	26	<1	<1	-	-
GRAB	RMD-256	1000 Blk. McDonald Road	2022-09-20 14:45	17	0.09	0.6	12	<1	<1	-	-
GRAB	RMD-256	1000 Blk. McDonald Road	2022-09-26 14:45	16	0.1	0.72	12	<1	<1	-	-
GRAB	RMD-256	1000 Blk. McDonald Road	2022-10-03 14:45	17	0.1	0.63	30	<1	<1	-	-
GRAB	RMD-256	1000 Blk. McDonald Road	2022-10-11 14:40	16	0.11	0.58	130	<1	<1	-	-
GRAB	RMD-256	1000 Blk. McDonald Road	2022-10-17 14:45	15	0.12	0.69	8	<1	<1	-	-
GRAB	RMD-256	1000 Blk. McDonald Road	2022-10-24 14:45	15	0.1	0.73	6	<1	<1	-	-
GRAB	RMD-256	1000 Blk. McDonald Road	2022-10-31 14:45	13	0.13	0.58	28	<1	<1	-	-
GRAB	RMD-256	1000 Blk. McDonald Road	2022-11-07 14:45	11	0.18	0.69	<2	<1	<1	-	-
GRAB	RMD-256	1000 Blk. McDonald Road	2022-11-14 14:45	10	0.13	0.76	<2	<1	<1	-	-
GRAB	RMD-256	1000 Blk. McDonald Road	2022-11-21 14:45	9	0.1	0.67	<2	<1	<1	-	-
GRAB	RMD-256	1000 Blk. McDonald Road	2022-11-28 14:45	9	0.11	0.61	<2	<1	<1	-	-
GRAB	RMD-256	1000 Blk. McDonald Road	2022-12-05 14:45	7	0.12	0.79	<2	<1	<1	-	-
GRAB	RMD-256	1000 Blk. McDonald Road	2022-12-12 14:45	7	0.15	0.67	<2	<1	<1	-	-
GRAB	RMD-257	6640 Blundell Road	2022-01-05 15:45	5	0.12	0.88	<2	<1	<1	-	-
GRAB	RMD-257	6640 Blundell Road	2022-01-12 15:45	6	0.18	1.08	<2	<1	<1	-	-
GRAB	RMD-257	6640 Blundell Road	2022-01-18 15:45	6	0.17	1.39	<2	<1	<1	-	-
GRAB	RMD-257	6640 Blundell Road	2022-01-26 15:45	5	0.12	0.83	<2	<1	<1	-	-
GRAB	RMD-257	6640 Blundell Road	2022-02-02 15:45	6	1.1	0.74	<2	<1	<1	-	-
GRAB	RMD-257	6640 Blundell Road	2022-02-09 15:45	6	0.17	0.75	<2	<1	<1	-	-
GRAB	RMD-257	6640 Blundell Road	2022-02-16 15:45	6	0.11	0.76	<2	<1	<1	-	-
GRAB	RMD-257	6640 Blundell Road	2022-02-23 15:45	6	0.1	0.82	<2	<1	<1	-	-
GRAB	RMD-257	6640 Blundell Road	2022-03-02 15:45	6	0.13	0.74	<2	<1	<1	-	-
GRAB	RMD-257	6640 Blundell Road	2022-03-09 15:45	6	0.37	0.9	<2	<1	1	-	-
GRAB	RMD-257	6640 Blundell Road	2022-03-16 16:00	6	0.12	0.78	<2	<1	<1	-	-
GRAB	RMD-257	6640 Blundell Road	2022-03-23 15:45	6	0.17	0.89	<2	<1	<1	-	-
GRAB	RMD-257	6640 Blundell Road	2022-03-30 15:45	7	0.14	1.19	<2	<1	<1	-	-
GRAB	RMD-257	6640 Blundell Road	2022-04-06 15:50	7	0.2	1.08	<2	<1	<1	-	-
GRAB	RMD-257	6640 Blundell Road	2022-04-13 15:45	8	0.11	0.71	<2	<1	<1	-	-
GRAB	RMD-257	6640 Blundell Road	2022-04-20 15:45	8	0.71	0.79	<2	<1	<1	-	-
GRAB	RMD-257	6640 Blundell Road	2022-04-27 15:45	8	0.12	0.77	<2	<1	<1	-	-
GRAB	RMD-257	6640 Blundell Road	2022-05-04 15:45	9	0.21	0.77	<2	<1	<1	-	-
GRAB	RMD-257	6640 Blundell Road	2022-05-11 15:45	9	0.14	0.64	<2	<1	<1	-	-
GRAB	RMD-257	6640 Blundell Road	2022-05-18 15:45	9	0.09	0.68	<2	<1	<1	-	-
GRAB	RMD-257	6640 Blundell Road	2022-05-25 15:50	10	0.12	0.55	<2	<1	<1	-	-
GRAB	RMD-257	6640 Blundell Road	2022-06-01 15:45	9	0.15	1.22	<2	<1	<1	-	-
GRAB	RMD-257	6640 Blundell Road	2022-06-08 15:40	9	0.14	0.81	<2	<1	<1	-	-
GRAB	RMD-257	6640 Blundell Road	2022-06-15 15:45	9	0.13	0.59	<2	<1	<1	-	-
GRAB	RMD-257	6640 Blundell Road	2022-06-22 15:45	9	0.11	0.77	<2	<1	<1	-	-
GRAB	RMD-257	6640 Blundell Road	2022-06-28 15:45	9	0.14	0.77	<2	<1	<1	-	-
GRAB	RMD-257	6640 Blundell Road	2022-07-06 13:05	10	0.13	0.75	<2	<1	<1	-	-
GRAB	RMD-257	6640 Blundell Road	2022-07-13 15:45	10	0.17	0.73	<2	<1	<1	-	-
GRAB	RMD-257	6640 Blundell Road	2022-07-20 15:45	13	0.12	0.81	<2	<1	<1	-	-
GRAB	RMD-257	6640 Blundell Road	2022-07-27 15:45	13	0.14	0.67	<2	<1	<1	-	-
GRAB	RMD-257	6640 Blundell Road	2022-08-03 15:45	13	0.12	0.78	<2	<1	<1	-	-
GRAB	RMD-257	6640 Blundell Road	2022-08-10 15:45	14	0.12	0.58	<2	<1	<1	-	-
GRAB	RMD-257	6640 Blundell Road	2022-08-17 15:45	13	0.12	0.66	<2	<1	<1	-	-
GRAB	RMD-257	6640 Blundell Road	2022-08-25 15:45	14	0.13	0.76	<2	<1	<1	-	-
GRAB	RMD-257	6640 Blundell Road	2022-08-31 15:45	15	0.11	0.82	<2	<1	<1	-	-
GRAB	RMD-257	6640 Blundell Road	2022-09-07 15:45	15	0.12	0.72	<2	<1	<1	-	-
GRAB	RMD-257	6640 Blundell Road	2022-09-14 15:45	15	0.08	0.71	<2	<1	<1	-	-

Sample Type	Water Sampling Station Number	Water Sampling Station Address	Sampled Date	Temperature (°C)	Turbidity (NTU)	Chlorine Free (mg/L)	HPC (CFU/mL)	Ecoli (CFU/100mLs)	Total Coliform (CFU/100mLs)	Ecoli (MPN/100mLs)	Total Coliform (MPN/100mLs)
GRAB	RMD-257	6640 Blundell Road	2022-09-21 15:45	15	0.09	0.65	2	<1	<1	-	-
GRAB	RMD-257	6640 Blundell Road	2022-09-28 15:45	15	0.09	0.71	2	<1	<1	-	-
GRAB	RMD-257	6640 Blundell Road	2022-10-05 15:45	15	0.12	0.74	<2	<1	<1	-	-
GRAB	RMD-257	6640 Blundell Road	2022-10-12 15:45	15	0.11	0.67	2	<1	<1	-	-
GRAB	RMD-257	6640 Blundell Road	2022-10-19 15:45	15	0.2	0.75	<2	<1	<1	-	-
GRAB	RMD-257	6640 Blundell Road	2022-10-27 15:45	13	0.09	0.69	2	<1	<1	-	-
GRAB	RMD-257	6640 Blundell Road	2022-11-02 15:45	10	0.13	0.7	<2	<1	<1	-	-
GRAB	RMD-257	6640 Blundell Road	2022-11-09 15:45	9	0.13	0.74	<2	<1	<1	-	-
GRAB	RMD-257	6640 Blundell Road	2022-11-16 15:45	9	0.1	0.72	<2	<1	<1	-	-
GRAB	RMD-257	6640 Blundell Road	2022-11-23 15:45	8	0.11	0.65	<2	<1	<1	-	-
GRAB	RMD-257	6640 Blundell Road	2022-11-30 15:45	8	0.11	0.78	<2	<1	<1	-	-
GRAB	RMD-257	6640 Blundell Road	2022-12-07 15:45	7	0.13	0.75	<2	<1	<1	-	-
GRAB	RMD-257	6640 Blundell Road	2022-12-14 15:45	6	0.11	0.75	<2	<1	<1	-	-
GRAB	RMD-257	6640 Blundell Road	2022-12-21 15:45	5	0.19	0.78	NA	<1	<1	-	-
GRAB	RMD-258	7000 Blk. Dyke Road	2022-01-05 15:30	6	0.15	0.71	<2	<1	<1	-	-
GRAB	RMD-258	7000 Blk. Dyke Road	2022-01-12 15:25	6	0.11	0.84	<2	<1	<1	-	-
GRAB	RMD-258	7000 Blk. Dyke Road	2022-01-18 15:30	6	0.18	1.3	<2	<1	<1	-	-
GRAB	RMD-258	7000 Blk. Dyke Road	2022-01-26 15:30	6	0.11	0.97	<2	<1	<1	-	-
GRAB	RMD-258	7000 Blk. Dyke Road	2022-02-02 15:30	6	0.1	0.76	<2	<1	<1	-	-
GRAB	RMD-258	7000 Blk. Dyke Road	2022-02-09 15:30	6	0.15	0.69	<2	<1	<1	-	-
GRAB	RMD-258	7000 Blk. Dyke Road	2022-02-16 15:30	6	0.1	0.66	<2	<1	<1	-	-
GRAB	RMD-258	7000 Blk. Dyke Road	2022-02-23 15:30	6	0.1	0.78	<2	<1	<1	-	-
GRAB	RMD-258	7000 Blk. Dyke Road	2022-03-02 15:30	6	0.14	0.88	<2	<1	<1	-	-
GRAB	RMD-258	7000 Blk. Dyke Road	2022-03-09 15:30	5	0.28	0.88	<2	<1	<1	-	-
GRAB	RMD-258	7000 Blk. Dyke Road	2022-03-16 15:40	6	0.11	0.78	<2	<1	<1	-	-
GRAB	RMD-258	7000 Blk. Dyke Road	2022-03-23 15:30	7	0.13	0.67	<2	<1	<1	-	-
GRAB	RMD-258	7000 Blk. Dyke Road	2022-03-30 15:30	7	0.13	0.85	<2	<1	<1	-	-
GRAB	RMD-258	7000 Blk. Dyke Road	2022-04-06 15:35	7	0.15	0.77	<2	<1	<1	-	-
GRAB	RMD-258	7000 Blk. Dyke Road	2022-04-13 15:30	8	0.09	0.68	<2	<1	<1	-	-
GRAB	RMD-258	7000 Blk. Dyke Road	2022-04-20 15:30	8	0.1	0.81	<2	<1	<1	-	-
GRAB	RMD-258	7000 Blk. Dyke Road	2022-04-27 15:30	9	0.09	0.71	<2	<1	<1	-	-
GRAB	RMD-258	7000 Blk. Dyke Road	2022-05-04 15:30	10	0.16	0.68	<2	<1	<1	-	-
GRAB	RMD-258	7000 Blk. Dyke Road	2022-05-11 15:30	9	0.16	0.73	<2	<1	<1	-	-
GRAB	RMD-258	7000 Blk. Dyke Road	2022-05-18 15:30	10	0.17	0.7	<2	<1	<1	-	-
GRAB	RMD-258	7000 Blk. Dyke Road	2022-05-25 15:35	10	0.26	0.67	<2	<1	<1	-	-
GRAB	RMD-258	7000 Blk. Dyke Road	2022-06-01 15:25	9	0.21	0.95	2	<1	<1	-	-
GRAB	RMD-258	7000 Blk. Dyke Road	2022-06-08 15:25	11	0.16	0.72	<2	<1	<1	-	-
GRAB	RMD-258	7000 Blk. Dyke Road	2022-06-15 15:25	10	0.1	0.78	<2	<1	<1	-	-
GRAB	RMD-258	7000 Blk. Dyke Road	2022-06-22 15:25	10	0.14	0.96	<2	<1	<1	-	-
GRAB	RMD-258	7000 Blk. Dyke Road	2022-06-28 15:30	11	0.12	0.74	<2	<1	<1	-	-
GRAB	RMD-258	7000 Blk. Dyke Road	2022-07-06 12:50	11	0.23	0.74	<2	<1	<1	-	-
GRAB	RMD-258	7000 Blk. Dyke Road	2022-07-13 15:30	12	0.15	0.74	<2	<1	<1	-	-
GRAB	RMD-258	7000 Blk. Dyke Road	2022-07-20 15:25	14	1.5	0.78	26	<1	<1	-	-
GRAB	RMD-258	7000 Blk. Dyke Road	2022-07-27 15:25	14	0.08	0.71	<2	<1	<1	-	-
GRAB	RMD-258	7000 Blk. Dyke Road	2022-08-03 15:30	16	0.13	0.7	<2	<1	<1	-	-
GRAB	RMD-258	7000 Blk. Dyke Road	2022-08-10 15:25	15	0.09	0.53	<2	<1	<1	-	-
GRAB	RMD-258	7000 Blk. Dyke Road	2022-08-17 15:30	15	0.09	0.77	4	<1	<1	-	-
GRAB	RMD-258	7000 Blk. Dyke Road	2022-08-24 15:30	16	0.13	0.66	<2	<1	<1	-	-
GRAB	RMD-258	7000 Blk. Dyke Road	2022-08-31 15:30	16	0.08	0.74	<2	<1	<1	-	-
GRAB	RMD-258	7000 Blk. Dyke Road	2022-09-07 15:30	16	0.08	0.67	<2	<1	<1	-	-
GRAB	RMD-258	7000 Blk. Dyke Road	2022-09-14 15:30	16	0.07	0.62	<2	<1	<1	-	-
GRAB	RMD-258	7000 Blk. Dyke Road	2022-09-21 15:25	16	0.12	0.53	<2	<1	<1	-	-
GRAB	RMD-258	7000 Blk. Dyke Road	2022-09-28 15:30	16	0.12	0.6	6	<1	<1	-	-
GRAB	RMD-258	7000 Blk. Dyke Road	2022-10-05 15:30	16	0.09	0.59	4	<1	<1	-	-
GRAB	RMD-258	7000 Blk. Dyke Road	2022-10-12 15:30	16	0.1	0.52	2	<1	<1	-	-
GRAB	RMD-258	7000 Blk. Dyke Road	2022-10-19 15:30	15	0.21	0.53	<2	<1	<1	-	-
GRAB	RMD-258	7000 Blk. Dyke Road	2022-10-27 15:30	14	0.1	0.5	42	<1	<1	-	-
GRAB	RMD-258	7000 Blk. Dyke Road	2022-11-02 15:30	10	0.24	0.66	6	<1	<1	-	-
GRAB	RMD-258	7000 Blk. Dyke Road	2022-11-09 15:30	10	0.14	0.7	4	<1	<1	-	-
GRAB	RMD-258	7000 Blk. Dyke Road	2022-11-16 15:30	10	0.1	0.68	2	<1	<1	-	-
GRAB	RMD-258	7000 Blk. Dyke Road	2022-11-23 15:25	8	0.13	0.6	<2	<1	<1	-	-
GRAB	RMD-258	7000 Blk. Dyke Road	2022-11-30 15:30	9	0.1	0.78	<2	<1	<1	-	-
GRAB	RMD-258	7000 Blk. Dyke Road	2022-12-07 15:30	7	0.23	0.65	<2	<1	<1	-	-
GRAB	RMD-258	7000 Blk. Dyke Road	2022-12-14 15:23	7	0.1	0.8	<2	<1	<1	-	-

Sample Type	Water Sampling Station Number	Water Sampling Station Address	Sampled Date	Temperature (°C)	Turbidity (NTU)	Chlorine Free (mg/L)	HPC (CFU/mL)	E. coli (CFU/100mLs)	Total Coliform (CFU/100mLs)	E. coli (MPN/100mLs)	Total Coliform (MPN/100mLs)
GRAB	RMD-258	7000 Blk. Dyke Road	2022-12-21 15:25	5	0.11	0.65	NA	<1	<1	-	-
GRAB	RMD-259	10020 Amethyst Avenue	2022-01-05 14:40	5	0.17	0.87	<2	<1	<1	-	-
GRAB	RMD-259	10020 Amethyst Avenue	2022-01-12 14:40	7	0.12	1.16	<2	<1	<1	-	-
GRAB	RMD-259	10020 Amethyst Avenue	2022-01-18 14:40	6	0.15	1.38	<2	<1	<1	-	-
GRAB	RMD-259	10020 Amethyst Avenue	2022-01-26 14:45	7	0.19	0.9	<2	<1	<1	-	-
GRAB	RMD-259	10020 Amethyst Avenue	2022-02-02 14:45	6	0.13	0.69	<2	<1	<1	-	-
GRAB	RMD-259	10020 Amethyst Avenue	2022-02-09 14:45	6	0.14	0.6	<2	<1	<1	-	-
GRAB	RMD-259	10020 Amethyst Avenue	2022-02-16 14:40	7	0.11	0.79	<2	<1	<1	-	-
GRAB	RMD-259	10020 Amethyst Avenue	2022-02-23 14:40	7	0.1	0.93	<2	<1	<1	-	-
GRAB	RMD-259	10020 Amethyst Avenue	2022-03-02 14:40	6	0.11	0.72	<2	<1	<1	-	-
GRAB	RMD-259	10020 Amethyst Avenue	2022-03-09 14:40	6	0.31	0.96	<2	<1	<1	-	-
GRAB	RMD-259	10020 Amethyst Avenue	2022-03-16 14:50	6	0.14	0.72	<2	<1	<1	-	-
GRAB	RMD-259	10020 Amethyst Avenue	2022-03-23 14:45	7	0.14	0.75	<2	<1	<1	-	-
GRAB	RMD-259	10020 Amethyst Avenue	2022-03-30 14:45	7	0.17	0.84	<2	<1	<1	-	-
GRAB	RMD-259	10020 Amethyst Avenue	2022-04-06 14:50	9	0.14	0.78	<2	<1	<1	-	-
GRAB	RMD-259	10020 Amethyst Avenue	2022-04-13 14:45	8	0.15	0.66	<2	<1	<1	-	-
GRAB	RMD-259	10020 Amethyst Avenue	2022-04-20 14:45	8	0.21	0.76	<2	<1	<1	-	-
GRAB	RMD-259	10020 Amethyst Avenue	2022-04-27 14:40	9	0.09	0.66	<2	<1	<1	-	-
GRAB	RMD-259	10020 Amethyst Avenue	2022-05-04 14:40	9	0.14	0.67	<2	<1	<1	-	-
GRAB	RMD-259	10020 Amethyst Avenue	2022-05-11 14:40	9	0.12	0.74	<2	<1	<1	-	-
GRAB	RMD-259	10020 Amethyst Avenue	2022-05-18 14:40	9	0.13	0.64	<2	<1	<1	-	-
GRAB	RMD-259	10020 Amethyst Avenue	2022-05-25 14:50	10	0.15	0.68	<2	<1	<1	-	-
GRAB	RMD-259	10020 Amethyst Avenue	2022-06-01 14:40	10	0.15	0.65	<2	<1	<1	-	-
GRAB	RMD-259	10020 Amethyst Avenue	2022-06-08 14:40	11	0.14	0.8	2	<1	<1	-	-
GRAB	RMD-259	10020 Amethyst Avenue	2022-06-15 14:40	11	0.09	0.65	<2	<1	<1	-	-
GRAB	RMD-259	10020 Amethyst Avenue	2022-06-22 14:40	10	0.13	0.66	4	<1	<1	-	-
GRAB	RMD-259	10020 Amethyst Avenue	2022-06-28 14:40	12	0.12	0.76	2	<1	<1	-	-
GRAB	RMD-259	10020 Amethyst Avenue	2022-07-06 12:20	13	0.17	0.74	<2	<1	<1	-	-
GRAB	RMD-259	10020 Amethyst Avenue	2022-07-13 14:40	13	0.16	0.71	<2	<1	<1	-	-
GRAB	RMD-259	10020 Amethyst Avenue	2022-07-20 14:40	14	0.1	0.78	4	<1	<1	-	-
GRAB	RMD-259	10020 Amethyst Avenue	2022-07-27 14:40	13	0.09	0.66	6	<1	<1	-	-
GRAB	RMD-259	10020 Amethyst Avenue	2022-08-03 14:45	15	0.13	0.75	<2	<1	<1	-	-
GRAB	RMD-259	10020 Amethyst Avenue	2022-08-10 14:40	15	0.15	0.55	<2	<1	<1	-	-
GRAB	RMD-259	10020 Amethyst Avenue	2022-08-17 14:45	15	0.11	0.79	8	<1	<1	-	-
GRAB	RMD-259	10020 Amethyst Avenue	2022-08-24 14:45	17	0.13	0.81	<2	<1	<1	-	-
GRAB	RMD-259	10020 Amethyst Avenue	2022-08-31 14:45	16	0.1	0.8	<2	<1	<1	-	-
GRAB	RMD-259	10020 Amethyst Avenue	2022-09-07 14:45	16	0.08	0.62	<2	<1	<1	-	-
GRAB	RMD-259	10020 Amethyst Avenue	2022-09-14 14:40	17	0.09	0.63	4	<1	<1	-	-
GRAB	RMD-259	10020 Amethyst Avenue	2022-09-21 14:40	17	0.12	0.63	2	<1	<1	-	-
GRAB	RMD-259	10020 Amethyst Avenue	2022-09-28 14:45	16	0.11	0.64	<2	<1	<1	-	-
GRAB	RMD-259	10020 Amethyst Avenue	2022-10-05 14:40	16	0.1	0.62	8	<1	<1	-	-
GRAB	RMD-259	10020 Amethyst Avenue	2022-10-12 14:45	16	0.1	0.61	<2	<1	<1	-	-
GRAB	RMD-259	10020 Amethyst Avenue	2022-10-19 14:45	15	0.25	0.68	2	<1	<1	-	-
GRAB	RMD-259	10020 Amethyst Avenue	2022-10-27 14:40	14	0.11	0.62	4	<1	<1	-	-
GRAB	RMD-259	10020 Amethyst Avenue	2022-11-02 14:40	11	0.17	0.73	6	<1	<1	-	-
GRAB	RMD-259	10020 Amethyst Avenue	2022-11-09 14:45	10	0.12	0.79	<2	<1	<1	-	-
GRAB	RMD-259	10020 Amethyst Avenue	2022-11-16 14:25	10	0.11	0.66	<2	<1	<1	-	-
GRAB	RMD-259	10020 Amethyst Avenue	2022-11-23 14:40	9	0.12	0.66	<2	<1	<1	-	-
GRAB	RMD-259	10020 Amethyst Avenue	2022-11-30 14:45	9	0.11	0.84	<2	<1	<1	-	-
GRAB	RMD-259	10020 Amethyst Avenue	2022-12-07 14:40	8	0.17	0.78	<2	<1	<1	-	-
GRAB	RMD-259	10020 Amethyst Avenue	2022-12-14 14:40	7	0.11	0.76	4	<1	<1	-	-
GRAB	RMD-259	10020 Amethyst Avenue	2022-12-21 14:40	6	0.1	0.78	NA	<1	<1	-	-
GRAB	RMD-260	11111 Horseshoe Way	2022-01-05 14:25	5	0.16	0.73	<2	<1	<1	-	-
GRAB	RMD-260	11111 Horseshoe Way	2022-01-12 14:25	6	0.15	1.12	<2	<1	<1	-	-
GRAB	RMD-260	11111 Horseshoe Way	2022-01-18 14:25	6	0.16	1.22	<2	<1	<1	-	-
GRAB	RMD-260	11111 Horseshoe Way	2022-01-26 14:30	5	0.12	1.02	<2	<1	<1	-	-
GRAB	RMD-260	11111 Horseshoe Way	2022-02-02 14:30	5	0.24	0.81	<2	<1	<1	-	-
GRAB	RMD-260	11111 Horseshoe Way	2022-02-09 14:30	6	0.2	0.85	<2	<1	<1	-	-
GRAB	RMD-260	11111 Horseshoe Way	2022-02-16 14:25	5	0.12	0.91	2	<1	<1	-	-
GRAB	RMD-260	11111 Horseshoe Way	2022-02-23 14:25	6	0.13	0.92	<2	<1	<1	-	-
GRAB	RMD-260	11111 Horseshoe Way	2022-03-02 14:25	6	0.14	0.78	<2	<1	<1	-	-
GRAB	RMD-260	11111 Horseshoe Way	2022-03-09 14:25	6	0.51	0.91	<2	<1	<1	-	-
GRAB	RMD-260	11111 Horseshoe Way	2022-03-16 14:35	6	0.2	0.74	2	<1	<1	-	-
GRAB	RMD-260	11111 Horseshoe Way	2022-03-23 14:30	7	0.16	1.01	<2	<1	<1	-	-

Sample Type	Water Sampling Station Number	Water Sampling Station Address	Sampled Date	Temperature (°C)	Turbidity (NTU)	Chlorine Free (mg/L)	HPC (CFU/mL)	E. coli (CFU/100mLs)	Total Coliform (CFU/100mLs)	E. coli (MPN/100mLs)	Total Coliform (MPN/100mLs)
GRAB	RMD-260	11111 Horseshoe Way	2022-03-30 14:30	7	0.16	1.06	<2	<1	<1	-	-
GRAB	RMD-260	11111 Horseshoe Way	2022-04-06 14:35	7	0.16	0.85	<2	<1	<1	-	-
GRAB	RMD-260	11111 Horseshoe Way	2022-04-13 14:25	7	0.13	0.74	<2	<1	<1	-	-
GRAB	RMD-260	11111 Horseshoe Way	2022-04-20 14:30	8	0.12	0.79	<2	<1	<1	-	-
GRAB	RMD-260	11111 Horseshoe Way	2022-04-27 14:25	8	0.14	0.71	<2	<1	<1	-	-
GRAB	RMD-260	11111 Horseshoe Way	2022-05-04 14:25	9	0.14	0.75	<2	<1	<1	-	-
GRAB	RMD-260	11111 Horseshoe Way	2022-05-11 15:25	9	0.22	0.99	<2	<1	<1	-	-
GRAB	RMD-260	11111 Horseshoe Way	2022-05-18 14:25	9	0.09	0.66	<2	<1	<1	-	-
GRAB	RMD-260	11111 Horseshoe Way	2022-05-25 14:35	10	0.17	0.69	<2	<1	<1	-	-
GRAB	RMD-260	11111 Horseshoe Way	2022-06-01 14:25	9	0.13	0.65	<2	<1	<1	-	-
GRAB	RMD-260	11111 Horseshoe Way	2022-06-08 14:25	11	0.11	0.69	<2	<1	<1	-	-
GRAB	RMD-260	11111 Horseshoe Way	2022-06-15 14:25	10	0.12	0.72	<2	<1	<1	-	-
GRAB	RMD-260	11111 Horseshoe Way	2022-06-22 14:25	10	0.13	0.91	<2	<1	<1	-	-
GRAB	RMD-260	11111 Horseshoe Way	2022-06-28 14:25	10	0.16	0.77	<2	<1	<1	-	-
GRAB	RMD-260	11111 Horseshoe Way	2022-07-06 12:10	10	0.13	0.7	<2	<1	<1	-	-
GRAB	RMD-260	11111 Horseshoe Way	2022-07-13 14:25	12	0.14	0.78	<2	<1	<1	-	-
GRAB	RMD-260	11111 Horseshoe Way	2022-07-20 14:25	14	0.11	0.71	2	<1	<1	-	-
GRAB	RMD-260	11111 Horseshoe Way	2022-07-27 14:25	13	0.12	0.62	<2	<1	<1	-	-
GRAB	RMD-260	11111 Horseshoe Way	2022-08-03 14:30	15	0.16	0.66	2	<1	<1	-	-
GRAB	RMD-260	11111 Horseshoe Way	2022-08-10 14:25	15	0.11	0.53	<2	<1	<1	-	-
GRAB	RMD-260	11111 Horseshoe Way	2022-08-17 14:30	15	0.1	0.6	2	<1	<1	-	-
GRAB	RMD-260	11111 Horseshoe Way	2022-08-24 14:30	16	0.14	0.78	2	<1	<1	-	-
GRAB	RMD-260	11111 Horseshoe Way	2022-08-31 14:30	16	0.13	0.67	<2	<1	<1	-	-
GRAB	RMD-260	11111 Horseshoe Way	2022-09-07 14:30	16	0.11	0.65	<2	<1	<1	-	-
GRAB	RMD-260	11111 Horseshoe Way	2022-09-14 14:25	15	0.1	0.64	<2	<1	<1	-	-
GRAB	RMD-260	11111 Horseshoe Way	2022-09-21 14:25	16	0.43	0.6	<2	<1	<1	-	-
GRAB	RMD-260	11111 Horseshoe Way	2022-09-28 14:30	16	0.14	0.61	<2	<1	<1	-	-
GRAB	RMD-260	11111 Horseshoe Way	2022-10-05 14:25	16	0.09	0.65	<2	<1	<1	-	-
GRAB	RMD-260	11111 Horseshoe Way	2022-10-12 14:30	16	0.12	0.57	<2	<1	<1	-	-
GRAB	RMD-260	11111 Horseshoe Way	2022-10-19 14:30	15	0.15	0.59	<2	<1	<1	-	-
GRAB	RMD-260	11111 Horseshoe Way	2022-10-27 14:25	13	0.22	0.68	4	<1	<1	-	-
GRAB	RMD-260	11111 Horseshoe Way	2022-11-02 14:25	11	0.17	0.63	<2	<1	<1	-	-
GRAB	RMD-260	11111 Horseshoe Way	2022-11-09 14:30	10	0.13	0.71	<2	<1	<1	-	-
GRAB	RMD-260	11111 Horseshoe Way	2022-11-16 14:30	9	0.1	0.66	<2	<1	<1	-	-
GRAB	RMD-260	11111 Horseshoe Way	2022-11-23 14:25	8	0.19	0.67	<2	<1	<1	-	-
GRAB	RMD-260	11111 Horseshoe Way	2022-11-30 14:30	8	0.12	0.7	<2	<1	<1	-	-
GRAB	RMD-260	11111 Horseshoe Way	2022-12-07 14:25	7	0.13	0.63	<2	<1	<1	-	-
GRAB	RMD-260	11111 Horseshoe Way	2022-12-14 14:25	7	0.12	0.86	<2	<1	<1	-	-
GRAB	RMD-260	11111 Horseshoe Way	2022-12-21 14:25	6	0.19	0.64	NA	<1	<1	-	-
GRAB	RMD-261	9911 Sidaway Road	2022-01-05 14:10	6	0.26	0.92	<2	<1	<1	-	-
GRAB	RMD-261	9911 Sidaway Road	2022-01-12 14:10	6	0.22	0.93	<2	<1	<1	-	-
GRAB	RMD-261	9911 Sidaway Road	2022-01-18 14:10	6	0.14	0.97	<2	<1	<1	-	-
GRAB	RMD-261	9911 Sidaway Road	2022-01-26 14:15	7	0.14	0.61	<2	<1	<1	-	-
GRAB	RMD-261	9911 Sidaway Road	2022-02-02 14:15	6	0.11	0.77	<2	<1	<1	-	-
GRAB	RMD-261	9911 Sidaway Road	2022-02-09 14:15	6	0.14	0.62	<2	<1	<1	-	-
GRAB	RMD-261	9911 Sidaway Road	2022-02-16 14:10	6	0.12	0.55	<2	<1	<1	-	-
GRAB	RMD-261	9911 Sidaway Road	2022-02-23 14:10	6	0.09	1.02	8	<1	<1	-	-
GRAB	RMD-261	9911 Sidaway Road	2022-03-02 14:10	6	0.13	0.58	<2	<1	<1	-	-
GRAB	RMD-261	9911 Sidaway Road	2022-03-09 14:10	6	0.25	0.7	2	<1	<1	-	-
GRAB	RMD-261	9911 Sidaway Road	2022-03-16 14:20	6	0.1	0.7	<2	<1	<1	-	-
GRAB	RMD-261	9911 Sidaway Road	2022-03-23 14:15	7	0.11	0.7	<2	<1	<1	-	-
GRAB	RMD-261	9911 Sidaway Road	2022-03-30 14:15	7	0.15	0.87	<2	<1	<1	-	-
GRAB	RMD-261	9911 Sidaway Road	2022-04-06 14:20	9	0.11	0.56	<2	<1	<1	-	-
GRAB	RMD-261	9911 Sidaway Road	2022-04-13 14:10	8	0.08	0.61	<2	<1	<1	-	-
GRAB	RMD-261	9911 Sidaway Road	2022-04-20 14:15	8	0.08	0.62	<2	<1	<1	-	-
GRAB	RMD-261	9911 Sidaway Road	2022-04-27 14:10	8	0.07	0.97	<2	<1	<1	-	-
GRAB	RMD-261	9911 Sidaway Road	2022-05-04 14:10	9	0.08	0.63	<2	<1	<1	-	-
GRAB	RMD-261	9911 Sidaway Road	2022-05-11 14:10	10	0.11	0.63	<2	<1	<1	-	-
GRAB	RMD-261	9911 Sidaway Road	2022-05-18 14:10	10	0.2	0.66	60	<1	<1	-	-
GRAB	RMD-261	9911 Sidaway Road	2022-05-25 14:20	10	0.11	0.64	<2	<1	<1	-	-
GRAB	RMD-261	9911 Sidaway Road	2022-06-01 14:10	9	0.1	0.72	<2	<1	<1	-	-
GRAB	RMD-261	9911 Sidaway Road	2022-06-08 14:10	11	0.16	0.59	<2	<1	<1	-	-
GRAB	RMD-261	9911 Sidaway Road	2022-06-15 14:10	10	0.1	0.73	<2	<1	<1	-	-
GRAB	RMD-261	9911 Sidaway Road	2022-06-22 14:10	10	0.1	0.78	<2	<1	<1	-	-

Sample Type	Water Sampling Station Number	Water Sampling Station Address	Sampled Date	Temperature (°C)	Turbidity (NTU)	Chlorine Free (mg/L)	HPC (CFU/mL)	E. coli (CFU/100mLs)	Total Coliform (CFU/100mLs)	E. coli (MPN/100mLs)	Total Coliform (MPN/100mLs)
GRAB	RMD-261	9911 Sidaway Road	2022-06-28 14:10	10	0.09	0.72	<2	<1	<1	-	-
GRAB	RMD-261	9911 Sidaway Road	2022-07-06 12:00	11	0.12	0.69	<2	<1	<1	-	-
GRAB	RMD-261	9911 Sidaway Road	2022-07-13 14:10	13	0.16	0.58	<2	<1	<1	-	-
GRAB	RMD-261	9911 Sidaway Road	2022-07-20 14:10	13	0.12	0.69	<2	<1	<1	-	-
GRAB	RMD-261	9911 Sidaway Road	2022-07-27 14:10	13	0.12	0.58	<2	<1	<1	-	-
GRAB	RMD-261	9911 Sidaway Road	2022-08-03 14:10	15	0.1	0.74	<2	<1	<1	-	-
GRAB	RMD-261	9911 Sidaway Road	2022-08-10 14:10	14	0.14	0.58	<2	<1	<1	-	-
GRAB	RMD-261	9911 Sidaway Road	2022-08-17 14:15	15	0.09	0.72	<2	<1	<1	-	-
GRAB	RMD-261	9911 Sidaway Road	2022-08-24 14:15	16	0.1	0.67	4	<1	<1	-	-
GRAB	RMD-261	9911 Sidaway Road	2022-08-31 14:15	16	0.08	0.75	<2	<1	<1	-	-
GRAB	RMD-261	9911 Sidaway Road	2022-09-07 14:15	16	0.09	0.67	<2	<1	<1	-	-
GRAB	RMD-261	9911 Sidaway Road	2022-09-14 14:10	16	0.09	0.71	<2	<1	<1	-	-
GRAB	RMD-261	9911 Sidaway Road	2022-09-21 14:10	16	0.13	0.58	2	<1	<1	-	-
GRAB	RMD-261	9911 Sidaway Road	2022-09-28 14:15	16	0.2	0.54	<2	<1	<1	-	-
GRAB	RMD-261	9911 Sidaway Road	2022-10-05 14:10	15	0.12	0.71	<2	<1	<1	-	-
GRAB	RMD-261	9911 Sidaway Road	2022-10-12 14:15	16	0.09	0.53	<2	<1	<1	-	-
GRAB	RMD-261	9911 Sidaway Road	2022-10-19 14:15	15	0.16	0.63	<2	<1	<1	-	-
GRAB	RMD-261	9911 Sidaway Road	2022-10-27 14:10	14	0.12	0.56	2	<1	<1	-	-
GRAB	RMD-261	9911 Sidaway Road	2022-11-02 14:10	10	0.12	0.58	<2	<1	<1	-	-
GRAB	RMD-261	9911 Sidaway Road	2022-11-09 14:15	10	0.15	0.74	<2	<1	<1	-	-
GRAB	RMD-261	9911 Sidaway Road	2022-11-16 14:15	10	0.1	0.7	<2	<1	<1	-	-
GRAB	RMD-261	9911 Sidaway Road	2022-11-23 14:10	8	0.14	0.73	<2	<1	<1	-	-
GRAB	RMD-261	9911 Sidaway Road	2022-11-30 14:15	8	0.12	0.73	<2	<1	<1	-	-
GRAB	RMD-261	9911 Sidaway Road	2022-12-07 14:10	7	0.15	0.64	<2	<1	<1	-	-
GRAB	RMD-261	9911 Sidaway Road	2022-12-14 14:10	7	0.11	0.63	<2	<1	<1	-	-
GRAB	RMD-261	9911 Sidaway Road	2022-12-21 14:10	5	0.2	0.61	NA	<1	<1	-	-
GRAB	RMD-262	13799 Commerce Parkway	2022-01-05 13:15	6	0.17	0.68	<2	<1	<1	-	-
GRAB	RMD-262	13799 Commerce Parkway	2022-01-12 13:20	6	0.18	0.91	<2	<1	<1	-	-
GRAB	RMD-262	13799 Commerce Parkway	2022-01-18 13:20	6	0.14	1.02	<2	<1	<1	-	-
GRAB	RMD-262	13799 Commerce Parkway	2022-01-26 13:30	6	0.16	0.93	<2	<1	<1	-	-
GRAB	RMD-262	13799 Commerce Parkway	2022-02-02 13:25	6	0.16	0.69	2	<1	<1	-	-
GRAB	RMD-262	13799 Commerce Parkway	2022-02-09 13:30	6	0.19	0.6	2	<1	<1	-	-
GRAB	RMD-262	13799 Commerce Parkway	2022-02-16 13:15	6	0.11	0.64	<2	<1	<1	-	-
GRAB	RMD-262	13799 Commerce Parkway	2022-02-23 13:15	6	0.29	0.84	<2	<1	<1	-	-
GRAB	RMD-262	13799 Commerce Parkway	2022-03-02 13:15	6	0.2	0.69	2	<1	<1	-	-
GRAB	RMD-262	13799 Commerce Parkway	2022-03-09 13:15	6	0.34	0.7	<2	<1	<1	-	-
GRAB	RMD-262	13799 Commerce Parkway	2022-03-16 13:30	6	0.16	0.63	<2	<1	<1	-	-
GRAB	RMD-262	13799 Commerce Parkway	2022-03-23 13:25	7	0.12	0.85	<2	<1	<1	-	-
GRAB	RMD-262	13799 Commerce Parkway	2022-03-30 13:30	7	0.13	0.81	<2	<1	<1	-	-
GRAB	RMD-262	13799 Commerce Parkway	2022-04-06 13:20	7	0.22	0.75	<2	<1	<1	-	-
GRAB	RMD-262	13799 Commerce Parkway	2022-04-13 13:20	8	0.33	0.65	2	<1	<1	-	-
GRAB	RMD-262	13799 Commerce Parkway	2022-04-20 13:20	8	0.3	0.71	<2	<1	<1	-	-
GRAB	RMD-262	13799 Commerce Parkway	2022-04-27 13:15	8	0.09	0.86	<2	<1	<1	-	-
GRAB	RMD-262	13799 Commerce Parkway	2022-05-04 13:15	8	0.09	0.74	<2	<1	<1	-	-
GRAB	RMD-262	13799 Commerce Parkway	2022-05-11 13:15	9	0.1	0.67	2	<1	<1	-	-
GRAB	RMD-262	13799 Commerce Parkway	2022-05-18 13:15	9	0.1	0.72	2	<1	<1	-	-
GRAB	RMD-262	13799 Commerce Parkway	2022-05-25 13:20	11	0.12	0.62	<2	<1	<1	-	-
GRAB	RMD-262	13799 Commerce Parkway	2022-06-01 13:20	8	0.12	0.57	<2	<1	<1	-	-
GRAB	RMD-262	13799 Commerce Parkway	2022-06-08 13:15	10	0.16	0.65	6	<1	<1	-	-
GRAB	RMD-262	13799 Commerce Parkway	2022-06-15 13:20	9	0.13	0.84	<2	<1	<1	-	-
GRAB	RMD-262	13799 Commerce Parkway	2022-06-22 13:20	10	0.15	0.79	<2	<1	<1	-	-
GRAB	RMD-262	13799 Commerce Parkway	2022-06-28 13:15	10	0.11	0.81	<2	<1	<1	-	-
GRAB	RMD-262	13799 Commerce Parkway	2022-07-06 11:20	11	0.12	0.82	2	<1	<1	-	-
GRAB	RMD-262	13799 Commerce Parkway	2022-07-13 13:15	12	0.13	0.65	<2	<1	<1	-	-
GRAB	RMD-262	13799 Commerce Parkway	2022-07-20 13:20	13	0.13	0.74	<2	<1	<1	-	-
GRAB	RMD-262	13799 Commerce Parkway	2022-07-27 13:20	12	0.16	0.6	<2	<1	<1	-	-
GRAB	RMD-262	13799 Commerce Parkway	2022-08-03 13:15	14	0.18	0.67	<2	<1	<1	-	-
GRAB	RMD-262	13799 Commerce Parkway	2022-08-10 13:20	14	0.17	0.61	<2	<1	<1	-	-
GRAB	RMD-262	13799 Commerce Parkway	2022-08-17 13:30	15	0.11	0.66	2	<1	<1	-	-
GRAB	RMD-262	13799 Commerce Parkway	2022-08-24 13:20	15	0.16	0.72	<2	<1	<1	-	-
GRAB	RMD-262	13799 Commerce Parkway	2022-08-31 13:20	16	0.1	0.7	<2	<1	<1	-	-
GRAB	RMD-262	13799 Commerce Parkway	2022-09-07 13:25	16	0.18	0.65	<2	<1	<1	-	-
GRAB	RMD-262	13799 Commerce Parkway	2022-09-14 13:15	16	0.11	0.67	6	<1	<1	-	-
GRAB	RMD-262	13799 Commerce Parkway	2022-09-21 13:20	16	0.2	0.55	2	<1	<1	-	-

Sample Type	Water Sampling Station Number	Water Sampling Station Address	Sampled Date	Temperature (°C)	Turbidity (NTU)	Chlorine Free (mg/L)	HPC (CFU/mL)	Ecoli (CFU/100mLs)	Total Coliform (CFU/100mLs)	Ecoli (MPN/100mLs)	Total Coliform (MPN/100mLs)
GRAB	RMD-262	13799 Commerce Parkway	2022-09-28 13:20	16	0.13	0.62	<2	<1	<1	-	-
GRAB	RMD-262	13799 Commerce Parkway	2022-10-05 13:15	15	0.13	0.73	<2	<1	<1	-	-
GRAB	RMD-262	13799 Commerce Parkway	2022-10-12 13:20	15	0.12	0.64	<2	<1	<1	-	-
GRAB	RMD-262	13799 Commerce Parkway	2022-10-19 13:20	15	0.67	0.71	<2	<1	<1	-	-
GRAB	RMD-262	13799 Commerce Parkway	2022-10-27 13:15	13	0.21	0.75	<2	<1	<1	-	-
GRAB	RMD-262	13799 Commerce Parkway	2022-11-02 13:15	10	0.14	0.72	4	<1	<1	-	-
GRAB	RMD-262	13799 Commerce Parkway	2022-11-09 13:20	10	0.14	0.72	<2	<1	<1	-	-
GRAB	RMD-262	13799 Commerce Parkway	2022-11-16 13:20	10	0.12	0.7	<2	<1	<1	-	-
GRAB	RMD-262	13799 Commerce Parkway	2022-11-23 13:20	8	0.21	0.67	<2	<1	<1	-	-
GRAB	RMD-262	13799 Commerce Parkway	2022-11-30 13:20	8	0.13	0.7	<2	<1	<1	-	-
GRAB	RMD-262	13799 Commerce Parkway	2022-12-07 13:15	7	0.14	0.65	<2	<1	<1	-	-
GRAB	RMD-262	13799 Commerce Parkway	2022-12-14 13:20	6	0.11	0.92	<2	<1	<1	-	-
GRAB	RMD-262	13799 Commerce Parkway	2022-12-21 13:20	6	0.25	0.79	NA	<1	<1	-	-
GRAB	RMD-263	12560 Cambie Road	2022-01-05 12:30	5	0.22	0.77	<2	<1	<1	-	-
GRAB	RMD-263	12560 Cambie Road	2022-01-12 12:30	6	0.17	1.17	<2	<1	<1	-	-
GRAB	RMD-263	12560 Cambie Road	2022-01-18 12:30	6	0.15	1.21	<2	<1	<1	-	-
GRAB	RMD-263	12560 Cambie Road	2022-01-26 12:30	6	0.34	1.03	<2	<1	<1	-	-
GRAB	RMD-263	12560 Cambie Road	2022-02-02 12:30	6	0.17	0.79	<2	<1	<1	-	-
GRAB	RMD-263	12560 Cambie Road	2022-02-09 12:30	6	0.18	0.74	<2	<1	<1	-	-
GRAB	RMD-263	12560 Cambie Road	2022-02-16 12:30	6	0.11	0.75	<2	<1	<1	-	-
GRAB	RMD-263	12560 Cambie Road	2022-02-23 12:30	6	0.12	0.82	<2	<1	<1	-	-
GRAB	RMD-263	12560 Cambie Road	2022-03-02 12:30	6	0.1	0.72	<2	<1	<1	-	-
GRAB	RMD-263	12560 Cambie Road	2022-03-09 12:30	6	0.4	0.96	<2	<1	<1	-	-
GRAB	RMD-263	12560 Cambie Road	2022-03-16 12:30	6	0.18	0.69	<2	<1	<1	-	-
GRAB	RMD-263	12560 Cambie Road	2022-03-23 12:30	7	0.15	1	<2	<1	<1	-	-
GRAB	RMD-263	12560 Cambie Road	2022-03-30 12:30	7	0.13	0.89	<2	<1	<1	-	-
GRAB	RMD-263	12560 Cambie Road	2022-04-06 12:30	7	0.15	0.9	<2	<1	<1	-	-
GRAB	RMD-263	12560 Cambie Road	2022-04-13 12:30	8	0.1	0.74	<2	<1	<1	-	-
GRAB	RMD-263	12560 Cambie Road	2022-04-20 12:30	8	0.15	0.81	<2	<1	<1	-	-
GRAB	RMD-263	12560 Cambie Road	2022-04-27 12:30	8	0.1	0.86	<2	<1	<1	-	-
GRAB	RMD-263	12560 Cambie Road	2022-05-04 12:30	9	0.16	0.69	<2	<1	<1	-	-
GRAB	RMD-263	12560 Cambie Road	2022-05-11 12:30	9	0.14	0.84	2	<1	<1	-	-
GRAB	RMD-263	12560 Cambie Road	2022-05-18 12:30	9	0.23	0.76	<2	<1	<1	-	-
GRAB	RMD-263	12560 Cambie Road	2022-05-25 12:30	10	0.12	0.61	<2	<1	<1	-	-
GRAB	RMD-263	12560 Cambie Road	2022-06-01 12:30	9	0.14	0.63	<2	<1	<1	-	-
GRAB	RMD-263	12560 Cambie Road	2022-06-08 12:30	10	0.12	0.76	2	<1	<1	-	-
GRAB	RMD-263	12560 Cambie Road	2022-06-15 12:30	9	0.11	0.77	<2	<1	<1	-	-
GRAB	RMD-263	12560 Cambie Road	2022-06-22 12:30	10	0.13	1.14	<2	<1	<1	-	-
GRAB	RMD-263	12560 Cambie Road	2022-06-28 12:30	10	0.13	0.75	<2	<1	<1	-	-
GRAB	RMD-263	12560 Cambie Road	2022-07-06 10:45	11	0.38	0.54	<2	<1	<1	-	-
GRAB	RMD-263	12560 Cambie Road	2022-07-13 12:30	11	0.17	0.63	<2	<1	<1	-	-
GRAB	RMD-263	12560 Cambie Road	2022-07-20 12:30	13	0.13	0.69	2	<1	<1	-	-
GRAB	RMD-263	12560 Cambie Road	2022-07-27 12:30	12	0.2	0.66	<2	<1	<1	-	-
GRAB	RMD-263	12560 Cambie Road	2022-08-03 12:30	14	0.13	0.69	4	<1	<1	-	-
GRAB	RMD-263	12560 Cambie Road	2022-08-10 12:30	14	0.12	0.58	<2	<1	<1	-	-
GRAB	RMD-263	12560 Cambie Road	2022-08-17 12:30	15	0.11	0.75	<2	<1	<1	-	-
GRAB	RMD-263	12560 Cambie Road	2022-08-24 12:30	15	0.14	0.9	2	<1	<1	-	-
GRAB	RMD-263	12560 Cambie Road	2022-08-31 12:30	16	0.1	0.78	<2	<1	<1	-	-
GRAB	RMD-263	12560 Cambie Road	2022-09-07 12:30	16	0.09	0.67	<2	<1	<1	-	-
GRAB	RMD-263	12560 Cambie Road	2022-09-14 12:30	16	0.08	0.69	4	<1	<1	-	-
GRAB	RMD-263	12560 Cambie Road	2022-09-21 12:30	16	0.14	0.63	2	<1	<1	-	-
GRAB	RMD-263	12560 Cambie Road	2022-09-28 12:30	16	0.12	0.75	2	<1	<1	-	-
GRAB	RMD-263	12560 Cambie Road	2022-10-05 12:30	15	0.12	0.77	38	<1	<1	-	-
GRAB	RMD-263	12560 Cambie Road	2022-10-12 12:30	16	0.17	0.66	<2	<1	<1	-	-
GRAB	RMD-263	12560 Cambie Road	2022-10-19 12:30	15	0.23	0.71	16	<1	<1	-	-
GRAB	RMD-263	12560 Cambie Road	2022-10-27 12:30	13	0.16	0.94	2	<1	<1	-	-
GRAB	RMD-263	12560 Cambie Road	2022-11-02 12:30	10	0.13	0.64	<2	<1	<1	-	-
GRAB	RMD-263	12560 Cambie Road	2022-11-09 12:30	10	0.16	0.76	<2	<1	<1	-	-
GRAB	RMD-263	12560 Cambie Road	2022-11-16 12:30	9	0.18	0.74	<2	<1	<1	-	-
GRAB	RMD-263	12560 Cambie Road	2022-11-23 12:30	8	0.22	0.66	<2	<1	<1	-	-
GRAB	RMD-263	12560 Cambie Road	2022-11-30 12:30	8	0.14	0.78	<2	<1	<1	-	-
GRAB	RMD-263	12560 Cambie Road	2022-12-07 12:30	7	0.16	0.82	<2	<1	<1	-	-
GRAB	RMD-263	12560 Cambie Road	2022-12-14 12:30	7	0.11	0.85	<2	<1	<1	-	-
GRAB	RMD-263	12560 Cambie Road	2022-12-21 12:30	6	0.13	0.82	NA	<1	<1	-	-

Sample Type	Water Sampling Station Number	Water Sampling Station Address	Sampled Date	Temperature (°C)	Turbidity (NTU)	Chlorine Free (mg/L)	HPC (CFU/mL)	Ecoli (CFU/100mLs)	Total Coliform (CFU/100mLs)	Ecoli (MPN/100mLs)	Total Coliform (MPN/100mLs)
GRAB	RMD-264	13100 Mitchell Road	2022-01-05 12:45	5	0.2	0.8	<2	<1	<1	-	-
GRAB	RMD-264	13100 Mitchell Road	2022-01-12 12:45	6	0.14	1.15	<2	<1	<1	-	-
GRAB	RMD-264	13100 Mitchell Road	2022-01-18 13:00	6	0.26	1.22	<2	<1	<1	-	-
GRAB	RMD-264	13100 Mitchell Road	2022-01-26 13:10	6	0.14	0.97	<2	<1	<1	-	-
GRAB	RMD-264	13100 Mitchell Road	2022-02-02 13:05	6	0.18	0.77	<2	<1	<1	-	-
GRAB	RMD-264	13100 Mitchell Road	2022-02-09 13:10	6	0.16	0.74	<2	<1	<1	-	-
GRAB	RMD-264	13100 Mitchell Road	2022-02-16 13:00	6	0.11	0.71	<2	<1	<1	-	-
GRAB	RMD-264	13100 Mitchell Road	2022-02-23 12:45	7	0.17	1.15	<2	<1	<1	-	-
GRAB	RMD-264	13100 Mitchell Road	2022-03-02 12:45	6	0.12	0.72	4	<1	<1	-	-
GRAB	RMD-264	13100 Mitchell Road	2022-03-09 12:45	6	0.32	0.95	<2	<1	<1	-	-
GRAB	RMD-264	13100 Mitchell Road	2022-03-16 13:10	6	0.42	0.72	<2	<1	<1	-	-
GRAB	RMD-264	13100 Mitchell Road	2022-03-23 13:05	7	0.15	0.76	<2	<1	<1	-	-
GRAB	RMD-264	13100 Mitchell Road	2022-03-30 13:10	7	0.14	0.93	<2	<1	<1	-	-
GRAB	RMD-264	13100 Mitchell Road	2022-04-06 13:05	7	0.23	0.73	<2	<1	<1	-	-
GRAB	RMD-264	13100 Mitchell Road	2022-04-13 13:00	8	0.11	0.72	<2	<1	<1	-	-
GRAB	RMD-264	13100 Mitchell Road	2022-04-20 13:05	8	0.13	0.62	<2	<1	<1	-	-
GRAB	RMD-264	13100 Mitchell Road	2022-04-27 12:45	9	0.12	0.68	<2	<1	<1	-	-
GRAB	RMD-264	13100 Mitchell Road	2022-05-04 12:45	9	0.19	0.64	<2	<1	<1	-	-
GRAB	RMD-264	13100 Mitchell Road	2022-05-11 12:45	9	1	0.89	<2	<1	<1	-	-
GRAB	RMD-264	13100 Mitchell Road	2022-05-18 12:45	9	0.1	0.74	<2	<1	<1	-	-
GRAB	RMD-264	13100 Mitchell Road	2022-05-25 13:00	10	0.11	0.61	<2	<1	<1	-	-
GRAB	RMD-264	13100 Mitchell Road	2022-06-01 13:00	11	0.11	0.79	<2	<1	<1	-	-
GRAB	RMD-264	13100 Mitchell Road	2022-06-08 13:00	13	0.16	0.49	2	<1	<1	-	-
GRAB	RMD-264	13100 Mitchell Road	2022-06-15 13:00	13	0.15	0.57	4	<1	<1	-	-
GRAB	RMD-264	13100 Mitchell Road	2022-06-22 13:00	10	0.11	0.71	<2	<1	<1	-	-
GRAB	RMD-264	13100 Mitchell Road	2022-06-28 12:45	11	0.12	0.82	<2	<1	<1	-	-
GRAB	RMD-264	13100 Mitchell Road	2022-07-06 11:05	14	0.12	0.68	<2	<1	<1	-	-
GRAB	RMD-264	13100 Mitchell Road	2022-07-13 12:45	13	0.18	0.79	8	<1	<1	-	-
GRAB	RMD-264	13100 Mitchell Road	2022-07-20 13:00	13	0.29	0.67	<2	<1	<1	-	-
GRAB	RMD-264	13100 Mitchell Road	2022-07-27 13:00	12	0.18	0.66	<2	<1	<1	-	-
GRAB	RMD-264	13100 Mitchell Road	2022-08-03 13:00	14	0.16	0.73	<2	<1	<1	-	-
GRAB	RMD-264	13100 Mitchell Road	2022-08-10 13:00	15	0.15	0.64	8	<1	<1	-	-
GRAB	RMD-264	13100 Mitchell Road	2022-08-17 13:10	15	0.1	0.76	<2	<1	<1	-	-
GRAB	RMD-264	13100 Mitchell Road	2022-08-24 13:05	16	0.21	0.76	8	<1	<1	-	-
GRAB	RMD-264	13100 Mitchell Road	2022-08-31 13:00	16	0.12	0.77	8	<1	<1	-	-
GRAB	RMD-264	13100 Mitchell Road	2022-09-07 13:05	16	0.09	0.67	<2	<1	<1	-	-
GRAB	RMD-264	13100 Mitchell Road	2022-09-14 12:45	16	0.09	0.66	34	<1	<1	-	-
GRAB	RMD-264	13100 Mitchell Road	2022-09-21 13:00	16	0.12	0.64	2	<1	<1	-	-
GRAB	RMD-264	13100 Mitchell Road	2022-09-28 13:05	16	0.15	0.79	6	<1	<1	-	-
GRAB	RMD-264	13100 Mitchell Road	2022-10-05 12:45	15	0.22	0.87	4	<1	<1	-	-
GRAB	RMD-264	13100 Mitchell Road	2022-10-12 13:05	16	0.13	0.72	2	<1	<1	-	-
GRAB	RMD-264	13100 Mitchell Road	2022-10-19 13:05	15	0.18	0.68	<2	<1	<1	-	-
GRAB	RMD-264	13100 Mitchell Road	2022-10-27 12:45	13	0.12	0.61	2	<1	<1	-	-
GRAB	RMD-264	13100 Mitchell Road	2022-11-02 12:45	10	0.15	0.68	<2	<1	<1	-	-
GRAB	RMD-264	13100 Mitchell Road	2022-11-09 13:05	10	0.15	0.86	<2	<1	<1	-	-
GRAB	RMD-264	13100 Mitchell Road	2022-11-16 13:05	10	0.11	0.71	<2	<1	<1	-	-
GRAB	RMD-264	13100 Mitchell Road	2022-11-23 13:00	8	0.15	0.75	280	<1	<1	-	-
GRAB	RMD-264	13100 Mitchell Road	2022-11-30 13:05	8	0.13	0.77	<2	<1	<1	-	-
GRAB	RMD-264	13100 Mitchell Road	2022-12-07 12:45	7	0.12	0.8	<2	<1	<1	-	-
GRAB	RMD-264	13100 Mitchell Road	2022-12-14 13:00	7	0.26	0.91	<2	<1	<1	-	-
GRAB	RMD-264	13100 Mitchell Road	2022-12-21 13:00	5	0.14	0.69	NA	<1	<1	-	-
GRAB	RMD-266	9380 General Currie Road	2022-01-05 14:55	5	0.15	1.21	<2	<1	<1	-	-
GRAB	RMD-266	9380 General Currie Road	2022-01-12 14:55	5	0.15	1.05	<2	<1	<1	-	-
GRAB	RMD-266	9380 General Currie Road	2022-01-18 15:00	7	0.12	1.39	<2	<1	<1	-	-
GRAB	RMD-266	9380 General Currie Road	2022-01-26 15:00	5	0.15	1.04	<2	<1	<1	-	-
GRAB	RMD-266	9380 General Currie Road	2022-02-02 15:00	6	0.16	0.78	<2	<1	<1	-	-
GRAB	RMD-266	9380 General Currie Road	2022-02-09 15:00	6	0.16	0.73	<2	<1	<1	-	-
GRAB	RMD-266	9380 General Currie Road	2022-02-16 14:55	6	0.11	0.88	<2	<1	<1	-	-
GRAB	RMD-266	9380 General Currie Road	2022-02-23 14:55	6	0.14	0.98	<2	<1	<1	-	-
GRAB	RMD-266	9380 General Currie Road	2022-03-02 14:55	6	0.11	0.7	<2	<1	<1	-	-
GRAB	RMD-266	9380 General Currie Road	2022-03-09 14:55	6	0.43	1.01	<2	<1	<1	-	-
GRAB	RMD-266	9380 General Currie Road	2022-03-16 15:05	6	0.18	0.8	<2	<1	<1	-	-
GRAB	RMD-266	9380 General Currie Road	2022-03-23 15:00	7	0.19	1.1	<2	<1	<1	-	-
GRAB	RMD-266	9380 General Currie Road	2022-03-30 15:00	7	0.16	0.94	<2	<1	<1	-	-

Sample Type	Water Sampling Station Number	Water Sampling Station Address	Sampled Date	Temperature (°C)	Turbidity (NTU)	Chlorine Free (mg/L)	HPC (CFU/mL)	E. coli (CFU/100mLs)	Total Coliform (CFU/100mLs)	E. coli (MPN/100mLs)	Total Coliform (MPN/100mLs)
GRAB	RMD-266	9380 General Currie Road	2022-04-06 15:05	8	0.19	0.88	<2	<1	<1	-	-
GRAB	RMD-266	9380 General Currie Road	2022-04-13 15:00	8	0.12	0.75	<2	<1	<1	-	-
GRAB	RMD-266	9380 General Currie Road	2022-04-20 15:00	8	0.27	0.8	<2	<1	<1	-	-
GRAB	RMD-266	9380 General Currie Road	2022-04-27 14:55	8	0.12	0.75	<2	<1	<1	-	-
GRAB	RMD-266	9380 General Currie Road	2022-05-04 14:55	9	0.2	0.74	<2	<1	<1	-	-
GRAB	RMD-266	9380 General Currie Road	2022-05-11 14:55	9	0.15	0.86	2	<1	<1	-	-
GRAB	RMD-266	9380 General Currie Road	2022-05-18 14:55	9	0.11	0.77	<2	<1	<1	-	-
GRAB	RMD-266	9380 General Currie Road	2022-05-25 15:05	10	0.17	0.67	<2	<1	<1	-	-
GRAB	RMD-266	9380 General Currie Road	2022-06-01 14:55	9	0.13	0.93	<2	<1	<1	-	-
GRAB	RMD-266	9380 General Currie Road	2022-06-08 14:55	10	0.12	0.63	<2	<1	<1	-	-
GRAB	RMD-266	9380 General Currie Road	2022-06-15 14:55	9	0.12	0.9	<2	<1	<1	-	-
GRAB	RMD-266	9380 General Currie Road	2022-06-22 14:55	10	0.13	0.87	2	<1	<1	-	-
GRAB	RMD-266	9380 General Currie Road	2022-06-28 14:55	10	0.15	0.88	<2	<1	<1	-	-
GRAB	RMD-266	9380 General Currie Road	2022-07-06 12:30	11	0.23	0.87	4	<1	<1	-	-
GRAB	RMD-266	9380 General Currie Road	2022-07-13 14:55	13	0.18	0.72	<2	<1	<1	-	-
GRAB	RMD-266	9380 General Currie Road	2022-07-20 14:55	13	0.11	0.73	2	<1	<1	-	-
GRAB	RMD-266	9380 General Currie Road	2022-07-27 14:55	13	0.1	0.7	<2	<1	<1	-	-
GRAB	RMD-266	9380 General Currie Road	2022-08-03 15:00	14	0.13	0.78	<2	<1	<1	-	-
GRAB	RMD-266	9380 General Currie Road	2022-08-10 14:55	14	0.13	0.64	<2	<1	<1	-	-
GRAB	RMD-266	9380 General Currie Road	2022-08-17 15:00	15	0.11	0.74	4	<1	<1	-	-
GRAB	RMD-266	9380 General Currie Road	2022-08-24 15:00	15	0.12	0.78	2	<1	<1	-	-
GRAB	RMD-266	9380 General Currie Road	2022-08-31 15:00	16	0.11	0.85	<2	<1	<1	-	-
GRAB	RMD-266	9380 General Currie Road	2022-09-07 15:00	16	0.1	0.7	<2	<1	<1	-	-
GRAB	RMD-266	9380 General Currie Road	2022-09-14 14:55	16	0.1	0.73	<2	<1	<1	-	-
GRAB	RMD-266	9380 General Currie Road	2022-09-21 14:55	16	0.12	0.67	4	<1	<1	-	-
GRAB	RMD-266	9380 General Currie Road	2022-09-28 15:00	16	0.12	0.79	<2	<1	<1	-	-
GRAB	RMD-266	9380 General Currie Road	2022-10-05 14:55	15	0.09	0.77	6	<1	<1	-	-
GRAB	RMD-266	9380 General Currie Road	2022-10-12 15:00	16	0.12	0.68	2	<1	<1	-	-
GRAB	RMD-266	9380 General Currie Road	2022-10-19 15:00	15	0.24	0.71	<2	<1	<1	-	-
GRAB	RMD-266	9380 General Currie Road	2022-10-27 14:55	13	0.11	0.77	<2	<1	<1	-	-
GRAB	RMD-266	9380 General Currie Road	2022-11-02 14:55	10	0.15	0.76	<2	<1	<1	-	-
GRAB	RMD-266	9380 General Currie Road	2022-11-09 15:00	10	0.11	0.81	<2	<1	<1	-	-
GRAB	RMD-266	9380 General Currie Road	2022-11-16 15:00	9	0.1	0.84	<2	<1	<1	-	-
GRAB	RMD-266	9380 General Currie Road	2022-11-23 14:55	9	0.1	0.8	<2	<1	<1	-	-
GRAB	RMD-266	9380 General Currie Road	2022-11-30 15:00	8	0.23	0.79	2	<1	<1	-	-
GRAB	RMD-266	9380 General Currie Road	2022-12-07 14:55	8	0.14	0.79	<2	<1	<1	-	-
GRAB	RMD-266	9380 General Currie Road	2022-12-14 14:55	6	0.13	0.87	<2	<1	<1	-	-
GRAB	RMD-266	9380 General Currie Road	2022-12-21 14:55	6	0.23	0.87	NA	<1	<1	-	-
GRAB	RMD-267	17240 Fedoruk	2022-01-07 10:10	7	0.18	0.8	<2	<1	<1	-	-
GRAB	RMD-267	17240 Fedoruk	2022-01-13 10:00	6	0.16	1.12	<2	<1	<1	-	-
GRAB	RMD-267	17240 Fedoruk	2022-01-21 10:00	6	0.12	0.73	<2	<1	<1	-	-
GRAB	RMD-267	17240 Fedoruk	2022-01-27 10:00	6	0.21	0.82	<2	<1	<1	-	-
GRAB	RMD-267	17240 Fedoruk	2022-02-04 10:00	7	0.16	0.73	<2	<1	<1	-	-
GRAB	RMD-267	17240 Fedoruk	2022-02-10 10:00	7	0.17	0.82	<2	<1	<1	-	-
GRAB	RMD-267	17240 Fedoruk	2022-02-18 10:00	7	0.16	0.7	2	<1	<1	-	-
GRAB	RMD-267	17240 Fedoruk	2022-02-24 10:00	7	0.11	0.77	<2	<1	<1	-	-
GRAB	RMD-267	17240 Fedoruk	2022-03-04 10:00	6	0.11	0.88	<2	<1	<1	-	-
GRAB	RMD-267	17240 Fedoruk	2022-03-10 10:00	7	0.14	0.86	<2	<1	<1	-	-
GRAB	RMD-267	17240 Fedoruk	2022-03-18 10:00	7	0.09	0.8	<2	<1	<1	-	-
GRAB	RMD-267	17240 Fedoruk	2022-03-24 10:00	7	0.09	0.75	<2	<1	<1	-	-
GRAB	RMD-267	17240 Fedoruk	2022-04-01 10:00	7	0.1	0.95	<2	<1	<1	-	-
GRAB	RMD-267	17240 Fedoruk	2022-04-07 10:10	8	0.18	0.57	<2	<1	<1	-	-
GRAB	RMD-267	17240 Fedoruk	2022-04-14 10:00	8	0.08	0.69	<2	<1	<1	-	-
GRAB	RMD-267	17240 Fedoruk	2022-04-21 10:00	9	0.09	0.7	<2	<1	<1	-	-
GRAB	RMD-267	17240 Fedoruk	2022-04-29 10:00	9	0.11	0.78	<2	<1	<1	-	-
GRAB	RMD-267	17240 Fedoruk	2022-05-05 10:00	9	0.09	1.06	2	<1	<1	-	-
GRAB	RMD-267	17240 Fedoruk	2022-05-13 10:00	10	0.1	0.7	<2	<1	<1	-	-
GRAB	RMD-267	17240 Fedoruk	2022-05-19 10:00	10	0.1	0.69	<2	<1	<1	-	-
GRAB	RMD-267	17240 Fedoruk	2022-05-27 10:10	10	0.23	0.66	<2	<1	<1	-	-
GRAB	RMD-267	17240 Fedoruk	2022-06-02 10:00	10	0.14	0.68	<2	<1	<1	-	-
GRAB	RMD-267	17240 Fedoruk	2022-06-10 10:10	11	0.14	0.61	<2	<1	<1	-	-
GRAB	RMD-267	17240 Fedoruk	2022-06-16 10:00	11	0.13	0.76	<2	<1	<1	-	-
GRAB	RMD-267	17240 Fedoruk	2022-06-24 10:00	12	0.1	0.66	<2	<1	<1	-	-
GRAB	RMD-267	17240 Fedoruk	2022-06-29 10:10	12	0.12	0.71	<2	<1	<1	-	-

Sample Type	Water Sampling Station Number	Water Sampling Station Address	Sampled Date	Temperature (°C)	Turbidity (NTU)	Chlorine Free (mg/L)	HPC (CFU/mL)	Ecoli (CFU/100mLs)	Total Coliform (CFU/100mLs)	Ecoli (MPN/100mLs)	Total Coliform (MPN/100mLs)
GRAB	RMD-267	17240 Fedoruk	2022-07-08 10:10	14	0.12	0.69	<2	<1	<1	-	-
GRAB	RMD-267	17240 Fedoruk	2022-07-14 10:10	14	0.09	0.74	<2	<1	<1	-	-
GRAB	RMD-267	17240 Fedoruk	2022-07-22 10:00	14	0.21	0.7	2	<1	<1	-	-
GRAB	RMD-267	17240 Fedoruk	2022-07-28 10:20	14	0.15	0.66	<2	<1	<1	-	-
GRAB	RMD-267	17240 Fedoruk	2022-08-05 10:00	16	0.13	0.6	2	<1	<1	-	-
GRAB	RMD-267	17240 Fedoruk	2022-08-11 10:10	16	0.13	0.64	<2	<1	<1	-	-
GRAB	RMD-267	17240 Fedoruk	2022-08-19 09:40	16	0.16	0.67	<2	<1	<1	-	-
GRAB	RMD-267	17240 Fedoruk	2022-08-25 10:00	16	0.11	0.67	<2	<1	<1	-	-
GRAB	RMD-267	17240 Fedoruk	2022-09-02 10:20	17	0.15	0.75	72	<1	<1	-	-
GRAB	RMD-267	17240 Fedoruk	2022-09-08 10:20	17	0.12	0.67	<2	<1	<1	-	-
GRAB	RMD-267	17240 Fedoruk	2022-09-16 10:20	17	0.11	0.72	<2	<1	<1	-	-
GRAB	RMD-267	17240 Fedoruk	2022-09-22 10:10	16	0.14	0.58	<2	<1	<1	-	-
GRAB	RMD-267	17240 Fedoruk	2022-09-29 10:00	15	0.26	0.67	<2	<1	<1	-	-
GRAB	RMD-267	17240 Fedoruk	2022-10-06 10:00	16	11	1.1	2	-	-	<1	<1
GRAB	RMD-267	17240 Fedoruk	2022-10-14 10:00	17	0.16	0.62	<2	<1	<1	-	-
GRAB	RMD-267	17240 Fedoruk	2022-10-20 10:10	15	0.14	0.69	<2	<1	<1	-	-
GRAB	RMD-267	17240 Fedoruk	2022-10-28 10:00	15	0.18	0.71	<2	<1	<1	-	-
GRAB	RMD-267	17240 Fedoruk	2022-11-03 10:00	12	0.11	0.68	<2	<1	<1	-	-
GRAB	RMD-267	17240 Fedoruk	2022-11-10 10:10	10	0.12	0.68	<2	<1	<1	-	-
GRAB	RMD-267	17240 Fedoruk	2022-11-17 10:00	9	0.15	0.72	<2	<1	<1	-	-
GRAB	RMD-267	17240 Fedoruk	2022-11-25 10:00	9	0.12	0.7	<2	<1	<1	-	-
GRAB	RMD-267	17240 Fedoruk	2022-12-01 10:10	7	0.14	0.64	<2	<1	<1	-	-
GRAB	RMD-267	17240 Fedoruk	2022-12-09 10:00	8	0.18	0.6	<2	<1	<1	-	-
GRAB	RMD-267	17240 Fedoruk	2022-12-15 10:00	6	0.11	0.74	<2	<1	<1	-	-
GRAB	RMD-267	17240 Fedoruk	2022-12-22 14:00	6	0.22	0.68	NA	<1	<1	-	-
GRAB	RMD-268	13800 No. 3 Road (off Garden City)	2022-01-05 15:15	5	0.16	0.86	<2	<1	<1	-	-
GRAB	RMD-268	13800 No. 3 Road (off Garden City)	2022-01-12 15:10	6	0.11	0.97	<2	<1	<1	-	-
GRAB	RMD-268	13800 No. 3 Road (off Garden City)	2022-01-18 15:15	6	0.14	1.24	<2	<1	<1	-	-
GRAB	RMD-268	13800 No. 3 Road (off Garden City)	2022-01-26 15:15	6	0.12	0.97	<2	<1	<1	-	-
GRAB	RMD-268	13800 No. 3 Road (off Garden City)	2022-02-02 15:15	6	0.19	0.73	2	<1	<1	-	-
GRAB	RMD-268	13800 No. 3 Road (off Garden City)	2022-02-09 15:15	6	0.15	0.73	2	<1	<1	-	-
GRAB	RMD-268	13800 No. 3 Road (off Garden City)	2022-02-16 15:15	6	0.11	0.87	<2	<1	<1	-	-
GRAB	RMD-268	13800 No. 3 Road (off Garden City)	2022-02-23 15:15	7	0.1	0.8	<2	<1	<1	-	-
GRAB	RMD-268	13800 No. 3 Road (off Garden City)	2022-03-02 15:15	6	0.17	0.85	<2	<1	<1	-	-
GRAB	RMD-268	13800 No. 3 Road (off Garden City)	2022-03-09 15:15	6	0.29	0.95	<2	<1	<1	-	-
GRAB	RMD-268	13800 No. 3 Road (off Garden City)	2022-03-16 15:20	6	0.13	0.84	<2	<1	<1	-	-
GRAB	RMD-268	13800 No. 3 Road (off Garden City)	2022-03-23 15:15	7	0.15	0.83	<2	<1	<1	-	-
GRAB	RMD-268	13800 No. 3 Road (off Garden City)	2022-03-30 15:15	7	0.17	1.06	<2	<1	<1	-	-
GRAB	RMD-268	13800 No. 3 Road (off Garden City)	2022-04-06 15:20	7	0.13	0.73	<2	<1	<1	-	-
GRAB	RMD-268	13800 No. 3 Road (off Garden City)	2022-04-13 15:15	8	0.1	0.66	<2	<1	<1	-	-
GRAB	RMD-268	13800 No. 3 Road (off Garden City)	2022-04-20 15:15	8	0.1	0.77	<2	<1	<1	-	-
GRAB	RMD-268	13800 No. 3 Road (off Garden City)	2022-04-27 15:15	9	0.1	0.67	4	<1	<1	-	-
GRAB	RMD-268	13800 No. 3 Road (off Garden City)	2022-05-04 15:15	9	0.15	0.66	<2	<1	<1	-	-
GRAB	RMD-268	13800 No. 3 Road (off Garden City)	2022-05-11 15:15	9	0.12	0.87	2	<1	<1	-	-
GRAB	RMD-268	13800 No. 3 Road (off Garden City)	2022-05-18 15:15	10	0.12	0.69	10	<1	<1	-	-
GRAB	RMD-268	13800 No. 3 Road (off Garden City)	2022-05-25 15:20	10	0.16	0.75	<2	<1	<1	-	-
GRAB	RMD-268	13800 No. 3 Road (off Garden City)	2022-06-01 15:10	9	0.2	0.95	<2	<1	<1	-	-
GRAB	RMD-268	13800 No. 3 Road (off Garden City)	2022-06-08 15:10	11	0.1	1.25	<2	<1	<1	-	-
GRAB	RMD-268	13800 No. 3 Road (off Garden City)	2022-06-15 15:10	10	0.12	0.74	<2	<1	<1	-	-
GRAB	RMD-268	13800 No. 3 Road (off Garden City)	2022-06-22 15:10	10	0.13	0.69	<2	<1	<1	-	-
GRAB	RMD-268	13800 No. 3 Road (off Garden City)	2022-06-28 15:15	10	0.15	0.87	10	<1	<1	-	-
GRAB	RMD-268	13800 No. 3 Road (off Garden City)	2022-07-06 12:40	11	1.7	0.77	<2	<1	<1	-	-
GRAB	RMD-268	13800 No. 3 Road (off Garden City)	2022-07-13 15:15	12	0.16	0.7	2	<1	<1	-	-
GRAB	RMD-268	13800 No. 3 Road (off Garden City)	2022-07-20 15:10	13	10	1.27	<2	-	-	<1	<1
GRAB	RMD-268	13800 No. 3 Road (off Garden City)	2022-07-27 15:10	13	0.1	0.71	<2	<1	<1	-	-
GRAB	RMD-268	13800 No. 3 Road (off Garden City)	2022-08-03 15:15	15	0.13	0.66	<2	<1	<1	-	-
GRAB	RMD-268	13800 No. 3 Road (off Garden City)	2022-08-10 15:10	15	0.19	0.56	<2	<1	<1	-	-
GRAB	RMD-268	13800 No. 3 Road (off Garden City)	2022-08-17 15:15	15	0.12	0.78	<2	<1	<1	-	-
GRAB	RMD-268	13800 No. 3 Road (off Garden City)	2022-08-24 15:15	15	0.1	0.64	4	<1	<1	-	-
GRAB	RMD-268	13800 No. 3 Road (off Garden City)	2022-08-31 15:15	16	0.11	0.72	<2	<1	<1	-	-
GRAB	RMD-268	13800 No. 3 Road (off Garden City)	2022-09-07 15:15	16	0.1	0.69	<2	<1	<1	-	-
GRAB	RMD-268	13800 No. 3 Road (off Garden City)	2022-09-14 15:15	16	0.08	0.62	8	<1	<1	-	-
GRAB	RMD-268	13800 No. 3 Road (off Garden City)	2022-09-21 15:10	16	2.3	0.57	10	<1	<1	-	-
GRAB	RMD-268	13800 No. 3 Road (off Garden City)	2022-09-28 15:15	16	0.12	0.61	<2	<1	<1	-	-

Sample Type	Water Sampling Station Number	Water Sampling Station Address	Sampled Date	Temperature (°C)	Turbidity (NTU)	Chlorine Free (mg/L)	HPC (CFU/mL)	E. coli (CFU/100mLs)	Total Coliform (CFU/100mLs)	E. coli (MPN/100mLs)	Total Coliform (MPN/100mLs)
GRAB	RMD-268	13800 No. 3 Road (off Garden City)	2022-10-05 15:15	16	0.1	0.61	4	<1	<1	-	-
GRAB	RMD-268	13800 No. 3 Road (off Garden City)	2022-10-12 15:15	16	0.11	0.55	8	<1	<1	-	-
GRAB	RMD-268	13800 No. 3 Road (off Garden City)	2022-10-19 15:15	15	0.18	0.52	2	<1	<1	-	-
GRAB	RMD-268	13800 No. 3 Road (off Garden City)	2022-10-27 15:15	14	0.31	0.58	6	<1	<1	-	-
GRAB	RMD-268	13800 No. 3 Road (off Garden City)	2022-11-02 15:15	10	0.16	0.58	6	<1	<1	-	-
GRAB	RMD-268	13800 No. 3 Road (off Garden City)	2022-11-09 15:15	10	0.11	0.68	<2	<1	<1	-	-
GRAB	RMD-268	13800 No. 3 Road (off Garden City)	2022-11-16 15:15	10	0.1	0.68	<2	<1	<1	-	-
GRAB	RMD-268	13800 No. 3 Road (off Garden City)	2022-11-23 15:10	9	0.1	0.69	<2	<1	<1	-	-
GRAB	RMD-268	13800 No. 3 Road (off Garden City)	2022-11-30 15:15	9	0.13	0.75	2	<1	<1	-	-
GRAB	RMD-268	13800 No. 3 Road (off Garden City)	2022-12-07 15:15	8	0.14	0.54	4	<1	<1	-	-
GRAB	RMD-268	13800 No. 3 Road (off Garden City)	2022-12-14 15:10	7	0.1	0.79	<2	<1	<1	-	-
GRAB	RMD-269	14951 Triangle Road	2022-01-04 14:00	5	0.22	0.76	<2	<1	<1	-	-
GRAB	RMD-269	14951 Triangle Road	2022-01-10 13:50	5	0.16	0.98	<2	<1	<1	-	-
GRAB	RMD-269	14951 Triangle Road	2022-01-17 13:55	6	0.15	1.01	<2	<1	<1	-	-
GRAB	RMD-269	14951 Triangle Road	2022-01-24 13:50	6	0.17	0.8	<2	<1	<1	-	-
GRAB	RMD-269	14951 Triangle Road	2022-02-01 13:55	6	0.12	0.7	<2	<1	<1	-	-
GRAB	RMD-269	14951 Triangle Road	2022-02-07 13:50	5	0.12	0.74	<2	<1	<1	-	-
GRAB	RMD-269	14951 Triangle Road	2022-02-14 13:50	6	0.12	0.69	<2	<1	<1	-	-
GRAB	RMD-269	14951 Triangle Road	2022-02-22 13:50	6	0.13	0.75	<2	<1	<1	-	-
GRAB	RMD-269	14951 Triangle Road	2022-02-28 13:50	6	0.14	0.8	2	<1	<1	-	-
GRAB	RMD-269	14951 Triangle Road	2022-03-07 13:50	6	0.1	0.78	<2	<1	<1	-	-
GRAB	RMD-269	14951 Triangle Road	2022-03-14 13:50	6	0.15	0.8	<2	<1	<1	-	-
GRAB	RMD-269	14951 Triangle Road	2022-03-21 13:50	6	0.1	0.77	<2	<1	<1	-	-
GRAB	RMD-269	14951 Triangle Road	2022-03-28 13:50	7	0.13	0.91	2	<1	<1	-	-
GRAB	RMD-269	14951 Triangle Road	2022-04-04 13:50	7	0.17	0.64	<2	<1	<1	-	-
GRAB	RMD-269	14951 Triangle Road	2022-04-11 13:50	7	0.1	0.68	<2	<1	<1	-	-
GRAB	RMD-269	14951 Triangle Road	2022-04-19 13:50	8	0.14	0.74	<2	<1	<1	-	-
GRAB	RMD-269	14951 Triangle Road	2022-04-25 13:50	8	0.08	0.89	<2	<1	<1	-	-
GRAB	RMD-269	14951 Triangle Road	2022-05-02 13:50	9	0.08	0.72	<2	<1	<1	-	-
GRAB	RMD-269	14951 Triangle Road	2022-05-09 13:50	8	0.11	0.75	<2	<1	<1	-	-
GRAB	RMD-269	14951 Triangle Road	2022-05-16 13:50	9	0.11	0.69	<2	<1	<1	-	-
GRAB	RMD-269	14951 Triangle Road	2022-05-24 13:55	9	0.31	0.7	<2	<1	<1	-	-
GRAB	RMD-269	14951 Triangle Road	2022-05-30 13:50	9	0.12	0.71	<2	<1	<1	-	-
GRAB	RMD-269	14951 Triangle Road	2022-06-06 12:30	9	0.11	0.75	<2	<1	<1	-	-
GRAB	RMD-269	14951 Triangle Road	2022-06-13 13:50	10	0.2	0.58	<2	<1	<1	-	-
GRAB	RMD-269	14951 Triangle Road	2022-06-20 13:50	10	0.1	0.92	<2	<1	<1	-	-
GRAB	RMD-269	14951 Triangle Road	2022-06-27 13:50	12	0.14	0.72	<2	<1	<1	-	-
GRAB	RMD-269	14951 Triangle Road	2022-07-04 13:50	12	0.11	0.72	<2	<1	<1	-	-
GRAB	RMD-269	14951 Triangle Road	2022-07-11 13:50	10	0.16	0.79	<2	<1	<1	-	-
GRAB	RMD-269	14951 Triangle Road	2022-07-18 13:50	14	0.12	0.71	<2	<1	<1	-	-
GRAB	RMD-269	14951 Triangle Road	2022-07-25 13:50	12	0.18	0.74	<2	<1	<1	-	-
GRAB	RMD-269	14951 Triangle Road	2022-08-02 13:50	13	0.16	0.76	<2	<1	<1	-	-
GRAB	RMD-269	14951 Triangle Road	2022-08-08 13:50	15	0.21	0.68	<2	<1	<1	-	-
GRAB	RMD-269	14951 Triangle Road	2022-08-15 13:50	13	0.16	0.7	<2	<1	<1	-	-
GRAB	RMD-269	14951 Triangle Road	2022-08-22 13:50	14	0.11	0.87	<2	<1	<1	-	-
GRAB	RMD-269	14951 Triangle Road	2022-08-29 13:50	15	0.11	0.63	<2	<1	<1	-	-
GRAB	RMD-269	14951 Triangle Road	2022-09-06 13:50	15	0.16	0.71	2	<1	<1	-	-
GRAB	RMD-269	14951 Triangle Road	2022-09-12 13:50	16	0.17	0.7	<2	<1	<1	-	-
GRAB	RMD-269	14951 Triangle Road	2022-09-20 13:50	17	0.13	0.61	<2	<1	<1	-	-
GRAB	RMD-269	14951 Triangle Road	2022-09-26 13:50	16	0.13	0.66	<2	<1	<1	-	-
GRAB	RMD-269	14951 Triangle Road	2022-10-03 13:50	16	0.11	0.73	<2	<1	<1	-	-
GRAB	RMD-269	14951 Triangle Road	2022-10-11 13:50	16	0.14	0.61	<2	<1	<1	-	-
GRAB	RMD-269	14951 Triangle Road	2022-10-17 13:50	15	0.17	0.7	<2	<1	<1	-	-
GRAB	RMD-269	14951 Triangle Road	2022-10-24 13:50	14	0.13	0.78	<2	<1	<1	-	-
GRAB	RMD-269	14951 Triangle Road	2022-10-31 13:50	12	0.14	0.71	<2	<1	<1	-	-
GRAB	RMD-269	14951 Triangle Road	2022-11-07 13:50	12	0.25	0.68	<2	<1	<1	-	-
GRAB	RMD-269	14951 Triangle Road	2022-11-14 13:50	10	0.16	0.77	<2	<1	<1	-	-
GRAB	RMD-269	14951 Triangle Road	2022-11-21 13:50	8	0.16	0.77	<2	<1	<1	-	-
GRAB	RMD-269	14951 Triangle Road	2022-11-28 13:50	8	0.09	0.74	<2	<1	<1	-	-
GRAB	RMD-269	14951 Triangle Road	2022-12-05 13:50	7	0.16	0.72	<2	<1	<1	-	-
GRAB	RMD-269	14951 Triangle Road	2022-12-12 13:50	7	0.19	0.69	<2	<1	<1	-	-
GRAB	RMD-270	8200 Jones Road	2022-01-04 14:15	6	0.16	0.95	<2	<1	<1	-	-
GRAB	RMD-270	8200 Jones Road	2022-01-10 14:10	5	0.13	0.96	2	<1	<1	-	-
GRAB	RMD-270	8200 Jones Road	2022-01-17 14:10	7	0.11	0.79	<2	<1	<1	-	-

Sample Type	Water Sampling Station Number	Water Sampling Station Address	Sampled Date	Temperature (°C)	Turbidity (NTU)	Chlorine Free (mg/L)	HPC (CFU/mL)	Ecoli (CFU/100mLs)	Total Coliform (CFU/100mLs)	Ecoli (MPN/100mLs)	Total Coliform (MPN/100mLs)
GRAB	RMD-270	8200 Jones Road	2022-01-24 14:10	6	0.12	1.06	<2	<1	<1	-	-
GRAB	RMD-270	8200 Jones Road	2022-02-01 14:15	6	0.1	0.86	<2	<1	<1	-	-
GRAB	RMD-270	8200 Jones Road	2022-02-07 14:10	6	0.12	0.73	<2	<1	<1	-	-
GRAB	RMD-270	8200 Jones Road	2022-02-14 14:10	6	0.12	0.85	<2	<1	<1	-	-
GRAB	RMD-270	8200 Jones Road	2022-02-22 14:15	7	0.1	0.96	<2	<1	<1	-	-
GRAB	RMD-270	8200 Jones Road	2022-02-28 14:15	6	0.12	0.81	<2	<1	<1	-	-
GRAB	RMD-270	8200 Jones Road	2022-03-07 14:10	6	0.14	0.92	<2	<1	<1	-	-
GRAB	RMD-270	8200 Jones Road	2022-03-14 14:10	6	0.12	0.7	<2	<1	<1	-	-
GRAB	RMD-270	8200 Jones Road	2022-03-21 14:10	7	0.12	0.81	2	<1	<1	-	-
GRAB	RMD-270	8200 Jones Road	2022-03-28 14:10	7	0.14	0.83	<2	<1	<1	-	-
GRAB	RMD-270	8200 Jones Road	2022-04-04 14:10	7	0.13	0.78	<2	<1	<1	-	-
GRAB	RMD-270	8200 Jones Road	2022-04-11 14:10	8	0.1	0.72	<2	<1	<1	-	-
GRAB	RMD-270	8200 Jones Road	2022-04-19 14:10	8	0.11	0.71	<2	<1	<1	-	-
GRAB	RMD-270	8200 Jones Road	2022-04-25 14:14	9	0.12	0.71	14	<1	<1	-	-
GRAB	RMD-270	8200 Jones Road	2022-05-02 14:15	8	0.11	0.65	<2	<1	<1	-	-
GRAB	RMD-270	8200 Jones Road	2022-05-09 14:15	10	0.13	0.7	2	<1	<1	-	-
GRAB	RMD-270	8200 Jones Road	2022-05-16 14:15	9	0.1	0.65	14	<1	<1	-	-
GRAB	RMD-270	8200 Jones Road	2022-05-24 14:15	9	0.37	0.64	6	<1	<1	-	-
GRAB	RMD-270	8200 Jones Road	2022-05-30 14:15	9	0.15	0.62	16	<1	<1	-	-
GRAB	RMD-270	8200 Jones Road	2022-06-06 12:45	11	0.13	0.85	<2	<1	<1	-	-
GRAB	RMD-270	8200 Jones Road	2022-06-13 14:15	12	0.14	0.54	6	<1	<1	-	-
GRAB	RMD-270	8200 Jones Road	2022-06-20 14:15	12	0.1	0.66	<2	<1	<1	-	-
GRAB	RMD-270	8200 Jones Road	2022-06-27 14:15	11	0.14	0.63	8	<1	<1	-	-
GRAB	RMD-270	8200 Jones Road	2022-07-04 14:10	12	0.11	0.77	4	<1	<1	-	-
GRAB	RMD-270	8200 Jones Road	2022-07-11 14:15	10	0.11	0.73	2	<1	<1	-	-
GRAB	RMD-270	8200 Jones Road	2022-07-18 14:10	15	0.12	0.58	22	<1	<1	-	-
GRAB	RMD-270	8200 Jones Road	2022-07-25 14:10	15	0.11	0.76	4	<1	<1	-	-
GRAB	RMD-270	8200 Jones Road	2022-08-02 14:10	17	0.16	0.86	18	<1	<1	-	-
GRAB	RMD-270	8200 Jones Road	2022-08-08 14:15	16	0.16	0.67	52	<1	<1	-	-
GRAB	RMD-270	8200 Jones Road	2022-08-15 14:10	15	0.11	0.7	40	<1	<1	-	-
GRAB	RMD-270	8200 Jones Road	2022-08-22 14:15	14	0.1	0.67	140	<1	<1	-	-
GRAB	RMD-270	8200 Jones Road	2022-08-29 14:15	16	0.14	0.65	18	<1	<1	-	-
GRAB	RMD-270	8200 Jones Road	2022-09-06 14:10	17	0.08	0.65	280	<1	<1	-	-
GRAB	RMD-270	8200 Jones Road	2022-09-12 14:10	17	0.3	0.67	140	<1	<1	-	-
GRAB	RMD-270	8200 Jones Road	2022-09-20 14:15	16	0.11	0.6	190	<1	<1	-	-
GRAB	RMD-270	8200 Jones Road	2022-09-26 14:15	16	0.09	0.64	390	<1	<1	-	-
GRAB	RMD-270	8200 Jones Road	2022-10-03 14:10	16	0.11	0.63	96	<1	<1	-	-
GRAB	RMD-270	8200 Jones Road	2022-10-13 09:40	16	0.13	0.55	100	<1	<1	-	-
GRAB	RMD-270	8200 Jones Road	2022-10-17 14:10	15	0.17	0.63	260	<1	<1	-	-
GRAB	RMD-270	8200 Jones Road	2022-10-24 14:15	15	0.26	0.7	180	<1	<1	-	-
GRAB	RMD-270	8200 Jones Road	2022-10-31 14:15	12	0.19	0.63	350	<1	<1	-	-
GRAB	RMD-270	8200 Jones Road	2022-11-07 14:10	11	0.21	0.71	<2	<1	<1	-	-
GRAB	RMD-270	8200 Jones Road	2022-11-14 14:10	11	0.11	0.74	<2	<1	<1	-	-
GRAB	RMD-270	8200 Jones Road	2022-11-21 14:15	9	0.09	0.78	<2	<1	<1	-	-
GRAB	RMD-270	8200 Jones Road	2022-11-28 14:15	9	0.1	0.75	4	<1	<1	-	-
GRAB	RMD-270	8200 Jones Road	2022-12-05 14:14	7	0.31	0.78	12	<1	<1	-	-
GRAB	RMD-270	8200 Jones Road	2022-12-12 14:15	7	0.1	0.71	<2	<1	<1	-	-
GRAB	RMD-271	3800 Cessna Drive	2022-01-04 15:15	6	0.16	1	<2	<1	<1	-	-
GRAB	RMD-271	3800 Cessna Drive	2022-01-10 15:10	5	0.12	1.01	<2	<1	<1	-	-
GRAB	RMD-271	3800 Cessna Drive	2022-01-17 15:10	6	0.11	0.97	<2	<1	<1	-	-
GRAB	RMD-271	3800 Cessna Drive	2022-01-24 15:10	6	0.13	0.97	<2	<1	<1	-	-
GRAB	RMD-271	3800 Cessna Drive	2022-02-01 15:15	6	0.12	0.97	<2	<1	<1	-	-
GRAB	RMD-271	3800 Cessna Drive	2022-02-07 15:15	6	0.11	0.76	<2	<1	<1	-	-
GRAB	RMD-271	3800 Cessna Drive	2022-02-14 15:15	6	0.13	0.88	<2	<1	<1	-	-
GRAB	RMD-271	3800 Cessna Drive	2022-02-22 15:15	6	0.11	0.99	<2	<1	<1	-	-
GRAB	RMD-271	3800 Cessna Drive	2022-02-28 15:15	6	0.19	0.74	<2	<1	<1	-	-
GRAB	RMD-271	3800 Cessna Drive	2022-03-07 15:15	6	0.11	1.04	<2	<1	<1	-	-
GRAB	RMD-271	3800 Cessna Drive	2022-03-14 15:15	6	0.18	0.73	<2	<1	<1	-	-
GRAB	RMD-271	3800 Cessna Drive	2022-03-21 15:15	7	0.13	1.04	<2	<1	<1	-	-
GRAB	RMD-271	3800 Cessna Drive	2022-03-28 15:15	7	0.13	0.96	<2	<1	<1	-	-
GRAB	RMD-271	3800 Cessna Drive	2022-04-04 15:15	7	0.14	0.85	<2	<1	<1	-	-
GRAB	RMD-271	3800 Cessna Drive	2022-04-11 15:15	8	0.23	0.75	<2	<1	<1	-	-
GRAB	RMD-271	3800 Cessna Drive	2022-04-19 15:15	8	0.11	0.69	2	<1	<1	-	-
GRAB	RMD-271	3800 Cessna Drive	2022-04-25 15:15	8	0.1	0.69	<2	<1	<1	-	-

Sample Type	Water Sampling Station Number	Water Sampling Station Address	Sampled Date	Temperature (°C)	Turbidity (NTU)	Chlorine Free (mg/L)	HPC (CFU/mL)	E. coli (CFU/100mLs)	Total Coliform (CFU/100mLs)	E. coli (MPN/100mLs)	Total Coliform (MPN/100mLs)
GRAB	RMD-271	3800 Cessna Drive	2022-05-02 15:15	9	0.1	0.68	<2	<1	<1	-	-
GRAB	RMD-271	3800 Cessna Drive	2022-05-09 15:15	9	0.12	0.68	<2	<1	<1	-	-
GRAB	RMD-271	3800 Cessna Drive	2022-05-16 15:15	9	0.11	0.71	<2	<1	<1	-	-
GRAB	RMD-271	3800 Cessna Drive	2022-05-24 15:15	9	0.12	0.76	<2	<1	<1	-	-
GRAB	RMD-271	3800 Cessna Drive	2022-05-30 15:15	9	0.12	0.69	<2	<1	<1	-	-
GRAB	RMD-271	3800 Cessna Drive	2022-06-06 13:50	10	0.11	0.73	<2	<1	<1	-	-
GRAB	RMD-271	3800 Cessna Drive	2022-06-13 15:15	11	0.16	0.6	2	<1	<1	-	-
GRAB	RMD-271	3800 Cessna Drive	2022-06-20 15:15	11	0.09	0.91	<2	<1	<1	-	-
GRAB	RMD-271	3800 Cessna Drive	2022-06-27 15:15	11	0.16	0.73	<2	<1	<1	-	-
GRAB	RMD-271	3800 Cessna Drive	2022-07-04 15:15	12	0.12	0.66	<2	<1	<1	-	-
GRAB	RMD-271	3800 Cessna Drive	2022-07-11 15:15	10	0.14	0.79	<2	<1	<1	-	-
GRAB	RMD-271	3800 Cessna Drive	2022-07-18 15:15	14	0.13	0.83	<2	<1	<1	-	-
GRAB	RMD-271	3800 Cessna Drive	2022-07-25 15:15	15	0.14	0.69	14	<1	<1	-	-
GRAB	RMD-271	3800 Cessna Drive	2022-08-02 15:15	16	0.21	0.79	22	<1	<1	-	-
GRAB	RMD-271	3800 Cessna Drive	2022-08-08 15:15	14	0.14	0.65	22	<1	<1	-	-
GRAB	RMD-271	3800 Cessna Drive	2022-08-15 15:15	14	0.5	0.84	<2	<1	<1	-	-
GRAB	RMD-271	3800 Cessna Drive	2022-08-22 15:15	15	0.11	0.76	32	<1	<1	-	-
GRAB	RMD-271	3800 Cessna Drive	2022-08-29 15:15	16	0.13	0.68	<2	<1	<1	-	-
GRAB	RMD-271	3800 Cessna Drive	2022-09-06 15:15	16	0.08	0.65	<2	<1	<1	-	-
GRAB	RMD-271	3800 Cessna Drive	2022-09-12 15:15	17	0.12	0.6	<2	<1	<1	-	-
GRAB	RMD-271	3800 Cessna Drive	2022-09-20 15:15	16	0.12	0.65	8	<1	<1	-	-
GRAB	RMD-271	3800 Cessna Drive	2022-09-26 15:15	15	0.13	0.71	<2	<1	<1	-	-
GRAB	RMD-271	3800 Cessna Drive	2022-10-03 15:15	16	0.14	0.73	<2	<1	<1	-	-
GRAB	RMD-271	3800 Cessna Drive	2022-10-11 15:10	16	0.11	0.65	2	<1	<1	-	-
GRAB	RMD-271	3800 Cessna Drive	2022-10-17 15:15	15	0.19	0.65	<2	<1	<1	-	-
GRAB	RMD-271	3800 Cessna Drive	2022-10-24 15:15	15	0.12	0.81	12	<1	<1	-	-
GRAB	RMD-271	3800 Cessna Drive	2022-10-31 15:15	13	0.1	0.64	34	<1	<1	-	-
GRAB	RMD-271	3800 Cessna Drive	2022-11-07 15:15	11	0.21	0.62	<2	<1	<1	-	-
GRAB	RMD-271	3800 Cessna Drive	2022-11-14 15:15	9	0.14	0.74	4	<1	<1	-	-
GRAB	RMD-271	3800 Cessna Drive	2022-11-21 15:15	9	0.17	0.78	2	<1	<1	-	-
GRAB	RMD-271	3800 Cessna Drive	2022-11-28 15:15	9	0.12	0.7	<2	<1	<1	-	-
GRAB	RMD-271	3800 Cessna Drive	2022-12-05 15:15	7	0.14	0.7	<2	<1	<1	-	-
GRAB	RMD-271	3800 Cessna Drive	2022-12-12 15:15	7	0.12	0.83	<2	<1	<1	-	-
GRAB	RMD-272	751 Catalina Crescent	2022-01-04 15:30	5	0.21	1	<2	<1	<1	-	-
GRAB	RMD-272	751 Catalina Crescent	2022-01-10 15:25	5	0.14	0.96	2	<1	<1	-	-
GRAB	RMD-272	751 Catalina Crescent	2022-01-17 15:25	6	0.15	0.87	<2	<1	<1	-	-
GRAB	RMD-272	751 Catalina Crescent	2022-01-24 15:25	6	0.43	1.16	<2	<1	<1	-	-
GRAB	RMD-272	751 Catalina Crescent	2022-02-01 15:30	6	0.13	1.06	<2	<1	<1	-	-
GRAB	RMD-272	751 Catalina Crescent	2022-02-07 15:30	6	0.15	0.91	<2	<1	<1	-	-
GRAB	RMD-272	751 Catalina Crescent	2022-02-14 15:30	6	0.13	0.99	<2	<1	<1	-	-
GRAB	RMD-272	751 Catalina Crescent	2022-02-22 15:30	6	0.14	0.91	<2	<1	<1	-	-
GRAB	RMD-272	751 Catalina Crescent	2022-02-28 15:30	6	0.19	0.78	<2	<1	<1	-	-
GRAB	RMD-272	751 Catalina Crescent	2022-03-07 15:30	6	0.16	1.04	<2	<1	<1	-	-
GRAB	RMD-272	751 Catalina Crescent	2022-03-14 15:30	6	0.23	0.81	<2	<1	<1	-	-
GRAB	RMD-272	751 Catalina Crescent	2022-03-21 15:30	7	0.15	1.09	2	<1	<1	-	-
GRAB	RMD-272	751 Catalina Crescent	2022-03-28 15:30	7	0.52	1.02	<2	<1	<1	-	-
GRAB	RMD-272	751 Catalina Crescent	2022-04-04 15:30	7	0.18	0.69	<2	<1	<1	-	-
GRAB	RMD-272	751 Catalina Crescent	2022-04-11 15:30	8	0.12	0.78	<2	<1	<1	-	-
GRAB	RMD-272	751 Catalina Crescent	2022-04-19 15:30	8	0.11	0.72	2	<1	<1	-	-
GRAB	RMD-272	751 Catalina Crescent	2022-04-25 15:30	8	0.11	0.73	<2	<1	<1	-	-
GRAB	RMD-272	751 Catalina Crescent	2022-05-02 15:30	9	0.21	0.67	<2	<1	<1	-	-
GRAB	RMD-272	751 Catalina Crescent	2022-05-09 15:30	9	0.13	0.62	<2	<1	<1	-	-
GRAB	RMD-272	751 Catalina Crescent	2022-05-16 15:30	8	0.14	0.74	<2	<1	<1	-	-
GRAB	RMD-272	751 Catalina Crescent	2022-05-24 15:30	9	0.12	0.71	<2	<1	<1	-	-
GRAB	RMD-272	751 Catalina Crescent	2022-05-30 15:30	9	0.11	0.89	<2	<1	<1	-	-
GRAB	RMD-272	751 Catalina Crescent	2022-06-06 14:00	10	0.14	0.83	6	<1	<1	-	-
GRAB	RMD-272	751 Catalina Crescent	2022-06-13 15:30	9	0.16	0.66	6	<1	<1	-	-
GRAB	RMD-272	751 Catalina Crescent	2022-06-20 15:30	10	0.14	0.79	<2	<1	<1	-	-
GRAB	RMD-272	751 Catalina Crescent	2022-06-27 15:30	10	0.18	1.18	<2	<1	<1	-	-
GRAB	RMD-272	751 Catalina Crescent	2022-07-04 15:30	12	0.11	0.86	14	<1	<1	-	-
GRAB	RMD-272	751 Catalina Crescent	2022-07-11 15:30	11	0.15	0.76	22	<1	<1	-	-
GRAB	RMD-272	751 Catalina Crescent	2022-07-18 15:30	14	0.11	0.88	36	<1	<1	-	-
GRAB	RMD-272	751 Catalina Crescent	2022-07-25 15:30	13	0.16	0.8	58	<1	<1	-	-
GRAB	RMD-272	751 Catalina Crescent	2022-08-02 15:30	14	0.13	0.84	12	<1	<1	-	-

Sample Type	Water Sampling Station Number	Water Sampling Station Address	Sampled Date	Temperature (°C)	Turbidity (NTU)	Chlorine Free (mg/L)	HPC (CFU/mL)	E. coli (CFU/100mLs)	Total Coliform (CFU/100mLs)	E. coli (MPN/100mLs)	Total Coliform (MPN/100mLs)
GRAB	RMD-272	751 Catalina Crescent	2022-08-08 15:30	15	0.15	0.76	34	<1	<1	-	-
GRAB	RMD-272	751 Catalina Crescent	2022-08-15 15:30	15	0.67	0.72	66	<1	<1	-	-
GRAB	RMD-272	751 Catalina Crescent	2022-08-22 15:30	14	0.11	0.88	110	<1	<1	-	-
GRAB	RMD-272	751 Catalina Crescent	2022-08-29 15:30	16	0.14	0.71	130	<1	<1	-	-
GRAB	RMD-272	751 Catalina Crescent	2022-09-06 15:30	16	0.17	0.8	130	<1	<1	-	-
GRAB	RMD-272	751 Catalina Crescent	2022-09-12 15:30	17	0.19	0.66	<2	<1	<1	-	-
GRAB	RMD-272	751 Catalina Crescent	2022-09-20 15:30	16	0.18	0.77	16	<1	<1	-	-
GRAB	RMD-272	751 Catalina Crescent	2022-09-26 15:30	16	0.19	0.87	750	<1	<1	-	-
GRAB	RMD-272	751 Catalina Crescent	2022-10-03 15:30	16	0.91	0.9	100	<1	<1	-	-
GRAB	RMD-272	751 Catalina Crescent	2022-10-13 10:10	15	0.33	0.82	44	<1	<1	-	-
GRAB	RMD-272	751 Catalina Crescent	2022-10-17 15:30	15	1.4	0.76	<2	<1	<1	-	-
GRAB	RMD-272	751 Catalina Crescent	2022-10-24 15:30	14	0.21	0.88	8	<1	<1	-	-
GRAB	RMD-272	751 Catalina Crescent	2022-10-31 15:30	11	0.13	0.76	14	<1	<1	-	-
GRAB	RMD-272	751 Catalina Crescent	2022-11-07 15:30	11	0.2	0.82	6	<1	<1	-	-
GRAB	RMD-272	751 Catalina Crescent	2022-11-14 15:30	9	0.18	0.78	8	<1	<1	-	-
GRAB	RMD-272	751 Catalina Crescent	2022-11-21 15:30	8	0.14	0.87	2	<1	<1	-	-
GRAB	RMD-272	751 Catalina Crescent	2022-11-28 15:30	8	0.11	0.86	4	<1	<1	-	-
GRAB	RMD-272	751 Catalina Crescent	2022-12-05 15:30	7	0.16	0.79	<2	<1	<1	-	-
GRAB	RMD-272	751 Catalina Crescent	2022-12-12 15:30	6	0.42	1	6	<1	<1	-	-
GRAB	RMD-273	Opp. 8331 Fairfax Place	2022-01-04 12:45	6	0.15	0.72	<2	<1	<1	-	-
GRAB	RMD-273	Opp. 8331 Fairfax Place	2022-01-10 12:45	6	0.12	0.66	<2	<1	<1	-	-
GRAB	RMD-273	Opp. 8331 Fairfax Place	2022-01-17 12:45	7	0.12	0.75	<2	<1	<1	-	-
GRAB	RMD-273	Opp. 8331 Fairfax Place	2022-01-24 12:45	7	0.13	0.81	<2	<1	<1	-	-
GRAB	RMD-273	Opp. 8331 Fairfax Place	2022-02-01 12:45	7	0.12	0.74	<2	<1	<1	-	-
GRAB	RMD-273	Opp. 8331 Fairfax Place	2022-02-07 12:45	7	0.1	0.72	<2	<1	<1	-	-
GRAB	RMD-273	Opp. 8331 Fairfax Place	2022-02-14 12:45	7	0.11	0.77	<2	<1	<1	-	-
GRAB	RMD-273	Opp. 8331 Fairfax Place	2022-02-22 12:45	8	0.12	0.79	<2	<1	<1	-	-
GRAB	RMD-273	Opp. 8331 Fairfax Place	2022-02-28 12:45	7	0.12	0.72	<2	<1	<1	-	-
GRAB	RMD-273	Opp. 8331 Fairfax Place	2022-03-07 12:45	7	0.12	0.73	<2	<1	<1	-	-
GRAB	RMD-273	Opp. 8331 Fairfax Place	2022-03-14 12:45	7	0.18	0.71	<2	<1	<1	-	-
GRAB	RMD-273	Opp. 8331 Fairfax Place	2022-03-21 12:45	7	0.12	0.8	<2	<1	<1	-	-
GRAB	RMD-273	Opp. 8331 Fairfax Place	2022-03-28 12:45	7	0.14	0.85	<2	<1	<1	-	-
GRAB	RMD-273	Opp. 8331 Fairfax Place	2022-04-04 12:45	10	0.12	0.67	<2	<1	<1	-	-
GRAB	RMD-273	Opp. 8331 Fairfax Place	2022-04-11 12:45	10	0.11	0.69	<2	<1	<1	-	-
GRAB	RMD-273	Opp. 8331 Fairfax Place	2022-04-19 12:45	10	0.1	0.62	<2	<1	<1	-	-
GRAB	RMD-273	Opp. 8331 Fairfax Place	2022-04-25 12:45	10	0.25	0.68	<2	<1	<1	-	-
GRAB	RMD-273	Opp. 8331 Fairfax Place	2022-05-02 12:45	10	0.09	0.6	2	<1	<1	-	-
GRAB	RMD-273	Opp. 8331 Fairfax Place	2022-05-09 12:45	11	0.14	0.68	<2	<1	<1	-	-
GRAB	RMD-273	Opp. 8331 Fairfax Place	2022-05-16 12:45	11	0.11	0.63	<2	<1	<1	-	-
GRAB	RMD-273	Opp. 8331 Fairfax Place	2022-05-24 12:45	12	0.44	0.6	<2	<1	<1	-	-
GRAB	RMD-273	Opp. 8331 Fairfax Place	2022-05-30 12:45	13	0.11	0.6	<2	<1	<1	-	-
GRAB	RMD-273	Opp. 8331 Fairfax Place	2022-06-06 15:15	14	0.12	0.66	<2	<1	<1	-	-
GRAB	RMD-273	Opp. 8331 Fairfax Place	2022-06-13 12:45	14	0.15	0.52	<2	<1	<1	-	-
GRAB	RMD-273	Opp. 8331 Fairfax Place	2022-06-20 12:45	15	0.09	0.58	<2	<1	<1	-	-
GRAB	RMD-273	Opp. 8331 Fairfax Place	2022-06-27 12:45	15	0.2	0.68	4	<1	<1	-	-
GRAB	RMD-273	Opp. 8331 Fairfax Place	2022-07-04 12:45	17	0.13	0.6	<2	<1	<1	-	-
GRAB	RMD-273	Opp. 8331 Fairfax Place	2022-07-11 12:45	16	0.12	0.65	2	<1	<1	-	-
GRAB	RMD-273	Opp. 8331 Fairfax Place	2022-07-18 12:45	17	0.12	0.62	<2	<1	<1	-	-
GRAB	RMD-273	Opp. 8331 Fairfax Place	2022-07-25 12:45	17	0.11	0.67	2	<1	<1	-	-
GRAB	RMD-273	Opp. 8331 Fairfax Place	2022-08-02 12:45	19	0.2	0.67	<2	<1	<1	-	-
GRAB	RMD-273	Opp. 8331 Fairfax Place	2022-08-08 12:45	19	0.18	0.59	6	<1	<1	-	-
GRAB	RMD-273	Opp. 8331 Fairfax Place	2022-08-15 12:45	19	0.11	0.62	4	<1	<1	-	-
GRAB	RMD-273	Opp. 8331 Fairfax Place	2022-08-22 12:45	18	0.11	0.73	6	<1	<1	-	-
GRAB	RMD-273	Opp. 8331 Fairfax Place	2022-08-29 12:45	19	0.13	0.61	6	<1	<1	-	-
GRAB	RMD-273	Opp. 8331 Fairfax Place	2022-09-06 12:45	19	0.09	0.68	4	<1	<1	-	-
GRAB	RMD-273	Opp. 8331 Fairfax Place	2022-09-12 12:45	19	0.12	0.58	2	<1	<1	-	-
GRAB	RMD-273	Opp. 8331 Fairfax Place	2022-09-20 12:45	19	0.14	0.57	<2	<1	<1	-	-
GRAB	RMD-273	Opp. 8331 Fairfax Place	2022-09-26 12:45	18	0.1	0.58	<2	<1	<1	-	-
GRAB	RMD-273	Opp. 8331 Fairfax Place	2022-10-03 12:45	18	0.1	0.62	6	<1	<1	-	-
GRAB	RMD-273	Opp. 8331 Fairfax Place	2022-10-11 12:45	17	0.23	0.56	8	<1	<1	-	-
GRAB	RMD-273	Opp. 8331 Fairfax Place	2022-10-17 12:45	17	0.12	0.57	<2	<1	<1	-	-
GRAB	RMD-273	Opp. 8331 Fairfax Place	2022-10-24 12:45	16	0.11	0.64	8	<1	<1	-	-
GRAB	RMD-273	Opp. 8331 Fairfax Place	2022-10-31 12:45	14	0.1	0.47	<2	<1	<1	-	-
GRAB	RMD-273	Opp. 8331 Fairfax Place	2022-11-07 12:45	12	0.17	0.61	<2	<1	<1	-	-

Sample Type	Water Sampling Station Number	Water Sampling Station Address	Sampled Date	Temperature (°C)	Turbidity (NTU)	Chlorine Free (mg/L)	HPC (CFU/mL)	E. coli (CFU/100mLs)	Total Coliform (CFU/100mLs)	E. coli (MPN/100mLs)	Total Coliform (MPN/100mLs)
GRAB	RMD-273	Opp. 8331 Fairfax Place	2022-11-14 12:45	11	0.15	0.61	<2	<1	<1	-	-
GRAB	RMD-273	Opp. 8331 Fairfax Place	2022-11-21 12:45	8	0.1	0.49	<2	<1	<1	-	-
GRAB	RMD-273	Opp. 8331 Fairfax Place	2022-11-28 12:45	10	0.1	0.68	<2	<1	<1	-	-
GRAB	RMD-273	Opp. 8331 Fairfax Place	2022-12-05 12:45	8	0.15	0.7	<2	<1	<1	-	-
GRAB	RMD-273	Opp. 8331 Fairfax Place	2022-12-12 12:45	8	0.14	0.67	<2	<1	<1	-	-
GRAB	RMD-274	10920 Springwood Court	2022-01-04 13:20	6	0.16	0.9	<2	<1	<1	-	-
GRAB	RMD-274	10920 Springwood Court	2022-01-10 13:15	5	0.13	1.01	<2	<1	<1	-	-
GRAB	RMD-274	10920 Springwood Court	2022-01-17 13:15	6	0.12	0.99	<2	<1	<1	-	-
GRAB	RMD-274	10920 Springwood Court	2022-01-24 13:15	6	0.13	0.87	<2	<1	<1	-	-
GRAB	RMD-274	10920 Springwood Court	2022-02-01 13:15	6	0.15	0.8	<2	<1	<1	-	-
GRAB	RMD-274	10920 Springwood Court	2022-02-07 13:15	6	0.12	0.94	<2	<1	<1	-	-
GRAB	RMD-274	10920 Springwood Court	2022-02-14 13:15	6	0.18	0.9	<2	<1	<1	-	-
GRAB	RMD-274	10920 Springwood Court	2022-02-22 13:15	8	0.13	0.81	<2	<1	<1	-	-
GRAB	RMD-274	10920 Springwood Court	2022-02-28 13:15	7	0.14	0.85	<2	<1	<1	-	-
GRAB	RMD-274	10920 Springwood Court	2022-03-07 13:15	6	0.17	0.93	<2	<1	<1	-	-
GRAB	RMD-274	10920 Springwood Court	2022-03-14 13:15	6	0.18	0.73	4	<1	<1	-	-
GRAB	RMD-274	10920 Springwood Court	2022-03-21 13:15	7	0.12	0.81	<2	<1	<1	-	-
GRAB	RMD-274	10920 Springwood Court	2022-03-28 13:15	7	0.14	0.9	<2	<1	<1	-	-
GRAB	RMD-274	10920 Springwood Court	2022-04-04 13:15	7	0.14	0.68	<2	<1	<1	-	-
GRAB	RMD-274	10920 Springwood Court	2022-04-11 13:15	8	0.1	0.77	<2	<1	<1	-	-
GRAB	RMD-274	10920 Springwood Court	2022-04-19 13:15	8	0.1	0.78	<2	<1	<1	-	-
GRAB	RMD-274	10920 Springwood Court	2022-04-25 13:15	9	0.11	0.8	<2	<1	<1	-	-
GRAB	RMD-274	10920 Springwood Court	2022-05-02 13:15	11	0.1	0.65	<2	<1	<1	-	-
GRAB	RMD-274	10920 Springwood Court	2022-05-09 13:15	11	0.13	0.7	4	<1	<1	-	-
GRAB	RMD-274	10920 Springwood Court	2022-05-16 13:15	10	0.16	0.72	<2	<1	<1	-	-
GRAB	RMD-274	10920 Springwood Court	2022-05-24 13:15	13	0.11	0.64	<2	<1	<1	-	-
GRAB	RMD-274	10920 Springwood Court	2022-05-30 13:15	12	0.13	0.63	2	<1	<1	-	-
GRAB	RMD-274	10920 Springwood Court	2022-06-06 15:00	14	0.14	0.67	8	<1	<1	-	-
GRAB	RMD-274	10920 Springwood Court	2022-06-13 13:15	15	0.16	0.56	6	<1	<1	-	-
GRAB	RMD-274	10920 Springwood Court	2022-06-20 13:15	12	0.09	0.85	42	<1	<1	-	-
GRAB	RMD-274	10920 Springwood Court	2022-06-27 13:15	15	0.16	0.69	140	<1	<1	-	-
GRAB	RMD-274	10920 Springwood Court	2022-07-04 13:15	15	1.2	0.72	600	<1	5	-	-
GRAB	RMD-274	10920 Springwood Court	2022-07-11 13:15	16	0.11	0.74	20	<1	<1	-	-
GRAB	RMD-274	10920 Springwood Court	2022-07-18 13:15	18	0.13	0.63	1800	<1	<1	-	-
GRAB	RMD-274	10920 Springwood Court	2022-07-25 13:15	16	0.25	0.76	96	<1	<1	-	-
GRAB	RMD-274	10920 Springwood Court	2022-08-02 13:15	17	0.38	0.73	190	<1	<1	-	-
GRAB	RMD-274	10920 Springwood Court	2022-08-08 13:15	18	0.17	0.6	20	<1	<1	-	-
GRAB	RMD-274	10920 Springwood Court	2022-08-15 13:15	18	0.16	0.63	38	<1	<1	-	-
GRAB	RMD-274	10920 Springwood Court	2022-08-22 13:15	18	0.09	0.67	24	<1	<1	-	-
GRAB	RMD-274	10920 Springwood Court	2022-08-29 13:15	19	0.1	0.62	12	<1	<1	-	-
GRAB	RMD-274	10920 Springwood Court	2022-09-06 13:15	17	0.1	0.63	20	<1	<1	-	-
GRAB	RMD-274	10920 Springwood Court	2022-09-12 13:15	18	0.15	0.55	140	<1	<1	-	-
GRAB	RMD-274	10920 Springwood Court	2022-09-20 13:15	17	1	0.62	360	<1	<1	-	-
GRAB	RMD-274	10920 Springwood Court	2022-09-26 13:15	18	0.11	0.65	<2	<1	<1	-	-
GRAB	RMD-274	10920 Springwood Court	2022-10-03 13:15	17	0.11	0.65	54	<1	<1	-	-
GRAB	RMD-274	10920 Springwood Court	2022-10-11 13:15	16	2.4	0.68	60	<1	<1	-	-
GRAB	RMD-274	10920 Springwood Court	2022-10-17 13:15	16	0.16	0.55	74	<1	<1	-	-
GRAB	RMD-274	10920 Springwood Court	2022-10-24 13:15	16	0.55	0.64	98	<1	<1	-	-
GRAB	RMD-274	10920 Springwood Court	2022-10-31 13:15	13	0.21	0.55	32	<1	<1	-	-
GRAB	RMD-274	10920 Springwood Court	2022-11-07 13:15	12	0.16	0.65	<2	<1	<1	-	-
GRAB	RMD-274	10920 Springwood Court	2022-11-14 13:15	11	0.13	0.66	10	<1	<1	-	-
GRAB	RMD-274	10920 Springwood Court	2022-11-21 13:15	8	0.1	0.68	2	<1	<1	-	-
GRAB	RMD-274	10920 Springwood Court	2022-11-28 13:15	10	0.1	0.74	2	<1	<1	-	-
GRAB	RMD-274	10920 Springwood Court	2022-12-05 13:15	8	0.12	0.83	<2	<1	<1	-	-
GRAB	RMD-274	10920 Springwood Court	2022-12-12 13:15	7	0.1	0.76	<2	<1	<1	-	-
GRAB	RMD-275	5180 Smith Crescent	2022-01-07 11:00	7	0.13	0.66	<2	<1	<1	-	-
GRAB	RMD-275	5180 Smith Crescent	2022-01-13 10:45	6	0.19	0.92	<2	<1	<1	-	-
GRAB	RMD-275	5180 Smith Crescent	2022-01-21 10:45	6	0.21	0.79	2	<1	<1	-	-
GRAB	RMD-275	5180 Smith Crescent	2022-01-27 10:45	6	0.15	0.77	<2	<1	<1	-	-
GRAB	RMD-275	5180 Smith Crescent	2022-02-04 10:45	6	0.14	0.61	<2	<1	<1	-	-
GRAB	RMD-275	5180 Smith Crescent	2022-02-10 10:45	6	0.19	0.67	<2	<1	<1	-	-
GRAB	RMD-275	5180 Smith Crescent	2022-02-18 10:45	6	0.14	0.71	<2	<1	<1	-	-
GRAB	RMD-275	5180 Smith Crescent	2022-02-24 10:45	7	0.12	0.71	2	<1	<1	-	-
GRAB	RMD-275	5180 Smith Crescent	2022-03-04 11:00	6	0.17	0.82	<2	<1	<1	-	-

Sample Type	Water Sampling Station Number	Water Sampling Station Address	Sampled Date	Temperature (°C)	Turbidity (NTU)	Chlorine Free (mg/L)	HPC (CFU/mL)	Ecoli (CFU/100mLs)	Total Coliform (CFU/100mLs)	Ecoli (MPN/100mLs)	Total Coliform (MPN/100mLs)
GRAB	RMD-275	5180 Smith Crescent	2022-03-10 10:45	6	0.29	0.74	<2	<1	<1	-	-
GRAB	RMD-275	5180 Smith Crescent	2022-03-18 11:00	7	0.16	0.79	<2	<1	<1	-	-
GRAB	RMD-275	5180 Smith Crescent	2022-03-24 11:00	7	0.11	0.88	<2	<1	<1	-	-
GRAB	RMD-275	5180 Smith Crescent	2022-04-01 11:00	7	0.11	0.98	<2	<1	<1	-	-
GRAB	RMD-275	5180 Smith Crescent	2022-04-07 10:55	8	0.12	0.72	<2	<1	<1	-	-
GRAB	RMD-275	5180 Smith Crescent	2022-04-14 11:00	8	0.11	0.73	4	<1	<1	-	-
GRAB	RMD-275	5180 Smith Crescent	2022-04-21 10:45	9	0.21	0.68	<2	<1	<1	-	-
GRAB	RMD-275	5180 Smith Crescent	2022-04-29 10:30	9	0.11	0.74	<2	<1	<1	-	-
GRAB	RMD-275	5180 Smith Crescent	2022-05-05 10:45	8	0.08	1.09	<2	<1	<1	-	-
GRAB	RMD-275	5180 Smith Crescent	2022-05-13 10:45	10	0.09	0.72	<2	<1	<1	-	-
GRAB	RMD-275	5180 Smith Crescent	2022-05-19 10:45	9	0.11	0.71	<2	<1	<1	-	-
GRAB	RMD-275	5180 Smith Crescent	2022-05-27 10:55	9	0.17	0.6	<2	<1	<1	-	-
GRAB	RMD-275	5180 Smith Crescent	2022-06-02 10:45	10	0.12	0.7	4	<1	<1	-	-
GRAB	RMD-275	5180 Smith Crescent	2022-06-10 10:55	11	0.18	0.58	<2	<1	<1	-	-
GRAB	RMD-275	5180 Smith Crescent	2022-06-16 10:40	10	0.18	0.82	<2	<1	<1	-	-
GRAB	RMD-275	5180 Smith Crescent	2022-06-24 10:45	12	0.1	0.68	<2	<1	<1	-	-
GRAB	RMD-275	5180 Smith Crescent	2022-06-29 10:55	12	0.11	0.7	2	<1	<1	-	-
GRAB	RMD-275	5180 Smith Crescent	2022-07-08 10:55	13	0.16	0.65	6	<1	<1	-	-
GRAB	RMD-275	5180 Smith Crescent	2022-07-22 10:45	14	0.27	0.65	<2	<1	<1	-	-
GRAB	RMD-275	5180 Smith Crescent	2022-07-28 11:10	13	0.14	0.56	6	<1	<1	-	-
GRAB	RMD-275	5180 Smith Crescent	2022-08-05 11:00	15	0.6	0.6	32	<1	<1	-	-
GRAB	RMD-275	5180 Smith Crescent	2022-08-11 10:55	15	0.12	0.64	14	<1	<1	-	-
GRAB	RMD-275	5180 Smith Crescent	2022-08-19 10:40	16	0.22	0.64	8	<1	<1	-	-
GRAB	RMD-275	5180 Smith Crescent	2022-08-25 11:00	15	0.14	0.6	2	<1	<1	-	-
GRAB	RMD-275	5180 Smith Crescent	2022-09-02 11:15	16	0.31	0.68	6	<1	<1	-	-
GRAB	RMD-275	5180 Smith Crescent	2022-09-08 11:15	16	0.41	0.71	10	<1	<1	-	-
GRAB	RMD-275	5180 Smith Crescent	2022-09-16 11:15	16	0.12	0.62	8	<1	<1	-	-
GRAB	RMD-275	5180 Smith Crescent	2022-09-22 10:55	17	0.31	0.58	18	<1	<1	-	-
GRAB	RMD-275	5180 Smith Crescent	2022-09-29 10:45	16	0.26	0.53	10	<1	<1	-	-
GRAB	RMD-275	5180 Smith Crescent	2022-10-06 10:45	16	0.13	0.62	28	<1	<1	-	-
GRAB	RMD-275	5180 Smith Crescent	2022-10-14 10:45	16	0.13	0.61	2	<1	<1	-	-
GRAB	RMD-275	5180 Smith Crescent	2022-10-20 10:55	15	0.57	0.68	2	<1	<1	-	-
GRAB	RMD-275	5180 Smith Crescent	2022-10-28 11:00	14	0.24	0.68	<2	<1	<1	-	-
GRAB	RMD-275	5180 Smith Crescent	2022-11-03 10:45	11	0.37	0.64	4	<1	<1	-	-
GRAB	RMD-275	5180 Smith Crescent	2022-11-10 10:55	9	0.18	0.65	<2	<1	<1	-	-
GRAB	RMD-275	5180 Smith Crescent	2022-11-17 10:45	9	0.14	0.67	<2	<1	<1	-	-
GRAB	RMD-275	5180 Smith Crescent	2022-11-25 10:55	9	0.22	0.68	<2	<1	<1	-	-
GRAB	RMD-275	5180 Smith Crescent	2022-12-01 10:55	8	0.15	0.7	<2	<1	<1	-	-
GRAB	RMD-275	5180 Smith Crescent	2022-12-09 10:45	8	0.16	0.59	<2	<1	<1	-	-
GRAB	RMD-275	5180 Smith Crescent	2022-12-15 10:45	7	0.13	0.69	2	<1	<1	-	-
GRAB	RMD-275	5180 Smith Crescent	2022-12-22 15:00	6	0.32	0.54	NA	<1	<1	-	-
GRAB	RMD-276	22271 Cochrane Drive	2022-01-07 10:45	8	0.11	0.79	<2	<1	<1	-	-
GRAB	RMD-276	22271 Cochrane Drive	2022-01-13 10:30	6	0.17	1.19	<2	<1	<1	-	-
GRAB	RMD-276	22271 Cochrane Drive	2022-01-21 10:30	6	0.18	0.88	<2	<1	<1	-	-
GRAB	RMD-276	22271 Cochrane Drive	2022-01-27 10:30	6	0.13	0.84	<2	<1	<1	-	-
GRAB	RMD-276	22271 Cochrane Drive	2022-02-04 10:30	6	0.21	0.69	<2	<1	<1	-	-
GRAB	RMD-276	22271 Cochrane Drive	2022-02-10 10:30	6	0.16	0.73	2	<1	<1	-	-
GRAB	RMD-276	22271 Cochrane Drive	2022-02-18 10:30	6	0.13	0.72	<2	<1	<1	-	-
GRAB	RMD-276	22271 Cochrane Drive	2022-02-24 10:30	6	0.17	0.81	<2	<1	<1	-	-
GRAB	RMD-276	22271 Cochrane Drive	2022-03-04 10:40	6	0.14	0.8	<2	<1	<1	-	-
GRAB	RMD-276	22271 Cochrane Drive	2022-03-10 10:30	6	0.22	0.83	<2	<1	<1	-	-
GRAB	RMD-276	22271 Cochrane Drive	2022-03-18 10:40	7	0.1	0.78	<2	<1	<1	-	-
GRAB	RMD-276	22271 Cochrane Drive	2022-03-24 10:40	7	0.1	0.67	2	<1	<1	-	-
GRAB	RMD-276	22271 Cochrane Drive	2022-04-01 10:40	7	0.1	0.96	<2	<1	<1	-	-
GRAB	RMD-276	22271 Cochrane Drive	2022-04-07 10:40	8	0.12	0.71	<2	<1	<1	-	-
GRAB	RMD-276	22271 Cochrane Drive	2022-04-14 10:40	8	0.08	0.72	<2	<1	<1	-	-
GRAB	RMD-276	22271 Cochrane Drive	2022-04-21 10:30	9	0.09	0.73	<2	<1	<1	-	-
GRAB	RMD-276	22271 Cochrane Drive	2022-04-29 10:15	8	0.12	0.76	<2	<1	<1	-	-
GRAB	RMD-276	22271 Cochrane Drive	2022-05-05 10:30	8	0.08	1.26	<2	<1	<1	-	-
GRAB	RMD-276	22271 Cochrane Drive	2022-05-13 10:30	9	0.09	0.7	<2	<1	<1	-	-
GRAB	RMD-276	22271 Cochrane Drive	2022-05-19 10:30	9	0.11	0.66	<2	<1	<1	-	-
GRAB	RMD-276	22271 Cochrane Drive	2022-05-27 10:40	9	0.13	0.71	<2	<1	<1	-	-
GRAB	RMD-276	22271 Cochrane Drive	2022-06-02 10:30	10	0.11	0.59	<2	<1	<1	-	-
GRAB	RMD-276	22271 Cochrane Drive	2022-06-10 10:40	10	0.15	0.66	<2	<1	<1	-	-

Sample Type	Water Sampling Station Number	Water Sampling Station Address	Sampled Date	Temperature (°C)	Turbidity (NTU)	Chlorine Free (mg/L)	HPC (CFU/mL)	Ecoli (CFU/100mLs)	Total Coliform (CFU/100mLs)	Ecoli (MPN/100mLs)	Total Coliform (MPN/100mLs)
GRAB	RMD-276	22271 Cochrane Drive	2022-06-16 10:20	9	0.23	0.79	<2	<1	<1	-	-
GRAB	RMD-276	22271 Cochrane Drive	2022-06-24 10:30	12	0.1	0.58	<2	<1	<1	-	-
GRAB	RMD-276	22271 Cochrane Drive	2022-06-29 10:40	11	0.13	0.65	<2	<1	<1	-	-
GRAB	RMD-276	22271 Cochrane Drive	2022-07-08 10:40	13	0.11	0.71	<2	<1	<1	-	-
GRAB	RMD-276	22271 Cochrane Drive	2022-07-14 10:40	14	0.12	0.61	<2	<1	<1	-	-
GRAB	RMD-276	22271 Cochrane Drive	2022-07-22 10:30	15	0.2	0.61	<2	<1	<1	-	-
GRAB	RMD-276	22271 Cochrane Drive	2022-07-28 10:55	13	0.25	0.76	<2	<1	<1	-	-
GRAB	RMD-276	22271 Cochrane Drive	2022-08-05 10:40	15	0.1	0.52	<2	<1	<1	-	-
GRAB	RMD-276	22271 Cochrane Drive	2022-08-11 10:40	15	0.18	0.7	2	<1	<1	-	-
GRAB	RMD-276	22271 Cochrane Drive	2022-08-19 10:20	15	0.15	0.63	<2	<1	<1	-	-
GRAB	RMD-276	22271 Cochrane Drive	2022-08-25 10:40	15	0.14	0.69	<2	<1	<1	-	-
GRAB	RMD-276	22271 Cochrane Drive	2022-09-02 11:00	16	0.13	0.73	<2	<1	<1	-	-
GRAB	RMD-276	22271 Cochrane Drive	2022-09-08 11:00	16	0.15	0.63	4	<1	<1	-	-
GRAB	RMD-276	22271 Cochrane Drive	2022-09-16 11:00	16	0.12	0.66	<2	<1	<1	-	-
GRAB	RMD-276	22271 Cochrane Drive	2022-09-22 10:40	16	0.23	0.55	2	<1	<1	-	-
GRAB	RMD-276	22271 Cochrane Drive	2022-09-29 10:30	15	0.13	0.59	6	<1	<1	-	-
GRAB	RMD-276	22271 Cochrane Drive	2022-10-06 10:30	16	0.12	0.64	2	<1	<1	-	-
GRAB	RMD-276	22271 Cochrane Drive	2022-10-14 10:30	16	0.14	0.66	<2	<1	<1	-	-
GRAB	RMD-276	22271 Cochrane Drive	2022-10-20 10:40	16	0.16	0.68	<2	<1	<1	-	-
GRAB	RMD-276	22271 Cochrane Drive	2022-10-28 10:40	14	0.24	0.66	<2	<1	<1	-	-
GRAB	RMD-276	22271 Cochrane Drive	2022-11-03 10:30	12	0.16	0.75	<2	<1	<1	-	-
GRAB	RMD-276	22271 Cochrane Drive	2022-11-10 10:40	9	0.16	0.63	<2	<1	<1	-	-
GRAB	RMD-276	22271 Cochrane Drive	2022-11-17 10:30	9	0.15	0.71	<2	<1	<1	-	-
GRAB	RMD-276	22271 Cochrane Drive	2022-11-25 10:40	9	0.11	0.67	<2	<1	<1	-	-
GRAB	RMD-276	22271 Cochrane Drive	2022-12-01 10:40	8	0.76	0.65	<2	<1	<1	-	-
GRAB	RMD-276	22271 Cochrane Drive	2022-12-09 10:30	8	0.16	0.63	<2	<1	<1	-	-
GRAB	RMD-276	22271 Cochrane Drive	2022-12-15 10:30	7	0.18	0.68	<2	<1	<1	-	-
GRAB	RMD-276	22271 Cochrane Drive	2022-12-22 14:30	6	0.24	0.63	NA	<1	<1	-	-
GRAB	RMD-277	Opp. 11280 Twigg Place	2022-01-05 13:00	6	0.18	0.95	<2	<1	<1	-	-
GRAB	RMD-277	Opp. 11280 Twigg Place	2022-01-12 13:00	6	0.56	1.16	<2	<1	<1	-	-
GRAB	RMD-277	Opp. 11280 Twigg Place	2022-01-18 12:45	6	0.14	1.12	<2	<1	<1	-	-
GRAB	RMD-277	Opp. 11280 Twigg Place	2022-01-26 12:50	6	0.15	0.99	<2	<1	<1	-	-
GRAB	RMD-277	Opp. 11280 Twigg Place	2022-02-02 12:50	6	0.13	0.76	<2	<1	<1	-	-
GRAB	RMD-277	Opp. 11280 Twigg Place	2022-02-09 12:50	6	0.18	0.87	<2	<1	<1	-	-
GRAB	RMD-277	Opp. 11280 Twigg Place	2022-02-16 12:45	6	0.14	0.85	2	<1	<1	-	-
GRAB	RMD-277	Opp. 11280 Twigg Place	2022-02-23 13:00	6	0.11	0.8	<2	<1	<1	-	-
GRAB	RMD-277	Opp. 11280 Twigg Place	2022-03-02 13:00	6	0.11	0.68	<2	<1	<1	-	-
GRAB	RMD-277	Opp. 11280 Twigg Place	2022-03-09 13:00	6	0.36	0.89	<2	<1	<1	-	-
GRAB	RMD-277	Opp. 11280 Twigg Place	2022-03-16 12:50	6	0.41	0.68	<2	<1	<1	-	-
GRAB	RMD-277	Opp. 11280 Twigg Place	2022-03-23 12:50	7	0.2	1.06	<2	<1	<1	-	-
GRAB	RMD-277	Opp. 11280 Twigg Place	2022-03-30 12:50	7	0.32	1.01	<2	<1	<1	-	-
GRAB	RMD-277	Opp. 11280 Twigg Place	2022-04-06 12:50	7	0.18	0.8	<2	<1	<1	-	-
GRAB	RMD-277	Opp. 11280 Twigg Place	2022-04-13 12:45	8	0.2	0.73	<2	<1	<1	-	-
GRAB	RMD-277	Opp. 11280 Twigg Place	2022-04-20 12:50	8	0.1	0.7	<2	<1	<1	-	-
GRAB	RMD-277	Opp. 11280 Twigg Place	2022-04-27 13:00	9	0.12	0.72	<2	<1	<1	-	-
GRAB	RMD-277	Opp. 11280 Twigg Place	2022-05-04 13:00	9	0.16	0.62	<2	<1	<1	-	-
GRAB	RMD-277	Opp. 11280 Twigg Place	2022-05-11 13:00	9	0.13	0.89	2	<1	<1	-	-
GRAB	RMD-277	Opp. 11280 Twigg Place	2022-05-18 13:00	9	0.17	0.76	<2	<1	<1	-	-
GRAB	RMD-277	Opp. 11280 Twigg Place	2022-05-25 12:45	11	0.09	0.64	2	<1	<1	-	-
GRAB	RMD-277	Opp. 11280 Twigg Place	2022-06-01 12:45	11	0.11	0.66	<2	<1	<1	-	-
GRAB	RMD-277	Opp. 11280 Twigg Place	2022-06-08 12:45	11	0.13	0.72	4	<1	<1	-	-
GRAB	RMD-277	Opp. 11280 Twigg Place	2022-06-15 12:45	12	0.1	0.74	2	<1	<1	-	-
GRAB	RMD-277	Opp. 11280 Twigg Place	2022-06-22 12:45	12	0.12	0.61	<2	<1	<1	-	-
GRAB	RMD-277	Opp. 11280 Twigg Place	2022-06-28 13:00	12	0.13	0.52	6	<1	<1	-	-
GRAB	RMD-277	Opp. 11280 Twigg Place	2022-07-06 10:55	13	0.13	0.73	12	<1	<1	-	-
GRAB	RMD-277	Opp. 11280 Twigg Place	2022-07-13 13:00	15	0.09	0.71	6	<1	<1	-	-
GRAB	RMD-277	Opp. 11280 Twigg Place	2022-07-20 12:45	13	0.24	0.77	8	<1	<1	-	-
GRAB	RMD-277	Opp. 11280 Twigg Place	2022-07-27 12:45	13	0.2	0.73	2	<1	<1	-	-
GRAB	RMD-277	Opp. 11280 Twigg Place	2022-08-03 12:45	17	0.15	0.77	2	<1	<1	-	-
GRAB	RMD-277	Opp. 11280 Twigg Place	2022-08-10 12:45	17	0.16	0.69	10	<1	<1	-	-
GRAB	RMD-277	Opp. 11280 Twigg Place	2022-08-17 12:50	15	0.14	0.73	<2	<1	<1	-	-
GRAB	RMD-277	Opp. 11280 Twigg Place	2022-08-24 12:50	15	0.15	0.79	10	<1	<1	-	-
GRAB	RMD-277	Opp. 11280 Twigg Place	2022-08-31 12:45	16	0.12	0.78	<2	<1	<1	-	-
GRAB	RMD-277	Opp. 11280 Twigg Place	2022-09-07 12:50	16	0.09	0.78	24	<1	<1	-	-

Sample Type	Water Sampling Station Number	Water Sampling Station Address	Sampled Date	Temperature (°C)	Turbidity (NTU)	Chlorine Free (mg/L)	HPC (CFU/mL)	E. coli (CFU/100mLs)	Total Coliform (CFU/100mLs)	E. coli (MPN/100mLs)	Total Coliform (MPN/100mLs)
GRAB	RMD-277	Opp. 11280 Twigg Place	2022-09-14 13:00	17	0.1	0.76	16	<1	<1	-	-
GRAB	RMD-277	Opp. 11280 Twigg Place	2022-09-21 12:45	17	0.14	0.69	32	<1	<1	-	-
GRAB	RMD-277	Opp. 11280 Twigg Place	2022-09-28 12:50	16	0.19	0.8	14	<1	<1	-	-
GRAB	RMD-277	Opp. 11280 Twigg Place	2022-10-05 13:00	15	0.27	0.76	10	<1	<1	-	-
GRAB	RMD-277	Opp. 11280 Twigg Place	2022-10-12 12:50	16	0.13	0.68	26	<1	<1	-	-
GRAB	RMD-277	Opp. 11280 Twigg Place	2022-10-19 12:50	15	0.16	0.76	20	<1	<1	-	-
GRAB	RMD-277	Opp. 11280 Twigg Place	2022-10-27 13:00	14	0.12	0.73	2	<1	<1	-	-
GRAB	RMD-277	Opp. 11280 Twigg Place	2022-11-02 13:00	11	0.13	0.75	4	<1	<1	-	-
GRAB	RMD-277	Opp. 11280 Twigg Place	2022-11-09 12:50	10	0.14	0.84	<2	<1	<1	-	-
GRAB	RMD-277	Opp. 11280 Twigg Place	2022-11-16 12:50	10	0.12	0.71	<2	<1	<1	-	-
GRAB	RMD-277	Opp. 11280 Twigg Place	2022-11-23 12:45	8	0.13	0.73	<2	<1	<1	-	-
GRAB	RMD-277	Opp. 11280 Twigg Place	2022-11-30 12:50	9	0.14	0.72	<2	<1	<1	-	-
GRAB	RMD-277	Opp. 11280 Twigg Place	2022-12-07 13:00	7	0.12	0.77	2	<1	<1	-	-
GRAB	RMD-277	Opp. 11280 Twigg Place	2022-12-14 12:45	7	0.13	0.87	<2	<1	<1	-	-
GRAB	RMD-277	Opp. 11280 Twigg Place	2022-12-21 12:45	6	0.14	0.71	NA	<1	<1	-	-
GRAB	RMD-278	6651 Fraserwood Place	2022-01-05 13:35	6	0.19	0.69	<2	<1	<1	-	-
GRAB	RMD-278	6651 Fraserwood Place	2022-01-12 13:35	6	0.15	0.87	<2	<1	<1	-	-
GRAB	RMD-278	6651 Fraserwood Place	2022-01-18 13:40	6	0.13	0.92	2	<1	<1	-	-
GRAB	RMD-278	6651 Fraserwood Place	2022-01-26 13:45	6	0.21	0.74	<2	<1	<1	-	-
GRAB	RMD-278	6651 Fraserwood Place	2022-02-02 13:45	6	0.11	0.7	<2	<1	<1	-	-
GRAB	RMD-278	6651 Fraserwood Place	2022-02-09 13:45	6	0.25	0.7	2	<1	<1	-	-
GRAB	RMD-278	6651 Fraserwood Place	2022-02-16 13:35	7	0.13	0.69	<2	<1	<1	-	-
GRAB	RMD-278	6651 Fraserwood Place	2022-02-23 13:35	6	0.09	0.78	<2	<1	<1	-	-
GRAB	RMD-278	6651 Fraserwood Place	2022-03-02 13:35	6	0.12	0.74	<2	<1	<1	-	-
GRAB	RMD-278	6651 Fraserwood Place	2022-03-09 13:35	7	0.25	0.71	<2	<1	<1	-	-
GRAB	RMD-278	6651 Fraserwood Place	2022-03-16 13:50	6	0.14	0.72	<2	<1	<1	-	-
GRAB	RMD-278	6651 Fraserwood Place	2022-03-23 13:45	7	0.14	0.82	<2	<1	<1	-	-
GRAB	RMD-278	6651 Fraserwood Place	2022-03-30 13:45	7	0.14	0.72	<2	<1	<1	-	-
GRAB	RMD-278	6651 Fraserwood Place	2022-04-06 13:40	7	0.12	0.64	<2	<1	<1	-	-
GRAB	RMD-278	6651 Fraserwood Place	2022-04-13 13:40	8	0.13	0.75	<2	<1	<1	-	-
GRAB	RMD-278	6651 Fraserwood Place	2022-04-20 13:40	8	0.13	0.72	<2	<1	<1	-	-
GRAB	RMD-278	6651 Fraserwood Place	2022-04-27 13:35	9	0.09	0.67	<2	<1	<1	-	-
GRAB	RMD-278	6651 Fraserwood Place	2022-05-04 13:35	10	0.1	0.76	<2	<1	<1	-	-
GRAB	RMD-278	6651 Fraserwood Place	2022-05-11 13:35	10	0.13	0.73	<2	<1	<1	-	-
GRAB	RMD-278	6651 Fraserwood Place	2022-05-18 13:35	10	0.27	0.73	12	<1	<1	-	-
GRAB	RMD-278	6651 Fraserwood Place	2022-05-25 13:40	10	0.12	0.63	<2	<1	<1	-	-
GRAB	RMD-278	6651 Fraserwood Place	2022-06-01 13:35	9	0.13	0.68	<2	<1	<1	-	-
GRAB	RMD-278	6651 Fraserwood Place	2022-06-08 13:30	10	0.19	0.7	2	<1	<1	-	-
GRAB	RMD-278	6651 Fraserwood Place	2022-06-15 13:35	9	0.13	0.76	<2	<1	<1	-	-
GRAB	RMD-278	6651 Fraserwood Place	2022-06-22 13:35	10	0.15	0.71	<2	<1	<1	-	-
GRAB	RMD-278	6651 Fraserwood Place	2022-06-28 13:35	11	0.1	0.68	<2	<1	<1	-	-
GRAB	RMD-278	6651 Fraserwood Place	2022-07-06 11:35	14	0.19	0.66	<2	<1	<1	-	-
GRAB	RMD-278	6651 Fraserwood Place	2022-07-13 13:35	11	0.2	0.71	4	<1	<1	-	-
GRAB	RMD-278	6651 Fraserwood Place	2022-07-20 13:35	13	0.28	1.11	<2	<1	<1	-	-
GRAB	RMD-278	6651 Fraserwood Place	2022-07-27 13:35	12	0.18	0.69	<2	<1	<1	-	-
GRAB	RMD-278	6651 Fraserwood Place	2022-08-03 13:35	14	0.27	0.69	4	<1	<1	-	-
GRAB	RMD-278	6651 Fraserwood Place	2022-08-10 13:35	15	0.23	0.65	2	<1	<1	-	-
GRAB	RMD-278	6651 Fraserwood Place	2022-08-17 13:45	15	0.11	0.66	<2	<1	<1	-	-
GRAB	RMD-278	6651 Fraserwood Place	2022-08-24 13:40	17	0.11	0.64	8	<1	<1	-	-
GRAB	RMD-278	6651 Fraserwood Place	2022-08-31 13:40	17	0.1	0.65	10	<1	<1	-	-
GRAB	RMD-278	6651 Fraserwood Place	2022-09-07 13:45	16	0.25	0.66	12	<1	<1	-	-
GRAB	RMD-278	6651 Fraserwood Place	2022-09-14 13:35	17	0.11	0.66	42	<1	<1	-	-
GRAB	RMD-278	6651 Fraserwood Place	2022-09-21 13:35	16	0.35	0.64	<2	<1	<1	-	-
GRAB	RMD-278	6651 Fraserwood Place	2022-09-28 13:40	17	0.15	0.59	2	<1	<1	-	-
GRAB	RMD-278	6651 Fraserwood Place	2022-10-05 13:35	16	0.1	0.66	8	<1	<1	-	-
GRAB	RMD-278	6651 Fraserwood Place	2022-10-12 13:40	16	0.12	0.62	<2	<1	<1	-	-
GRAB	RMD-278	6651 Fraserwood Place	2022-10-19 12:40	15	0.21	0.7	<2	<1	<1	-	-
GRAB	RMD-278	6651 Fraserwood Place	2022-10-27 13:35	13	0.19	0.68	12	<1	<1	-	-
GRAB	RMD-278	6651 Fraserwood Place	2022-11-02 13:35	10	0.38	0.64	4	<1	<1	-	-
GRAB	RMD-278	6651 Fraserwood Place	2022-11-09 13:40	10	0.13	0.72	<2	<1	<1	-	-
GRAB	RMD-278	6651 Fraserwood Place	2022-11-16 13:40	10	0.14	0.82	<2	<1	<1	-	-
GRAB	RMD-278	6651 Fraserwood Place	2022-11-23 13:35	8	0.24	0.6	<2	<1	<1	-	-
GRAB	RMD-278	6651 Fraserwood Place	2022-11-30 13:40	9	0.15	0.66	<2	<1	<1	-	-
GRAB	RMD-278	6651 Fraserwood Place	2022-12-07 13:30	7	0.14	0.71	6	<1	<1	-	-

Sample Type	Water Sampling Station Number	Water Sampling Station Address	Sampled Date	Temperature (°C)	Turbidity (NTU)	Chlorine Free (mg/L)	HPC (CFU/mL)	Ecoli (CFU/100mLs)	Total Coliform (CFU/100mLs)	Ecoli (MPN/100mLs)	Total Coliform (MPN/100mLs)
GRAB	RMD-278	6651 Fraserwood Place	2022-12-14 13:35	7	0.13	0.77	<2	<1	<1	-	-
GRAB	RMD-278	6651 Fraserwood Place	2022-12-21 13:35	6	0.12	0.46	NA	<1	<1	-	-
GRAB	RMD-279	Opp. 20371 Westminster Highway	2022-01-05 13:50	4	0.1	0.85	<2	<1	<1	-	-
GRAB	RMD-279	Opp. 20371 Westminster Highway	2022-01-12 13:50	6	0.29	0.76	<2	<1	<1	-	-
GRAB	RMD-279	Opp. 20371 Westminster Highway	2022-01-18 13:55	6	0.13	1.27	<2	<1	<1	-	-
GRAB	RMD-279	Opp. 20371 Westminster Highway	2022-01-26 14:00	5	0.16	0.74	<2	<1	<1	-	-
GRAB	RMD-279	Opp. 20371 Westminster Highway	2022-02-02 14:00	5	0.14	0.75	<2	<1	<1	-	-
GRAB	RMD-279	Opp. 20371 Westminster Highway	2022-02-09 14:00	5	0.15	0.72	<2	<1	<1	-	-
GRAB	RMD-279	Opp. 20371 Westminster Highway	2022-02-16 13:50	6	0.16	0.74	4	<1	<1	-	-
GRAB	RMD-279	Opp. 20371 Westminster Highway	2022-02-23 13:50	5	0.12	0.76	<2	<1	<1	-	-
GRAB	RMD-279	Opp. 20371 Westminster Highway	2022-03-02 13:50	5	0.21	0.75	<2	<1	<1	-	-
GRAB	RMD-279	Opp. 20371 Westminster Highway	2022-03-09 13:50	5	0.24	0.73	<2	<1	<1	-	-
GRAB	RMD-279	Opp. 20371 Westminster Highway	2022-03-16 14:05	6	0.15	0.76	<2	<1	<1	-	-
GRAB	RMD-279	Opp. 20371 Westminster Highway	2022-03-23 14:00	6	0.15	0.87	<2	<1	<1	-	-
GRAB	RMD-279	Opp. 20371 Westminster Highway	2022-03-30 14:00	6	0.15	0.93	<2	<1	<1	-	-
GRAB	RMD-279	Opp. 20371 Westminster Highway	2022-04-06 14:00	7	0.14	0.77	<2	<1	<1	-	-
GRAB	RMD-279	Opp. 20371 Westminster Highway	2022-04-13 13:55	8	0.07	0.67	<2	<1	<1	-	-
GRAB	RMD-279	Opp. 20371 Westminster Highway	2022-04-20 14:00	7	0.08	0.72	<2	<1	<1	-	-
GRAB	RMD-279	Opp. 20371 Westminster Highway	2022-04-27 13:50	8	0.1	0.69	<2	<1	<1	-	-
GRAB	RMD-279	Opp. 20371 Westminster Highway	2022-05-04 13:50	9	0.11	0.8	<2	<1	<1	-	-
GRAB	RMD-279	Opp. 20371 Westminster Highway	2022-05-11 13:50	8	0.09	0.72	<2	<1	<1	-	-
GRAB	RMD-279	Opp. 20371 Westminster Highway	2022-05-18 13:50	9	0.23	0.74	<2	<1	<1	-	-
GRAB	RMD-279	Opp. 20371 Westminster Highway	2022-05-25 14:00	10	0.09	0.52	<2	<1	<1	-	-
GRAB	RMD-279	Opp. 20371 Westminster Highway	2022-06-01 13:50	9	0.12	0.75	<2	<1	<1	-	-
GRAB	RMD-279	Opp. 20371 Westminster Highway	2022-06-08 13:50	9	0.21	1.21	<2	<1	<1	-	-
GRAB	RMD-279	Opp. 20371 Westminster Highway	2022-06-15 13:50	9	0.13	0.76	2	<1	<1	-	-
GRAB	RMD-279	Opp. 20371 Westminster Highway	2022-06-22 13:50	9	0.11	0.77	<2	<1	<1	-	-
GRAB	RMD-279	Opp. 20371 Westminster Highway	2022-06-28 13:50	10	0.11	0.65	<2	<1	<1	-	-
GRAB	RMD-279	Opp. 20371 Westminster Highway	2022-07-06 11:45	10	0.14	0.8	<2	<1	<1	-	-
GRAB	RMD-279	Opp. 20371 Westminster Highway	2022-07-13 13:50	10	0.18	0.74	<2	<1	<1	-	-
GRAB	RMD-279	Opp. 20371 Westminster Highway	2022-07-20 13:50	12	0.11	0.92	<2	<1	<1	-	-
GRAB	RMD-279	Opp. 20371 Westminster Highway	2022-07-27 13:50	11	0.23	0.8	<2	<1	<1	-	-
GRAB	RMD-279	Opp. 20371 Westminster Highway	2022-08-03 13:50	13	0.15	0.74	<2	<1	<1	-	-
GRAB	RMD-279	Opp. 20371 Westminster Highway	2022-08-10 13:50	14	0.11	0.54	<2	<1	<1	-	-
GRAB	RMD-279	Opp. 20371 Westminster Highway	2022-08-17 14:00	14	0.11	0.73	<2	<1	<1	-	-
GRAB	RMD-279	Opp. 20371 Westminster Highway	2022-08-24 13:55	15	0.13	0.73	<2	<1	<1	-	-
GRAB	RMD-279	Opp. 20371 Westminster Highway	2022-08-31 14:00	16	0.11	0.79	<2	<1	<1	-	-
GRAB	RMD-279	Opp. 20371 Westminster Highway	2022-09-07 14:00	15	0.64	0.73	6	<1	<1	-	-
GRAB	RMD-279	Opp. 20371 Westminster Highway	2022-09-14 13:50	15	0.11	0.68	<2	<1	<1	-	-
GRAB	RMD-279	Opp. 20371 Westminster Highway	2022-09-21 13:50	15	0.21	0.65	<2	<1	<1	-	-
GRAB	RMD-279	Opp. 20371 Westminster Highway	2022-09-28 13:55	15	0.3	0.7	<2	<1	<1	-	-
GRAB	RMD-279	Opp. 20371 Westminster Highway	2022-10-05 13:50	15	0.1	0.71	<2	<1	<1	-	-
GRAB	RMD-279	Opp. 20371 Westminster Highway	2022-10-12 13:55	15	0.14	0.67	<2	<1	<1	-	-
GRAB	RMD-279	Opp. 20371 Westminster Highway	2022-10-19 13:55	15	0.18	0.78	<2	<1	<1	-	-
GRAB	RMD-279	Opp. 20371 Westminster Highway	2022-10-27 13:50	13	0.2	0.84	<2	<1	<1	-	-
GRAB	RMD-279	Opp. 20371 Westminster Highway	2022-11-02 13:50	11	0.23	0.74	<2	<1	<1	-	-
GRAB	RMD-279	Opp. 20371 Westminster Highway	2022-11-09 13:55	9	0.13	0.93	<2	<1	<1	-	-
GRAB	RMD-279	Opp. 20371 Westminster Highway	2022-11-16 13:55	9	0.12	0.6	<2	<1	<1	-	-
GRAB	RMD-279	Opp. 20371 Westminster Highway	2022-11-23 13:50	8	0.19	0.74	<2	<1	<1	-	-
GRAB	RMD-279	Opp. 20371 Westminster Highway	2022-11-30 13:15	7	0.13	0.66	<2	<1	<1	-	-
GRAB	RMD-279	Opp. 20371 Westminster Highway	2022-12-07 13:45	7	0.13	0.77	<2	<1	<1	-	-
GRAB	RMD-279	Opp. 20371 Westminster Highway	2022-12-14 13:50	6	0.14	0.85	<2	<1	<1	-	-
GRAB	RMD-279	Opp. 20371 Westminster Highway	2022-12-21 13:50	5	0.25	0.71	NA	<1	<1	-	-
GRAB	RMD-280	11500 McKenzie Road	2022-01-07 08:20	7	0.18	1.12	<2	<1	<1	-	-
GRAB	RMD-280	11500 McKenzie Road	2022-01-13 08:15	6	0.18	0.97	<2	<1	<1	-	-
GRAB	RMD-280	11500 McKenzie Road	2022-01-21 08:15	6	0.13	0.84	<2	<1	<1	-	-
GRAB	RMD-280	11500 McKenzie Road	2022-01-27 08:15	6	0.24	0.82	<2	<1	<1	-	-
GRAB	RMD-280	11500 McKenzie Road	2022-02-04 08:15	6	0.16	0.91	<2	<1	<1	-	-
GRAB	RMD-280	11500 McKenzie Road	2022-02-10 08:15	7	0.13	0.97	<2	<1	<1	-	-
GRAB	RMD-280	11500 McKenzie Road	2022-02-18 08:15	6	0.13	1.04	<2	<1	<1	-	-
GRAB	RMD-280	11500 McKenzie Road	2022-02-24 08:15	7	0.28	1.06	<2	<1	<1	-	-
GRAB	RMD-280	11500 McKenzie Road	2022-03-04 08:15	7	0.14	0.79	<2	<1	<1	-	-
GRAB	RMD-280	11500 McKenzie Road	2022-03-10 08:15	7	0.26	0.8	2	<1	<1	-	-
GRAB	RMD-280	11500 McKenzie Road	2022-03-18 08:15	7	0.15	0.75	<2	<1	<1	-	-

Sample Type	Water Sampling Station Number	Water Sampling Station Address	Sampled Date	Temperature (°C)	Turbidity (NTU)	Chlorine Free (mg/L)	HPC (CFU/mL)	Ecoli (CFU/100mLs)	Total Coliform (CFU/100mLs)	Ecoli (MPN/100mLs)	Total Coliform (MPN/100mLs)
GRAB	RMD-280	11500 McKenzie Road	2022-03-24 08:15	7	0.12	0.9	<2	<1	<1	-	-
GRAB	RMD-280	11500 McKenzie Road	2022-04-01 08:15	7	0.13	1	<2	<1	<1	-	-
GRAB	RMD-280	11500 McKenzie Road	2022-04-07 08:20	8	0.14	0.73	<2	<1	<1	-	-
GRAB	RMD-280	11500 McKenzie Road	2022-04-14 08:15	9	0.12	0.91	<2	<1	<1	-	-
GRAB	RMD-280	11500 McKenzie Road	2022-04-21 08:15	8	0.12	0.69	<2	<1	<1	-	-
GRAB	RMD-280	11500 McKenzie Road	2022-04-29 08:15	10	0.13	0.68	2	<1	<1	-	-
GRAB	RMD-280	11500 McKenzie Road	2022-05-05 08:20	9	0.16	1.08	<2	<1	<1	-	-
GRAB	RMD-280	11500 McKenzie Road	2022-05-13 08:15	9	0.11	0.63	<2	<1	<1	-	-
GRAB	RMD-280	11500 McKenzie Road	2022-05-19 08:15	10	0.13	0.74	<2	<1	<1	-	-
GRAB	RMD-280	11500 McKenzie Road	2022-05-27 08:20	9	0.12	0.67	<2	<1	<1	-	-
GRAB	RMD-280	11500 McKenzie Road	2022-06-02 08:15	10	0.11	0.66	2	<1	<1	-	-
GRAB	RMD-280	11500 McKenzie Road	2022-06-10 08:20	11	0.18	0.7	<2	<1	<1	-	-
GRAB	RMD-280	11500 McKenzie Road	2022-06-16 08:15	10	0.12	0.71	<2	<1	<1	-	-
GRAB	RMD-280	11500 McKenzie Road	2022-06-24 08:15	10	0.13	0.74	<2	<1	<1	-	-
GRAB	RMD-280	11500 McKenzie Road	2022-06-29 08:20	12	0.12	0.8	<2	<1	<1	-	-
GRAB	RMD-280	11500 McKenzie Road	2022-07-08 08:20	12	0.11	0.7	<2	<1	<1	-	-
GRAB	RMD-280	11500 McKenzie Road	2022-07-14 08:20	13	0.1	0.68	18	<1	<1	-	-
GRAB	RMD-280	11500 McKenzie Road	2022-07-22 08:15	14	0.14	0.78	<2	<1	<1	-	-
GRAB	RMD-280	11500 McKenzie Road	2022-07-28 08:20	13	0.13	0.83	<2	<1	<1	-	-
GRAB	RMD-280	11500 McKenzie Road	2022-08-05 08:15	15	0.16	0.59	<2	<1	<1	-	-
GRAB	RMD-280	11500 McKenzie Road	2022-08-11 08:20	15	0.16	0.72	2	<1	<1	-	-
GRAB	RMD-280	11500 McKenzie Road	2022-08-19 08:15	15	0.11	0.8	<2	<1	<1	-	-
GRAB	RMD-280	11500 McKenzie Road	2022-08-25 08:15	15	0.11	0.78	4	<1	<1	-	-
GRAB	RMD-280	11500 McKenzie Road	2022-09-02 08:30	16	0.11	0.69	<2	<1	<1	-	-
GRAB	RMD-280	11500 McKenzie Road	2022-09-08 08:30	16	0.13	0.71	<2	<1	<1	-	-
GRAB	RMD-280	11500 McKenzie Road	2022-09-16 08:30	16	0.11	0.7	<2	<1	<1	-	-
GRAB	RMD-280	11500 McKenzie Road	2022-09-22 08:20	16	0.12	0.67	<2	<1	<1	-	-
GRAB	RMD-280	11500 McKenzie Road	2022-09-29 08:15	16	0.17	0.81	<2	<1	<1	-	-
GRAB	RMD-280	11500 McKenzie Road	2022-10-06 08:15	16	0.18	0.65	<2	<1	<1	-	-
GRAB	RMD-280	11500 McKenzie Road	2022-10-14 08:15	16	0.16	0.62	2	<1	<1	-	-
GRAB	RMD-280	11500 McKenzie Road	2022-10-20 08:20	15	0.19	0.57	<2	<1	<1	-	-
GRAB	RMD-280	11500 McKenzie Road	2022-10-28 08:15	14	0.11	0.79	<2	<1	<1	-	-
GRAB	RMD-280	11500 McKenzie Road	2022-11-03 08:15	12	0.11	0.66	4	<1	<1	-	-
GRAB	RMD-280	11500 McKenzie Road	2022-11-10 08:20	10	0.16	0.35	8	<1	<1	-	-
GRAB	RMD-280	11500 McKenzie Road	2022-11-17 08:15	9	0.11	0.57	<2	<1	<1	-	-
GRAB	RMD-280	11500 McKenzie Road	2022-11-25 08:15	9	0.15	0.72	<2	<1	<1	-	-
GRAB	RMD-280	11500 McKenzie Road	2022-12-01 08:20	8	0.18	0.79	<2	<1	<1	-	-
GRAB	RMD-280	11500 McKenzie Road	2022-12-09 08:15	8	0.17	0.67	<2	<1	<1	-	-
GRAB	RMD-280	11500 McKenzie Road	2022-12-15 08:15	7	0.15	0.85	<2	<1	<1	-	-
GRAB	RMD-280	11500 McKenzie Road	2022-12-22 12:50	6	0.48	0.66	NA	<1	<1	-	-

APPENDIX F: 2022 THM AND HAA TEST RESULTS

Water Sampling Station Number	Date Sampled	THM (ppb)						HAA (ppb)						
		Bromodichloromethane	Bromoform	Chlorodibromomethane	Chloroform	Total Trihalomethanes	Total THM Quarterly Average (Guideline Limit 100 ppb)	Dibromoacetic Acid	Dichloroacetic Acid	Monobromoacetic Acid	Monochloroacetic Acid	Trichloroacetic Acid	Total Haloacetic Acid	Total HAA Quarterly Average (Guideline Limit 80 ppb)
RMD-250	24-Feb-21	<1	<1	<1	23	25	25	<0.5	7	<1	<2	7	16	20
RMD-250	2-Jun-21	<1	<1	<1	20	22	25	<0.5	9	<1	<2	7	18	20
RMD-250	25-Aug-21	1	<1	<1	25	28	25	<0.5	11	<1	<2	8	19	20
RMD-250	25-Nov-21	<1	<1	<1	30	32	27	<0.5	10	<1	<2	9	19	18
RMD-250	16-Feb-22	<1	<1	<1	20	21	26	<0.5	9.7	<0.5	0.6	8	18	18
RMD-250	11-May-22	<1	<1	<1	25	27	27	<0.5	11	<0.5	1.1	7	18	19
RMD-250	17-Aug-22	<1	<1	<1	21	21	25	<0.5	7.8	<0.5	<5.0	5	14	17
RMD-250	17-Nov-22	2	<1	<1	28	30	25	<0.5	7.3	<0.5	0.8	6	14	16
RMD-251	24-Feb-21	<1	<1	<1	25	27	26	<0.5	7	<1	<2	7	17	17
RMD-251	2-Jun-21	<1	<1	<1	19	21	25	<0.5	10	<1	<2	8	20	19
RMD-251	25-Aug-21	1	<1	<1	26	29	26	<0.5	12	<1	<2	7	19	20
RMD-251	25-Nov-21	<1	<1	<1	28	29	27	<0.5	11	<1	<2	10	21	19
RMD-251	16-Feb-22	<1	<1	<1	11	12	23	<0.5	9.5	<0.5	0.7	7	17	19
RMD-251	11-May-22	<1	<1	<1	23	24	24	<0.5	10	<0.5	0.6	6	17	19
RMD-251	17-Aug-22	<1	<1	<1	21	21	22	<0.5	8.2	<0.5	<5.0	5	14	17
RMD-251	17-Nov-22	2	<1	<1	27	29	22	<0.5	6.9	<0.5	<0.5	5	12	15
RMD-258	24-Feb-21	<1	<1	<1	25	26	29	<0.5	8	<1	<2	8	18	21
RMD-258	2-Jun-21	<1	<1	<1	23	25	28	<0.5	11	<1	<2	9	22	22
RMD-258	25-Aug-21	1	<1	<1	32	34	28	<0.5	13	<1	<2	9	22	22
RMD-258	25-Nov-21	<1	<1	<1	31	32	29	<0.5	11	<1	<2	11	22	21
RMD-258	16-Feb-22	<1	<1	<1	23	24	29	<0.5	11	<0.5	0.6	8	20	21
RMD-258	11-May-22	<1	<1	<1	27	29	30	<0.5	12	<0.5	1	8	21	21
RMD-258	17-Aug-22	<1	<1	<1	27	27	28	<0.5	9.9	<0.5	0.7	8	18	20
RMD-258	17-Nov-22	2	<1	<1	28	30	28	<0.5	6.9	<0.5	0.6	6	14	18
RMD-259	24-Feb-21	<1	<1	<1	24	26	27	<0.5	6	<1	<2	4	11	17
RMD-259	2-Jun-21	<1	<1	<1	21	23	26	<0.5	9	<1	<2	8	18	17
RMD-259	25-Aug-21	1	<1	<1	31	33	27	<0.5	13	<1	<2	10	23	19
RMD-259	25-Nov-21	<1	<1	<1	32	32	29	<0.5	11	<1	<2	10	21	18
RMD-259	16-Feb-22	<1	<1	<1	21	22	28	<0.5	10	<0.5	0.5	7.7	18	20
RMD-259	11-May-22	<1	<1	<1	27	28	29	<0.5	11	<0.5	0.6	8	20	21
RMD-259	17-Aug-22	<1	<1	<1	30	30	28	<0.5	11	<0.5	0.8	9.6	21	20
RMD-259	17-Nov-22	2	<1	<1	32	34	29	<0.5	6.7	<0.5	0.6	5.7	13	18

APPENDIX G: 2022 METAL LEVELS

Parameter	Canadian Guideline Limit	Reason Guideline Established
Aluminium Total (µg/L)	2,900	Health
Antimony Total (µg/L)	6	Health
Arsenic Total (µg/L)	10 (ALARA)	Health
Barium Total (µg/L)	2,000	Health
Boron Total (µg/L)	5,000	Health
Cadmium Total (µg/L)	7	Health
Calcium Total (µg/L)	none	
Chromium Total (µg/L)	50	Health
Cobalt Total (µg/L)	none	
Copper Total (µg/L)	2,000	Health
Iron Total (µg/L)	≤ 300	Aesthetic
Lead Total (µg/L)	5 (ALARA)	Health
Magnesium Total (µg/L)	none	
Manganese Total (µg/L)	120	Health
Mercury Total (µg/L)	1.0	Health
Molybdenum Total (µg/L)	none	
Nickel Total (µg/L)	none	
Potassium Total (µg/L)	none	
Selenium Total (µg/L)	50	Health
Silver Total (µg/L)	none	
Sodium Total (µg/L)	≤ 200,000	Aesthetic
Zinc Total (µg/L)	≤ 5,000	Aesthetic

ALARA = As Low As Reasonably Achievable

None = no established maximum acceptable concentration (MAC)

Guidelines updated: Nov 15, 2022

APPENDIX H: 2022 METAL TESTING RESULTS

Water Sampling Station Number	RMD-250	RMD-257	RMD-263	RMD-250	RMD-257	RMD-263
Water Sampling Station Address	6071 Azure Rd.	6640 Blundell Rd.	12560 Cambie Rd.	6071 Azure Rd.	6640 Blundell Rd.	12560 Cambie Rd.
Date Sample Taken	2-May-22	2-May-22	2-May-22	9-Nov-22	2-May-22	2-May-22
Metals						
Aluminum Total (µg/L)	26	26	28	32	30	33
Antimony Total (µg/L)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Arsenic Total (µg/L)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Barium Total (µg/L)	2.5	2.6	2.5	3.2	3.2	3.2
Boron Total (µg/L)	<10	<10	<10	<10	<10	<10
Cadmium Total (µg/L)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Calcium Total (µg/L)	8,810	8,850	8,950	8,190	8,370	8,270
Chromium Total (µg/L)	<0.05	<0.05	<0.05	0.07	0.07	0.06
Cobalt Total (µg/L)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Copper Total (µg/L)	<0.5	1	0.9	0.8	0.8	0.9
Iron Total (µg/L)	7	9	7	<5	<5	7
Lead Total (µg/L)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Magnesium Total (µg/L)	188	193	190	204	208	205
Manganese Total (µg/L)	8.1	12	7.6	7.8	8.1	8.9
Mercury Total (µg/L)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Molybdenum Total (µg/L)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Nickel Total (µg/L)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Potassium Total (µg/L)	157	157	157	225	227	227
Selenium Total (µg/L)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

Water Sampling Station Number	RMD-250	RMD-257	RMD-263	RMD-250	RMD-257	RMD-263
Water Sampling Station Address	6071 Azure Rd.	6640 Blundell Rd.	12560 Cambie Rd.	6071 Azure Rd.	6640 Blundell Rd.	12560 Cambie Rd.
Date Sample Taken	2-May-22	2-May-22	2-May-22	9-Nov-22	2-May-22	2-May-22
Metals						
Silver Total (µg/L)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Sodium Total (µg/L)	1,610	1,600	1,610	1,950	1,880	1,980
Zinc Total (µg/L)	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0

APPENDIX I: 2022 VINYL CHLORIDE RESULTS

Water Sampling Station Number	Water Sampling Station Address	Date Sampled	Vinyl Chloride µg/L
RMD-205	13851 Steveston Highway	18-May-22	<1
RMD-205	13851 Steveston Highway	1-Dec-22	<1
RMD-206	4251 Moncton Street	18-May-22	<1
RMD-206	4252 Moncton Street	1-Dec-22	<2
RMD-253	11051 No. 3 Road	18-May-22	<1
RMD-253	11051 No. 3 Road	1-Dec-22	<1
RMD-256	1000 Blk. McDonald Road	20-May-22	<1
RMD-256	1000 Blk. McDonald Road	1-Dec-22	<1
RMD-263	12560 Cambie Road	20-May-22	<1
RMD-263	12560 Cambie Road	1-Dec-22	<1



City of Richmond

6911 No. 3 Road, Richmond, BC V6Y 2C1

Telephone: 604-276-4000

www.richmond.ca

2022 Annual Water Quality Report Summary

In 2022, Richmond residents enjoyed high-quality, safe and reliable drinking water. The Annual Water Quality Report identifies rigorous measures taken to protect the City's water supply and demonstrates testing results from water sampling with full transparency in accordance with regulatory requirements.

Richmond is dedicated to promoting the value of municipal tap water, maximizing opportunities for use of tap water in municipal facilities and developing strategies for making tap water the "water of choice" in our community.



How does Richmond provide high-quality tap water?

- By testing all 40 water quality sites on a regular basis.
- By continuous preventative maintenance and monitoring.
- By providing the water system with the highest degree of care to ensure high-quality drinking water is free from any harmful bacteria or toxins.
- By proactive watermain replacement and maintenance projects.

2022 Results

- Provided 33.3 million cubic metres of the highest quality drinking water to over 230,584 Richmond residents.
- Between 2020 and 2022, the per capita consumption decreased by 2.4%, resulting in the conservation of about 800,000 cubic metres of water in 2022.
- Conducted 2,048 microbiological tests from 40 test locations.
- Maintained 12 pressure reducing valve (PRV) stations.
- Repaired 16 watermain breaks without compromising the integrity of the water distribution system while maintaining positive pressure.
- Discovered and repaired 90 non-visible underground leaks through Richmond's leak detection program using noise loggers measuring sound frequencies in the targeted pipe allowing any leaks to be heard and recorded.
- Provided service to Richmond's 5,109 fire hydrants to ensure water is available during an emergency.
- Repaired 205 service connections.
- Installed 4,180 metres of new capital watermain.
- Installed 170 water services for new developments.

Multi-Barrier Approach

Richmond recognizes that in order to provide the highest quality water, several methods must be used to ensure its superiority—hence the "Multi-Barrier Approach".

The "Multi-Barrier Approach" includes:

- Disinfection of the water at the source.
- Water quality monitoring capabilities at eight pressure reducing valve (PRV) stations.
- Weekly microbiological testing at 40 test locations.
- Maintenance practices that are of the highest standard.
- System operators that are certified by BC's Environmental Operators Certification Program (EOCP).

Heterotrophic Plate Count (HPC)

- The HPC count indicates the presence of nutrients that could facilitate the growth of harmful bacteria such as E.coli.
- By reducing the HPC levels, the possibility of bacteriological re-growth is essentially reduced.
- The minimal positive chlorine residual in our water also disinfects and eliminates harmful substances within our distribution system.

Summary

Richmond residents will continue to enjoy fresh, high-quality drinking water. It is without a doubt that the City of Richmond consistently excels at providing tap water of excellent quality and reliability.





City of Richmond

Report to Committee

To: Public Works and Transportation Committee

Date: May 23, 2023

From: Milton Chan, P.Eng
Director, Engineering

File: 10-6340-20-
P.2022CD00096/Vol
01

Re: Drainage Canal Bank Failure Repairs – 12506 Vickers Way

Staff Recommendation

That funding of \$1,000,000 from the Drainage Improvement Reserve Fund for the drainage canal bank failure repairs at 12506 Vickers Way, be approved and that the Consolidated 5 Year Financial Plan (2023-2027) be amended accordingly, as detailed in the report titled "Drainage Canal Bank Failure Repairs – 12506 Vickers Way" dated May 23, 2023, from the Director, Engineering.

Milton Chan, P.Eng
Director, Engineering
(604-276-4377)

REPORT CONCURRENCE		
ROUTED TO:	CONCURRENCE	CONCURRENCE OF GENERAL MANAGER
Finance Department	<input checked="" type="checkbox"/>	
Sewer & Drainage	<input checked="" type="checkbox"/>	
Law	<input checked="" type="checkbox"/>	
SENIOR STAFF REPORT REVIEW	INITIALS: 	APPROVED BY CAO

Staff Report

Origin

In January 2021, settlement and surface cracks were observed by City maintenance staff along the drainage canal bank and pedestrian path located on City owned land at 12506 Vickers Way, in the Bath Slough drainage catchment.

The failing section of canal bank and pedestrian path was temporarily repaired by City forces. The cause of the failure was identified as the placement of heavy stacks of tiles on City property by a business operating on the adjacent private property. The condition of the canal bank has been continuously monitored while the damage was assessed and appropriate permanent repairs were determined. In recent months, this section of canal bank has deteriorated and immediate repairs are required.

Staff recommend that funding for permanent repairs be provided from the Drainage Improvement Reserve Fund.

This report supports Council's Strategic Plan 2022-2026 Focus Area #3: A Safe and Prepared Community:

- *Ensure civic infrastructure, assets and resources are effectively maintained to continue to meet the needs of the community as it grows.*

Analysis

The drainage canal bank and pedestrian path located on the City owned land at 12506 Vickers Way is failing. The bank failure at this location presents the potential for danger to public safety, damage to public infrastructure and private property, adverse effects to the environment as well as potential impacts to the City drainage network's functionality.

The failing section of canal bank and pedestrian path was temporarily repaired by City forces and its condition has been monitored while further investigation and design of a permanent repair was undertaken. Based on the initial field observations and the completion of a geotechnical report completed by a third party professional, the slope failure was caused by heavy stacks of tiles placed near to the slough bank, on City property, by users of the adjacent private property at 12500 Vickers Way. As a result, in January of 2023 the City filed a Notice of Civil Claim against the property owner and tenant of 12500 Vickers Way in the BC Supreme Court, seeking an order that the City be compensated for all damages to the City property, as well as all repair costs.

In recent months, the condition of the canal bank has deteriorated and is now in urgent need of repair. The area is now closed to the public to ensure safety. The proposed repair work will include the installation of sheet piles to stabilize the bank, reconstruction of the bank and restoration of the pedestrian path and hand railing to allow safe pedestrian passage along this stretch of Bath Slough canal.

The costs for the repair works are estimated at \$1,000,000, including engineering consultant design and construction works.

Financial Impact

The total estimated capital cost for the repair of the failed section of canal bank and adjacent pedestrian path is \$1,000,000.

A temporary funding source will be utilized to fund the repair until the Consolidated 5 Year Financial Plan (2023-2027) can be amended with this additional \$1,000,000 to be funded by the Drainage Improvement Reserve Fund. In January of 2023 the City filed a Notice of Civil Claim against the property owner and tenant of 12500 Vickers Way in the BC Supreme Court, seeking an order that the City be compensated for all damages to the City property, as well as all repair costs. Any compensation received through the ongoing litigation process and any unused funds will be returned to the funding source.

Conclusion

The canal bank along 12506 Vickers Way is at risk of failure and in need of immediate repair. Staff will be using a temporary funding source to fund the repair. Staff recommend that funding for the repair work be provided from the Drainage Improvement Reserve Fund.



Kevin Roberts, P.Eng
Acting Manager
Engineering Design and Construction
(604-204-8512)



Elena Paller, P.Eng.
Project Manager,
Engineering Design and Construction
(604-276-4023)




City of Richmond

Report to Committee

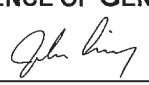

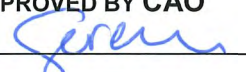
To: Public Works & Transportation Committee **Date:** May 8, 2023
From: Peter Russell **File:** 10-6125-07-04/2023-Vol 0
Director, Sustainability and District Energy
Re: **Circular Procurement Policy Implementation and Progress Update**

Staff Recommendation

That results of the implementation of circular economy criteria into projects and procurement activities, as noted in the staff report titled “Circular Procurement Policy Implementation and Progress Update,” dated May 8, 2023, from the Director, Sustainability and District Energy, be posted online to inform the public.


Peter Russell
Director, Sustainability and District Energy
(604-276-4130)

Att. 5

ROUTED TO:	CONCURRENCE	CONCURRENCE OF GENERAL MANAGER
Finance Department	<input checked="" type="checkbox"/>	
Arts, Culture & Heritage	<input checked="" type="checkbox"/>	
Library	<input checked="" type="checkbox"/>	
Parks Services	<input checked="" type="checkbox"/>	
Recreation & Sport Services	<input checked="" type="checkbox"/>	
Engineering	<input checked="" type="checkbox"/>	
Facility Services & Project Development	<input checked="" type="checkbox"/>	
Public Works Division	<input checked="" type="checkbox"/>	
Fire Rescue	<input checked="" type="checkbox"/>	
Transportation	<input checked="" type="checkbox"/>	
SENIOR STAFF REPORT REVIEW	INITIALS: 	APPROVED BY CAO 

Staff Report

Origin

This report responds to a referral from the February 22, 2021 Council meeting, which requested:

“(2) That Procurement Policy #3104 be reviewed in 18 months, and staff report back..”

This report supports Council’s Strategic Plan 2022-2026 Focus Area #1 Proactive in Stakeholder and Civic Engagement:

1.2 Advocate for the needs of Richmond in collaboration with partners and stakeholders.

This report supports Council’s Strategic Plan 2022-2026 Focus Area #2 Strategic and Sustainable Community Growth:

2.3 Ensure that both built and natural infrastructure supports sustainable development throughout the city.

2.5 Work collaboratively and proactively to attract and retain businesses to support a diversified economic base.

This report supports Council’s Strategic Plan 2022-2026 Focus Area #3 A Safe and Prepared Community:

3.2 Leverage strategic partnerships and community-based approaches for comprehensive safety services.

This report supports Council’s Strategic Plan 2022-2026 Focus Area #5 A Leader in Environmental Sustainability:

5.1 Continue to demonstrate leadership in proactive climate action and environmental sustainability.

5.3 Encourage waste reduction and sustainable choices in the City and community.

This report supports the Richmond Circular City Strategy (RCCS), which Council approved on April 24, 2023. In line with the circular principles incorporated into Procurement Policy #3104, the RCCS is an innovative plan to steer Richmond toward a sustainable, equitable, and low-carbon economy, aiming for 100% circularity by 2050.

Analysis

In February 2021, Council endorsed an updated version of the City’s Procurement Policy #3104, to include circular economy principles. The initiative differentiated the City as a leader in the public sector, by adapting procurement activities to support the organization and the community in moving towards a circular economy. The City’s vision for the circular economy aims to maximize the value of resources by design, through responsible consumption, minimizing waste and reimagining how resources flow in a sustainable, equitable, low-carbon economy.

The City's work is guided by the following principles:

- **Design clean:** design our waste and pollution by prioritizing regenerative resources;
- **Keep using:** keep products and materials in an operational use;
- **Regenerate:** regenerate natural systems and mitigate climate change;
- **Collaborate to co-create:** collaborate to co-create innovation and joint value; and,
- **Maximize value:** maximize economic value for money.

Figure 1: City of Richmond circular economy principles framework



Staff capacity building approach

Since the inception of the City's circular principles, staff have engaged multiple vendors, stakeholders and internal staff to assess the City's current and future capacity to support the transition from a linear to a circular economy. The transition is supported through the setting of short and medium-term milestones that will ultimately lead the City to realize its long-term objective of achieving 100% circularity.

Within the past 24 months, the City has reflected circular economy requirements within the scope of work and/or has evaluated submissions against specific criteria relating to the circular economy in over 100 competitive processes. Staff are currently monitoring and evaluating the outcomes of the following:

- Information Technology (IT): 7 procurement activities
- Professional Services: 18 procurement activities
- Civil Construction and Infrastructure: 23 procurement activities
- Facilities, Maintenance and Operations (FMO): 17 procurement activities
- Fleet: 25 procurement activities

In the initial phase, staff recognized there was a lack of knowledge within the organization on what the circular economy represented or how it could be reflected in the City's day-to-day activities and initiatives. The level of market readiness across the City's supply base was also unknown. Given these factors, staff began integrating qualitative circular criteria into procurement processes in an effort to learn from suppliers, assess supply chain readiness within different supply markets and identify more opportunities to create new circular possibilities through procurement activities. Staff also reviewed circular procurement approaches used by other public and private sector organizations to identify best practices and further refine the City's approach. Responses from bidders were reviewed and shared with City departments to learn what information can be requested and how best to assess and score those responses. Appropriate criteria and guidelines for circular procurement methodologies were developed and more information was made publically available to assist vendors understanding of the City's vision for a circular economy.

The implementation approach encompassed the following (see Attachment 1 for more information):

- **Training, capacity-building, and stakeholder engagement:** Since the inclusion of circular economy goals within the City's Procurement Policy in February 2021, the City has organized numerous training and capacity-building events, including over 40 engagement meetings and 20 informal training sessions. Two internal workshops were held to explore further opportunities and challenges to advancing circular procurement. An intranet page was developed and updated with case studies and metrics to further illustrate circular principles in action.
- **Peer-to-peer and stakeholders collaboration:** City staff identified progressive practices from other leading cities, forging collaborations and participating in numerous circular pilot projects. The City has engaged with sustainability and procurement teams from other local governments and participated in procurement focus groups. In total, 52 peer-to-peer activities were undertaken. Some pilot projects include the Reclaimed Asphalt Pavement initiatives, Total Cost of Ownership in IT, and the Hydrogen Fuels pilot project.
- **Market consultation and supplier's engagement:** Market research was undertaken to identify the relative maturity of supply markets and appropriate specifications to use when procuring innovative circular products and services. The knowledge gained has enabled staff to consider different approaches on how best to implement circular principles in projects (See Attachment 2 – Case 14, 15, 16 and 17 as examples). Consulting with industry representatives in the pre-competitive procurement phase of projects is recognized as a key success factor when developing product and service specifications. Successful market consultation has enabled staff to set more realistic goals, evaluate tangible circular proposals, encourage collaboration with City departments and generate support for future circular initiatives.
- **Questionnaires:** Supported by Sustainability, the Purchasing department piloted the use of supplier questionnaires within some Request for Proposal (RFP) bid documents. The questionnaires were able to solicit qualitative information from bidders relating to products, services and the use of packaging materials. Through the questionnaires, more information on product life-cycles, repair and reuse possibilities, remanufacturing and recycling was able to be obtained, as well as information on the availability of extended warranties and service plans that offer opportunities to maximize the life of assets.
- **Evaluation of Proposals:** Proposals from bidders are routinely assessed according to their ability to meet the City's operational and project requirements. However where practical, supplier proposals are now also assessed against their alignment with the City's circular economy criteria. Information received from bidders relating to the use of environmentally-friendly materials, resource efficiency and circular business practices is now also collected and assessed. Evaluation processes are designed to ensure proposals are assessed on both their economic value and their alignment to circular goals and objectives. Depending on the product or service being procured, staff assign evaluation weightings between 5-10% for circular economy considerations.
- **Preliminary technical specifications:** Staff have developed preliminary requirements for various goods and services procured by the City that reflect specifications relating to life-

cycle costs, repair, reuse, remanufacturing, recycling and the availability of extended warranties.

Results and Learnings in the Last 24 Months

The City's efforts implementing circular economy principles in procurement and project activities have been encouraging to date (see more details in Attachment 3):

- **Enhanced circular economy knowledge and capabilities:** Vendors and stakeholders have an increased, but still limited understanding of the circular economy. Technical capabilities vary among suppliers, with some already offering circular solutions, as described in Case 4 - Circular Procurement Strategies for Enclosed Tractors and Flail Mowers and Case 11 - High RAP Pilot Program in City Roadworks (Attachment 2). Other suppliers may require additional support to implement and meet circular requirements. Suppliers have shown a commitment to learning and implementing circular approaches in support of City efforts, as shown in market consultation and Case 1 - Embracing Circularity in Infrastructure: The South Dike Upgrade Project (Attachment 2). Council-supported internal training programs, support, and capacity building have expedited the City's progress in implementing circular approaches in project and procurement activities (see Attachment 6 - Engagement Activity Responses by Staff).
- **Strengthened collaborative processes and stakeholder engagement:** Successful leadership initiatives, as demonstrated in projects like Case 14 - Circularity Integrated into Major Projects and Case 16 - Leading the Way: Project Development Engages with Suppliers and Stakeholders to Foster Circular Innovation (Attachment 2), show that early stakeholder engagement and collaborative activities are essential to identifying common opportunities and creating synergies. As members of the Circular Cities and Regions Initiative and Circular Innovation Council, peer-to-peer and stakeholder collaboration is essential for creating consistency and achieving results. Participation in focus groups, such as Reclaimed Asphalt Pavement, Total Cost of Ownership in IT, EcoHack-a-City, and dialogue around the hydrogen fuels pilot project, provide a platform for building collaboration among City departments and stakeholders. As the result of this participation, staff have developed tools such as a Total Cost of Ownership toolkit.
- **Positive outcomes and cost efficiency in circular procurement:** If carefully planned, implementing circular principles in procurement activities will not necessarily negatively impact costs, as demonstrated in the Reclaimed Asphalt Pavement Pilot Project. Staff observed that by taking a circular economy approach, cost savings can be realized. An example is described in Case 12 - Circular Approach for Synthetic Sports Surfacing Replacement in Hugh Boyd Park. Reusing crumb rubber at Hugh Boyd sports field provided cost savings of \$330,000 compared to new infill and kept 800,000 pounds (363,000 kg) of rubber away from landfills (Attachment 2). Other procurement projects have also identified cost saving opportunities, such as Case 17: Furniture Circular Management. However, additional research and analysis needs to be conducted to assess and analyze potential savings over time (see Attachment 4). Ultimately, the City's Procurement Policy reflects a best value approach that also includes both financial and non-financial considerations.
- **Adapting to its Supply Base:** The inclusion of circular questionnaires in procurement activities has been relatively well-received by suppliers who have responded to bid opportunities advertised by the City. The implementation of circular economy criteria in bid

documents have highlighted a supplier's ability to provide circular opportunities, as demonstrated in Case 7: Circular Economy Principles in E-Scooter Share Procurement. More technological advancements and product/service developments are expected in the coming years when the possibilities for circular solutions are shared and highlighted.

The City's work was validated when the City was awarded the Organizational Environmental Programs Award by the Environmental Manager's Association (EMA) of BC in November 2022 for the implementation of a procurement policy that integrates circular economy criteria into corporate procurement activities. The award recognized the City's leadership in promoting environmental sustainability and corporate accountability.

Staff will continue to incorporate circular principles into selected procurements, ensuring alignment with the City's goals and strategies. Based on key results and learnings identified above, staff will undertake the activities described in the Attachment 4 – Next Steps to further implement circular economy principles through procurement activities.

Next Steps

Staff will continue to incorporate circular principles into selected procurements where feasible, ensuring alignment with the City's goals and strategies. Based on key results and learnings identified above, staff will undertake with current resources the following activities to further implementation of the circular economy principles and criteria integrated into the procurement policy (see more details in Attachment 4):

- **Establishing Metrics and Indicators for Circular Procurement Progress:** Implement key metrics to track circular economy principles in procurement, enhancing transparency and prioritizing long-term adherence to circular practices through progress monitoring and reporting.
- **Pilot Project Implementation:** Staff aim to explore more pilot projects with stakeholders and peers, as they are crucial for capacity building and evaluating progress towards a circular economy, while also enhancing the organization's image and regional reputation for sustainability and innovation.
- **Conducting Material Flow Analysis Study and Life-Cycle Analysis:** Following the October 2022 Council endorsement, a Material Flow Analysis study is in progress to assess Richmond's current circularity level and establish a baseline for circular economy progress, with additional Life-Cycle Analysis studies as needed for complex product opportunities.
- **Fostering Training and Capacity Building Initiatives:** Staff will engage in capacity-building and training alongside leading organizations, while collaborating with suppliers and stakeholders to identify circular procurement opportunities, deliver circular products and services, and refine regulatory references.
- **Advocating for Standardized Circular Metrics at the Regional Level:** Recognizing the need for standardized metrics and accessible measurement tools, advocate for the adoption of regional standardized metrics to ensure adherence to circular economy principles.
- **Engaging with Peer and Industry Working Groups:** Participate in working groups to engage with circular economy stakeholders, identify opportunities, synergies, and

metrics, and foster collaboration that advances circular principles in procurement activities.

Sharing the success stories to lead the pathway toward the circular economy

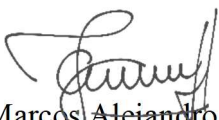
A recommendation is included to post results on the City's website and social media platforms as described in the report, including those that may arise in the future. Showcasing tangible examples of circular strategies in action strengthens the credibility of the City's circular efforts and inspires stakeholders, vendors, and other municipalities to replicate these practices.

Financial Impact

None.

Conclusion

The City of Richmond has made significant strides to incorporate circular economy principles in its procurement activities. However, staff recognize that this is only the beginning of its journey toward achieving 100% circularity by 2050. Numerous vendors and stakeholders have pledged their commitment to promote sustainability and a circular economy. To expedite progress, staff will continue to collaborate with suppliers to maintain dialogue and share experiences, tools and practices that facilitate the adoption of circular outcomes. Fostering ongoing collaboration will enable the expansion of circular principles to a broader range of projects and activities. A key benefit for the City has been the collaborations with peers, other levels of government and different stakeholders to enhance circular procurement practices further and inspire widespread market adoption. With Council endorsement, results will be posted on the City's website and social media, demonstrating the City's commitment to a circular economy. The EMA Award, given to the City for integrating circular economy principles into procurement, highlights the City's leadership in environmental sustainability.



Marcos Alejandro Badra
Program Manager, Circular Economy
(604-204-8643)

MB:mb

Att. 1: Implementation Activities

- 2: Circular Procurement Success Stories
- 3: Key learnings and results from implementing circular principles in corporate procurement and project activities
- 4: Next Steps
- 5: Analysis of the last 24 months' request for proposals by sector

Implementation Activities

Integration of circular principles into procurement activities has leveraged City's leadership in a way that is consistent with several existing City strategic sustainability goals including zero-waste, zero-emissions, ecosystem resilience and business mobilization. The engagement approach and earlier market engagement undertaken by staff supported the following benefits:

- Obtaining information on circular business models, an understanding how specific markets are structured and how they operate;
- Learning from suppliers to understand planned circular innovations;
- Increasing trust and credibility with suppliers;
- Creating market conditions to design circular products and services;
- Helping buyers identify opportunities for circularity and innovation;
- Clarifying needs and circular principles application in an appropriate to the context of the request to market players;
- Extending the life of products the City already owns;
- Encouraging the growth of circular supply chains by procuring more circular products, materials and services; and,
- Promoting new business opportunities based on resource-efficient models solutions (e.g. innovative rental systems, systems for sharing products and equipment or systems in which consumers buy the service provided by a product, rather than the product itself).

The implementation approach encompassed the following:

- **Training, capacity-building, and stakeholder engagement:** Since the adoption of the revised Procurement Policy in February 2021, the City has played a lead role in organizing multiple training programs and capacity-building engagements attended by both internal and external stakeholders. In November 2021, staff invited stakeholders to a workshop to identify opportunities and challenges for implementing a circular economy. These capacity-building and stakeholder engagements have enabled staff to obtain feedback from representatives from multiple industry sectors that in turn is helping to inform the City's ongoing circular procurement work. Staff carried out:
 - more than 40 engagement meetings with different internal and external stakeholders representing different industries to identify opportunities and readiness;
 - more than 20 informal training sessions with vendors, stakeholders and suppliers;
 - two internal staff workshops on circular procurement opportunities;
 - the development and update of an Intranet page with case studies to illustrate applications of circular principles in projects.
- **Peer-to-peer and stakeholders collaboration:** Staff have been able to capture promising practices and insights from other cities and jurisdictions. Staff have consistently demonstrated the City's leadership and commitment to circular procurement by bringing together peers and stakeholders, as well as forging vital strategic collaborations within a pre-competitive environment to co-create and identify opportunities for embracing circularity in local and regional markets. As part of peer-to-peer and stakeholder collaboration, the following activities have been undertaken:

- Meetings with sustainability and procurement teams from other local governments, such as Mississauga, Edmonton, Vancouver, North Vancouver, Banff, Guelph, and the District of Peel.
 - Participation in procurement focus groups as part of the Circular Cities and Regions Initiative.
 - Regular involvement with the Circular Innovation Council and its partners.
 - Circular pilot projects: City staff organize and participate in circular pilot projects to assess the impact of circular innovation and create regional references to advance the circular economy. Pilot projects and study cases include:
 - Reclaimed Asphalt Pavement, in collaboration with National Zero Waste Council and Lafarge Canada
 - Total Cost of Ownership in IT organized by Green Economic Canada
 - Hydrogen fuels pilot project and research interviewing 24 industry stakeholders and non-profit organizations
 - Propane project as an alternative fuel, in collaboration with Sierra
 - e-Scooter pilot project to increase low-carbon option in Richmond mobility
 - EcoHack-a-City - Towards a Zero Waste Industrial Sector, co-hosts: District and City of North Vancouver
 - LEED certifications and the circular economy principles
 - CSA Group's Roadmap to Circularity with focus on low-carbon cement
 - Participation in 52 diverse peer-to-peer activities has facilitated the identification of shared opportunities, challenges, and synergies in pursuing the circular economy, fostering a culture of leading by example and embracing experiential learning.
- **Market consultation and supplier's engagement:** Market consultation was key to validate preliminary specifications and requirements for procuring innovative circular products and services. It was vital to consider current supplier business models and product specifications when conducting circular procurement. There was a correlation between the levels of technical specifications and market maturity, with more mature markets offering open specifications and less mature markets requiring guidance on potential solutions and market consultation providing valuable insights into circular opportunities.
- **Questionnaires in the request for proposal:** Request for Proposals (RFPs) incorporated qualitative questionnaires for various products, services, and packaging. Criteria included purchasing items that were durable, repairable, reusable, made with recycled or renewable content, containing less hazardous chemicals, maximizing resource efficiency, and featuring a collection and return system. Packaging specifications were requested to be made from reusable or recyclable materials and free from hazardous chemicals. Materials used in the manufacturing process were to be ideally locally sourced, seasonally, and regeneratively. The questionnaires also encouraged the elimination of problematic or unnecessary packaging through redesign and innovation, replacing single-use packaging with reusable formats or alternative delivery models, and utilizing packaging or plastics that were 100% recyclable with recycled content or sourced from

- renewable feedstock. A relative weighting of between 5% and 10% was typically given to circular performance in evaluating bid submissions. Consideration is routinely given to how well the proposals adhere to circular requirements and principles, including the use of environmentally-friendly materials, promote and resource efficiency, and adopting circular business practices. This evaluation process ensures bid submissions are assessed not only on their economic value but also on their ability to achieve circular goals and objectives.
- **Preliminary technical specifications:** In the initial phase, staff developed preliminary specifications for procurement projects and incorporated qualitative requirements for products or services being acquired. Utilizing more qualitative specifications were able to open up new opportunities for innovative, circular solutions without prescribing specific solutions. These solutions were better suited to meet departments' needs in terms of quality, quantity, and reliability. The use of functional specifications is dependent on a supply market's relative maturity regarding circularity and the complexity of the product or service group. To further encourage circular solutions, procurement activities incorporated the following requirements:
 - Conducting a life-cycle analysis to assess products and service costs throughout the entire lifespan, from production to end-of-life.
 - Promoting repair, reuse, remanufacturing, repurposing, and recycling so that products can be repaired to maximize their length of useful life, reused or shared to maximize product utility, and disassembled and recycled to maintain maximum value of resources for products at the end of their useful life.
 - Requiring an extensive warranty to reduce the need for more resources, inputs, and less frequent replacement.
 - Focusing on service instead of products.
 - Focusing on market dialogue.

Circular Procurement Success Stories

Case 1: Embracing Circularity in Infrastructure: The South Dike Upgrade Project

The South Dike Upgrade project improved the dike structure from No.3 Road to 400m west of No.4 Road. The primary objective was to engage a contractor for structural upgrades, while adhering with all regulatory agency requirements. Key tasks included clearing and grubbing, excavation, placement of dike fill and rip rap armouring, topsoil management and landscaping. Circular economy considerations were incorporated into the procurement process to promote responsible consumption, minimize waste, and create a sustainable, low-carbon economy.

Circular criteria involved a focus on reusing excavated materials, recycling raw materials and low-carbon transportation. Criteria was selected in consultation with the project team and based on the nature of the project. The expected impacts included a greater emphasis on keeping materials onsite and reusing them. The circular criteria contributed 5% to the overall evaluation of proposals. The criteria was assessed was based on the City of Richmond's vision for a circular economy and the assessment process involved analyzing proposals for the proportion of reused products, reused soil, recycled raw materials and low-carbon transportation.

Key learnings from the project include the importance of clear communication and understanding of circular economy principles during the design process. A wrap-up meeting with the contractor and engineer also provided valuable insights for improving the efficiency and effectiveness of future projects in achieving circular economy goals.

Case 2: Integrating Circular Procurement Practices in Municipal Fleet Operations

The Department of Fleet Operations implemented circular procurement practices in the acquisition of two 3/4 ton crew cab pickup trucks for the Parks and Environmental Program Departments. The project aimed to align with the city's Green Fleet Action Plan, which has a target of reducing greenhouse gas emissions by 20% by 2020, using 2011 as the baseline year.

The circular criteria used in the procurement process were based on fuel economy, vehicle emission reductions, long-term parts availability, ergonomics, and safety features. Consultations were held with internal user groups, mechanics, and external vendors to identify circular economy principles that aligned with the project's objectives.

The evaluation process included a mandatory questionnaire covering circular economy principles and practices, emphasizing product quality and safety, recycling and waste reduction, environmental and sustainability performance, product reuse, repair, and remake strategies, and the use of raw materials in the equipment.

Two proposals were received, with one being accepted as it met all requirements and demonstrated adherence to circular economy principles. The winning bid acknowledged the company's adoption of circular economy practices and aligned with the city's efforts to minimize

its environmental footprint and social impact. The evaluation process also considered fuel economy and emission reduction possibilities, which factored into the final decision.

Challenges included the scarcity of supply of units and the lack of understanding of circular economy principles among vendors. To overcome this, staff researched parent companies like Ford and Chevrolet, educated local distributors or dealerships on circular economy principles, and encouraged them to identify specific initiatives for future evaluations.

Case 3: Driving Circular Procurement: Fleet Transformation with Hybrid and Electric Vehicles

Staff implemented circular procurement practices in the acquisition of plug-in hybrid and fully electric passenger sedans and hatchback vehicles. The project aimed to align with the city's Green Fleet Action Plan, which has a target of reducing greenhouse gas emissions by 20% by 2020, using 2011 as the baseline year.

Circular economy criteria used in the procurement process were based on fuel economy, government environmental vehicle emission reductions, long-term parts availability, ergonomics for all body types, and safety features. Consultations were held with internal user groups, mechanics, and external vendors to identify circular economy principles that aligned with the project's objectives.

The evaluation process prioritized PHEV and BEV vehicles that met the circular criteria, such as LED lighting, safety features, and adherence to the BC Environmental Vehicles Emissions reduction requirements. The Fleet department has a robust fuel monitoring system, which allows them to measure the fuel economy, idling, and kilometers traveled by all vehicles. They have observed an approximate fuel and emission saving of over 47% by incorporating these vehicles.

Four proposals were received, with two being accepted. Circular criteria was aligned with the Green Fleet Action Plan, and some circular economy principles were included as mandatory features. The RFQ was completed before the implementation of a specific Circular Economy Questionnaire in the RFQ process.

Challenges included the scarcity of supply of units and the lack of understanding of circular economy principles among vendors. In order to address this challenge, the staff conducted research on parent companies like Ford and Chevrolet, provided education on circular economy principles to local distributors or dealerships, and motivated them to identify particular initiatives for future assessments. The increased cost due to mandatory requirements was factored into the budget, and reduced operating costs on the acquired units improved the Total Cost of Ownership.

Case 4: Circular Procurement Strategies for Enclosed Tractors and Flail Mowers

Fleet Operations implemented circular procurement practices in the acquisition of two enclosed tractors complete with 26-foot reach flail mowers. The project aimed to align with the city's Green Fleet Action Plan, which has a target of reducing greenhouse gas emissions by 20% by 2020, using 2011 as the baseline year.

Circular criteria used in the procurement process were based on fuel economy, government environmental vehicle emission reductions, long-term parts availability, ergonomics, and safety features. Consultations were held with internal user groups, mechanics, and external vendors to

identify circular economy principles that aligned with the project's objectives. Compliance with new bylaws regarding Emission Regulations was also researched.

A Circular Economy Questionnaire was included in the RFQ, covering topics such as parts availability, recycled or sustainably sourced materials, recycling of old equipment, and product reuse repair and remake strategies. The Fleet department has a robust fuel monitoring system, which allows them to measure the fuel economy, idling, and hours used by all vehicles. The units will also be equipped with LED lighting.

Two proposals were received, with one being accepted. The winning bid acknowledged the adoption of circular economy principles and practices, and the evaluation took into account fuel economy and emission reduction possibilities. The vendor met all requirements and was awarded the contract. Their ECO-Blue engine is optimized for fuel efficiency and reduced CO₂ and NO_X emissions.

Challenges included the scarcity of supply of units and limited vendor responses. The selected vendor, New Holland, provided several examples and links to videos showcasing their commitment to circular economy principles. The project demonstrated the successful implementation of circular procurement practices in acquiring vehicles that met operational needs while significantly reducing emissions and contributing to a more sustainable future.

Case 5: Circular Practices in Fuel System Replacement at City Works Yard

Fleet Operations undertook a circular procurement project for the replacement of underground electrical conduit, fuel pumps, installation of rain covers, and related works at the City Works Yard. The project was initiated after the failure of outdated pumps during the November 2021 atmospheric river event.

Western Oil Services, a City Contractor for over 20 years, was chosen as the sole authorized contractor for the Coencorp Fuelling System in British Columbia. The company has demonstrated a strong commitment to environmental concerns and has provided solutions to prevent any events that could impact the environment. The vendor is also required to adhere to stringent oil and gas regulations for installations and maintenance.

As a single-source procurement, there was no point distribution system applied to the contract. However, the City recognized the vendor's background and experience in environmental concerns. The new Veeder Root installed will monitor fuel levels and advise if there are any leaks in the fuel tanks, helping to mitigate any potential environmental impacts.

Challenges, opportunities, and learnings from this project included the importance of educating vendors about presenting their circular economy strategies and sharing this information with the City, potentially through an online platform or training sessions. While this specific procurement did not involve circular criteria evaluation, the project highlighted the importance of working with environmentally responsible vendors and incorporating circular principles in future procurement projects.

Case 6: Dump Body Unit Acquisition and Outfitting

Fleet Operations undertook a circular procurement project for the supply and delivery of one dump body unit and outfitting on a City provided single axle cab and chassis unit. This project

aligned with the City's Green Fleet Action Plan, which aims to reduce greenhouse gas emissions by 20% by 2020 and update the policy to incorporate 2030 targets and new strategies.

Circular criteria for this project was selected based on fuel economy, government environmental vehicle emission reductions, long-term parts availability, ergonomics, and safety features. Internally, consultation with end-user groups, mechanics, and policies like the Green Fleet policy took place. Externally, the City worked with Peterbilt and potential vendors to ensure all requirements were met. The expected impact of including these circular economy principles was the acquisition of vehicles that met operational needs while significantly reducing emissions.

Criteria was evaluated through a mandatory questionnaire included in the RFQ. The winning bid was awarded to the lowest bidder that met specifications, and the vendor's responses to the questionnaire confirmed their commitment to circular economy principles. The main cab and chassis were from Peterbilt, which has clearly defined circular economy and environmental justice programs.

Challenges faced during the project included the scarcity of supply of units and the limited understanding of circular economy principles among vendors. Staff had to research parent companies to find information on circular economy initiatives and then educate local distributors or dealerships on how to respond. City workshops could help vendors identify current initiatives and areas for improvement in their circular economy strategies.

Case 7: Circular Economy Principles in E-Scooter Share Procurement

Transportation aimed to procure a qualified contractor to develop, operate, maintain, and manage a publicly accessible electric kick scooter ("e-scooter") share system for the City's pilot program. The goal is to provide an alternative mode of transportation for residents, reducing automobile use, promoting active transportation and transit use, enhancing connectivity, and allowing multi-modal access to employment, recreation centers, and services.

Circular criteria used in the evaluation process included the nature and variety of circular economy and sustainability opportunities available to the City, the proponent's life cycle program, waste collection and reduction strategies, and energy management and conservation. These criteria were weighted at 5% of the evaluation process.

Six proposals were received, and Lime's proposal included strong emphasis on circular economy principles. Lime outlined that their e-scooters have a lifespan of at least five years, with every component being replaceable. At the end of their lifespan, Lime achieves nearly 100% landfill diversion with its end-of-life partners, recycling more than 96% of the materials.

Lime also utilizes a fleet management system to optimize field tasks, reduce vehicle kilometers traveled, and charges the e-scooters with 100% renewable energy. Lime employs e-vans and e-cargo bikes for collecting, rebalancing, and redeploying e-scooters in dense city areas.

The inclusion of circular criteria demonstrates the City's commitment to sustainability and circular economy principles in its e-scooter share pilot program. The selection of Lime as the contractor for the project ensures that the program will be managed with a strong focus on circular economy principles, such as the extended lifespan and high recycling rate of e-scooters, contributing to the City's overall sustainability goals.

Case 8: Circular Procurement of Vending Machines for Public Recreation Facilities

Recreation and Sport Services aimed to procure an experienced and qualified Vending Machine Contractor to provide commission-based vending services for food and beverages at twelve public recreation facilities. The primary objective was to have an automated and self-sufficient vending machine operation providing nutritional snacks and beverages, including all necessary equipment, supplies, and personnel.

Circular criteria was included in the evaluation process, with a focus on environmental impact reduction, energy management, waste reduction, and other circular opportunities. The circular criteria was weighted at 5% in the RFP. The evaluation committee considered corporate sustainability practices, including energy efficiency, vehicle fuel efficiency, greenhouse gas reductions, recycling and waste reductions, corporate social responsibility initiatives, and circular economy initiatives.

Five competitive bids were received. The inclusion of circular criteria helped one proposal, Compass Group Canada, gain a competitive edge. Compass Group Canada achieved higher scores in corporate sustainability and circular economy practices, displaying efforts to reduce emissions from operations and having a strong corporate profile. The company pledged to reduce CO2e emissions by 43% by 2025, uses Energy Star machines and LED lighting, plans to phase out bottled water within five years, recycles 100% of cardboard, and employs smart service data technology for increased fuel efficiency.

Challenges identified include the need for a clearer understanding of circular criteria and a process to evaluate and monitor the contractor's efforts in meeting these criteria. By addressing these challenges, the City of Richmond can further promote circular economy practices in its procurement processes and ensure that contractors follow through on their commitments.

Case 9: Circular Criteria in Procurement for Self-Checkout Kiosks at Richmond Public Library

The Richmond Public Library underwent a procurement project for the supply, installation, and support of 10 RFID self-checkout kiosks and associated software for the library's four branches. The procurement objectives aimed to find a competitive supplier capable of fulfilling the project's scope of work.

Circular criteria was included in the procurement process, focusing on the Circular Economy Assessment, which considered recycling programs, reuse and recycling of hardware and hardware components, waste reduction strategies, and energy efficiencies and management. The evaluation process consisted of two phases, with the circular criteria accounting for 5% of the score in Phase 1.

Four proposals were received from Envisionware, Mk, Convergent, and Bibliotheca. The circular criteria did not impact the process or the number of proposals submitted. The proponents responded to the circular criteria without issues, with most offering removal and recycling services for decommissioned hardware and associated parts at a cost.

Circular criteria was assessed by the review panel independently, with scores and comments reviewed by the Buyer. However, circular economy appeared to be an afterthought for most proponents, with responses seeming "stretched" to favor a positive outcome. As the self-

checkout kiosks were new equipment installed last year, the library will follow up on the supplier's commitment to recycling or reuse.

Case 10: High RAP Pilot Program in City Roads

Engineering and stakeholders initiated a high reclaimed asphalt pavement (RAP) pilot program to increase the use of recycled asphalt in municipal roads. The objectives included incorporating high RAP requirements in the annual paving program and seeking qualified contractors capable of delivering high RAP products.

The procurement strategy involved including questions and documents in the RFP to facilitate evaluation based on the ability to successfully deliver high RAP paving services. Award criteria considered the proponent's approach to circular economy considerations with a 5% weighting.

The City has paved a section of a 4-lane arterial road (No 5. Road, between Grandville Road and Blundell Avenue) with high RAP, and has several future locations planned for further application of this technology. This was the first project in Canada to use 40% RAP and has placed the City in a leadership role by engaging the local industry, reducing natural resource and fossil fuel use, and minimizing waste. The accreditation system ensures that the City obtains products that meet its specifications, and quality control is a crucial aspect of meeting these specifications. Based on the results of this pilot project, there is also the potential for cost savings through using high reclaimed asphalt.

Case 11: Circular Approach for Synthetic Sports Surfacing Replacement in Hugh Boyd Park

Parks Planning, Design & Construction initiated a project for Hugh Boyd Park Synthetic Sports Surfacing Replacement, which aimed to replace, recycle, and re-use the existing infilled sports surfacing system. The procurement strategy sought qualified proponents/contractors with the necessary experience, skills, and equipment to remove, clean, and re-install crumb rubber infill.

The contract required the removal and recycling of the existing synthetic turf surface and the installation of new synthetic turf playing field surfacing that meets the most current FIFA Quality Pro synthetic turf product standards. Award criteria focused on sustainability initiatives, energy management, waste reduction, emission reduction, recycling efforts, and preference for recycling and utilizing removed turf surface materials. Additionally, the proponents were required to provide ongoing maintenance and repairs within 48 hours notice, and a warranty of a minimum of 8 years for both labor and materials.

By reusing the existing crumb rubber infill, the life cycle of rubber was extended, preventing it from ending up in landfills and polluting the environment. Reusing crumb rubber at Hugh Boyd sports field provided cost savings of \$330,000 compared to new infill and kept 800,000 pounds (363,000 kg) of rubber away from landfills.

Lessons learned include the viability of recycling and reusing crumb rubber infill for cost savings and sustainability. However, public perception regarding recycled tire crumb rubber can be controversial. Despite local, provincial, and national health authorities suggesting that recycled crumb rubber is safe for use in artificial turf sports fields, some organizations have concerns about the health and safety related to recycled tire rubber. This may impact future decision-making for its continued use in sports fields.

Case 12: Meetings with Architects and Construction Managers Sparks Circular Ideas for Collaboration

Prior to incorporating circular economy principles into the City's procurement process, meetings were held with 17 proponents, including architects and construction managers. The City's Manager of Capital Buildings Project Development and the Manager of Purchasing led the meeting and posed a question to the proponents:

"The City has declared its support for a circular economy and is looking to collaborate with innovative contractors/architects to achieve those goals. What ideas does your firm have and how should the City change its specifications to reflect a practical and value-added transition to a circular economy?"

The proponents were given time for internal discussions before providing their feedback and answers. This approach allowed the City staff to gauge the level of awareness, understanding, and market readiness for circular economy principles among the proponents.

Out of the shortlisted Architects and Construction Managers, 9 out of 10 Architects and 5 out of 7 Construction Managers provided responses to the question. The various responses showcased the proponents' ideas and suggestions for collaborating with the City to promote a circular economy, such as adopting sustainable materials, designing for disassembly, and prioritizing waste reduction.

One architectural firm, in particular, demonstrated a strong commitment to the circular economy by introducing their Senior Sustainability Consultant. This consultant shared valuable resources, such as research, tools, and insights on design for disassembly. As a result of this presentation, the architectural firm was connected with the staff to explore further collaboration and integration of circular economy principles into the City's projects.

Case 13: Circularity Integrated into Major Projects

The Capital Buildings Project Development has integrated circular economy principles into its Request for Proposals (RFP) for major projects. Vendors were asked to review the City's policy on circular and provide relevant examples of previous projects based on their understanding of the concept.

For the Steveston Community Centre and Library Replacement project, the RFP required vendors to provide relevant project references that achieved a LEED Gold Certification or a higher performing sustainability standard, such as Passive House or Net Zero Carbon. The scope of work for the project required the successful candidate to:

1. Design to achieve LEED Gold certification;
2. Design to meet the City of Richmond's Circular Economy Principles and Criteria; and
3. Design to meet City Building Facilities Design Guidelines and Technical Specifications.

These requirements have elements of circular principles embedded in them, emphasizing the City's commitment to sustainable practices. The successful candidate proposed Integrated Design Process (IDP) meetings as part of their proposal to review and progressively refine Circular Economy goals and targets. They also included a consultant in their project team to design the

building envelope for deconstruction, which extends the lifecycle of the materials used in the project.

As a result of this approach:

1. The City adopted its circular principles and criteria, finding relevant pre-existing requirements that can help create a set of metrics to measure circularity in future projects.
2. Vendors are given the opportunity to learn more about sustainable practices and incorporate them into their proposals, thus promoting a more sustainable and circular economy in the industry.

By incorporating circular principles into the RFPs and project requirements, the City is not only demonstrating its commitment to sustainability but also encouraging vendors to embrace these principles, leading to more environmentally responsible and resource-efficient projects.

Case 14: Circular Principles in Fire Rescue Department's Procurement Activities

The Fire Rescue department's procurement activities prioritize circular economy principles to enhance sustainability and cost-effectiveness. In this case, the City requested a single source supplier to meet their specific requirements. The rationale behind this decision was based on compatibility with existing city equipment, custom-built information systems, and inventory systems, as well as the absence of reasonable alternatives.

The supplier's approach to circular economy is evident in their commitment to reducing waste, reusing materials, and recycling components. Their products are of superior quality, with added value safety and performance features, ensuring a longer life cycle, reduced replacement costs, and lower ownership costs. This directly contributes to the reduction of waste in the city's procurement activities.

Fire hoses supplied by the chosen vendor can be repurposed for various municipal activities after their retirement from the fire service, further supporting the re-use principle. Additionally, aluminum couplings can be removed and recycled when the fire hose is no longer usable.

In their manufacturing facilities, the supplier practices responsible recycling procedures. They reuse water in test tanks, return empty polyester yarn cones for refilling, and use recyclable cardboard for shipping materials. Waste generated during production, such as aluminum and brass chips, is collected and recycled. Furthermore, the supplier has implemented energy-efficient lighting and reuses or recycles pallets received for shipping.

This case study demonstrates how circular procurement principles have been successfully incorporated into the Fire Rescue department's activities, promoting sustainability, cost savings, and responsible use of resources.

Case 15: Leading the Way: Project Development Engages with Suppliers and Stakeholders to Foster Circular Innovation

Project Development demonstrated leadership by proactively engaging with prequalified architects and construction management firms to explore opportunities for implementing a circular procurement approach in harmony with existing sustainability practices. By initiating

this engagement activity, the City communicated its intention to support circular economy initiatives and sought collaboration with innovative professionals to achieve these objectives.

A survey was distributed, asking participants to share their ideas on how the City could adapt its specifications to facilitate a practical and value-added transition to a circular economy. Various responses were received, including suggestions related to LEED, Passive House, and carbon reduction. Respondents emphasized the need for clear definitions and guidelines, such as methods of analysis, reuse examples, and data on material usage.

Quality control checks and cost analyses were recommended to ensure the achievement of circular economy goals. Some respondents noted that LEED was becoming less popular due to its high costs and restrictive nature. They suggested adopting best practices from LEED and other guidelines to develop a more practical approach.

The capability of consultants in the region to support circular economy initiatives was acknowledged, but respondents also identified a gap between political directives and project implementation. They recommended incorporating circular economy considerations at the beginning of the project stage or in the project definition study. This would enable the identification of opportunities and their inclusion in the request for proposals (RFP).

Budget constraints were highlighted as a challenge for incorporating circular economy principles in competitive bidding scenarios. Respondents suggested defining circular economy requirements in the owner's statement of requirements (OSR) and leaving the determination of options to consultants. Conducting a feasibility study in the pre-design stage and adjusting the project budget accordingly could help balance financial value and sustainability goals.

Project Development showcased its leadership by actively involving suppliers and stakeholders in the exploration of circular procurement opportunities. This collaborative approach, coupled with the valuable suggestions provided, can significantly contribute to the City's progress towards achieving its circular economy goals while maintaining a strong focus on sustainability.

Case 16: Furniture Circular Management: Implementing Circular Business Models for Sustainable and Cost-Effective Operations

Project Development demonstrated leadership by proactively implementing circular business models to improve city operations performance and reduce costs. One of the areas where this approach was applied is in the procurement and management of furniture.

Emphasizing the circular economy, the Project Development team utilized existing furniture products in the City's inventory for most reconfigurations. While new materials were occasionally required due to project specifications or insufficient stock, the team also refurbished furniture items, such as chairs, filing cabinets, and panels.

The approach to integrating furniture into the circular economy involved several key steps:

- Inventory management: maintaining an updated list of stock.
- Preventative maintenance: extending product lifetime through proper care.
- Corrective maintenance: repairing products as needed.
- Reuse: redistributing and cleaning products for future use.

- Repurposing: modifying products for new functionalities.
- Refurbishing: remanufacturing products to optimize their lifetime, such as reupholstering, repainting, or cleaning.
- Recycling: recovering the value of components and materials for use in new products.

The refurbished items proved to be significantly more cost-effective and required less lead time. For example, the average cost of a new upholstered chair was \$602.20 with a 3-4 week lead time, while a refurbished chair cost \$230.00 with only a 1-week lead time.

By embracing circular business models, Project Development has exemplified leadership in improving City operations performance and reducing costs. This approach, coupled with the efficient use of resources, supports the City's progress towards achieving its circular economy goals.

Case 17: King George Park Synthetic Turf Replacement

The project at King George Park involved the removal, disposal, and recycling of materials from the existing infilled synthetic turf system, as well as the supply and installation of a new thermoplastic elastomer (TPE) infilled synthetic turf and underlayment shock-pad system. Constructed in 2008, the artificial turf field at King George Park has exceeded its expected lifespan and now requires replacement to maintain minimum safety levels for operation.

In line with the City's circular economy vision, AstroTurf West outlined several initiatives for the King George Park project. The company uses a fuel-efficient fleet from 2018 and employs new equipment and technologies to clean and reuse existing turf infill. Furthermore, AstroTurf West will recycle the existing artificial turf locally by partnering with Fernwood Recycling Ltd., a company in Victoria, BC. The plastic-based turf fibers will be repurposed into composite fence posts for agricultural and landscaping applications. This circular approach demonstrates a commitment to sustainable procurement and resource efficiency in the development and maintenance of the City's parks.

Key learnings and results from implementing circular principles in corporate procurement and project activities

The City's efforts to implement circular economy principles in procurement and project activities have led to encouraging results to date and learnings, which can be summarized as follows:

- **Vendors and stakeholders have an emerging and limited understanding of circular economy:** Many vendors and stakeholders have a limited understanding of the opportunities presented by circular business models, often equating circularity solely with recycling. To address this issue, City staff have been proactive in providing information to City suppliers when requested.
- **Early market consultation is critical to achieve success implementing circular principles and criteria:** Engagement and market consultation with suppliers has helped them to better understand how to meet the City's expectations and goals. Dialogue with stakeholders helped identify quick wins and build momentum for implementing circular approaches.
- **If carefully planned, cost impacts can be mitigated:** The inclusion of circular economy criteria did not always translate to higher prices for products and services. In many cases, suppliers already had existing infrastructure making it relatively easy for suppliers to propose circular products and services.
- **The inclusion of circular economy criteria has promoted circular solutions and products:** Through the City's procurement processes, it has become apparent that some suppliers are currently capable of providing circular opportunities that meet the City's requirements during the design stage. Furthermore, the implementation of circular approaches has been applied at the system level, supplier level, or product level, depending on the market's maturity in embracing circularity. This has led to the identification of new and innovative solutions to procurement to advance circular principles in the City's operations.
- **Successful implementation of circular questionnaires in procurement activities:** The inclusion of circular questionnaires has been refined over time. Feedback and responses from suppliers has been helpful to adopt a more systematic approach to promoting circular principles. The questionnaires included inquiries about circular performance, sourcing of products and materials, and corporate circularity, as well as qualitative data to be considered when procuring goods and services with circular business models when possible.
- **The circular economy approach has identified some potential cost savings:** The City has identified potential cost savings through the implementation of circular principles, particularly in reducing waste and maximizing the use of resources. While further data collection is necessary to establish an objective baseline for quantifying these savings, early indications suggest that circular approaches have the potential to reduce total costs. By embracing circularity, the City can reduce the environmental impact of its operations while also promoting economic efficiency and innovation.
- **Suppliers demonstrated commitment to learning and implementing circular approaches in support of City efforts:** Suppliers have showed interest adopting circular approaches when providing products and services to the City. Response rates to

- advertised City procurements are unchanged. Moreover, some suppliers are proactively engaging City staff to share innovative opportunities for implementing circular principles, and showcasing their results.
- **Internal training, support, and capacity building proved crucial in identifying opportunities and implementing circular approaches in project and procurement activities:** As a result of the actions implemented, City staff developed a guide to support staff in integrating circular criteria into procurement activities. Workshops and meetings have identified champions and early adopters. These efforts have proven to be effective to encourage more staff to consider more sustainable and circular possibilities, fostering a culture of collaboration and continuous improvement.
- **Early stakeholder engagement and collaborative activities proved crucial in identifying opportunities and creating synergies:** Early engagement with stakeholders and vendors has encouraged more participation from suppliers to help advance City goals e.g. through issuing requests for information, conducting Life Cycle Assessments (LCAs) and business cases, and other research to determine the feasibility of promising circular initiatives.
- **Peer-to-peer and stakeholder collaboration as a critical action to create consistency and drive positive results in implementing circular criteria into projects and procurement:** This approach has significantly aided staff to learn and apply promising practices used other cities and jurisdictions. Staff have consistently showcased the City's leadership and commitment to circular procurement by bringing together peers and stakeholders, as well as building essential relationships to embrace circularity at a local and regional level.
- **Technical capability varies among suppliers, with some already offering circular solutions, while others need more support:** The number of suppliers providing circular solutions varies depending on the sector. The City's market for circular economy solutions is still in its early stages, and as such, suppliers may have a limited understanding of circular possibilities. However, markets are evolving and innovating, with new suppliers entering existing suppliers and adapting to the shift towards circularity. Staff recognize the value in identifying potential suppliers who have necessary expertise and experience in circular solutions and notifying them of potential bid opportunities and the demand for circular solutions.
- **Demand for products offering circular solutions** Contract requirements should be future-proofed to take advantage of these advancements and ensure that circular solutions remain relevant over time. It is important to identify suppliers who are innovative and forward-thinking in their approach to circularity, as well as those who have experience in developing and implementing circular solutions. Circular requirements may bring together suppliers from different subsectors in a new way, which can facilitate innovative circular solutions. Staff plan to set up regular meetings, training and support, and creating opportunities for joint problem-solving.

Next Steps

Staff will continue to incorporate circular principles into selected procurements where feasible, ensuring alignment with the City's goals and strategies. Based on key results and learnings identified above, staff will undertake with current resources the following activities to further implementation of the circular economy principles and criteria integrated into the procurement policy:

- **Establishing Metrics and Indicators for Circular Procurement Progress:** Develop and implement key metrics and indicators to measure and track the advancement of circular economy principles in procurement activities. These indicators will ensure circularity remains central to the procurement process, identify areas for improvement, and prioritize long-term adherence to circular practices. Moreover, monitoring and reporting progress will enhance transparency and traceability.
- **Sector-Specific Pilot Project Implementation:** Staff plan to investigate opportunities for additional pilot projects in collaboration with stakeholders and peers. Increased market engagement and collaborative pilot projects are essential for building capacity and assessing progress towards a circular economy. Successful examples will demonstrate the economic benefits and positive impact on the organization's image and regional standing as sustainable, responsible, and innovative.
- **Conducting Material Flow Analysis Study and Life-Cycle Analysis:** In accordance with the October 2022 Council endorsement, work is underway to develop a baseline analysis of Richmond's current circularity level through a Material Flow Analysis study. This study will establish a baseline for measuring progress towards a circular economy. Due to the complexity of circular opportunities among various products, complementary Life-Cycle Analysis studies may also be required.
- **Fostering Training and Capacity Building Initiatives:** Staff will continue to participate in internal and external training and capacity-building opportunities in collaboration with peers and leading organizations. Attendance at working group meetings and provision of informed input will facilitate the identification of circular procurement opportunities. Capacity building efforts must also extend to suppliers and stakeholders to enable the delivery of more circular products and services, as well as the refinement of regulatory references.
- **Advocating for Standardized Circular Metrics at the Regional Level:** Recognizing the need for standardized metrics and accessible measurement tools, advocate for the adoption of regional standardized metrics to ensure adherence to circular economy principles.
- **Engaging with Peer and Industry Working Groups:** Actively participate in peer and industry working groups to connect with a diverse range of circular economy stakeholders, identify common opportunities, synergies, metrics, case studies, pilot projects, and outcome-based indicators. This engagement will foster collaboration and promote the advancement of circular economy principles within procurement activities.

Analysis of the last 24 months' request for proposals by sector where circular criteria was implemented.

Information Technology (IT)

- Data Storage Solution and Services
- Provision of Telecommunications Services
- Network Hardware
- Video Detection System Hardware, Software and Services
- Supply and Delivery of Computer Equipment and Related Services
- RFID Self-Checkout Hardware, Software and Services
- Load Balancer Hardware including Support and Maintenance Services

Professional Services

- Prequalification for Architectural Consulting Services
- Transportation Improvement Programs 2020
- Consulting Services for Materials Flow Analysis
- Provision of Consulting Services for a Land Subsidence Study
- Services of a Mechanical Consultant for City of Richmond Facility Projects
- Prequalification for Pre-Construction and Construction Management Services for City of Richmond Building and Facility Projects
- Architectural Services for the Steveston Community Centre and Branch Library
- Consulting Services for Lansdowne Major Park Master Plan
- Steveston Community Park Playground and Outdoor Washroom Consulting Services
- Terra Nova Rural Park Historical Assets Program Plan
- Consulting Services for Green Fleet Action Plan 2030
- Consulting Services for West Cambie Neighborhood Park
- Provision of Engineering Consulting Services for Emergency Water Supply Plan Update
- Steveston Highway and No.3 Road & Steveston Highway and Gilbert Road Drainage Pump Station Upgrades
- Hydrogeological and Biophysical Assessment for Richmond Nature Park
- Provision of Consulting Services for a Land Subsidence Study
- Capstan Station Integration - development of conceptual designs
- Pre-Construction Services for the Steveston Community Centre and Branch Library

Civil Construction and Infrastructure

- Provision of Dewatering Services
- Design of Westminster & Cambie Rd Intersection Improvements
- Construction Services for No. 9 Road South Dike Upgrades
- 2021 Asphaltic Concrete Paving
- Supply and Installation of Conduits & Water Service Pipes Using Trenchless Technology and Other Related Civil Works
- Construction Services for River Road Sidewalk between No. 6 Rd and Burdette Street
- Conceptual Design of Gilbert Road Drainage Pump Station
- South Arm Community Park Playground Design-Build Services

- Talmey Neighbourhood School Park and Garnet Tot Lot Playground Design-Build Services
- Odlin Park Playground Design-Build Services
- Garden City Lands Screening Contractor
- McKim Way District Energy Distribution Piping Rehabilitation
- Steveston Community Park Playground and Outdoor Washroom Consulting Services
- Construction Services for Steveston Highway and No.3 Road & Steveston Highway and Gilbert Road Drainage Pump Station Upgrades
- Provision of Public E-Scooter Share Pilot Project
- Supply and Installation of LED Street Name Signs
- Odlin Park Playground Design-Build Services
- Talmey Neighbourhood School Park and Garnet Tot Lot Playground Design-Build Services
- Hydrogeological and Biophysical Assessment for Richmond Nature Park

Facilities, Maintenance and Operations (FMO)

- Rental of Coveralls and Related Services
- On Call Collection of Hazardous Materials
- Garden City Lands Screening Contractor
- McKim Way Distribution Piping Rehabilitation
- Car Seat Recycling Services
- MacDonald Beach Vegetation Planting Services
- Vending Machine Services for Public Recreational Facilities
- On-Call HVAC Service Provider
- Mattress and Upholstered Furniture Recycling Services
- Furniture Solutions and Management Services
- Supply and Delivery of (1) One 6500KG GVW Cutaway Van with Dual Rear Wheels
- Roll-Off and In-Ground Container Collection and Recycling/Disposal Services
- Garbage and Cardboard Containers and Collection Services at City Facilities
- Baseline Evaluation Test
- Tent and Event Supplies Rentals for Various City Events - BL

Fleet

- Supply and Delivery of Hybrid Minivans
- Supply & Delivery of One (1) Street Flusher Body on a City Provided Cab and Chassis
- Supply and Delivery of Two (2) 3/4 Ton Crew Cab Pick up Trucks
- Supply and Delivery of One (1) Conventional Zero Clearance Track Type Excavator
- Supply and Delivery of (1) One 6500KG GVW Cutaway Van with Dual Rear Wheels
- Supply and Delivery of One (1) Sewer Vacuum Combo Unit on a City Provided Cab and Chassis
- Supply and Delivery of One (1) Conventional Zero Clearance Track Type Excavator
- Supply and Delivery of Two (2) Dump Bodies and Outfitting on City Provided Tandem Cab and Chassis
- Supply and Delivery of Two (2) Conventional Zero Clearance/Zero Tail Swing Track Excavators

- Supply and Delivery of Two (2) Enclosed Tractors complete with 26 foot Reach Flail Mower
- GPS/AVL Pilot Project
- Supply and Delivery of Plug-In Hybrid and Fully Electric Passenger Sedans and Hatchback Vehicles
- Supply and Delivery of multiple plug-in hybrid and/or fully electric crossover vehicles
- Supply and Delivery of One (1) Forestry Aerial Lift Chipper Body with Boom and Smart PTO System on a City Provided Cab and Chassis
- Supply and Delivery of one (1) Mini Sweeper
- Supply and Delivery of one (1) 15,000 lb Fully Enclosed Exterior Fork Lift
- Supply & Delivery of Two (2) Two Ton Crew Cab Dump Trucks
- Supply & Delivery of One (1) Skid Steer Loader with Rubber Tracks
- Supply and Delivery of one (1) Dump Body Unit and Outfitting on a City Provided Single Axle Cab and Chassis
- 2023 Short Term Rental Vehicles
- Supply and Delivery of Fully Electric High Roof Van
- Supply and Delivery of Two (2) Two Ton Crew Cab Dump Trucks
- Supply & Delivery of One (1) Skid Steer Loader with Rubber Tracks
- Supply and Delivery of one (1) Dump Body Unit and Outfitting on a City Provided Single Axle Cab and Chassis
- Supply and Delivery of Six (6) Hybrid and/or Fully Electric Crew Cab Pickup Trucks
- Supply and Delivery of Multiple Four (4) Cylinder Hybrid Minivans
- Supply and Delivery of One (1) Fully Electric Bus
- Supply & Delivery of one (1) enclosed tractor complete with 16' (foot) flail mower



City of Richmond

Report to Committee

To: Public Works and Transportation Committee

Date: May 23, 2023

From: Milton Chan, P.Eng
Director, Engineering

File: 10-6060-01/2023-Vol
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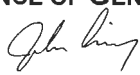


Re: **Dike Master Plan - Phase 4 Report**

Staff Recommendation

That the “Dike Master Plan – Phase 4 Final Report,” as attached in the staff report titled “Dike Master Plan – Phase 4 Report,” dated May 23, 2023, from the Director, Engineering, be endorsed for capital project and development planning purposes.

Milton Chan, P.Eng
Director, Engineering
(604-276-4377)

Att. 2

REPORT CONCURRENCE		
ROUTED TO:	CONCURRENCE	CONCURRENCE OF GENERAL MANAGER
Real Estate Services	<input checked="" type="checkbox"/>	
Parks Services	<input checked="" type="checkbox"/>	
Public Works	<input checked="" type="checkbox"/>	
Sustainability & District Energy	<input checked="" type="checkbox"/>	
Development Applications	<input checked="" type="checkbox"/>	
Policy Planning	<input checked="" type="checkbox"/>	
Transportation	<input checked="" type="checkbox"/>	
Intergovernmental Relations	<input checked="" type="checkbox"/>	
SENIOR STAFF REPORT REVIEW	INITIALS: 	APPROVED BY CAO 

Staff Report

Origin

As detailed in the Council-endorsed Flood Protection Management Strategy, flood protection is integral to protecting the health, safety, and economic viability of the City of Richmond. A key action identified in the City's Flood Protection Management Strategy involves continuing to upgrade the City's perimeter dike in anticipation of climate change-induced sea level rise. The accelerated flood protection program supports completing all upgrades in a 50-year timeline. The City's Dike Master Plans address this need by recommending dike upgrade options for each dike section throughout the City.

Council has endorsed the following phases of Dike Master Plans to date:

- Dike Master Plan Phase 1 – Steveston and the West dike south of Williams Road, endorsed by Council on April 22, 2013;
- Dike Master Plan Phase 2 – West dike between Williams Road and Terra Nova Rural Park and north dike between Terra Nova Rural Park and No. 6 Road, endorsed by Council on April 23, 2018;
- Dike Master Plan Phase 3 – South dike between No. 2 Road and Boundary Road, endorsed by Council on March 25, 2019; and
- Dike Master Plan Phase 5 – Sea Island dike from the Sea Island Connector Bridge to the south end of 3800 Cessna Drive, Mitchell Island and Richmond Island, endorsed by Council on March 25, 2019.

The Dike Master Plan Phase 4 Draft Report was presented at the regular Council meeting on June 28, 2021, where Council resolved the following:

“That, as outlined in the staff report titled “Dike Master Plan Phase 4 – Public and Stakeholder Engagement”, dated May 20, 2021, from the Director, Engineering, the public and stakeholder engagement program be endorsed.”

Staff have now completed public and key stakeholder consultation for Dike Master Plan Phase 4; the results of that consultation are the focus of this report. Dike Master Plan Phase 4 is the last phase of the plan, and upon its endorsement, the City's Dike Master Plan will be complete.

This report supports Council's Strategic Plan 2022-2026 Focus Area #1 Proactive in Stakeholder and Civic Engagement:

Proactive stakeholder and civic engagement to foster understanding and involvement and advance Richmond's interests.

1.2 Advocate for the needs of Richmond in collaboration with partners and stakeholders.

1.3 Increase the reach of communication and engagement efforts to connect with Richmond's diverse community.

This report supports Council's Strategic Plan 2022-2026 Focus Area #2 Strategic and Sustainable Community Growth:

Strategic and sustainable growth that supports long-term community needs and a well-planned and prosperous city.

2.1 Ensure that Richmond's targeted OCP update shapes the direction and character of the city.

Analysis

The City of Richmond is situated in a flood plain and is approximately 1 metre above sea level, making flood protection critical to safeguarding the community. The City is protected from coastal flooding by 49 kilometres of perimeter dike. Current climate change science estimates that the sea level will rise approximately 1 metre by the year 2100, and 0.2 metres of land subsidence is forecasted over the same period.

The Flood Protection Management Strategy identifies strengthening and raising the City's dike to 4.7 metres geodetic as a priority response to sea level rise and increased variability in freshet flows due to climate change. All new dikes are designed to accommodate a further height increase to 5.5 metres to address sea level rise beyond 2100.

As outlined in the staff report titled "Accelerated Flood Protection Program Update," dated March 4, 2022, from the Director, Engineering, a target annual revenue level of \$30 million by 2031 was endorsed for the Flood Protection Utility to support a 50 year implementation period, improving the City's diking infrastructure well in advance of the currently anticipated climate change impacts. Dike improvements are ongoing through the Council-approved Capital and development projects. Cost estimates for the remaining dike upgrades continue to be refined, and any changes to the required long-term funding will be brought forward for Council consideration in future Ageing Utility Infrastructure and Utility Budget reports.

The Dike Master Plans are intended to be a comprehensive guide to:

- Upgrading the City of Richmond's perimeter dike;
- Protecting Richmond from both storm surges and Fraser River freshet events;
- Adapting to sea level rise and land subsidence;
- Being seismically resilient;
- Integrating the Ecological Network Management Strategy vision and goals;
- Following the five strategic directions of the City's Waterfront Strategy (Working Together, Amenities and Legacy, Thriving Eco-Systems and Community, Economic Vitality, Responding to Climate Change and Natural Hazards); and
- Prioritizing dike improvement phasing to use resources efficiently.

All phases of the Dike Master Plan are shown in Figure 1. Council has endorsed Dike Master Plan Phases 1, 2, 3, and 5. Public and stakeholder consultation for Dike Master Plan Phase 4 is complete, and the findings are summarized in this report.

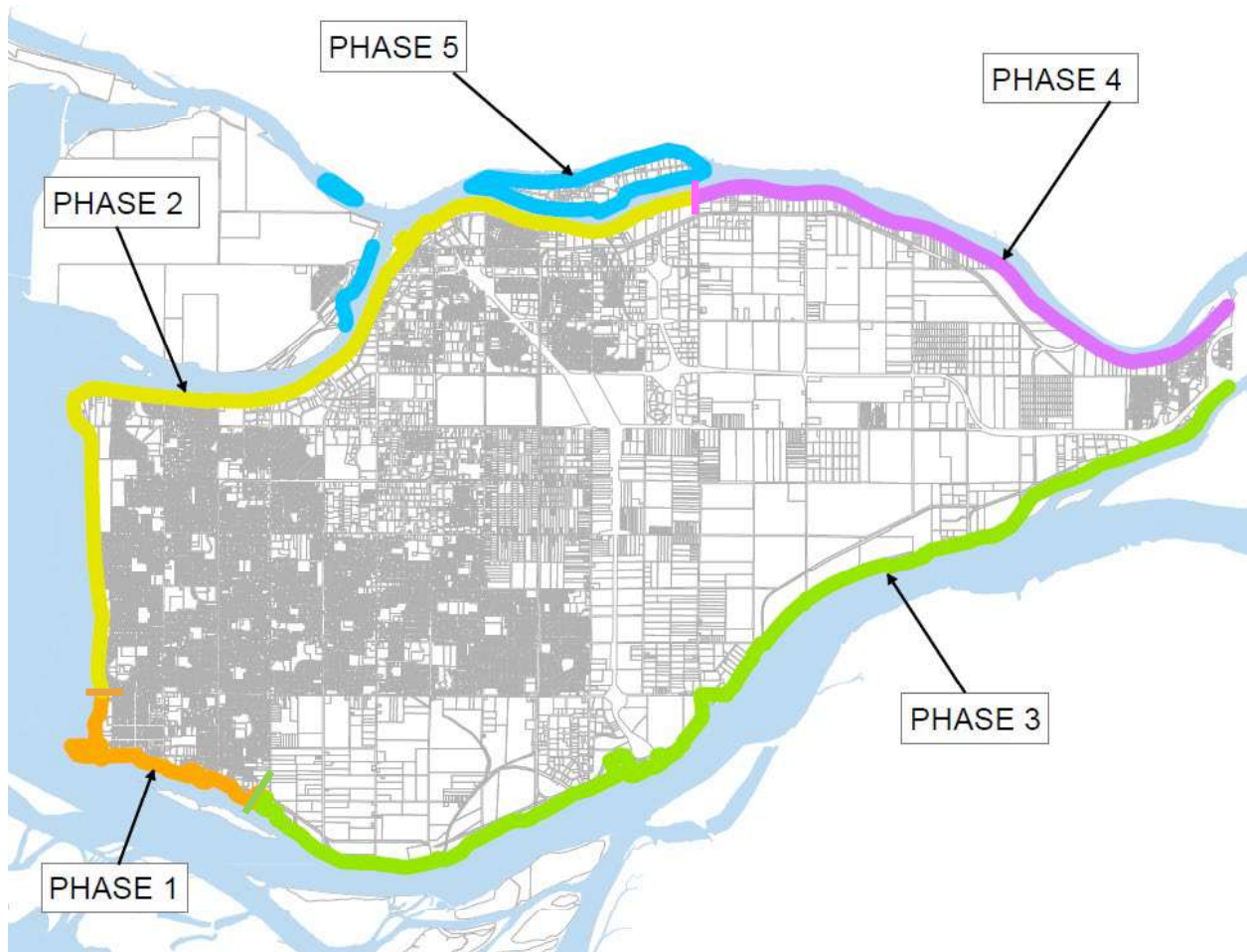


Figure 1: Dike Master Plan Phases

Dike Master Plan Phase 4

The Dike Master Plan Phase 4 report, appended as Attachment 1, provides upgrade recommendations for the north dike along River Road between No. 6 Road and Boundary Road, considering several factors, including adjacent land use, available land for diking, environmental conditions, and potential amenity improvements. It evaluates the various reaches within the study area and recommends upgrade approaches including separated dike and road, standard dike, and superdike.

Public Engagement

There was an extensive Flood Protection Public Engagement Campaign, including in-person and online engagement activities. This campaign was carried out over five months, from May 2022

to September 2022, to collect public feedback on the Dike Master Plan Phase 4. The City's accelerated flood protection program and the City's habitat enhancement initiatives were also highlighted as being integral to the overall program.

The engagement included the following:

- Five community pop-ups (Emergency Preparedness Week, Kwantlen Street Farmers Market, Steveston Farmers & Artisans Market, Burkeville Daze, "Island City, by Bike" tour);
- Two in-person open houses at Hamilton Community Centre;
- Three Works on Wheels bus tours;
- Four online Community Conversation engagement sessions;
- Elementary school presentations;
- 'Walk Richmond' walking tour;
- Updated flood protection webpage on the City's website;
- LetsTalkRichmond.ca flood protection project page;
- New Flood Protection page on StoryMaps; and
- Over 100 door-to-door visits in the Dike Master Plan Phase 4 study area.

Approximately 1,000 people attended the in-person engagement activities and events. Additionally, approximately 2,000 people participated online through the City's flood protection webpage and a Let's Talk Richmond project page that was set up to support community outreach.

Public Feedback

The feedback received through public engagement was generally positive and supportive of the Dike Master Plan Phase 4 and the City's flood protection initiatives. The public is aware of the flood risks and Richmond's flood protection measures, and most are supportive of upgrades that provide other community benefits and amenities. A vast majority of the engaged residents supported the accelerated flood protection program and the associated utility rate increases. Most residents appreciated being included in conversations about flood protection and being provided with the opportunity to ask questions and have them addressed directly at the event.

Based on feedback, the public indicated:

- Strong support for the accelerated flood protection program with a 50-year implementation timeline;
- Support for the actions being taken with regard to community safety;
- Support for environmental considerations in the Dike Master Plan;
- Support for coordination with development to create superdikes;
- Support for improved cyclist experience along River Road;
- Support for amenity upgrades along the dike corridor, including delineated bike lanes, multi-use pathways, benches, washrooms, perimeter dike trail continuity, and traffic calming features;

- Concern regarding the removal of trees and habitat along the dike. Once staff explained how trees in the dike could impact its overall structural integrity, the participants understood why tree removal may be necessary for some situations;
- Concern regarding the uncertainty in sea level rise trends. The participants were assured that the City is continuously monitoring and reviewing the evolving climate change science and adjusting the City's flood protection plans to protect the City well ahead of the sea-level rise;
- Concern regarding New Westminster's dike-raising plans. Staff are coordinating with New Westminster to ensure their dike upgrade plans are in alignment with Richmond's;
- Appreciation for the flood protection public engagement campaign and desire for more similar initiatives in the future;
- Appreciation for all materials available to provide information to residents, including the webpage, online StoryMaps, hand-out flyers, and poster boards; and
- Appreciation for being able to communicate directly with City staff regarding their flood protection concerns.

More details on public engagement and feedback are provided in the 'What We Heard' report appended as Attachment 2.

Key Stakeholder Feedback

Key regulators, community stakeholders, and advisory committees listed below were engaged and invited to provide feedback for the Dike Master Plan Phase 4. Staff mailed out information flyers to the local businesses to invite them to attend the community conversations, and held both in-person and virtual presentations for the advisory committees and some regulators. The other stakeholders were sent the Dike Master Plan Phase 4 report with links to the City's website, information flyers, and a survey on Let's Talk Richmond via email and were invited by staff to provide comments or meet for further discussions.

Community Stakeholders

- Local businesses;
- Agricultural Land Commission;
- Ministry of Transportation and Infrastructure;
- CN Rail;
- Environment Canada;
- Port of Vancouver;
- Urban Development Institute;
- Pembina Pipeline;
- Telus;
- BC Hydro;
- Hamilton Transit Centre; and
- City of New Westminster.

Advisory Committees

- Richmond Food Security and Agricultural Advisory Committee; and
- Richmond Advisory Committee on the Environment.

Regulators

- Department of Fisheries and Oceans;
- Ministry of Forests;
- Ministry of Water, Land and Resource Stewardship;
- Ministry of Emergency Management and Climate Readiness;
- Ministry of Agriculture, Food and Fisheries; and
- BC Inspector of Dikes.

In the past, First Nations were not specifically engaged on the overarching Dike Master Plans. First Nations were engaged on individual projects as required through the Province's permit approval processes. Through the staff report titled "Truth and Reconciliation Update," dated April 11, 2023, from the Director, Intergovernmental Relations and Corporate and Strategic Planning, Council endorsed creating a new position for Manager, Indigenous Relations at the Regular Council Meeting on May 8, 2023. Once this position has been filled, staff will use this opportunity to bring forward future diking and flood protection projects to First Nation groups and conduct meaningful engagements to advance reconciliation efforts.

Stakeholder Feedback

Staff received a limited number of comments and survey responses from the community stakeholder group. The advisory committees and the community stakeholders that returned comments were generally supportive of the findings in Dike Master Plan Phase 4. Some additional comments are provided below:

- Richmond's Advisory Committee on the Environment generally supported dike-raising and noted that New Westminster's dike-raising plans should align with Richmond's. The City is coordinating with the City of New Westminster to ensure that East Richmond will remain protected from flood risks.
- Richmond Food Security and Agricultural Advisory Committee noted that implementing a continuous trail network along the perimeter dike and tree planting for habitat compensation should be prioritized. Additionally, opportunities for accessing the river for water activities should be investigated. The recommendations provided in the Dike Master Plan Phase 4 include a continuous multi-use pathway for dike trail continuity as well as habitat enhancement and compensation recommendations. Staff will also explore water access opportunities during the detailed design phase of the various dike reaches.
- Ministry of Transportation does not have any infrastructure in the Dike Master Plan Phase 4 study area; however, they noted their request to be notified and engaged wherever Richmond's dike project may intersect with Ministry infrastructure.

- Fortis BC also requested a notification for dike upgrades along Reach 1 of Dike Master Plan Phase 4 to relocate or regrade one of their critical pump stations.

Regulatory Feedback

Staff met with the Fish and Fish Habitat Protection Program team at the Department of Fisheries and Oceans to discuss the dike-raising initiative and how impacts on fish and fish habitat are planned to be mitigated or compensated where impact cannot be avoided. They encourage the implementation of more nature-based solutions. Staff are in discussion with the Department of Fisheries and Oceans to implement a habitat bank, per council direction.

The Ministry of Forests commented on habitat impact from potential Riparian Management Area (RMA) watercourse infills along River Road. Staff will be working closely with a Qualified Environmental Professional, in collaboration with the Ministry, during the detailed design phase of the different dike sections to address regulatory requirements that limit impacts where possible and provide adequate high-value habitat compensation where necessary.

The Ministry of Forests also noted that Land Act authorizations would be required for any potential dike infrastructure that may encroach into the river or aquatic areas. Staff will obtain all required authorizations and permits before any dike upgrade works commence.

The plan notes that all other relevant federal and provincial regulatory agencies including, but not limited to, the Department of Fisheries and Oceans, Ministry of Forests, Ministry of Environment, and the Inspector of Dikes will continue to be engaged during the detailed design of the dike reaches.

Recommendations

Following public and key stakeholder consultation, comments received have been reviewed and are incorporated in the finalized report. The City's findings indicate that in addition to strong support for the accelerated dike upgrades, the residents of Richmond and the community stakeholders were most interested in seeing upgraded amenities to increase community safety and for recreational use. These include multi-use pathways, bike lanes, dike trail continuity, and other park features. There was also general support for creating high-value habitat through the City's habitat banking initiative for dike upgrades.

The updated recommendations of Dike Master Plan Phase 4 are summarized as follows:

1. **Separated Dike and Road**— Separate the dike core footprint from River Road footprint and raise River Road to the same elevation as the adjacent dike crest to produce a total width (dike plus road) of over 20 metres, providing robust flood protection, separated multi-use path and linear park sections are desired, and utilities relocated out of the dike. Where feasible, the separated multi-use path will aim to improve pedestrian and cyclist safety and promote dike trail continuity, while linear park sections can incorporate park amenities desired by the community.

2. **Raised Dike Elevation**— Raise the dike crest to allow for 1 metre of sea level rise. West of Nelson Road, the raised dike crest would be 4.7 metres (CGVD28). East of Nelson Road, the raised dike crest would increase to 5.1 metres at Boundary Road. The plan also allows for longer-term upgrading to accommodate a further 1 metre of sea level rise (i.e. 2 metres of sea level rise). The above noted desired amenities can be integrated at the ultimate dike elevation.
3. **Drainage Upgrades**— Replace the drainage channel immediately inside the dike with storm sewers and swales. This will improve dike stability and provide some of the land needed to relocate River Road. The stakeholders noted concerns regarding changes in the function or loss of open watercourses as they provide habitat value. The Habitat Banking work will consider and respond to these concerns.
4. **Habitat Enhancement**— Overall, maintain a goal to create and maintain high-value habitat to fulfil habitat compensation requirements for dike-raising projects;
5. **Superdikes**— Land and road raising immediately inside the dike (during redevelopment) to improve seismic resilience. This will also improve liveability by allowing residents to look down over the water.
6. **Secondary Dike**— Construct the north section of a secondary dike near Boundary Road.

Next Steps

Dike Master Plan Phase 4 identifies a medium to long-term program for dike improvements on the north dike along the eastern half of River Road. All sections included in the Dike Master Plan will be raised within the next 50 years to meet the target established by the accelerated program to stay ahead of climate change-induced sea level rise and land subsidence. Staff will continue to review the latest climate change predictions and update the plan to keep up with the current trends.

Based on the guidelines provided in the Flood Protection Management Strategy and feedback collected through stakeholder engagement, staff have identified a significant amount of work that can be carried out in the short and medium term in preparation for these upgrades. Should Council endorse this work plan, staff will proceed with the following:

- a) Identify and include dike reaches from Phase 4 for detailed design and construction in the future Capital Budgets. The detailed design of these reaches will be guided by the recommendations included in the Dike Master Plan Phase 4 and incorporate the aforementioned public and stakeholder feedback;
- b) Explore upcoming senior government funding opportunities for upgrades to dike reaches identified in the Dike Master Plan Phase 4;
- c) Continue coordination and discussions with the regulatory entities and engage the First Nations for future dike upgrade initiatives;
- d) Continue regular coordination with the City of New Westminster to ensure their flood protection initiatives align with the City's;

- e) Advance the habitat banking program to support dike improvement projects;
- f) Encourage the construction of superdikes through development;
- g) Re-evaluate current and future flood construction levels and development bylaws to reduce flood risk;
- h) Strategically acquire properties in support of future dike upgrading;
- i) Monitor sea level rise using water level sensors; and
- j) Continue public engagement activities for the City's flood protection projects to inform and involve the community.

Financial Impact

Capital projects will be brought forward for Council consideration as part of the budget process.

Conclusion

The Dike Master Plan Phase 4 is the last phase of the Dike Master Plan. Consistent with the City's Flood Protection Management Strategy, it provides medium to long-term dike upgrade recommendations along the north dike between No. 6 Road and Boundary Road. It generally recommends that the City raise the dike to a minimum 4.7 metre dike elevation while allowing for a further height increase to 5.5 metres in the future, integrate the proposed dike concepts within the study areas, pursue superdikes through development, and strategically acquire land required to facilitate the upgrades.

This project's public and stakeholder engagement is complete, and the feedback is generally favourable with support for the Dike Master Plan Phase 4 and the accelerated flood protection program. The feedback collected will be incorporated into capital dike improvement projects as identified in this plan.



Eric Sparolin, P.Eng.
Manager, Engineering Planning
(604)-247-4915



Ridhi Dalla, EIT
Project Manager, Engineering Planning
(604)-204-8521

- Att. 1: Dike Master Plan Phase 4 – Final Report
2: What We Heard Report



Final Report

Richmond Dike Master Plan - Phase 4

April 28, 2023
KWL File No. 0651.122-300

Submitted by:

 **KERR WOOD LEIDAL**
consulting engineers

CNCL - 355



Contents

Executive Summary	i
1. Introduction	1-1
1.1 Background	1-1
1.2 Purpose and Objectives	1-2
1.3 Approach and Methodology	1-2
1.4 Report Format	1-3
1.5 Project Team	1-3
2. Existing Conditions	2-1
2.1 Reaches and Major Features	2-1
2.2 Land Tenure	2-4
2.3 Infrastructure	2-4
2.4 Habitat	2-4
3. Options Assessment	3-1
3.1 Design Considerations	3-1
3.2 Design Criteria	3-7
3.3 Alternative Upgrading Strategies	3-11
3.4 Options and Concepts	3-12
3.5 Stakeholder Engagement	3-19
3.6 Options Evaluation and Selection	3-21
3.7 Cost Opinions	3-26
4. Implementation Strategy	4-1
4.1 Pre-design Measures	4-1
4.2 Construction Sequence	4-1
4.3 Prioritization	4-2
5. Reach Summary Sheets	5-1
Reach 1: Bridgeport Industrial	5-2
Reach 2: Industrial and Shipyards	5-4
Reach 3: Riverfront Houses and ALR	5-6
Reach 4: Bog and Rail	5-8
Reach 5: Hamilton Frontages	5-11
Reach 6: Tree Island Slough and Boundary	5-13
6. Recommendations	6-1

Report Submission

References



Figures

Figure 1-1: Dike Master Plan Phase Locations	1-5
Figure 1-2: Dike Master Plan Phase 4 Reaches.....	1-6
Figure 2-1: Existing Land Tenure	2-7
Figure 3-1: Fraser River Middle Arm Flood Elevations	3-1
Figure 3-2: Option 1: Raise Dike and Road, and Extend Land-side.....	3-2
Figure 3-3: Option 2: Raise Dike and Road with Retaining Walls	3-3
Figure 3-4: Option 3: Raise Dike Only and Extend River-side.....	3-4
Figure 3-5: Option 6: Rail Trestle – Raise Road/Dike Under Trestle	3-5
Figure 3-6: Option 7: Rail Trestle - Fill in between Trestle Pile	3-6
Figure 3-7: Option 8: City of New Westminster Tie-in – Raise Boundary Road	3-7
Figure 3-8: Tie-in alignment – raise Tree Island Steel property	3-8
Figure 3-9: Tie-in alignment – Across slough	3-9

Tables

Table 2-1: Phase 4 Reaches and Features.....	2-2
Table 2-2: Phase 4 Pump Stations and Reach Locations	2-4
Table 2-3: Environmental Values	2-6
Table 3-1: Ideal Dike Design Principles and Considerations.....	3-2
Table 3-2: City of Richmond ESA Type Management Objectives	3-4
Table 3-3: Design Criteria Summary	3-7
Table 3-4: Flood Levels and Dike Crest Elevations	3-9
Table 3-5: Proposed Alternative Seismic Performance Criteria.....	3-10
Table 3-6: High-level Dike Upgrading Strategies	3-11
Table 3-7: Major Dike and Road Alignment and Cross-section Options	3-12
Table 3-8: Space Limitations and Access Issues	3-13
Table 3-9: Options for Replacing Existing River Road Drainage Channels	3-16
Table 3-10: Recommended Dike Upgrading Options	3-23
Table 3-11: Reach-by-Reach Summary of Habitat Impacts	3-23
Table 3-12: Summary of Construction Costs (\$ in Millions)	3-26
Table 4-1: Priority by Reach.....	4-2

Appendices

- Appendix A: Plans and Sections for Lulu Island Dike Master Plan – Phase 4
- Appendix B: Richmond Dike Master Plan Landscape Concepts and Dike Typologies
- Appendix C: Geotechnical Engineering Analysis Report (Thurber)



Executive Summary

The City of Richmond uses a Dike Master Planning program to guide future dike upgrading projects, and to ensure that land development adjacent to the dike is compatible with flood protection objectives. The program includes 4 phases for the 49 km of the Lulu Island perimeter dike that is within Richmond, plus another phase for Sea Island, Mitchell Island, and Richmond Island. The immediate goal is to raise the dikes to allow for 1 m of sea level rise, and to allow for further upgrading in the future. The ultimate goal is to provide the City with a world class level of flood protection to keep pace with the rapidly growing community that relies on the dikes.

Dike Master Plan Phase 4 covers 9 km of the Lulu Island perimeter dike along the Fraser River North Arm, between No. 6 Road and Boundary Road. The dike within Phase 4 is mainly under River Road, with private property inside and outside of the dike. Phase 4 land use along the dike corridor is primarily industrial in the west, agricultural in the middle, and residential/industrial in the east. Specific features within the Phase 4 area that complicate dike upgrading include River Road on top of the dike, driveways to private property inside and outside the dike, pedestrian and bicycle traffic and safety issues along the dike/road, utilities within the dike, large drainage channels immediately inside the dike, a railway trestle crossing above the dike, the North East Bog Forest, and liquefiable soils beneath the dike.

This report describes existing conditions, develops an ideal vision for dike upgrading, presents design criteria, identifies options for dike upgrading, and presents recommended dike upgrading options that appropriately address the challenges. This work can be used as a basis for design of dike upgrading projects, recognizing that site-specific refinement of recommended options will be required in some areas. This work can also be used to assist with land use planning activities along the dike corridor.

The main recommended upgrading option in Phase 4 involves separating the dike and River Road, and raising River Road to the dike crest elevation. This will produce a total crest (dike plus road) width of over 20 m which will provide robust flood protection, separated multi-use paths and a linear park, and utilities relocated out of the dike.

Some of the additional features of the recommended options in Phase 4 are described below:

- Raise the dike crest to allow for 1 m of sea level rise. West of Nelson Road, the raised dike crest would be 4.7 m (CGVD28). East of Nelson Road, the raised dike crest would increase to 5.1 m at Boundary Road. The plan also allows for longer term upgrading to accommodate a further 1 m of sea level rise (i.e. 2 m of sea level rise).
- Replace the drainage channel immediately inside the dike with storm sewers and swales. This will improve dike stability, and will provide some of the land needed to relocate River Road.
- Raise land and roads immediately inside the dike (during redevelopment) to improve seismic resilience. This will also improve liveability by allowing residents to looking down over the water.
- Construct the north section of a secondary dike near Boundary Road.

It is also recommended that the City prepare a comprehensive implementation plan for dike upgrading that incorporates the elements of the Phase 4 Dike Master Plan, and the elements of the other Dike Master Plans.

To address habitat compensation issues associated with dike upgrading, it is further recommended that the City consider development of a habitat banking program that could provide effective large-scale compensation.



1. Introduction

Flood protection in Richmond is guided by the City's 2008-2031 Flood Protection Management Strategy which includes a comprehensive suite of measures including structural measures (e.g. dikes and pump stations), non-structural measures (e.g. flood construction levels), and flood response and recovery plans.

Dike Master Plans are critical components of the City's 2008-2031 Flood Protection Management Strategy and are used to guide the implementation of long-term dike upgrades.

The City of Richmond (City) has retained Kerr Wood Leidal (KWL) to prepare the Richmond Dike Master Plan Phase 4. The report was essentially completed and a draft report submitted in November 2018. The current final submission includes a summary of some additional stakeholder and public feedback received since the 2018 submission. The Flood Protection Management Strategy Update was submitted in May, 2019 and updates the 2008-2031 Flood Protection Management Strategy. Some of the results of this update may not be reflected in the Dike Master Plan Phase 4 because it was written first. Also, cost estimates were completed in 2018 dollars.

Phase 4 covers the north-eastern portion of the Lulu Island perimeter dike, from No. 6 Road to Boundary Road (City of New Westminster). Figure 1-1 presents the extent of the City's Dike Master Plan phases. Phase 4 has been subdivided into 6 reaches with relatively uniform conditions. Figure 1-2 shows the reaches of the Phase 4 Dike Master Plan.

1.1 Background

Richmond has a population of about 220,000 and is situated entirely on islands within the overlapping Fraser River and coastal floodplains (Lulu Island, Sea Island, Mitchell Island, Richmond Island, etc.). The City's continued success is due in part to its flat, arable land and its strategic location at the mouth of the Fraser River and on the seashore. The low elevation of the land and its proximity to the water comes with flood risks.

Lulu Island is the most heavily developed part of Richmond. Lulu Island is bounded by the Fraser River and the Strait of Georgia and is subject to flood risks from the Fraser River and the sea. Lulu Island is also subject to other flood-related hazards, including dike breach, seismic effects, internal drainage, tsunami, and river instability. The typical natural ground elevation¹ is in the range of 1 m to 2 m as shown on Figure 1-1.

The cornerstone of the Lulu Island flood defenses is a 49 km long perimeter dike. Internal drainage is provided by an integrated system of channels and storm sewers that drain to 39 pump stations / floodboxes. Richmond occupies over 90% of Lulu Island. The balance of Lulu Island (the upstream end) is occupied by the Queensborough neighbourhood of the City of New Westminster.

As Richmond is fully situated within the river/coastal floodplain, there is no option to locate development out of the floodplain. The continued success of the City depends on providing a high level of structural and non-structural flood protection measures. Without continued improvements, the flood risk within the City would progressively rise as a result of rising flood levels (due to climate change), subsiding land, and increasing development.

¹ All elevations in this report refer to the Canadian Geodetic Vertical Datum of 1928 (CGVD28), unless stated otherwise.



The 2008-2031 Flood Protection Management Strategy guides the City's flood risk reduction activities across the City's organizational structure and across the spectrum of structural and non-structural flood protection measures.

The Lulu Island perimeter dike is the most critical structural flood protection measure. With essentially unlimited inflow available from the Fraser River and the sea, significant flood damages and impacts could occur in the event of a dike breach.

1.2 Purpose and Objectives

The purpose of the Dike Master Plan is to guide the implementation of dike upgrades and provide a starting point for the City to work with proposed developments adjacent to the dike. The Dike Master Plan defines the City's preferred and minimum acceptable dike upgrading concepts.

The Dike Master Plan facilitates the City's annual dike upgrading program by providing critical information for the design of dike upgrades, including:

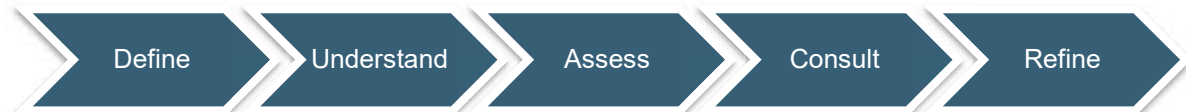
- general design concept;
- alignment;
- typical cross-section (conceptual design);
- footprint and land acquisition and tenure needs;
- design and performance criteria;
- infrastructure changes required for dike upgrading;
- operation and maintenance considerations;
- environmental features and potential impacts;
- social and public amenity considerations;
- guidance for future development adjacent to the dike; and
- guidance on interaction with other structural flood protection measures (e.g. secondary dikes).

The Dike Master Plan is intended to guide dike upgrading over the next 20 to 30 years.

Other flood protection measures, including non-structural measures, are addressed in the City's 2008-2031 Flood Protection Management Strategy.

1.3 Approach and Methodology

The Dike Master Plan has been developed using a 5-step approach presented and described below.



Define: Confirm Dike Master Plan objectives and design/performance criteria.

Understand: Collect and compile relevant information, including spatial data and background reports from the City and several other parties (City of New Westminster, provincial regulators, the port, etc.).

Assess: Develop dike upgrading options and identification of constraints and potential impacts. Desktop and field review of options with City staff to identify preferred options.

Consult: Present to and gather feedback from council and stakeholders on preferred options.

Refine: Develop the master plan informed by consultation and review by the City.



The scope for the Dike Master Plan includes the following main tasks:

- goals and objectives development;
- background data collection and review;
- design criteria development and identification of constraints;
- options development and review;
- site visits;
- drainage impacts assessment;
- desktop habitat mapping and impacts review;
- geotechnical assessment;
- public amenity review;
- stakeholder consultation; and
- report preparation.

1.4 Report Format

This report is organized as follows:

- The executive summary provides a high-level overview of the master plan and key features;
- Section 1 introduces the master plan context and process;
- Section 2 documents the existing conditions;
- Section 3 documents the options development and assessment, and presents the recommended options;
- Section 4 provides implementation strategy, including costs, phasing, and coordination;
- Section 5 is a compilation of 2-page summary sheets highlighting existing conditions and key features of the preferred option for each reach; and
- Section 6 provides general and reach specific recommendations for next steps and implementation.

Appendix A provides figures showing conditions along the existing dike alignment, and the preliminary design footprint for a number of upgrading options discussed in Section 3.

1.5 Project Team

The KWL project team includes the following key individuals:

- Colin Kristiansen, P.Eng., MBA – Project Manager;
- Mike Currie, M.Eng., P.Eng., FEC – Senior Engineer and Technical Reviewer;
- Amir Taleghani, M.Eng., P.Eng. – Project Engineer;
- Laurel Morgan, M.Sc., P.Eng., P.E. – Drainage Engineer;
- Daniel Brown, B.Sc., B.Tech., BIT – Project Biologist; and
- Jack Lau - GIS/CAD Analyst.

This report was primarily written by Amir Taleghani, and reviewed and updated by Colin Kristiansen. The report was reviewed by Mike Currie.

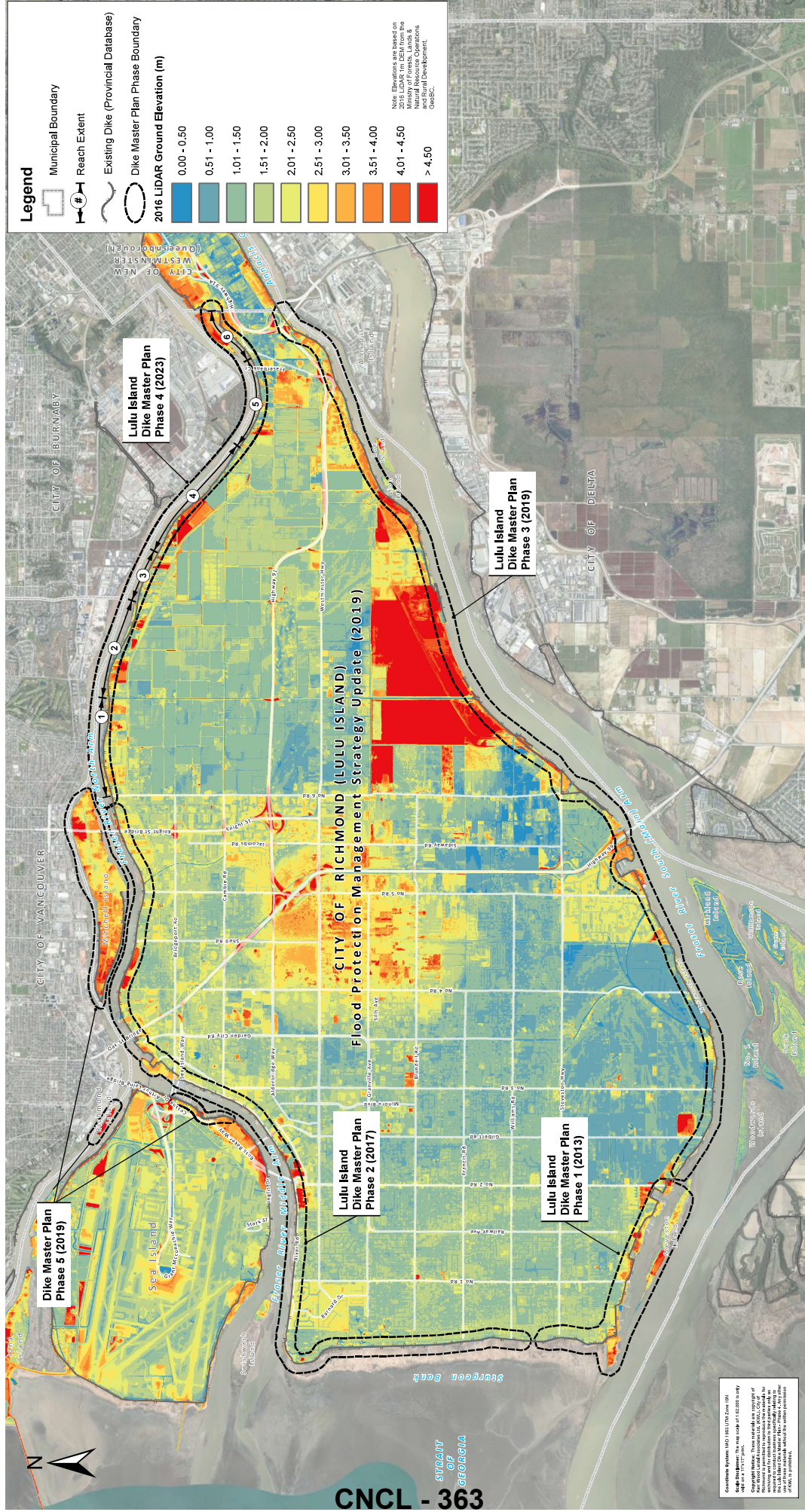
Thurber Engineering Ltd. (Steven Coulter, M.Sc., P.Eng.) provided geotechnical engineering services and Hapa Collaborative (Joseph Fry, BCSLA) provided landscape architecture services.



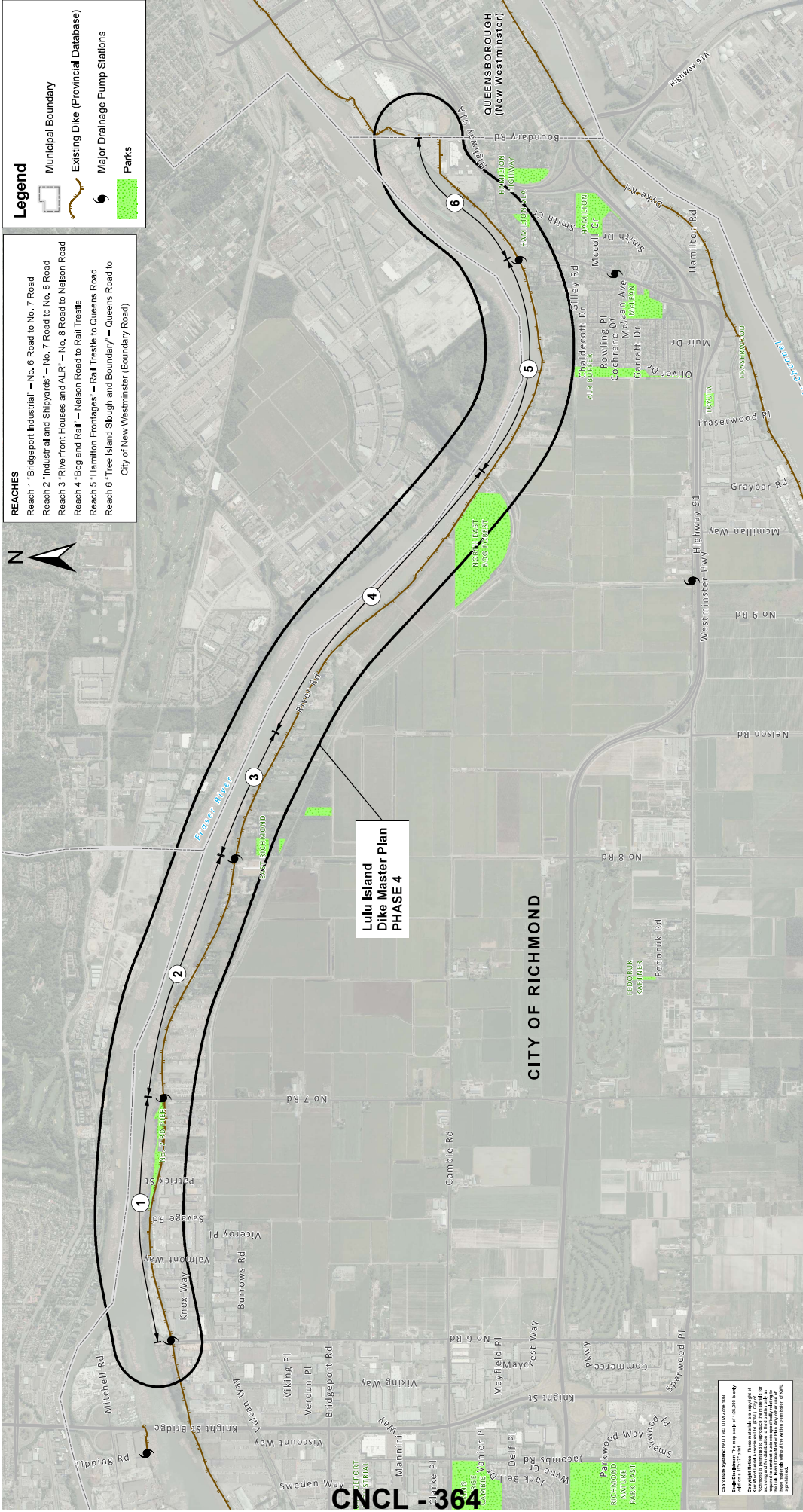
The project was guided on behalf of the City by:

- Pratima Milaire, P.Eng., PMP - Project Engineer, Engineering Planning.
- Ridhi Dalla, EIT - Project Manager, Engineering Planning; and
- Eric Sparolin, P.Eng. – Manager, Engineering Planning;

Many additional City staff contributed to the project during workshops, site visits, and in reviewing draft report materials.



City of Richmond
Lulu Island Dike Master Plan - Phase 4



Project No. 651-122
Date April 2023
Scale 1:25,000

Dike Master Plan Phase 4 Reaches

Figure 1-2



2. Existing Conditions

This section summarizes the options development process undertaken, including the following components:

- review of existing conditions;
- design considerations;
- upgrading strategies; and
- preferred options and concepts.

2.1 Reaches and Major Features

River Road is a defining feature of the dike in Phase 4 because the road is located on the dike crest for most of the dike alignment. A variety of land uses, structures, and infrastructure are located on either side of the road/dike. Space is limited along the road corridor, presenting unique challenges for the master plan. City staff have identified road safety, including pedestrian and cyclist safety, as an important consideration for the Dike Master Plan.

Land uses adjacent to the dike in Phase 4 comprise industrial, agricultural, and single family residential. Drainage channels run parallel to River Road on the south side. On the north side of River Road, the setback between the river bank and the dike (road) varies from more than 15 m to none where the edge of the dike/road is the river bank and riprap bank protection is in place. Several industrial and single family residential parcels are located on the river-side (north) of the dike (road), and therefore are not protected by the dike. Much of the dike alignment is adjacent to, or in some places on, the Agricultural Land Reserve (ALR).

Phase 4 has been subdivided into 6 reaches with relatively uniform conditions. The reach extents are presented on Figure 1-2.

Table 2-1 describes the existing conditions and features of each reach. It is anticipated that these defined reaches can be subsequently used for dike upgrading implementation phasing.

Appendix A provides a set of figures showing the existing dike alignment, adjacent land tenure, municipal infrastructure, and existing habitat.

Table 2-1: Phase 4 Reaches and Features

Reach ID and Name	Extent / Length	Existing Dike Alignment	Major Features
1 – Bridgeport Industrial	No. 6 Road to No. 7 Road (1.7 km)	River Road	<ul style="list-style-type: none"> • Drainage pump station at No. 6 Road • Industrial site (Mainland Sand and Gravel) north of River Road • FortisBC gas pipeline river and facility west of No. 7 Road • Drainage channel and pipe south of road • Riparian area north of road • Potential future tie-in with proposed mid-island dike
2 – Industrial and Shipyards	No. 7 Road to No. 8 Road (1.7 km)	River Road	<ul style="list-style-type: none"> • Water-oriented industrial parcels located north of road (tug boat operation and Tom-Mac Shipyards) • Residential/storage properties located north of road with minimal setback between road and structures • Large industrial parcels located south of road near No. 7 Road • ALR parcels with houses located south of road • Drainage pump station at No. 8 Road
3 – Riverfront Houses and ALR	No. 8 Road to Nelson Road (0.9 km)	River Road	<ul style="list-style-type: none"> • Residential/storage properties located north of road with minimal setback between road and structures near Nelson Road • ALR parcels with houses located south of road • Metro Vancouver Tilbury watermain crossing near Nelson Road
4 – Bog and Rail	Nelson Road to Rail Trestle (2.2 km)	River Road	<ul style="list-style-type: none"> • ALR parcels with cranberry farms south of road • Very large agricultural channel south of dike • North East Bog Forest (City park) • Rail trestle river crossing • No space between road edge and river channel (existing riprap bank protection)



Reach ID and Name	Extent / Length	Existing Dike Alignment	Major Features
5 – Hamilton Frontages	Rail Trestle to Queens Road (1.6 km)	River Road	<ul style="list-style-type: none"> • ALR parcels south of road with houses located close to road • No space between road edge and river channel (existing riprap bank protection) • Metro Vancouver Big Bend forcemain crossing west of 21920 River Road • Queens North drainage pump station west of Westminster Highway
6 – Tree Island Slough and Boundary	Queens Road to City of New Westminster (1.0 km)	River Road until Westminster Highway Riverbank to Hamilton Transit Centre	<ul style="list-style-type: none"> • River Road dike alignment from Queens Road to Westminster Highway, then a river-bank dike runs north of Westminster Highway houses to edge of new Hamilton Transit Centre • Tree Island Steel site (3933 Boundary Road) creates a slough north of the dike that shelters the road/dike from the river • Backyards of single family homes located south of dike • Dike alignment not well defined from Hamilton Transit Centre to City of New Westminster river-bank dike • Potential tie-in with proposed secondary dike to separate Richmond and New Westminster



2.2 Land Tenure

Most of the existing dike footprint is located within the City's road dedication, on a right-of-way, or on City-owned land parcels. However, there are several areas where the existing dike footprint encroaches onto private property or where space is very limited such that any upgrading would encroach onto private property.

The existing land tenure in Phase 4 is presented on Figure 2-1 and in more detail in Appendix A.

2.3 Infrastructure

There is considerable infrastructure and utilities associated with the existing dike corridor in Phase 4. In addition to the road that runs along the top of the dike for much of the reach, there are also watermain, drainage channels, and storm sewers that run parallel to the dike, predominantly at the landside toe. This infrastructure may need to be moved to accommodate any increases to the dike footprint.

There are 4 pump stations and 1 PRV (water) station that cross through the dike in Phase 4. The pump stations and the associated reach are summarized in Table 2-2. The condition of each pump station was not assessed as part of preparing the master plan.

Table 2-2: Phase 4 Pump Stations and Reach Locations

Pump Station	Reach
No. 6 Road North	1
No. 7 Road North	1
No. 8 Road North	2
Queens North	6

2.4 Habitat

Desktop Review

A desktop review was conducted to assess the ecological setting along and adjacent to the existing dike alignment. Spatial data were used to identify overlap of known environmental values with the Phase 4 study area.

Spatial data reviewed in the desktop study included:

- Fraser River Estuary Management Program mapping (FREMP 2012, 2007) mapping used to identify riparian and intertidal habitat types and quality;
- iMapBC web application (iMapBC 2017); and
- City of Richmond aerial photographs and Riparian Area Regulation 5 m and 15 m buffer layers (Richmond Interactive Map 2017).

The location and extent of high quality Fraser River riparian and intertidal habitat was identified to inform development of dike upgrade options and their potential impacts. FREMP habitat polygons were assigned the following categories: high quality riparian, high quality intertidal, or other. Deciduous tree woodland polygons were categorized as high quality riparian habitat because these communities provide cover and nutrients to fish using nearshore habitat. Mud, sand, and marsh polygons were



categorized as high quality intertidal habitat because of the foraging and nesting habitat they provide for bird species and the foraging, egg deposition and rearing habitat they provide for fish species. Aquatic and riparian habitat on the land side of the existing dike was identified and mapped using the Riparian Area Regulation buffer layers and interpretation of recent aerial photography (City of Richmond 2017).

Aquatic and Riparian Habitat

High quality intertidal and riparian habitat is present in all six Phase 4 reaches on the Fraser River side of the dike. This important habitat provides forage and cover habitat as well as a staging area for anadromous salmonids transitioning from saltwater to freshwater. Conversely, armoured sections of shoreline on the Fraser River side of the existing dike are present in Reaches 1, 4, 5, and 6. These sections provide limited habitat value and construction here would have less of a negative impact on fish.

On the land-side of the dike, drainage channels are present in all six reaches. These channels provide low to moderate quality aquatic and riparian habitat for fish and amphibians.

Two fish habitat compensation projects are present in the Phase 4 study area. These were created in 1986 and 1989 respectively and included the creation of intertidal marsh habitat to compensate for damage to habitat elsewhere.

Wildlife and Terrestrial Habitat

Terrestrial habitat types in Phase 4 include deciduous tree woodland, tall shrub woodland, low shrub woodland, and vascular plant meadow, as well as uncategorized sections (e.g. paved lots; FREMP 2007). These habitat types have potential to provide nesting habitat to migratory birds in all six reaches of Phase 4. Orthoimagery review identified potential raptor nesting trees in all six reaches of the Phase 4 study area.

The internal drainage channels that are mentioned above and are present in all six reaches of Phase 4 are likely used by native amphibian species as breeding habitat as well as by fish species. It is possible that additional amphibian habitat is present in small ponds or channels along the dike that were not identified in the desktop review.

Species and Ecological Communities at Risk

No known occurrences of terrestrial wildlife species at risk are present in the Phase 4 study area, but several occurrences exist on nearby islands in the Fraser River or on the river banks across from Richmond. It is possible that individuals of these species also occur on the Richmond side of the Fraser River. The Lower Fraser River population of White Sturgeon (*Acipenser transmontanus* pop. 4) is known to occur in the Fraser River next to the dike. Mapped critical habitat for at-risk species is not present within 500 m of the Phase 4 study area.

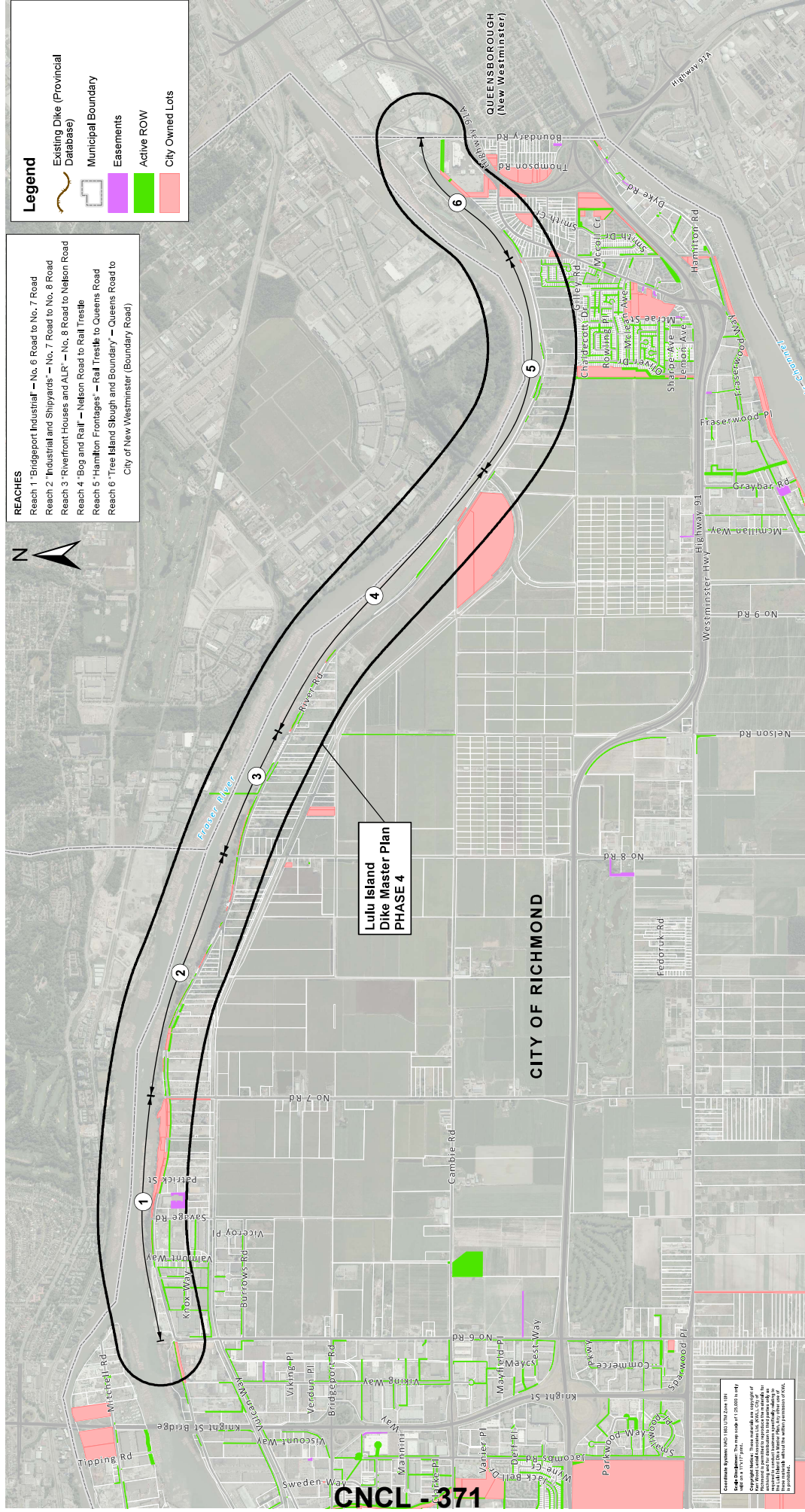
FREMP mapping (2007) indicates the presence of intertidal marsh communities in all six reaches of the Phase 4 study area. Many of these communities in British Columbia are considered at-risk (i.e. Blue-Listed; special concern, or Red-Listed; threatened, or endangered). No ecological communities at-risk are shown in either the study area on BC iMap (2017), but it is likely that some are present in the Phase 4 study area.

Table 2-3 presents the findings of the desktop review on a reach-by-reach basis and separates Fraser River side results from land-side results.



Table 2-3: Environmental Values

Reach #	Location	Environmental Setting	Construction Constraints	Construction Opportunities	FREMP Habitat Types	Known Species at Risk Occurrence Near Dyke Alignment	Potential Raptor Nesting Trees	Potential Migratory Bird Nesting Habitat	Existing Habitat Compensation Sites Present
1 Bridgeport Industrial	Land Side	<ul style="list-style-type: none"> Sections of channelized watercourse (amphibian habitat) Sections of moderate quality low shrub woodland 	Drainage channels and moderate quality habitat	Limited sections without drainage channels or shrub woodland	Low shrub woodland Deciduous tree woodland Meadow	White Sturgeon (Lower Fraser River population) (Acipenser transmontanus pop. 4)	Y	Y	Project: Richmond Plywood Year Created: 1989
	Fraser River side	<ul style="list-style-type: none"> Low-quality habitat, gravel lot and armoured bank at west end High quality deciduous tree woodland riparian habitat along east 3/4 of reach High Quality marsh and mudflat habitat along east 3/4 of reach 	High quality riparian and aquatic habitat in east 3/4 of reach	Low quality habitat at west end of reach	Marsh Deciduous tree woodland Mudflats Meadow				
2 Industrial and Shipyards	Land Side	<ul style="list-style-type: none"> Channelized watercourse adjacent to dike (amphibian habitat) along full length of reach 	Drainage channels along full length of reach	n/a	Deciduous tree woodland Meadow	White Sturgeon (Lower Fraser River population) (Acipenser transmontanus pop. 4)	Y	Y	N
	Fraser River side	<ul style="list-style-type: none"> High-quality deciduous tree woodland riparian habitat along 75% of reach High-quality marsh and mudflats habitat along 90% of reach 	High quality habitat along >90 % length of reach	n/a	Marsh Mudflats Meadow				
3 Riverfront Houses and ALR	Land Side	<ul style="list-style-type: none"> Channelized watercourse adjacent to dike (amphibian habitat) along full length of reach 	Drainage channels along full length of reach	n/a	Deciduous tree woodland Meadow	White Sturgeon (Lower Fraser River population) (Acipenser transmontanus pop. 4)	Y		Project: Olafson & Hewitt Compensation Site Year Created: 1986
	Fraser River side	<ul style="list-style-type: none"> High-quality deciduous tree woodland riparian habitat along 75% of reach High-quality marsh habitat along full length of reach 	High quality habitat along full length of reach	n/a	Marsh Deciduous tree woodland		Y	Y	
4 Bog and Rail	Land Side	<ul style="list-style-type: none"> Channelized watercourse adjacent to dike (amphibian habitat) along full length of reach High-quality shrubland habitat connected to North East Bog Forest in east end of reach 	Drainage channels along full length of reach	n/a	Deciduous tree woodland Meadow Low shrub woodland Tall shrub woodland	Green-fruited Sedge (Carex interrupta)			
	Fraser River side	<ul style="list-style-type: none"> High quality deciduous tree woodland riparian habitat along west 60% of reach High-quality marsh habitat along west 60% of reach Low quality armoured bank habitat in east 40% of reach 	High quality habitat along west 60% of reach	Low quality habitat at least 40% of reach	Deciduous tree woodland Marsh	White Sturgeon (Lower Fraser River population) (Acipenser transmontanus pop. 4)	Y	Y	N
5 Hamilton Frontages	Land Side	<ul style="list-style-type: none"> Channelized watercourse adjacent to dike (amphibian habitat) along full length of reach Moderate quality low shrub woodland and meadow in middle of reach 	Drainage channels along full length of reach	n/a	Meadow Low shrub woodland Tall shrub woodland	White Sturgeon (Lower Fraser River population) (Acipenser transmontanus pop. 4)	Y	Y	N
	Fraser River side	<ul style="list-style-type: none"> High-quality mudflat habitat and small patches of marsh at east end of reach Low quality armoured bank habitat along full length of reach 	High quality habitat along east half of reach	Low quality habitat at west end of reach	Mudflat Marsh				
6 Tree Island Slough and Boundary	Land Side	<ul style="list-style-type: none"> Channelized watercourse adjacent to dike (amphibian habitat) along west end of reach Mostly low-quality habitat, paved or maintained lawn 	Drainage channels along west end of reach	Low quality habitat along most of reach	Tall shrub woodland Deciduous tree woodland	White Sturgeon (Lower Fraser River population) (Acipenser transmontanus pop. 4)	Y	Y	N
	Fraser River side	<ul style="list-style-type: none"> High quality mudflat habitat and small patches of marsh at west end of reach Low quality habitat armoured bank at west half of reach 	High quality habitat along full length of reach	Low quality habitat at west end of reach	Mudflat Marsh Meadow				





3. Options Assessment

This section summarizes the options development process, including the following components:

- design considerations and design criteria;
- upgrading strategies;
- upgrading options and concepts;
- options evaluation; and
- recommended options for implementation.

The next version of the draft report will include a summary of external stakeholder engagement results.

3.1 Design Considerations

This section summarizes the main themes and issues that have informed the development of upgrading strategies and options for Phase 4.

Dike Performance, Maintenance, and Upgrading

Dike performance, maintenance, and upgrading are the most important design considerations for the Dike Master Plan.

The following themes define an ideal vision for dike upgrading:

1. **Level of Protection:** The City's 2008-2031 Flood Protection Management Strategy sets a target level of protection for structural measures. The City is presently developing an updated flood protection management strategy that will have an even more ambitious flood protection level target. The level of protection translates to a hazard-based design flood scenario to be incorporated into the Dike Master Plan. At this time, the proposed design flood scenario for the Lulu Island perimeter dike is the 500-year return period flood event (0.2 % annual exceedance probability, AEP) with climate change allowances including 1 m of sea level rise. However, the Dike Master Plan should be flexible to accommodate a future change in the design flood scenario in the future.
2. **Form and Performance:** The preferred form of the dike is a continuous, compacted dike fill embankment with standard or better geometry. Walls and other non-standard forms are less reliable and are not preferred. The level of performance of the Lulu Island perimeter dike should be in line with the significant population and assets that the dike protects. The dike should meet all relevant design guidelines of the day and in some cases, exceed guidelines to provide a higher level of performance. Dike performance can be expressed in terms of freeboard above the design flood scenario water level, and factors of safety against various failure processes, including flood conditions and internal erosion (piping).
3. **Passive Operation:** Minimal human or mechanical intervention or operation should be required to achieve full dike performance. To achieve this, the dike should not have any gaps, gates, or stop log structures.
4. **Enhance Performance (slow failure):** The likelihood of a catastrophic dike failure causing significant flood damages can be reduced by design features that aim to slow down failure processes, provide redundancy, and provide time to implement emergency repairs. In general, failure can be slowed or controlled with additional setback, crest width, and armouring of the river-side slope, crest, and land-side slope. Such measures can slow the impacts of river erosion, overtopping erosion, and stability failures. Increased monitoring approaches and technology may also be helpful.



5. **Post-earthquake Protection:** The dike should provide adequate protection following a major earthquake until permanent repairs can be implemented. In general, this means avoiding dike conditions where a major earthquake results in a sudden and full failure of the dike cross-section into the river, referred to as a ‘flowslide failure’. Other conditions where the dike crest settles, but still provides sufficient freeboard and factors of safety until repairs can be conducted may be acceptable. In general, increased crest width, crest elevation, and setback from the river may be undertaken to help achieve adequate post-earthquake protection. In some cases, improved seismic performance will also require ground improvement and densification works.
6. **Future Upgrading:** Uncertainty in climate change, particularly sea level rise timing, may require the City to further upgrade the dike sooner or higher than anticipated by current guidelines and policies. Sufficient space should be reserved under secured land tenure for future upgrading based on standard geometry. Conceptual design is provided for design flood levels which incorporate 1 m of sea level rise, and proof-of-concept design is provided for design flood levels which incorporate another 1 m water level increase for further climate change impacts (i.e. 2 m of sea level rise).

Some specific design considerations related to the above principles are presented in Table 3-1.

Table 3-1: Ideal Dike Design Principles and Considerations

Design Principle	Ideal Design Principles and Considerations
Level of Protection	<ul style="list-style-type: none">Based on 2008-2031 Flood Protection Management StrategyCurrently proposed: 500-year return period (0.2% AEP) with climate change allowances as per provincial studies
Form and Performance	<ul style="list-style-type: none">Continuous, compacted dike fill with standard or better geometryCrest elevation and adequate freeboardFactors of safety against stabilityMinimal infrastructure within the dike corridorAdequate bank protection or setback
Passive operation	<ul style="list-style-type: none">No gaps, gates, or stop logsPassive monitoring (e.g. SCADA water levels)
Enhance Performance (slow failure)	<ul style="list-style-type: none">Wide dike crestArmoured river-bank slope to resist erosionPaved/armoured crest and/or land-side slope to resist overtoppingWide setback from the river
Post-earthquake Protection	<ul style="list-style-type: none">No loss of full dike geometry into the river (“flowslide failure”) up to a return period to be determinedAdequate post-earthquake freeboard and stability until repairsWide dike crest and/or wide setback from the river
Future upgrading	<ul style="list-style-type: none">Space and tenure for upgrading (standard or better geometry)Avoid need for future infrastructure relocation or land acquisition



River Road Safety and Access

The safety of drivers, cyclists, and pedestrians using River Road is a significant consideration in Phase 4. City transportation engineering staff were consulted during the master plan development to provide input on dike upgrading concepts that will also improve road safety. The City's preferred concept for River Road is to provide wider vehicle travel lanes and separated multi-use paths, which may be located on the dike crest. Preferred travel lane and multi-use path widths are documented in the design criteria in Section 3.2. Additionally, the City's goal is to create a continuous path around Lulu Island along the river/on the dike system.

Vehicle access to properties located on both sides of River Road is also a significant consideration. Dike raising along River Road will impact driveway access in some areas. Land use on these properties includes industrial / port-related uses, residential, and agricultural. As such, a variety of vehicles, including semi-trailer trucks, need safe access from River Road to these properties. Currently, these properties are generally at grade with or slightly below River Road, and access is provided via asphalt or gravel driveways. For properties located south of River Road, the driveway crosses the existing drainage channel via a culvert. In some areas where the channel is large, the driveway crossing culvert has a large lock block headwall.

Driveway access was considered in options development by identifying several access upgrading concepts including upgrading driveways with retaining walls, land filling to raise sites to the dike/road level, and providing vehicle parking at the dike/road level. Retaining walls should consider the need for handrails for safety, in accordance with applicable regulations.

Internal Drainage System

As with any diked area, the drainage for the interior protected area must be integrated with the flood protection measures such that the protected area does not experience flooding due to conflicting functions between the drainage of water from the interior area and prevention of flooding from water exterior to the dike system.

In this part of Lulu Island, there are large drainage channels adjacent to the interior (land) side of the existing dike and River Road through much of this area. Most upgrading options (discussed in Section 3.4) will impact these drainage channels throughout Phase 4.

The master plan assesses the potential drainage impacts of filling in the existing channel adjacent to River Road and installing a piped drainage system. The assessment was conducted using East Richmond hydraulic model (MIKE URBAN software) provided to KWL by the City.

Land Raising and Acquisition

Land acquisition is an important consideration for the development and evaluation of dike upgrading options. In many areas, the River Road dike corridor is confined on both sides by private property with no room for expansion of the dike footprint.

The figures in Appendix A present the overlap between the proposed dike footprint and private property for select upgrading options discussed in this section. This overlap can be used to produce a land acquisition plan.

In some locations, an alternative to land acquisition may be to raise private property lots up to the dike elevation to create a much wider land raising platform (similar to recent developments along the Middle Arm (e.g. Olympic Oval).



Environmental Considerations

City of Richmond Bylaws

The City's Official Community Plan (OCP) bylaw (2011) includes an Ecological Network Management Strategy (ENMS) that identifies ecologically important areas in the City's Ecological Network (EN). These areas include Environmentally Sensitive Areas (ESAs), Riparian Management Areas (RMAs), and EN components (hubs, sites, and corridors, shoreline, city parks).

ESAs are designated as Development Permit Areas (DPAs) with specific restrictions and guidelines for development controlled through a review and permitting process (HB Lanarc-Golder and Raincoast Applied Ecology 2012). There are five ESA types, based on habitat, each with specific management objectives. These are summarized in Table 3-2 and more detailed guidelines can be found in HB Lanarc-Golder and Raincoast Applied Ecology (2012). According to Richmond's OCP, dike maintenance is exempt from development permits in ESAs. However, the guidelines provide useful direction that can be used to minimize impacts to these areas and provincial and federal legislation (see below) still applies to these areas.

RMAs are setbacks that were implemented in accordance with the provincial *Riparian Areas Protection Act* and act as pre-determined Streamside and Protection Areas (SPEAs) under the Act. They extend 5 m or 15 m back from the top of bank of the City's higher value drainage channels or more natural watercourses and are to remain free from development unless authorized by the City (City of Richmond, 2017). RMAs are present in all six Phase 4 reaches.

Hubs, sites, and corridors are components of the City of Richmond's EN, which aren't specifically afforded protection, but often overlap ESAs and RMAs, which are protected. These components are present in all 6 reaches of Phase 4.

Dike upgrade options will consider the potential impacts to these areas.

Table 3-2: City of Richmond ESA Type Management Objectives

ESA Type	Reaches Where Present	Management Objectives
Intertidal	All	<ul style="list-style-type: none">• Prevent infilling or direct disturbance to vegetation and soil in the intertidal zones• Maintain ecosystem processes such as drainage or sediment that sustain intertidal zones
Shoreline	1, 2, 3, 4, 6	<ul style="list-style-type: none">• Preserve existing shoreline vegetation and soils, and increase natural vegetation in developed areas during development or retrofitting
Upland Forest	1	<ul style="list-style-type: none">• Maintain stands or patches of healthy upland forests by preventing or limiting tree removal or damage, and maintaining ecological processes that sustain forests over the long-term
Old Fields and Shrublands	None	<ul style="list-style-type: none">• Maintain the extent and condition of old fields and shrublands, while recognizing the dynamic nature of these ecosystems• Preservation should recognize the balance between habitat loss and creation with the overall objective of preventing permanent loss of old fields and shrublands



ESA Type	Reaches Where Present	Management Objectives
Freshwater Wetland	None	<ul style="list-style-type: none">Maintain the areal extent and condition of freshwater wetland ESAs by preserving vegetation and soils, and maintaining predevelopment hydrology, drainage patterns, and water quality
Modified from HB Lanarc-Golder and Raincoast Applied Ecology 2012		

Fish Habitat and Offsetting

Fish and aquatic habitat is protected by the federal *Fisheries Act*. Under the Act, *serious harm to fish* must be authorized by the Minister of Fisheries and Oceans and impacts that cannot be avoided or mitigated must be balanced through offsetting. Offsetting plans are negotiated on a case-by-case basis and may require consultation with aboriginal groups and the Province. Offsetting measures include habitat restoration or enhancement and habitat creation and must be proportional to the loss caused by the project.

Often, the amount of offsetting habitat created is greater than the area of habitat impacted. The area of offsetting may need to be increased to account for uncertainty of effectiveness and time lag between impacts and offsetting. Selecting offsetting locations and beginning habitat creation works prior to all impacts occurring can help to reduce requirements for additional offsetting area required due to lag time. Creation of a smaller number of larger area habitat restoration, enhancement, or creation sites would allow for a more efficient use of resources and potentially reduce uncertainty.

Wildlife Considerations

Migratory birds, their eggs, and active nests are protected by the *Migratory Birds Convention Act* and appropriate measures must be taken to avoid incidental take. The most effective and efficient of these measures includes scheduling vegetation clearing outside of the migratory bird nesting season. If this is not possible, bird nest surveys can be completed immediately prior to vegetation clearing to identify active nests and delay vegetation clearing until the nest is no longer active.

The nests of Bald Eagles, herons and other raptors (both active and inactive) are protected under the provincial *Wildlife Act*. It is also prohibited under the *Wildlife Act* to disturb or harm birds and their eggs. The detailed design stage for dike upgrading should attempt to avoid the removal of trees where bald eagle nests are located.

Native amphibian species may use the drainage channels on the land side of the dike at certain times of year. These species are protected by the provincial *Wildlife Act* and detailed design should also consider potential impacts to these species.



Tie-in with City of New Westminster Dike

The Phase 4 dike needs to tie into the City of New Westminster portion of the Lulu Island perimeter dike.

As shown in the Appendix A, the dike alignment within the tie-in area is not well-defined. The alignment crosses between industrial sites including the Tree Island Steel property (3933 Boundary Road) and the recently developed Translink Hamilton Transit Centre property (4111 Boundary Road) to reach the border (Boundary Road) with the City of New Westminster.

The dike alignment on the City of New Westminster side of the boundary also doesn't appear well defined. Coordination between the City and the City of New Westminster is important to confirm the dike tie-in design at the boundary.

Potential Future Secondary Dikes

The City's 2008-2031 Flood Protection Management Strategy identifies potential secondary dike concepts which are important considerations for Phase 4, including the proposed mid-island dike and the proposed Richmond-New Westminster boundary dike. The purpose of these secondary dikes would be to limit flood damage by creating flood cells on Lulu Island which would contain flooding to smaller areas, and prevent complete flooding of the island if dike breaches were to occur.

The Phase 4 Dike Master Plan has been developed to allow tie-ins with the proposed mid-island dike and the proposed Richmond-New Westminster boundary dike. It is understood that the City is also considering implementation of both of these proposed dikes through gradual land raising through development as opposed to a dedicated dike corridor. The City's 2008-2031 Flood Protection Management Strategy provides additional information regarding potential future secondary dikes.

Public Realm and Ecological Enhancement

The dike is a major existing public realm feature providing a variety of recreation opportunities. The Dike Master Plan provides an opportunity to significantly enhance the public amenity of the dike system, particularly in the Phase 4 project area where walking, biking, and resting opportunities along River Road are limited. Additionally, the dike upgrading provides an opportunity to enhance ecological value through the landscaping treatments that will define the dike surface and edges.

Appendix B presents a suite of landscape concepts prepared by Hapa landscape architects to supplement the Dike Master Plan. These include landscape design principles, an overall network connectivity concept for the Lulu Island perimeter dike trail, and design toolkits for ecological enhancement and public realm features. Additionally, the Appendix B also includes descriptions of landscape concepts associated with the upgrading options presented in this section.



3.2 Design Criteria

This section describes the main design criteria used in the Dike Master Plan.

Table 3-3 presents a summary of the design criteria, and is followed by additional discussion. The criteria are presented in terms of both a minimum acceptable level, and a preferred level.

Table 3-3: Design Criteria Summary

Item	Value and Description	
	Minimum Acceptable	Preferred
Proposed Dike Crest Elevation	4.7 m CGVD28 downstream of Nelson Road 4.7 m CGVD28 to 5.0 m CGVD28 between Nelson Road and Boundary Road	
Future Dike Crest Elevation (for proof-of-concept design)	5.5 m CGVD28 downstream of Nelson Road 5.5 m CGVD28 to 6.0 m CGVD28 between Nelson Road and Boundary Road	
Geometry and Stability	4 m wide crest with dike fill core 3H:1V land-side slope 3H:1V river-side slope (or 2H:1V with riprap revetment) Retaining walls minimized Sheetpile walls acceptable only with minimum 4 m wide dike fill core behind wall No standalone flood walls Meet minimum geotechnical factors of safety	Meets or exceed provincial dike standard and City dike standard
Land Tenure	Registered right-of-way	Dike located on City-owned land
Infrastructure in Dike	Crossings designed with seepage control Locate parallel infrastructure to land-side outside of dike core	No infrastructure in dike
Land Adjacent to Dike	Land is raised as much as is practical	Land is raised to meet or exceed dike crest elevation
Seismic Performance	Minimum 3.2 m CGVD28 post-earthquake dike crest elevation and maintain dike core integrity	No damage to dike from earthquakes up to a return period to be determined



Item	Value and Description	
	Minimum Acceptable	Preferred
River-side Slope and Setback	2H:1V bank slope with riprap revetment designed for freshet flow velocities and vessel-generated waves	>10 m setback between river top of bank and dike river-side slope toe 3H:1V river-side bank slope with acceptable vegetation
Crest Surfacing and Land-side Slope Treatment	Crest surfacing: 150 mm thick road mulch Land-side slope treatment: hydraulically seeded grass	Meet or exceed provincial dike standard and City dike standard Consider paved crest and land-side slope vegetation/armouring to add robustness against overtopping
River Road Design Width	From river-side to land-side: 4.0 m multi-use path 0.5 m allowance for barrier 0.6 m min horizontal clearance Two 3.7 m travel lanes 0.6 m min horizontal clearance 0.5 m allowance for barrier Total width: 9.6 m	From river-side to land-side: 4.0 m multi-use path 0.5 m min horizontal clearance 0.5 m allowance for barrier 0.6 m min horizontal clearance Two 3.7 m travel lanes 0.6 m min horizontal clearance 0.5 m allowance for barrier 2.0 m pedestrian walkway Total width: 16.1 m

Dike Crest Elevation

At this time, the Province has not established a Fraser River flood profile and dike design profile that considers sea level rise and climate change. It is understood that the Fraser Basin Council's Lower Mainland Flood Management Strategy project may produce a recommended flood profile in the near future. The most recent available flood profile information is provided in the Province's 2014 study of climate change and sea level rise effects on the Fraser River flood hazard.

The designated flood profile for the purpose of developing the Dike Master Plan is proposed as the maximum of the following flood scenarios:

- 500-year return period coastal water level with 1 m of sea level rise (no wave effects); and
- 500-year return period freshet with moderate climate change impacts and 1 m of sea level rise.

Figure 3-1 shows the estimated flood profile water levels (in CGVD28 vertical datum, excluding freeboard) along the river in the study area. As shown on the figure, the coastal flood scenario governs from the Ocean upstream to approximately Nelson Road.

Design dike crest elevations are derived by adding freeboard and an allowance for land subsidence to the flood level. Table 3-4 presents the components that sum to the proposed dike crest elevation.



Table 3-4: Flood Levels and Dike Crest Elevations

Item	Downstream of Nelson Road (flat profile)	Upstream of Nelson Road (sloped profile)		
		Nelson Road	Boundary Road (Border with City of New Westminster)	Eastern Tip of Lulu Island
Governing Flood Hazard	tide + storm surge	Fraser River freshet		
Level of Performance	500-year return period (0.2% annual exceedance probability)			
Climate Change Allowance	1 m sea level rise	1 m sea level rise and 20% freshet flow increase		
Design Flood Level (m, CGD28) ¹	3.8	4.2	4.6	
Wave Effects Allowance	None			
Freeboard (m)	0.6			
Land Subsidence Allowance (m)	0.2			
Dike Crest Elevation ² (m)	4.6	5.0	5.4	
Notes:				
1. From (BC MFLNRO, 2014).				
2. The City's adopted downstream design crest elevation (4.7 m) exceeds the minimum required elevation (4.6 m). This is a result of updated coastal water level analysis methods (joint probability analysis) that result in a discrepancy when compared to previous methods (additive method).				

The Dike Master Plan also allows for further upgrading by providing proof of concept for raising to between 5.5 m downstream of Nelson Road, and 6.0 m at the boundary with the City of New Westminster.

Seismic Performance

The current provincial seismic performance criteria for dikes are difficult to meet without costly and complex ground improvement works. Additionally, the guidelines are considered very conservative in some situations because they require performance under extremely rare scenarios. For example, the guidelines require dikes to maintain 0.3 m freeboard in the event of a 10-year return period flood occurring following a 2,475-year return period earthquake which has a probability of 0.004% in a 1-year period. This is significantly rarer than the design event for the dike crest elevation (500-year return period event has a 0.2% annual exceedance probability). It is understood that the Province is conducting a review of the current criteria and associated guidelines.



For the purpose of the Dike Master Plan, an alternative seismic performance approach that focuses on failure mechanisms and post-earthquake level of protection is proposed. The alternative criteria are presented below.

Table 3-5: Proposed Alternative Seismic Performance Criteria

Criteria	Description / Value
Failure Mechanisms	Flowslides (resulting in full loss of dike cross-section into the river or channel) are not acceptable up to a return period to be determined (e.g. 2475-year return period).
Maximum post-earthquake overtopping probability	0.2% annual exceedance probability Calculate probability through comparison of various post-earthquake dike crest elevations and future flood levels + 0.3 m freeboard. Assume a minimum 1-year exposure period for dike repairs, or longer if local site conditions warrant. In general, this results in a minimum post-earthquake dike crest elevation of 3.2 m which corresponds to the governing scenario of an average annual maximum coastal water level (1.9 m) with 1 m of sea level rise occurring within 1 year of a 475-year return period earthquake. The post-earthquake dike crest would need to provide adequate dike performance and static stability (i.e. no major deformations and cracks).

This approach would make the service level of the dike in a seismic scenario consistent with the service level for the dike crest elevation which is set based on a 500-year return period flood or a 0.2% annual exceedance probability.

For the coastal design dike crest elevation of 4.7 m CGVD28, this approach would allow for up to 1.5 m of vertical settlement, as long as core dike integrity is maintained.

The length of time between earthquake and dike repair will be a critical assumption for analysis to support this approach. The City may wish to specify consistent assumptions through the Dike Master Plan to ensure consistent analyses. For example, reconstruction of a dike that has failed into the river channel following a flowslide failure from an extreme earthquake may take up to 2 years or more, whereas more straightforward compaction and raising of a settled dike could be done in less than a year after an earthquake.

In addition, it should be noted that meeting the seismic performance criteria through increasing the dike crest elevation, as opposed to ground densification, has the added benefit of increasing the level of protection against flood events.

The seismic performance criteria may need to be further reviewed if/when the Province issues updated guidelines for seismic performance of dikes.



3.3 Alternative Upgrading Strategies

Several high-level upgrading strategies, summarized in Table 3-6, were considered to inform the development of specific options for the Dike Master Plan.

Table 3-6: High-level Dike Upgrading Strategies

Strategy	Advantages	Disadvantages
Road Dike <i>Raise road to dike crest elevation</i>	<ul style="list-style-type: none">• Smaller footprint• Wider crest (more robust)• Smaller impacts to habitat	<ul style="list-style-type: none">• Operation and maintenance challenges• Infrastructure within dike• High cost to raise dike in the future
Separated Dike and Road <i>Conventional dike adjacent to road</i>	<ul style="list-style-type: none">• Operation and maintenance separated from road• No infrastructure within dike	<ul style="list-style-type: none">• Larger footprint and impact to infrastructure and habitat
Raise Riverbank Dike <i>Conventional dike along riverbank</i>	<ul style="list-style-type: none">• Minimize footprint	<ul style="list-style-type: none">• Limited space• Impacts to river side riparian and intertidal habitat and land side riparian and aquatic habitat• Reduced seismic performance• Erosion hazard
Fill River-side Dike <i>Build into river to achieve conventional dike</i>	<ul style="list-style-type: none">• Less impacts to existing development and on-shore infrastructure	<ul style="list-style-type: none">• Larger impacts to river side riparian and intertidal habitat• Reduced seismic performance• Erosion hazard
Setback Dike <i>Realign significantly away from river</i>	<ul style="list-style-type: none">• Increased seismic performance• Reduced erosion hazard• Increased opportunities for riparian and intertidal habitat enhancement	<ul style="list-style-type: none">• Increase in unprotected development• High infrastructure impacts• High cost to construct new dike alignment• Would result in 2 dikes (existing and setback) to maintain
Land Raising (“superdike”) <i>Raise development and roads adjacent to dike</i>	<ul style="list-style-type: none">• Wider crest (more robust)• Reduced grading issues (after implementation)• Less impacts to raise a dike in the future	<ul style="list-style-type: none">• Timing and phasing depends on development• High cost to raise large lots with low-density land use• Grading and access issues for water-oriented developments



3.4 Options and Concepts

Through a series of meetings and site visits with City staff, the high-level upgrading strategies have been narrowed down to a set of options and concepts for each reach.

The options developed for Phase 4 include:

- Option 1: Raise dike and road, extend land-side (Figure 3-2);
- Option 2: Raise dike and road with retaining walls (Figure 3-3);
- Option 3: Raise dike only and extend river-side (Figure 3-4); and
- Option 4: Raise dike only and extend land-side.

In addition to the above options, the following options have been developed to address site-specific issues at the rail trestle (Reach 4) and at the tie-in with the City of New Westminster (Reach 6):

- Option 6: Rail trestle – raise road/dike under trestle (Figure 3-5);
- Option 7: Rail trestle – fill in between trestle piles (Figure 3-6);
- Option 8: City of New Westminster tie-in – raise Boundary Road (Figure 3-7);
- Option 9: City of New Westminster tie-in – fill Tree Island Steel property to dike level (Figure 3-8); and
- Option 10: City of New Westminster tie-in – new alignment across Tree Island Slough (Figure 3-9).

Table 3-7 presents a summary of the options as applied to each reach based on discussions with City staff and is followed by a discussion of the options. Appendix B includes landscape concepts prepared by Hapa associated with the cross-section options.

Table 3-7: Major Dike and Road Alignment and Cross-section Options

Reach ID and Name	Alignment and Cross-section Options
1 – Bridgeport Industrial	<ul style="list-style-type: none">• Option 1: Raise dike and road, extend land-side**
2 – Industrial and Shipyards	<ul style="list-style-type: none">• Option 1: Raise dike and road, extend land-side**
3 – Riverfront Houses and ALR	<ul style="list-style-type: none">• Option 1: Raise dike and road, extend land-side**
4 – Bog and Rail	<ul style="list-style-type: none">• Option 1: Raise dike and road, extend land-side• Option 2: Raise dike and road with retaining walls• Option 3: Raise dike only and extend river-side** <p><u>Specific options for rail trestle:</u></p> <ul style="list-style-type: none">• Option 6: Rail trestle – raise road/dike under trestle• Option 7: Rail trestle – fill in between trestle piles
5 – Hamilton Frontages	<ul style="list-style-type: none">• Option 1: Raise dike and road, extend land-side**• Option 3: Raise dike only and extend river-side
6 – Tree Island Slough and Boundary	<ul style="list-style-type: none">• Option 3: Raise dike only and extend river-side**• Option 4: Raise dike only and extend land-side <p><u>Specific options for tie-in with City of New Westminster dike:</u></p> <ul style="list-style-type: none">• Option 8: City of New Westminster tie-in – raise Boundary Road• Option 9: Fill Tree Island Steel property to dike level• Option 10: City of New Westminster tie-in – new alignment across Tree Island slough
Notes: ** Option footprint is presented in Appendix A plan figures.	

Raise Dike and Road, and Extend Land-side

The preferred option developed for Reaches 1 to 3 involves separating the dike and River Road, raising both to the dike crest elevation, and extending the footprint of the fill towards the land-side. Figure 3-2 presents a typical cross-section for this option.

Figure 3-2 shows a 10 m wide dike crest to allow for additional future dike raising without the need to reconstruct the road. An alternative approach to reduce the overall footprint at first would be to have a 4 m wide dike crest and to extend the footprint and reconstruct the road in the future.



This option addresses several of the main design considerations including providing a substantially wide dike and improving River Road safety by separating vehicles and cyclists/pedestrians.

Extending the footprint towards the land-side takes advantage of the space currently occupied by drainage channels. This option requires filling in the existing channel and replacing or relocating the drainage conveyance and storage. The preferred approach is to replace the channels with pipes. This will result in a loss of aquatic and riparian habitat and will require habitat creation or enhancement to be completed elsewhere to offset the loss. Drainage modification options are discussed separately below.


Extending the footprint towards the land-side will also require land acquisition where the existing corridor width is insufficient. In general, this would affect a narrow strip of land on the frontage of large lots and should be feasible to implement.

However, there are also areas on both the land-side and the river-side where the upgrade will result in access issues. The areas with the most severe space limitations and potential options to address the access issues are presented in Table 3-8.




Table 3-8: Space Limitations and Access Issues

Reach / Location / Description	Photo	Options to Address Footprint and Access
Reach 1 No. 7 Road Pump Station		<ul style="list-style-type: none"> Retaining walls and steeper driveway access Replace pump station during dike upgrades
Reach 1 15700 River Road FortisBC gas pipeline facility		<ul style="list-style-type: none"> Retaining walls and steeper driveway access Coordinate with FortisBC to raise parcel during next major upgrade



Reach / Location / Description	Photo	Options to Address Footprint and Access
Reach 2 16291 River Road Residential / Office Space		<ul style="list-style-type: none"> • Retaining walls • Provide parking on land-side (instead of driveway down to lot) • Raise parcel of land at time of redevelopment • Land acquisition / managed retreat (buy-out, relocate, or do not allow redevelopment)
Reach 2 16971 River Road Tom-Mac Shipyard on water side, Residential on inland side		<ul style="list-style-type: none"> • Retaining walls • Provide parking on land-side (instead of driveway down to lot) • Raise parcel of land at time of redevelopment • Managed retreat (buy-out, relocate, or do not allow redevelopment)
Reach 3 17740 River Road No. 8 Road North Drainage Pump Station		<ul style="list-style-type: none"> • Retaining walls • Replace pump station during dike upgrades
Reach 3 18871 River Road Storage, and Residential lots (Water Side) Large Channel (Inland Side)		<ul style="list-style-type: none"> • Retaining walls • Provide parking on land-side (instead of driveway down to lot) • Raise parcel of land at time of redevelopment • Land acquisition / managed retreat (buy-out, relocate, or do not allow redevelopment)



Reach / Location / Description	Photo	Options to Address Footprint and Access
<p>Reach 3</p> <p>19051 River Road</p> <p>Metro Vancouver Tilbury Watermain Crossing</p>		<ul style="list-style-type: none"> Retaining walls and steeper driveway access Coordinate with Metro Vancouver to raise parcel during next major upgrade
<p>Reach 4</p> <p>21200 River Road</p> <p>CN Rail Trestle Bridge</p>		<ul style="list-style-type: none"> Refer to rail trestle discussion paragraph in this section (page 3-18)
<p>Reach 5</p> <p>22760 River Road</p> <p>Queen Road North Drainage Pump Station</p>		<ul style="list-style-type: none"> Retaining walls and steeper driveway access Replace pump station during dike upgrades



Filling in Drainage Channels (Extending Land-side)

The interior channels along River Road will generally be filled in the preferred option which involves raising the dike and River Road, and extending the footprint towards the land-side. Options considered to replace the conveyance and storage capacity provided in the channels are described in Table 3-9.

Table 3-9: Options for Replacing Existing River Road Drainage Channels

Option	Comments
1. Relocate channels further inland to new River Road toe	<ul style="list-style-type: none">• Would impact the adjacent properties, requiring acquisition of right-of-way or, potentially, of whole lots (depending on extent of impact to the lot)• New channels may not need to be as wide as the existing channel• New channels would be located at the toe of the road and outside the dike section• It is not ideal to have a channel near the toe of the dike and the option of locating a channel near the toe of the dike would need to be evaluated by a geotechnical engineer for seepage concerns
2. Replace channels with pipe	<ul style="list-style-type: none">• Would involve replacing the channel functions with a pipe below the road• Pipe would be located within the road base but must be outside of the dike cross-section or toe of the dike• The size of pipe that could be fit into the available space in the road cross-section is a potential limitation• Would result in a loss of land side aquatic and riparian habitat
3. Reconstruct channels at rear of lots along River Road	<ul style="list-style-type: none">• Would require re-grading of lots and re-connection of lot drainage to rear of lot• Property acquisition for drainage right-of-way would be required• Road drainage would need to be accommodated in additional infrastructure – likely a pipe below the road on the inland side

The option expected to be both the simplest to implement and the least cost is to replace the existing channels along River Road with pipes. As noted, this option is limited by the size of the pipe that can fit within the road cross-section and outside of the dike cross-section in the preferred option for the dike upgrades. It is estimated that maximum pipe size is approximately 1.2 m diameter, and a circular pipe will fit better than a box section in the available space.

Drainage from both River Road and the interior lots adjacent to the road would be directly connected to the new drainage pipes. The new pipes would drain to the existing north-south channels that convey runoff to the pump stations.

A preliminary assessment of the replacing the drainage channel with a piped system was done to determine whether it could provide the necessary conveyance and storage functions to replace the existing channels along River Road. The existing hydraulic model of the east Richmond drainage system was provided to KWL for this purpose by the City. The preliminary assessment indicates that replacement of the existing River Road channels with 1.2 m diameter concrete pipes would provide adequate conveyance and storage for drainage of the design storms from the interior drainage system.



The internal drainage system in the eastern part of Lulu Island provides irrigation service as well as drainage service. The system of channels allows water from intakes on the Fraser River to flow into Lulu Island and distribute through the drainage conveyance system to provide irrigation water to the farmlands in eastern Lulu Island. This use of the drainage conveyance system relies on the storage capacity within the channels to provide adequate water to the farmlands. The system was reviewed relative to the impacts on irrigation functions with the proposed removal of the large storage channels along River Road and their replacement with pipe infrastructure. The function of these channels for the irrigation system was discussed with City staff (Derek Hunter, Pump Station Manager). From an irrigation perspective, these changes to the system along River Road are not expected to impact the irrigation functions of the system. The east-west running channels along River Road have one-way flow gates at the junctions with the north-south running channels that convey flow to and from the pump stations and the irrigation intake points. These one-way gates allow the water to drain out of the east-west channels along River Road to flow to the pump stations, but they block irrigation water from entering the east-west channels when the irrigation function of the channels is in use during the growing season. Therefore, the proposed replacement of the channels along River Road with pipe infrastructure should not impact the irrigation system. Similar one-way gates should be used on the new pipe infrastructure to allow the irrigation flow in the north-south channels to continue to bypass the drainage infrastructure that will provide drainage service along the new River Road.

Infilling drainage channels will remove a large amount of aquatic and riparian habitat important for fishes and amphibians. This will require a significant amount of habitat creation, restoration, and/or enhancement to offset this loss.

North East Bog Forest (Reach 4)

In Reach 4, raising both the dike and River Road to the design dike elevation and extending the footprint towards the land-side (Option 1) would encroach onto the north-east Bog Forest, and is generally not preferred from an environmental perspective. The bog is a unique feature on Lulu Island, and impacts to the bog need to be carefully considered.

To avoid encroaching onto the bog, the following additional options are considered for Reach 4:

- Option 2: Raise dike and road with retaining walls; and
- Option 3: Raise dike only and extend river-side.

Option 2 would limit the encroachment onto the bog by retaining the road land-side slope using retaining walls. Settlement may be a significant concern with Option 1 and Option 2 because the soils adjacent to the bog may experience significant settlement.

By filling towards the river-side instead of the land-side, Option 3 would avoid encroachment and filling in the bog. Building into the river would cause an impact to existing riparian and aquatic habitat and require offsetting. However, the desktop habitat review (Section 2.4) shows that there are existing areas of low quality riparian and aquatic habitat in the eastern portion of Reach 4. As such, building into the river provides an opportunity to replace the low quality riparian habitat with higher quality riparian habitat. One concept to achieve this is to build out a shallow river-side slope with riparian and marsh benches, as shown in Figure 3-4. A shallow river-side slope would also reduce the erosion concern and reliance on riprap bank protection. Aquatic habitat loss will have to be offset elsewhere.

Since this option would involve filling in a portion of the river channel, it may have some impact on channel conveyance or navigation. However, the existing trestle piles and piers located upstream already limit the conveyance and navigation in this area. These impacts should be considered further if this option is preferred.

Rail Trestle (Reach 4)

The existing rail trestle structure at eastern end of Reach 4 is an obstacle to conventional dike upgrading due to limited space for widening the dike and road, and due to limited overhead clearance space for raising the road – as shown on the photo below.



The existing maximum road clearance below the structure is posted at 5.88 m. Raising the road/dike would reduce the clearance.

The following options have been developed for dike upgrading at the rail trestle:

- Option 6: Rail trestle - raise road/dike under trestle; and
- Option 7: Rail trestle – fill in between trestle piles.

To achieve Option 6, the trestle structure may need to be modified to achieve a minimum acceptable overhead clearance (to be confirmed with City staff).

Option 7 would avoid reducing the overhead clearance by leaving the road as-is and constructing a new dike on the river-side filling in between the trestle piers. The feasibility of this option needs to be confirmed from geotechnical engineering and constructability perspectives. Additionally, this option would involve filling in a portion of the river channel and may have an impact on channel conveyance or navigation. However, the existing trestle piles and piers already limit the conveyance and navigation in this area. These impacts should be considered further if this option is preferred.

Hamilton Frontages (Reach 5)

Upstream of the rail trestle, in Reach 5, the primary option is the same as Reach 1 to 3. This involves raising the road and the dike to the design dike elevation, and extending the footprint to the land-side (Option 1). This will remove a large amount of aquatic and riparian habitat and will require a significant amount of habitat creation, restoration and/or enhancement to offset the loss.

However, Option 3, raise dike and extend to river-side, is also considered because of the opportunity to convert the existing low quality riparian and aquatic habitat into higher quality habitat (see Section 2.4). One concept to achieve this is to build out a shallow river-side slope with riparian and marsh benches, as shown on Figure 3-4. A shallow river-side slope would also reduce the erosion concern and reliance on riprap bank protection. Additionally, this option is considered in both Reach 4 and Reach 6, and would allow for continuity in alignment. This option would involve filling in a portion of the river channel and may have an impact on channel conveyance or navigation.



Tree Island Slough and Tie-in with City of New Westminster Dike (Reach 6)

Near the western end of Reach 6, River Road intersects Westminster Highway. The existing dike runs along the river bank, and is separated from River Road. The existing dike runs east until it reaches the recently developed Hamilton Transit Centre. The existing dike alignment is not well defined from the Hamilton Transit Centre to Boundary Road where jurisdiction of the Lulu Island perimeter changes to the City of New Westminster.

The following options have been developed for Reach 6:

- Option 3: Raise dike only and extend river-side; and
- Option 4: Raise dike only and extend land-side.

The following specific options have been developed for tie-in with the City of New Westminster dike:

- Option 8: City of New Westminster tie-in – raise Boundary Road;
- Option 9: Fill Tree Island Steel property to dike level; and
- Option 10: City of New Westminster tie-in – new alignment across Tree Island Slough.

Options 3 and 4 address dike upgrading along the existing dike alignment from Reach 5 to the Hamilton Transit Centre, from which there are 2 compatible options for tie-in with the City of New Westminster dike:

- construct a dike along the right-of-way north of the Hamilton Transit Centre and raise Boundary Road (Option 8); and
- fill the Tree Island Steel property (3933 Boundary Road) up to the dike elevation through redevelopment.

Option 3 (extend river-side) would involve impacts to existing intertidal habitat, but also presents the opportunity to improve river side riparian habitat, while Option 4 would have private property impacts.

Raising Boundary Road (Option 8) may be difficult to achieve through a standard dike design because there is a railroad access line to the Tree Island Steel property that crosses Boundary Road. This may require a rail gate, which is not desired.

Raising the land elevation of the Tree Island Steel property (Option 9) would create a wide and robust dike at the tie-in, but this option is dependent on redevelopment of the site and may have feasibility issues due to access requirements.

Option 10 provides an alternative approach that realigns the dike to cross over the slough and runs along the Tree Island Steel property and directly connects to the City of New Westminster dike along the river bank. Option 10 would involve partially or completely closing off the slough and presents the opportunity to construct a large habitat enhancement project. One concept for this is to create an intertidal marsh in the slough and have a tide gate installed on the dike crossing at the outlet of the slough.

3.5 Stakeholder Engagement

Stakeholder engagement for Phase 4 was completed in four stages. This included internal (City) stakeholder review, Council review, external stakeholder engagement, and then public engagement.

Prior to City Council review, initial stakeholder engagement included meetings with internal City departments and some regulatory agencies. This initial stakeholder engagement provided input from City groups on options developed, additional background, and future coordination, with the goal of



informing the preferred upgrade options. City departments included Transportation, City of Richmond Parks, Planning, and Sustainability.

Following Council review, additional stakeholder engagement was conducted, including meetings with specific stakeholder groups.

External stakeholder feedback was received originally received in 2018 from the City of New Westminster and the Ministry of Forests, Lands, Natural Resource Operations, and Rural Development (MFLNRORD), including Inspector of Dikes, Flood Safety, and Water Authorizations staff. In 2022 and 2023, additional feedback was received from the Department of Fisheries and Oceans, Ministry of Transportation, Fortis BC, and the Ministry of Forests, Richmond's Advisory Committee on the Environment, and Richmond's Food Security and Agricultural Advisory Committee.

The Department of Fisheries and Oceans (DFO) originally declined to meet with the City in 2018, stating that input would be provided during later stages in the established review and approvals process. However, at a later date City staff met with the Fish and Fish Habitat Protection Program team at the Department of Fisheries and Oceans to discuss the dike-raising initiative and how impacts on fish and fish habitat are planned to be mitigated or compensated, where impact cannot be avoided. They encourage the implementation of more nature-based solutions. Staff are in discussion with the Department of Fisheries and Oceans to implement a habitat bank, per council direction.

Richmond's Advisory Committee on the Environment generally supported dike-raising and noted that New Westminster's dike-raising plans should align with Richmond's. The City is coordinating with the City of New Westminster to ensure that east Richmond will be protected from flood risks.

Richmond Food Security and Agricultural Advisory Committee noted that implementing a continuous trail network along the perimeter dike and tree planting for habitat compensation should be prioritized. Additionally, opportunities for accessing the river for water activities should be investigated. The dike cross-section recommended in the Dike Master Plan includes a continuous multi-use pathway for dike trail continuity and

The Ministry of Transportation does not have any infrastructure in the Dike Master Plan Phase 4 study area; however, they noted their request to be notified and engaged wherever Richmond's dike project may intersect with Ministry infrastructure. Staff will consult with the Ministry staff for any dike reaches where their infrastructure is located.

Fortis BC requested to be notified in advance of dike upgrades along Reach 1 of Dike Master Plan Phase 4, which is between No. 6 Road and No. 7 Road, to relocate or regrade one of their critical pump stations. They also noted the potential impact to their DP gas main along the rest of Reach 1. A preload and impact memo was requested during design to determine if there are impacts and mitigative measures needed.

Ministry of Forests expressed concerns about habitat impact from potential Riparian Management Area (RMA) ditch infills along River Road. They also noted that Land Act authorizations would be required for any potential dike infrastructure that may stretch over the river or aquatic areas. Staff will obtain all required authorizations and work closely with a Qualified Environmental Professional, in collaboration with the Ministry, during the detailed design phase of the different dike sections to limit impacts where possible and provide adequate habitat compensation, as necessary.

Public Feedback

The City sought and received feedback from the public. The engagement is described in the November 2022 report by the City titled City of Richmond Flood Protection What We Heard Report. The



engagement was conducted by the City over a five month period from May to September, 2022. “Approximately 1,000 people attended in-person engagement activities and events. Over 2,000 people participated online, both through the City’s flood protection webpage and Let’s Talk Richmond project page that was set up to support community outreach.” The received feedback included:

- Strong support for the accelerated flood protection program with a 50-year implementation timeline;
- Support for the actions being taken with regard to community safety;
- Support for environmental considerations in the Dike Master Plan;
- Support for coordination with development to create superdikes;
- Support for improved cyclist experience along River Road;
- Support for amenity upgrades along the dike corridor, including delineated bike lanes, multi-use pathways, benches, washrooms, perimeter dike trail continuity, and traffic calming features;
- Concern regarding the removal of trees and habitat along the dike. Once staff explained how trees in the dike could impact its overall structural integrity, the participants understood why tree removal may be necessary for some situations;
- Concern regarding the uncertainty in sea level rise trends. The participants were assured that the City is continuously monitoring and reviewing the evolving climate change science and adjusting the City’s flood protection plans to protect the City well ahead of the sea-level rise;
- Concern regarding New Westminster’s dike-raising plans. Staff are coordinating with New Westminster to ensure their dike upgrade plans are in alignment with Richmond’s;
- Appreciation for the flood protection public engagement campaign and desire for more similar initiatives in the future;
- Appreciation for all materials available to provide information to residents, including the webpage, online StoryMaps, hand-out flyers, and poster boards; and
- Appreciation for being able to communicate directly with City staff regarding their flood protection concerns.

3.6 Options Evaluation and Selection

The options described in Section 3.4 have been evaluated based on the design considerations and feedback from the stakeholder meetings held to date.

Recommended options have been identified and are described below. Environmental impacts and geotechnical considerations associated with the recommended options are also summarized below.

It is understood that the recommended options will be confirmed through Council and additional stakeholder consultation.

Recommended Options

In general, the recommended option is to separate River Road from the dike, and have both the road and the dike at the dike crest elevation. This is referred to as the “separated dike and road” option and is presented as Option 1 in Section 3.4.

The main features of this option are described below.



- Separate the dike and roadway such that there is an over-wide dike and separate travel areas for vehicles and cyclists/pedestrians.
- Raise the dike crest and road surface to the design dike crest elevation and extend the footprint of fill towards the land-side.
- Retain the land-side toe of the road with retaining walls (e.g. MSE) where necessary (e.g. to minimize impact to North East Bog Forest).
- Fill existing land-side drainage channel and replace with a piped drainage system.
- Modify driveways and access ramps into adjacent properties where reasonable (some constrained areas may require major modifications, redevelopment, or property acquisition).
- Incorporate public space, linear park, and multi-use path features appropriate for a dike crest.
- Install bank protection works on the river-side to match existing (may not be required where the alignment is setback from the river-bank).

The dike portion of the overall crest would be 10 m wide to accommodate future dike raising without having to modify the road. This option is recommended because it is the most robust of the options considered as it produces an earth fill embankment (dike and road) that would be approximately 22 m wide at the crest. This is a significant increase above the standard dike crest width of 4 m and is expected to reduce the likelihood of failure for a variety of processes. Additionally, separating the dike and road would provide several community benefits including improved pedestrian, cyclist, and vehicle safety, and the opportunity for a linear park/multi-use path.

Other options are recommended below in areas which are constrained and do not allow for the separated dike and road option.

- **Riverbank Dike (Option 4):**
 - Use in eastern end of Phase 4 where there is no road associated with the dike.
 - Raise the dike crest to the design height and extend the footprint of fill towards the land-side.
 - Install bank protection works on the river side to match existing.
- **Combined Dike and Road Below Trestle (Option 6):**
 - Use only at the CP rail trestle crossing where there is not enough space for a separated dike and road.
 - There is sufficient clearance to raise the road to the design dike elevation based on discussion with City transportation staff.
 - Install bank protection works on the river side to match existing.
- **Construct Dike Between Tree Island Steel and Hamilton Transit Centre, and Raise Boundary Road (Option 8):**
 - Use to tie-in with the City of New Westminster's portion of the Lulu Island perimeter dike.
 - Use existing right-of-way between Tree Island Steel property (3933 Boundary Road) and the Hamilton Transit Centre (4111 Boundary Road).
 - Raise Boundary Road from Tree Island Steel property towards river bank to tie into City of New Westminster's portion of the Lulu Island perimeter dike.



- Boundary Road raising will require road and possible intersection changes.
- The existing rail spur line servicing Tree Island Steel will need to be addressed (e.g. rail dike gate, raise rail spur, etc.).
- Alternatively, if redevelopment of the Tree Island Steel property occurs during the implementation period of the Dike Master Plan, then the recommended alternative option is raise the property (or a portion of it) to the dike crest elevation as per Option 9.

In addition to the options listed above, another recommendation for flood protection in all areas of Phase 4 is to target land raising of the areas behind the dike.

Table 3-10 below presents a summary of the recommended options for each reach.

Table 3-10: Recommended Dike Upgrading Options

Reach # and Name	Recommended Options
1 – Bridgeport Industrial	• Option 1: Separated dike and road
2 – Industrial and Shipyards	• Option 1: Separated dike and road
3 – Riverfront Houses and ALR	• Option 1: Separated dike and road
4 – Bog and Rail	• Option 1: Separated dike and road ¹ <u>Site specific option at rail trestle crossing:</u> • Option 6: Combined dike and road below trestle
5 – Hamilton Frontages	• Option 1: Separated dike and road
6 – Tree Island Slough and Boundary	• Option 4: Riverbank dike <u>Site specific option for tie-in with City of New Westminster dike:</u> • Option 8: Raise boundary road

1. Retaining walls (Option 2) may be required to minimize impacts to the bog.

Environmental Impacts of Recommended Options

In total, the estimated impact for the selected Phase 4 options is 3,300 m² of high quality Fraser River intertidal habitat, 1,900 m² high quality Fraser River riparian habitat, 28,500 m² drainage channel aquatic habitat, and 106,200 m² drainage channel riparian habitat. These areas represent an estimate based on FREMP habitat mapping (2007), and City of Richmond orthoimagery interpretation (2017). Not all Fraser River riparian and intertidal habitat was quantified. The desktop review only quantified high-quality riparian and intertidal habitat types on the Fraser River side of the existing dike. The remaining habitat area, while not calculated here, would also be required in calculations for determining offsetting requirements. Calculation of the exact area of impact of selected options will require an aquatic habitat survey and aquatic effects assessment.

Table 3-11 presents the summary of habitat impacts for the recommended options by reach.

Table 3-11: Reach-by-Reach Summary of Habitat Impacts

Reach # and Name	High-Quality Fraser River Intertidal (m ²)	High Quality Fraser River Riparian (m ²)	Drainage Channel Aquatic (m ²)	Drainage Channel Riparian (m ²)
1 - Bridgeport Industrial	-	500	3,300	14,800



Reach # and Name	High-Quality Fraser River Intertidal (m ²)	High Quality Fraser River Riparian (m ²)	Drainage Channel Aquatic (m ²)	Drainage Channel Riparian (m ²)
2 - Industrial and Shipyards	-	800	5,900	28,000
3 - Riverfront Houses and ALR	50	300	3,000	16,100
4 - Bog and Rail	100	300	10,200	23,500
5 - Hamilton Frontages	900	-	5,900	23,700
6 - Tree Island Slough and Boundary	2,200	-	-	-

Geotechnical Considerations for Recommended Options

The proposed dike improvements were assessed with consideration for the BC Seismic Design Guidelines for Dikes.

Thurber Engineering Ltd. (Thurber) assessed 3 sample cross-sections to estimate the potential deformation resulting from seismic events. The cross-sections were based on the preferred cross-section at what was judged to be the most susceptible areas for deformation. Soil conditions were determined by cone penetration tests. Seismic performance was assessed on the basis of existing foundation conditions, (i.e. no additional ground improvement/densification) to determine the need for ground improvement or alternative approaches. The analysis included seismic events representing 100, 475 and 2475-year return period events. Seismic performance was assessed using 2 methods: 1-D (i.e. flat ground) liquefaction assessment to estimate reconsolidation settlements, and 2-D numerical deformation assessment to estimate dynamic deformations. The methods are complimentary, and the results are interpreted together.

The preliminary geotechnical report is attached in Appendix C.

The key results of the geotechnical analysis are summarized below.

- Proposed dike cross-sections will not meet the performance requirements of the seismic design guidelines, without ground improvement or alternative approaches, based on the results of both assessment methods.
- The liquefaction hazard is considered insignificant for earthquakes up to the 100-year return period event.
- The liquefaction hazard is considered moderate and high for the 475 and 2475-year return period events respectively. The resulting deformations would be large.
- Liquefaction may result in a flowslide into the river for dike alignments along the river-bank due to lateral spreading, whereas it would result only in vertical deformation for dike alignments significantly set back from the river bank.
- The deformation analysis indicates that dikes may meet the performance requirements of the seismic design guidelines if they are typically set back 50 m to 100 m from the river-bank and have flat slopes or some localized ground improvement.

Options to address seismically induced deformations, and opinions on each, include:

- Densification** – The typical approach to densification is to install stone columns. To be effective against the liquefaction expected to follow the 2475-year return period event, densification would have to extend the depth of the liquefaction zone, and for a similar width. In a typical scenario, this can be considered as a 30 m (width) by 30 m (depth) densification located at the river-side toe of



the dike. Densification can be very costly (e.g. \$9,000 to \$18,000 per lineal metre of dike). Alternate experimental techniques are being tested by the City that may offer a more economic solution.

- **Higher Crest** – For the 100-year return period event, additional crest elevation may compensate for deformations caused by settlement. For events that cause liquefaction, added height just results in added deformation, so it would be less effective. This is not an effective strategy by itself for return periods above 100-year due to lateral spreading and large vertical deformations.
- **Setback and Slope** – Flatter side slopes on the dike improves seismic stability. However, to prevent large deformations in the 2475-year return period event, the maximum acceptable slope between the river channel invert and the dike crest would need to be approximately 2%, which would require a significant setback between the dike and river.
- **Wide Crest** (“superdikes”) – A very wide dike (e.g. crest width of 100 m to 200 m) could be used to extend the dike beyond the limit of significant lateral spreading due to liquefaction. A portion of the wide crest could be considered sacrificial in the event of major lateral spreading. Raising the land for approximately 200 m inland of the dike is desirable for related flood protection reasons, and may be desired by the City for other reasons such as land use planning. It has already been done as part of multiple family, commercial, and industrial development projects along the waterfront. Buildings within this area must already account for liquefaction in their foundation design.
- **Dike Relocation / Secondary Dikes** – Place the dike inland of the liquefaction lateral spreading zone (similar to set back approach) or place a secondary dike inland of the liquefaction lateral spreading zone. The wider option above would essentially include a secondary dike. Relocating the primary dike inland would be a form of retreat and would leave property and buildings exposed outside of the dike.
- **Post-earthquake Dike Repair** – Dike reach specific plans could be developed for post-earthquake dike repairs. These would need to consider the feasibility of dike repair construction following a major earthquake. In general, it is likely not feasible to quickly repair a dike that has failed due to a flowslide induced by liquefaction lateral spreading, especially if the breach results flooding from regular high tides. However, it may be feasible to prepare dike repair plans for dikes where a flowslide is not anticipated.

Additionally, the City may wish to use alternative seismic performance criteria, such as the criteria discussed in Section 3.2 which aims to develop a consistent level of performance between seismic scenarios and flood level scenarios (i.e. an overall 0.2% annual exceedance probability of failure across all hazards).

Recommendations to manage the seismic risk include:

- Consider the proposed alternative seismic performance criteria provided in Section 3.2. Review the criteria if/when the Province issues updated guidelines for seismic performance of dikes.
- Fill land for approximately 200 m inland of the dike to dike crest elevation. Buildings in this zone should be built above the dike crest elevation and have densified foundations capable of withstanding liquefaction. The required distance requires some additional evaluation and may be addressed in the pending updated to the Flood Protection Management Strategy.
- Continue to investigate practical densification options and consider earthquake induced dike deformations in emergency response and recovery planning.



3.7 Cost Opinions

Cost opinions for the recommended option in each reach are provided to help the City consider the financial implications for planning and comparing options. A breakdown is provided to help understand the proportional cost for recommendations such as separating and raising the road.

Costs are based on unit rate cost estimates and tender results for similar works. Costs are presented in 2018 dollars. They have not been updated between the original draft submission in 2018 and the current final report. The most relevant rates are from the City's Gilbert Road dike project. The City provided a summary of the cost estimate prepared by WSP for this project.

Rates from recent tenders for diking on the Lower Fraser River and other locations within the Lower Mainland were used to check the reasonableness of the rates and estimate other features such as sheet piles or large diameter drain pipes.

The costs were broken down by reach so that unit rates could be applied to similar typical cross-sections. They were also broken down into the main features that coincide with options that the City may wish to consider further. These features are described below.

- **Dike Raising** – this is the core element required to provide flood protection. It includes a 10 m crest width that can be raised while still achieving a 4 m crest width. This includes site preparation, fill, and erosion protection.
- **Road Structure and Utilities** – this includes stripping, subgrade preparation, pavement structure, drainage and utilities. Where the existing road is atop the dike, most of this cost would be incurred regardless of where it gets relocated.
- **Road Raising To Dike Crest** – this includes the additional fill required to raise the road to the dike crest elevation.
- **Other** – This category was used to capture pathways and utilities if the option did not include road construction.
- **Contingency** – A 40% contingency is provided because the costs are based on concept plans only.

Table 3-12 presents a summary of all reaches with cost breakdowns for the items described above. Costs for each reach are also provided in the Reach Summary Sheets in Section 5.

Table 3-12: Summary of Construction Costs (\$ in Millions)

Item	Reach 1	Reach 2	Reach 3	Reach 4	Reach 5	Reach 6	Total
Dike Raising	\$7.6	\$7.7	\$4.1	\$10.5	\$7.3	\$4.7	\$41.9
Road Structure & Utilities	\$12.3	\$12.6	\$6.6	\$16.8	\$11.8	\$1.5	\$61.4
Raise Road to Dike Height	\$3.2	\$3.3	\$1.7	\$4.3	\$3.1	\$1.6	\$17.2
Other*	\$1.5	\$2.0	\$1.1	\$2.0	\$1.5	\$4.6	\$12.8
Contingency (40%)	\$9.8	\$10.2	\$5.4	\$13.5	\$9.5	\$5.0	\$53.3
Total	\$34.3	\$35.8	\$18.9	\$47.1	\$33.1	\$17.4	\$186.6

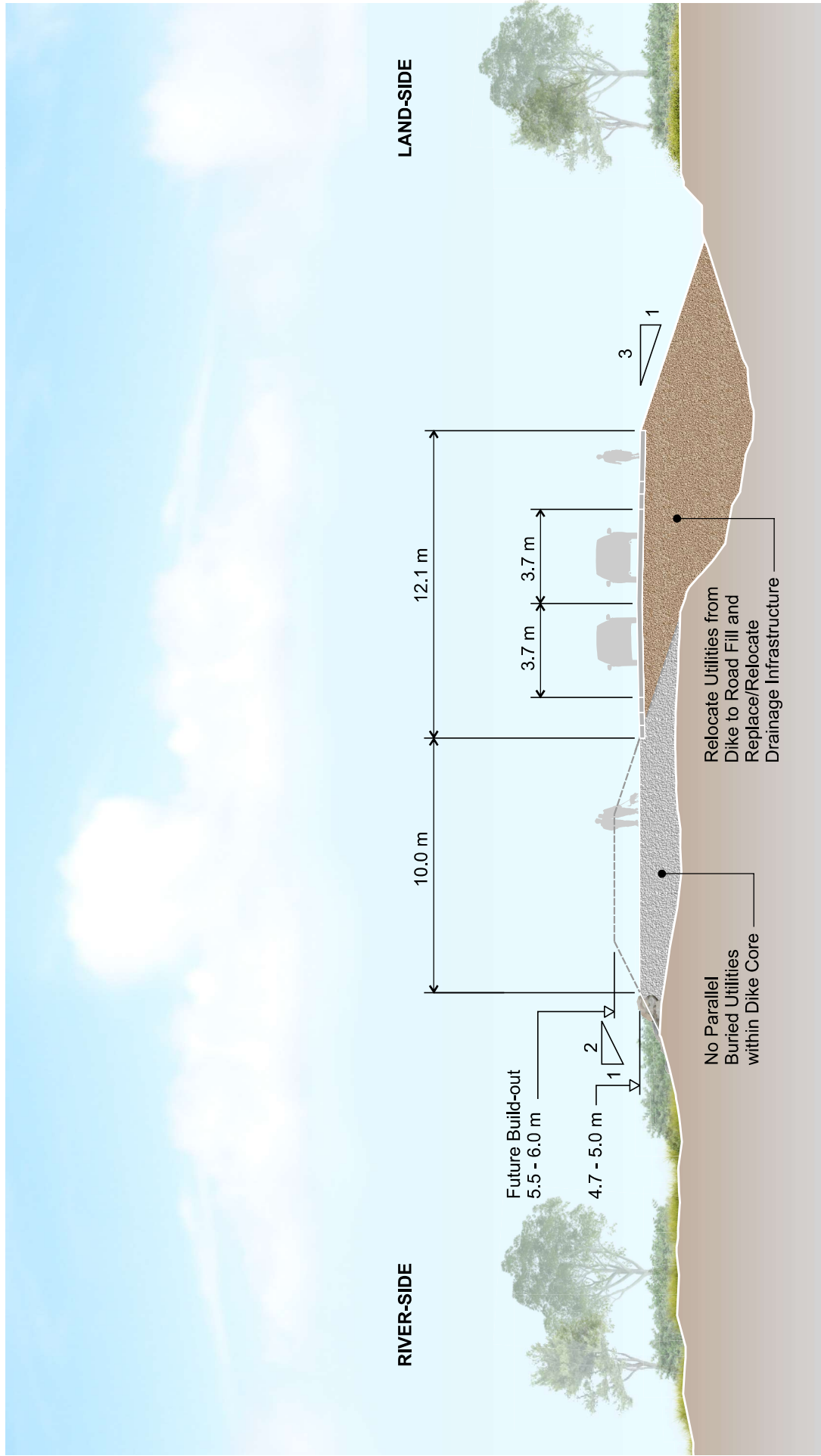
*Other - includes utilities if there is no road



Costs that are not included are noted below.

- Land acquisition is not included. Ideally, land will be acquired during redevelopment. Similarly, there may be opportunities to have dike improvements tied to adjacent development.
- Densification is not included. The recommendation is to fill 200 m back from the dike face as a preferred strategy to deal with liquefaction. If the road and land behind the dike is not raised, then densification is recommended. Current techniques such as stone columns would cost approximately \$9,000 to \$18,000 per metre of dike.
- Off-site habitat projects (that may be needed beyond the habitat enhancement provided along the dike corridor) are not included. Such cost could be roughly 5% of the construction cost. It is understood that a separate Dike Master Plan may be prepared to address habitat compensation by identifying and developing medium to large habitat compensation concepts.
- Raising the land behind the dike is not included. This is proposed to be a condition of development behind the dike, with the cost and benefit attributed to the property owner.
- Professional fees (engineering, surveying, environmental, archeological, etc.) are not included. Such costs could be in the range of 10% to 15% of the construction cost.
- Inflation since 2018.

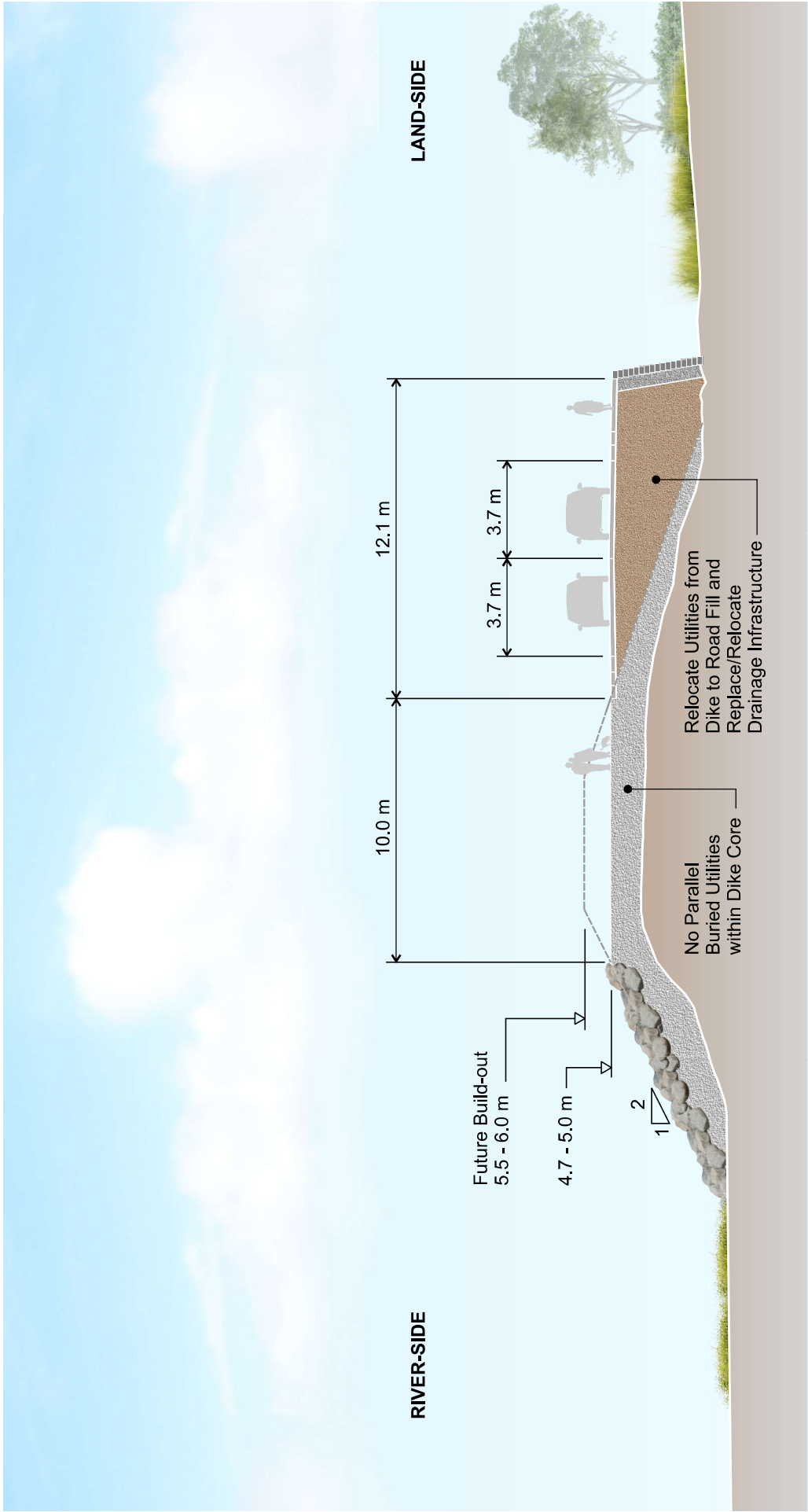


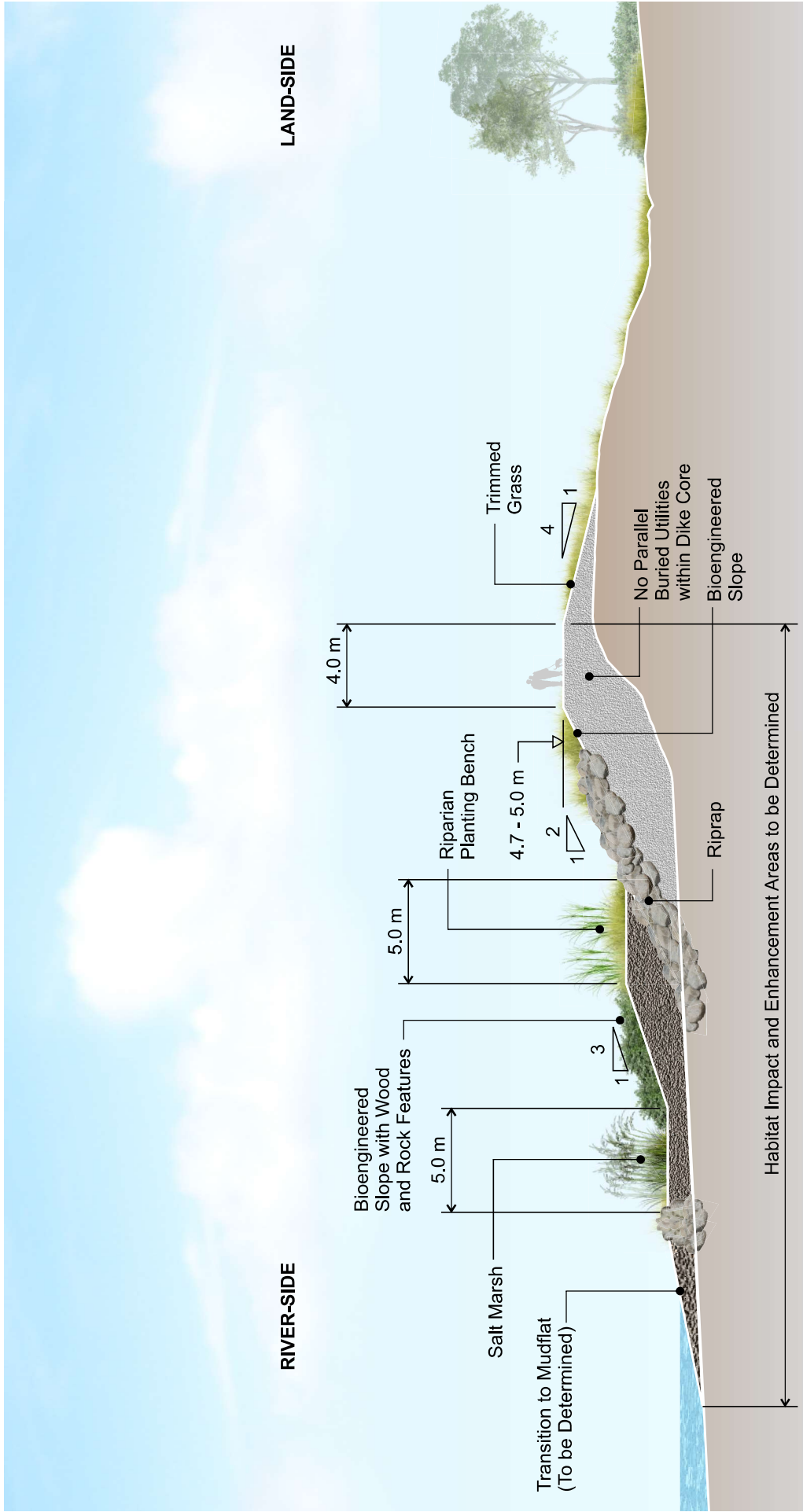


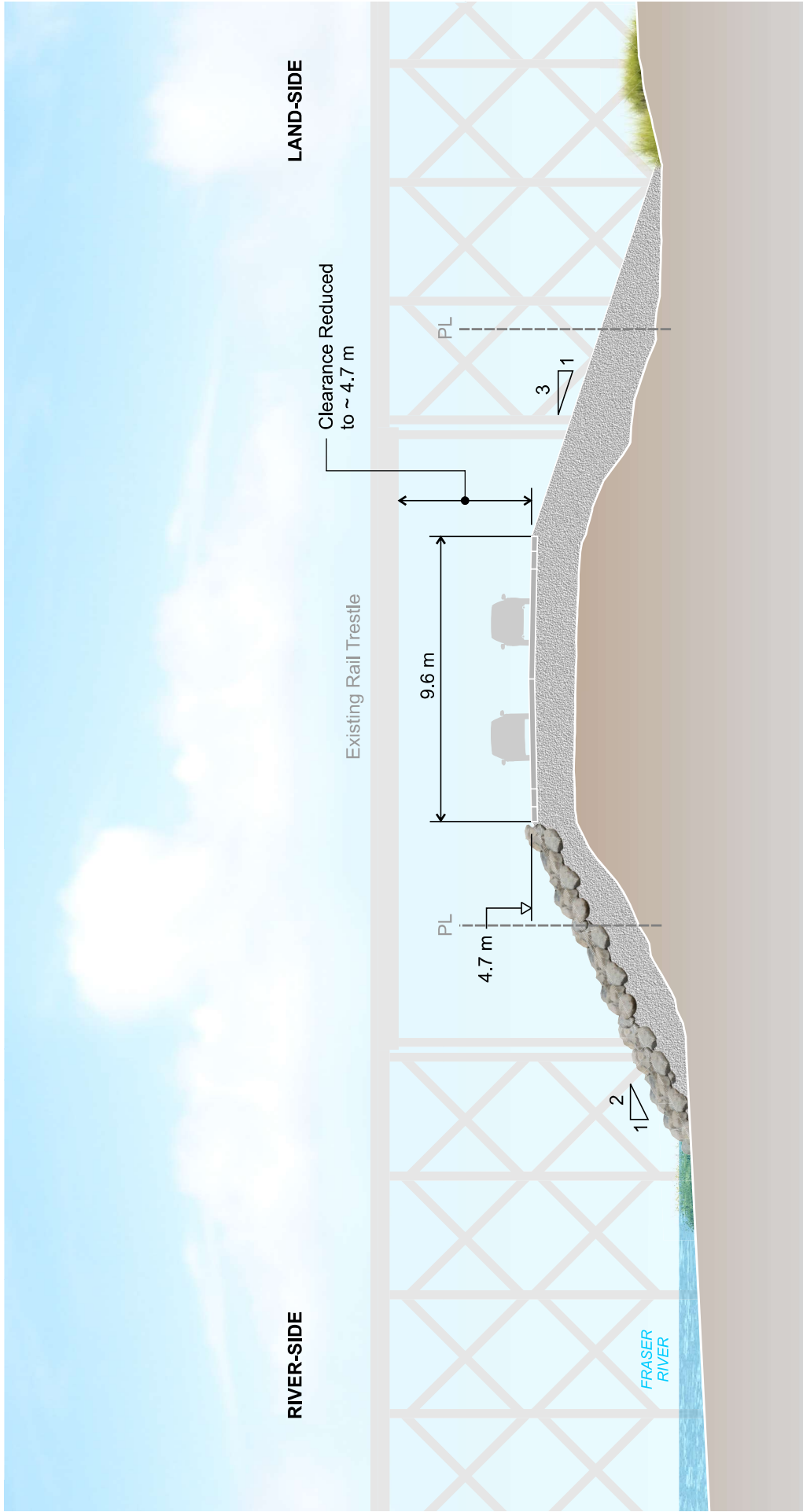
Project No.	651.122
Date	April, 2023
Scale	Not to Scale

Option 1: Raise Dike and Road and Extend Land-side
(Reaches 1-5)

Figure 3-2





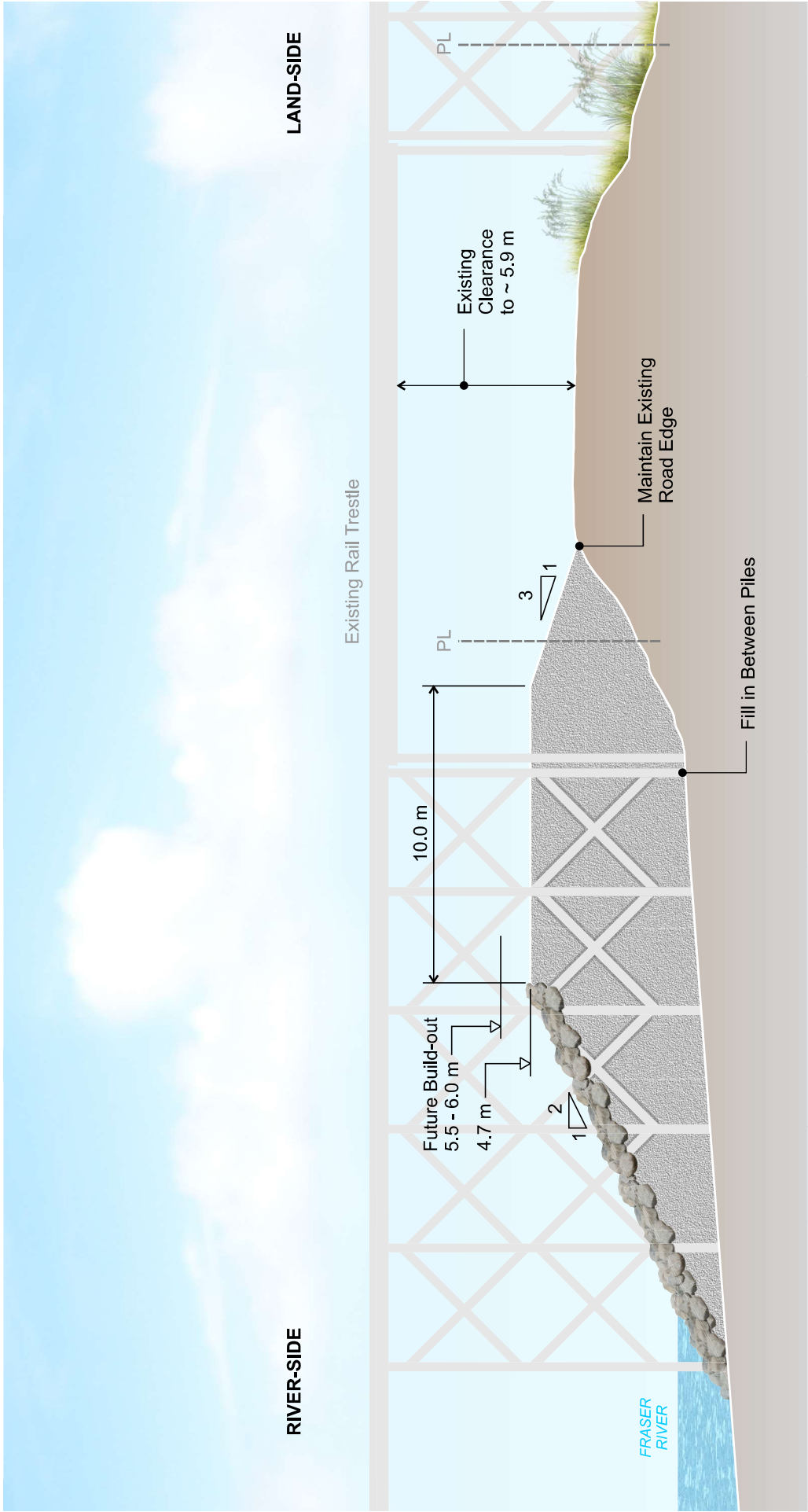


CNCL - 403

Project No.	651.122
Date	April, 2023
Scale	Not to Scale

**Option 6: Rail Trestle - Raise Road/Dike Under Trestle
(Reach 4)**

Figure 3-5

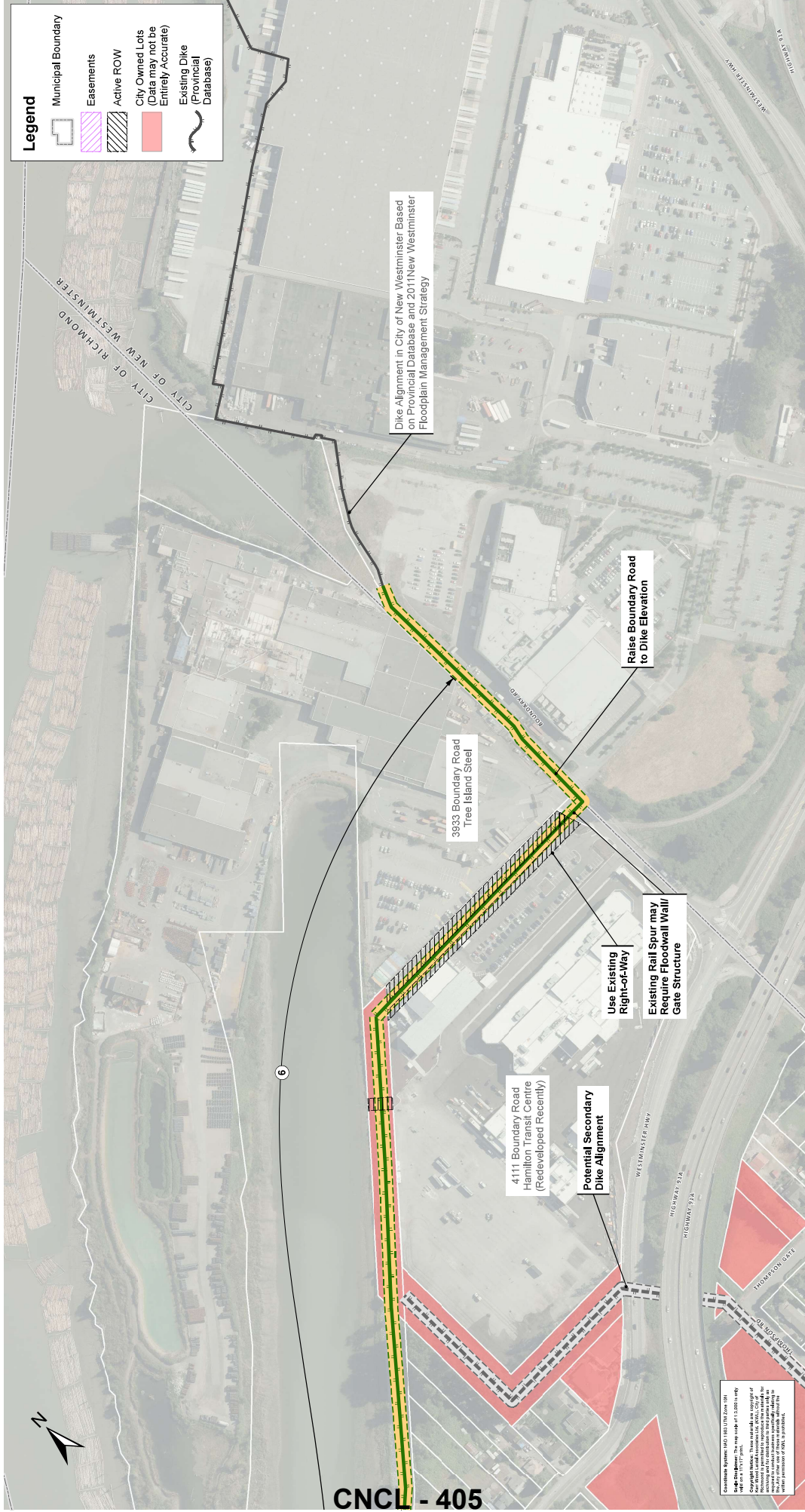


CNCL - 404

Project No.	651.122
Date	April, 2023
Scale	Not to Scale

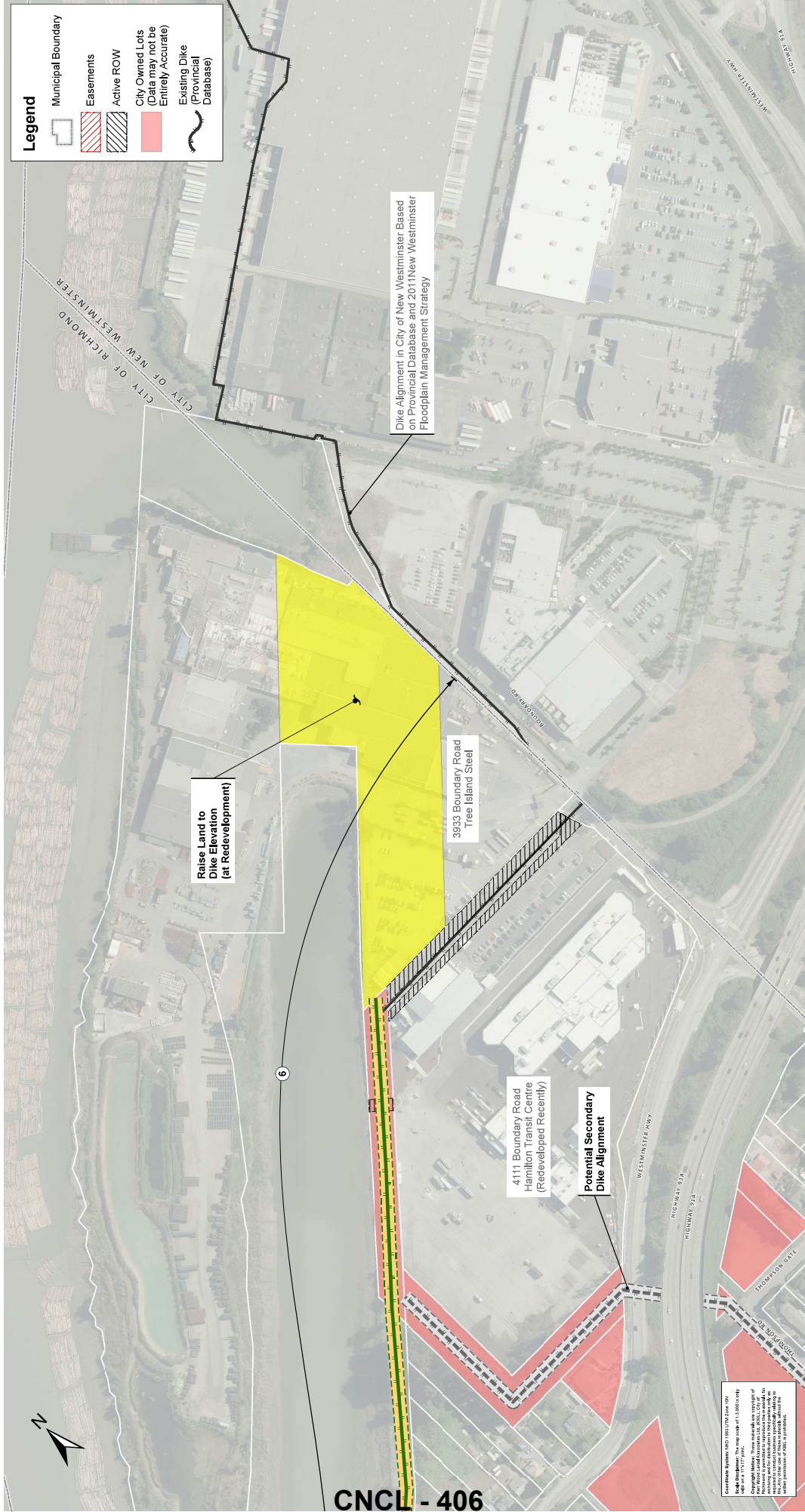
Option 7: Rail Trestle - Fill In-between Trestle Pile
(Reach 4)

Figure 3-6

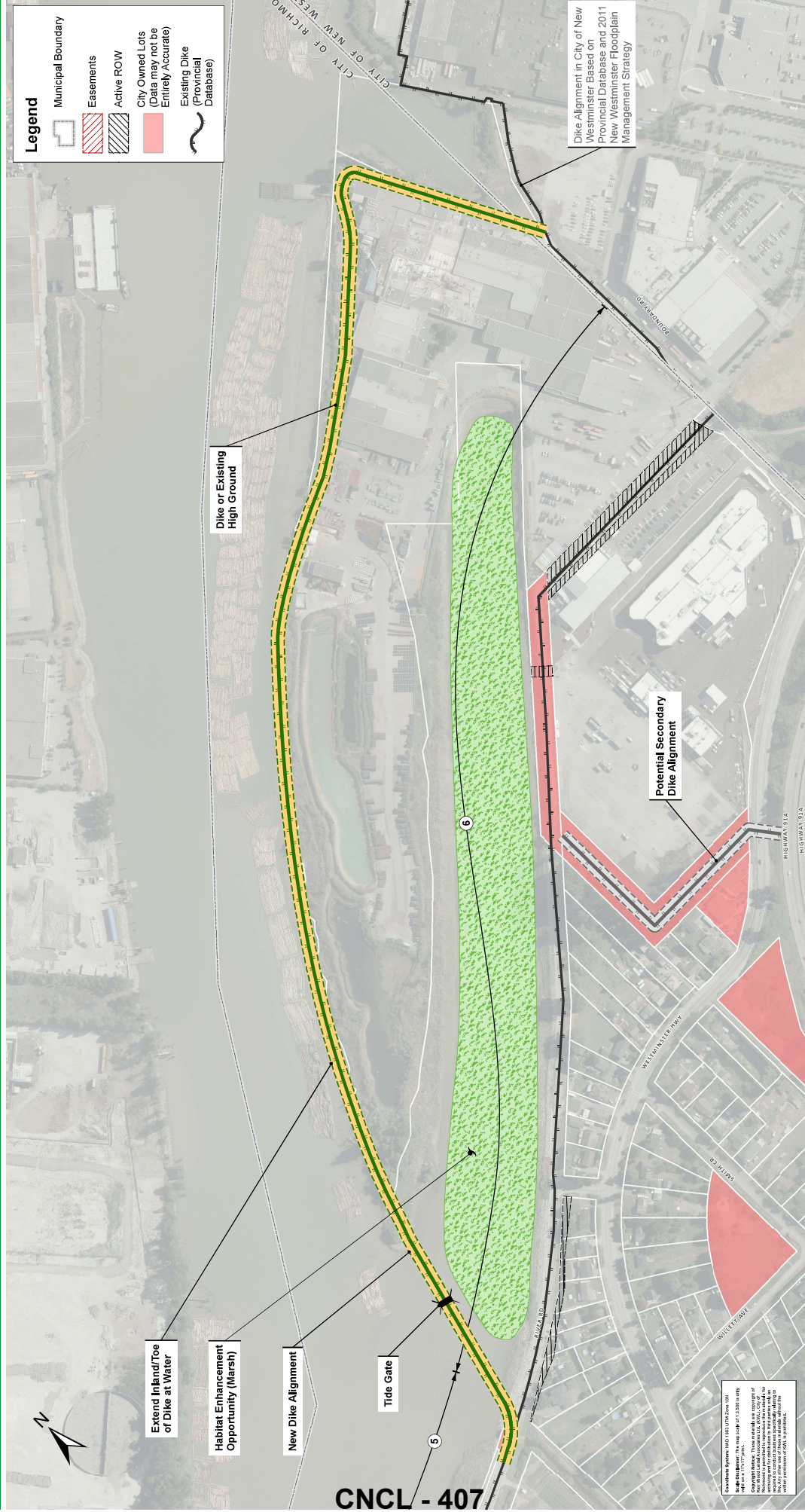


**Option 8 - City of New Westminster Tie-in
Raise Boundary Road**

Figure 3-7



Option 9 - City of New Westminster Tie-in
Fill Tree Island Steel Property



Option 10 - City of New Westminster Tie-in
New Alignment Across Tree Island Slough

Figure 3-9



4. Implementation Strategy

The implementation strategy has three parts:

- pre-design measures;
- construction sequencing for a typical reach; and
- prioritization of reaches for construction.

4.1 Pre-design Measures

Before construction can be implemented, the following steps are recommended.

- Use the Dike Master Plan as a planning tool with City land use planning to acquire land during redevelopment, and to rezone land with conditions for land raising inland of the dike.
- Acquire land prior to construction.
- Seek habitat compensation projects to bank credits in preparation for drainage channel and associated riparian area impacts. A separate mater plan for habitat compensation could be prepared to identify and develop medium to large habitat enhancement concepts to serve as compensation for multiple reaches.
- Assess required drainage system modifications (e.g. filling drainage channels and constructing a piped drainage system) in additional detail.
- Design with consideration for construction sequencing noted below.
- Advance public space and multi-use path design concepts further.
- Consider the need for an appropriate building setback from the land-side toe of any future flood protection works in view of the current BC setback guideline of 7.5 m. This should consider the planned dike upgrade to 4.7 m CGVD28, as well as future buildout to 5.5 m CGVD28. This may require consultation with the Inspector of Dikes.

4.2 Construction Sequence

The construction sequence for a typical reach is provided below. A typical reach currently has a road atop the dike, and utilities within the dike.

1. Secure land.
2. Coordinate third party utility relocations. This is mainly hydro on poles. Coordination with rail needed at trestle.
3. Install storm sewer (approximately 1200 mm dia., to be confirmed through at design) in proximity to existing channel.
4. Fill over storm sewer to underside of road structure. The fill placement may be followed by a settlement period depending on geotechnical recommendations. If so, this fill may include a preload depth in excess of the road fill.
5. Install new utilities (typically water and hydro, with some sewer).
6. Construct new road with parking where access outside the dike will be impacted.



7. Divert traffic to new road.
8. Remove existing road and utilities. Don't abandon utilities within dike.
9. Fill dike to crest elevation. Excavation of sub-grade may be required to remove unsuitable materials.
10. Complete armouring, trail, and landscaping.

Larger projects will result in less temporary road diversion works. As an alternate, the entire road could be reconstructed first, in phases, before the dike is built later. This would work with the new road being raised to dike crest elevation.

4.3 Prioritization

Priority for construction will depend on which section is the lowest and therefore most urgent to raise, opportunities such as site development or road improvement plans, level of preparedness for issues such as land acquisition and habitat offsets, and adjacent residents' receptiveness to a higher dike. A preliminary priority list is provided below. Opportunities may shift the order, and the reaches may be broken down into smaller or larger projects.

Table 4-1: Priority by Reach

	Reach ID and Name	Extent / Length	Notes
1	3 – Riverfront Houses and ALR	No. 8 Road to Nelson Road	<ul style="list-style-type: none">• Low section and road safety issues.
2	4 – Bog and Rail	Nelson Road to Rail Trestle	<ul style="list-style-type: none">• Low section and road safety issues. Rail coordination takes time.
3	5 – Hamilton Frontages	Rail Trestle to Queens Road	<ul style="list-style-type: none">• Relatively straightforward.
4	2 – Industrial and Shipyards	No. 7 Road to No. 8 Road	<ul style="list-style-type: none">• Seek redevelopment opportunities for land acquisition and to resolve access issues.
5	1 – Bridgeport Industrial	No. 6 Road to No. 7 Road	<ul style="list-style-type: none">• Seek redevelopment opportunities for land acquisition and to resolve access issues.
6	6 – Tree Island Slough and Boundary	Queens Road to City of New Westminster	<ul style="list-style-type: none">• Coordinate with planned park, road realignment, and redevelopment. Seek revised alignment with Tree Island Steel site, and further investigate Tree Island Slough habitat enhancement.

5. Reach Summary Sheets

This section contains 2-page, reach-by-reach summary sheets that summarize the existing conditions, design considerations and potential constraints for each reach of Phase 4. The second sheet will summarize the features of the master plan through each reach including typical cross-sections, plan features, costs and priority for upgrade.

Reach 1: Bridgeport Industrial



Existing Conditions

The existing dike in this reach is located in River Road. A watermain and overhead utilities run along the southern portion of the road.

This reach has wide vegetated channels on the inland side of the dike, and a wide vegetated riparian zone on the riverside.

Industrial lots and associated infrastructure exist throughout the reach, including warehouses and container storage.

No. 6 Road is the tie-in location with Phase 2 of the Dike Master Plan, and is also a potential tie-in location for the proposed mid-island dike.

Unique Features

- Drainage pump station at No. 6 Road.
- Industrial sites with water access north of River Road (e.g. Mainland Sand and Gravel).
- FortisBC gas pipeline river crossing and facility west of No. 7 Road.
- Drainage channel and pipe south of road.
- Riparian area north of road.
- Potential future tie-in location with proposed mid-island dike.

Considerations

Flood Protection

Dike alignment
Dike crest elevation
Erosion protection
Seismic performance
Static stability and seepage
River toe stability and setbacks
Boat waves

Industrial

Water access industrial sites north of road/dike
Road design and driveway grade to accommodate large trucks

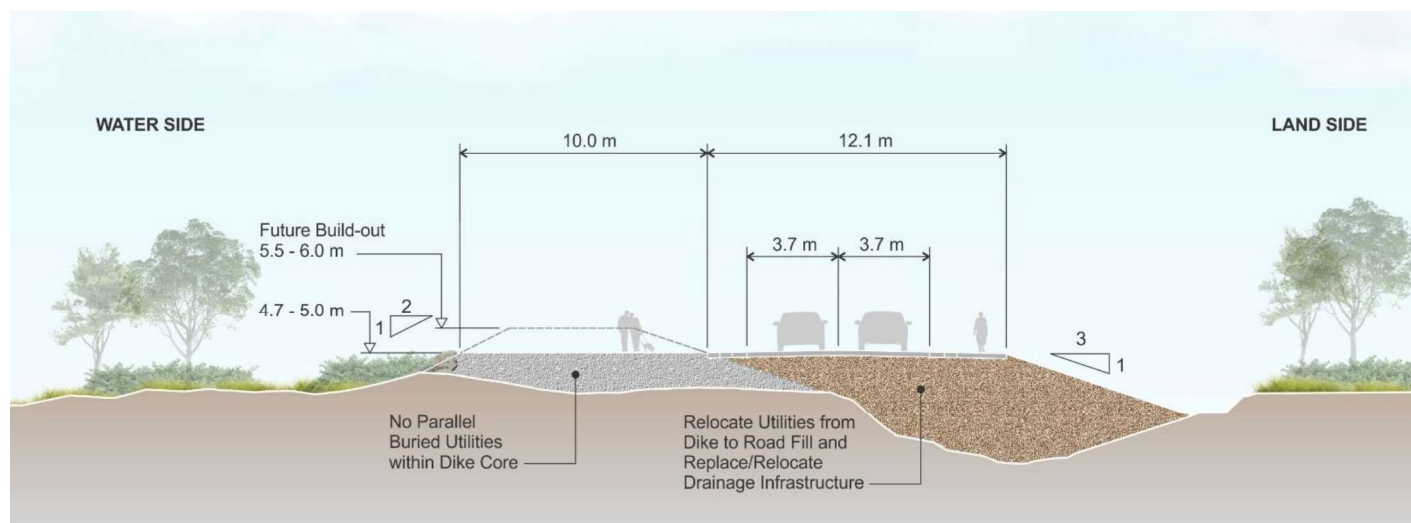
Social

No. 7 Road Pier Park
Align with 2009 Waterfront Strategy
Connect to existing and planned trails and public amenities
Wayfinding and public information signs

Environmental

Fraser River side habitat includes high quality intertidal habitat and high quality riparian habitat
Land side includes drainage channels adjacent to dike
No. 7 Road Pier Park

Reach 1: Bridgeport Industrial - Recommended Improvements



Master Plan Features

Flood Protection

Raise dike to 4.7 m and separate and raise road inland of the dike as illustrated above. Dike alignment will typically extend up from the current face of dike, and widen inland.

Provide erosion protection along the face of the dike, typically consisting of rip rap revetment.

Raise properties 200 m inland to 4.7 m or densify to the depth of potential liquefaction.

Replace channels with storm sewers and swales to improve stability and reduce seepage.

Industrial

Raise road to dike crest elevation to permit access over tide to industrial sites north of dike.

Raise industrial sites to dike crest elevation during redevelopment.

For lower sites, driveway ramps may need to extend into lots with grades that accommodate large trucks. Ramps may require retaining walls to limit footprint.

Social

Construct multi-use path on top of dike, separate from road. Link to parks, trails, public amenities, and wayfinding.

Environmental

The proposed footprint would impact an estimated 500 m² of high quality Fraser River riparian habitat, 14,800 m² of drainage channel riparian habitat, and 3,300 m² of drainage channel aquatic habitat

NOTE: This is an estimate based on 2007 FREMP mapping and 2017 orthoimagery interpretation. Exact numbers will require an aquatic habitat survey and aquatic effects assessment

Priority

Priority is ranked 5th out of 6 reaches.

This is one of the lower priority reaches due to relatively good existing height, and benefits to coordinating with future land redevelopment. The dike is at a higher elevation than the high priority reaches. Required land may be secured through redevelopment opportunities. Land raising during redevelopment will also reduce the width required for dike and road work, and the need for interim access ramps.

Construction Cost

Costs below are for 1.7 km of dike similar to cross-section above.

Item	Cost per metre	Cost
Dike Raising	\$4,500	\$7.6 Million
Road Structure & Utilities	\$5,300	\$8.9 Million
Raise Road to Dike Height	\$1,900	\$3.2 Million
Pathway	\$600	\$1 Million
Other (Driveways, Ramps or Road Reconstruction)		\$5 Million
Utilities (Drainage, Water)	\$2,000	\$3.3 Million
Contingency (40%)		\$9.8 Million
Total		\$34.3 Million

Cost opinions are in 2018 Canadian Dollars.

Reach 2: Industrial and Shipyards



Existing Conditions

The existing dike alignment in this reach is a dike in River Road. This reach has industrial lots, shipyards and a narrow riparian strip on the water side of the dike.

The inland side of the dike has access to industrial lots and residential lots to the east side of the reach.

Currently, there is parking along the dike for the shipyard employees.

Unique Features

- Water-oriented industrial parcels located north of road (tugboat operation and Tom-Mac Shipyards).
- Residential/storage properties located north of road with minimal setback between road and structures.
- Large industrial parcels located south of road near No. 7 Road.
- ALR parcels with houses located south of road.
- Drainage pump station at No. 8 Road.

Considerations

Flood Protection

Dike alignment
Dike crest elevation
Erosion protection
Seismic performance
Static stability and seepage
River toe stability and setbacks
Boat waves

Industrial

Water access for tugboats, and shipyards.
Road design and driveway grade to accommodate large trucks
Drainage pump station at No. 8 Road
Parking for shipyards is along River Road

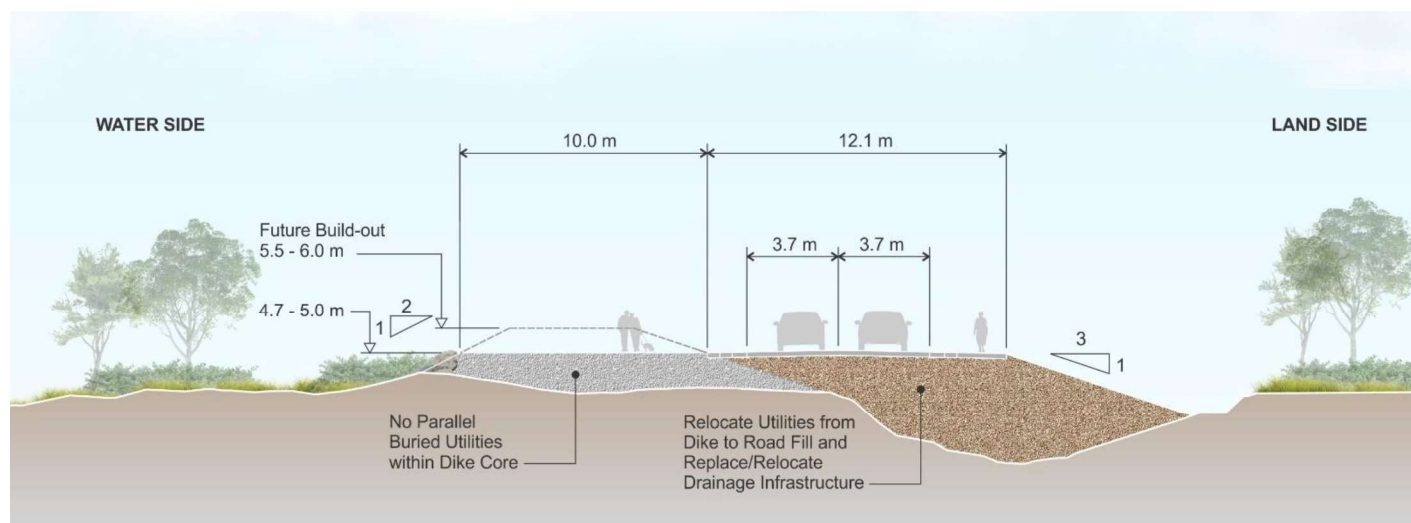
Social

Align with 2009 Waterfront Strategy
Connect to existing and planned trails and public amenities
Wayfinding and public information signs

Environmental

Fraser River side habitat includes narrow deciduous treed woodland high-quality habitat
Western portion of Land side includes drainage channels adjacent to dike; eastern portion of land side has trees/hedges along residential lots

Reach 2: Industrial and Shipyards - Recommended Improvements



Master Plan Features

Flood Protection

Raise dike to 4.7 m and separate and raise road inland of the dike as illustrated above.

Dike alignment will typically extend up from the current face of dike, and widen inland.

Provide erosion protection along the face of the dike, typically consisting of rip rap revetment.

Raise properties 200 m inland to 4.7 m or densify to the depth of potential liquefaction.

Replace channels with storm sewers and swales to improve stability and reduce seepage.

Industrial

Raise road to dike crest elevation to permit access over tide to industrial sites north of dike.

Raise industrial sites to dike crest elevation during redevelopment.

For lower sites, driveway ramps may need to extend into lots with grades that accommodate large trucks.

Social

Construct multi-use path along dike, separate from road. Link to parks, trails, public amenities, and wayfinding.

Environmental

The proposed footprint would impact an estimated 800 m² of high quality Fraser River riparian habitat, 28,000 m² of drainage channel riparian habitat, and 5,900 m² of drainage channel aquatic habitat

NOTE: This is an estimate based on 2007 FREMP mapping and 2017 orthoimagery interpretation. Exact numbers will require an aquatic habitat survey and aquatic effects assessment

Priority

Priority is ranked 4th out of 6 reaches.

This is one of the lower priority reaches due to relatively good existing height, and benefits to coordinating with future land redevelopment. The dike is at a higher elevation than the high priority reaches. Required land may be secured through redevelopment opportunities. The adjacent industrial land is less developed than Reach 1, so opportunities for land acquisition and land raising through redevelopment may arise earlier than for Reach 1. Land raising during redevelopment will also reduce the width required for dike and road work, and the need for interim access ramps.

Construction Cost

Costs below are for 1.7 km of dike similar to cross-section above.

Item	Cost per metre	Cost
Dike Raising	\$4,500	\$7.7 Million
Road Structure & Utilities	\$5,300	\$9.1 Million
Raise Road to Dike Height	\$1,900	\$3.3 Million
Pathway	\$600	\$1 Million
Other (Driveways, Ramps or Road Reconstruction)		\$1 Million
Utilities (Drainage, Water)	\$2,000	\$3.4 Million
Contingency (40%)		\$10.2 Million
Total		\$35.8 Million

Cost opinions are in 2018 Canadian Dollars.

Reach 3: Riverfront Houses and ALR



Existing Conditions

The dike in this reach is a dike in River Road, with a combination of residential and industrial lots on either side of the dike.

The inland side of the dike has large residential lots separated from the road by a large channel and hedges. The water side of this reach has access to docks, storage, drainage pump station.

There is a major Metro Vancouver pipe river crossing in this reach.

Unique Features

- Residential/storage properties located north of road with minimal setback between road and structures near Nelson Road.
- ALR parcels with houses located south of road.
- Metro Vancouver Tilbury watermain crossing near Nelson Road.

Considerations

Flood Protection

Dike alignment
Dike crest elevation
Erosion protection
Seismic performance
Static stability and seepage
River toe stability and setbacks
Boat waves

Industrial

Drainage pump station at east side of the reach
Storage and water access on the north side of River Road
Metro Vancouver watermain crossing
Road design and driveway grade to accommodate large trucks

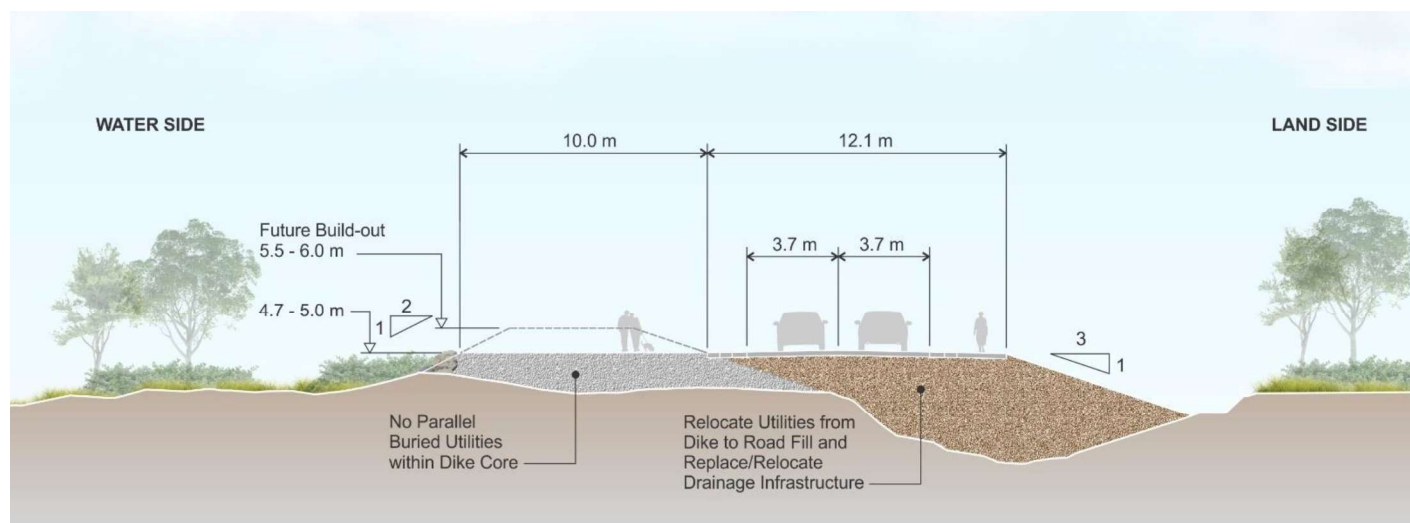
Social

Align with 2009 Waterfront Strategy
Connect to existing and planned trails and public amenities
Wayfinding and public information signs

Environmental

Fraser River Side habitat includes narrow deciduous treed woodland high-quality habitat along the 75% of the reach
Land side has tree/hedges along residential lots and drainage channels

Reach 3: Riverfront Houses and ALR - Recommended Improvements



Master Plan Features

Flood Protection

Raise dike to 4.7 m and separate and raise road inland of the dike as illustrated above.

Dike alignment will typically extend up from the current face of dike, and widen inland.

Provide erosion protection along the face of the dike, typically consisting of rip rap revetment.

Raise properties 200m inland to 4.7m or densify to the depth of potential liquefaction.

Replace channels with storm sewers and swales to improve stability and reduce seepage.

Industrial

Raise road to dike crest elevation to permit access over tide to properties north of dike.

Parking for properties north of dike to be provided at side of road, or with driveways and ramps or raised parking on private property.

Social

Construct multi-use path along dike, separate from road. Link to parks, trails, public amenities, and wayfinding.

Environmental

The proposed footprint would impact an estimated 300 m² of high quality Fraser River riparian habitat, 50 m² of high quality Fraser River intertidal habitat, 16,100 m² of drainage channel riparian habitat, and 3,000 m² drainage channel aquatic habitat

NOTE: This is an estimate based on 2007 FREMP mapping and 2017 orthoimagery interpretation. Exact numbers will require an aquatic habitat survey and aquatic effects assessment

Priority

Priority is ranked 1st out of 6 reaches.

This is highest ranked priority due to low crest elevations and road safety issues.

Land acquisition may be required, but the large agricultural/residential lots typically include adequate setbacks to provide enough space without redevelopment.

Land raising during redevelopment will also reduce the width required for dike and road work, and the need for interim access ramps.

Construction Cost

Costs below are for 0.9 km of dike similar to cross-section above.

Item	Cost per metre	Cost
Dike Raising	\$4,500	\$4 Million
Road Structure & Utilities	\$5,300	\$4.8 Million
Raise Road to Dike Height	\$1,900	\$1.7 Million
Pathway	\$600	\$0.5 Million
Other (Driveways, Ramps or Road Reconstruction)		\$0.6 Million
Utilities (Drainage, Water)	\$2,000	\$1.8 Million
Contingency (40%)		\$5.4 Million
Total		\$18.9 Million

Cost opinions are in 2018 Canadian Dollars.

Reach 4: Bog and Rail



Existing Conditions

The dike in this reach is within River Road.

There are environmental and agricultural constraints along either side of the dike. Outside of the dike on the riverside, there is a narrow strip of riparian zone and riprap along the Fraser River.

Informal agricultural (cranberry) dikes are located along the south edge of the road/dike. The drainage channel in this reach is very wide.

The North East Bog Forest is a city park/conservation area located south of the road/dike.

The east side of the reach includes a rail trestle bridge that crosses the dike and Fraser River.

Unique Features

- ALR parcels with cranberry farms south of road.
- Very large agricultural channel south of dike.
- North East Bog Forest (City park).
- Rail trestle river crossing.
- No space between road edge and river channel (existing riprap bank protection).

Considerations



Flood Protection

Dike alignment
Dike crest elevation
Erosion protection
Seismic performance
Static stability and seepage
River toe stability and setbacks
Boat waves
Soft soils (bog)



Industrial

Water access and parking for docks.
Road and Driveway access will need to be regraded.
Train rail trestle located at east side of reach.
Farm dike on the inside of the current dike.



Social

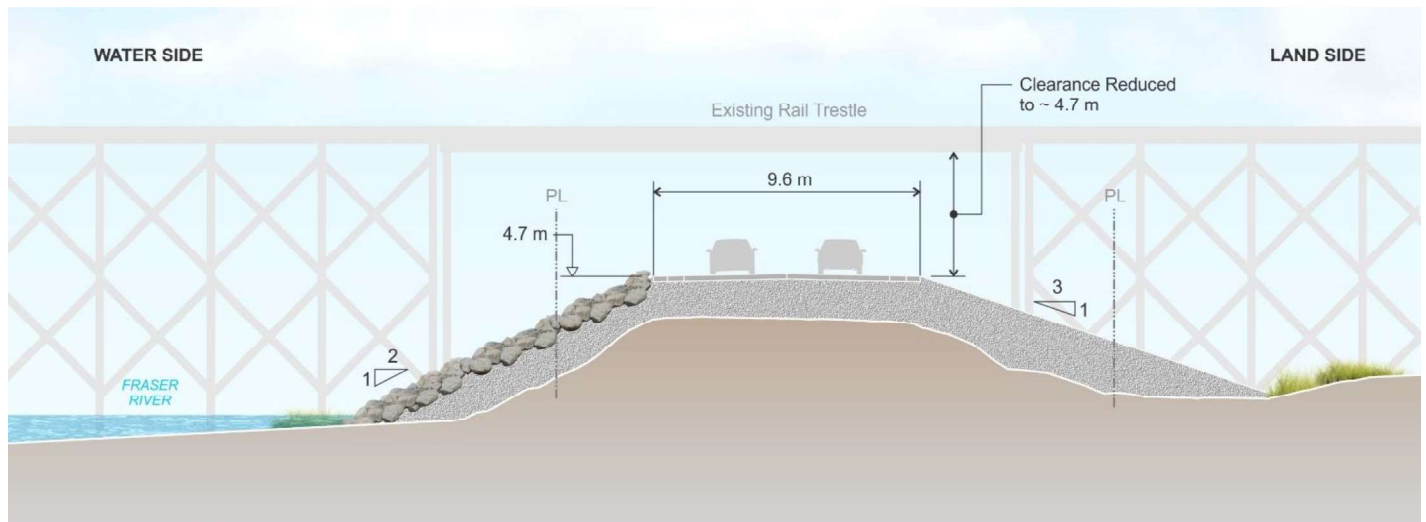
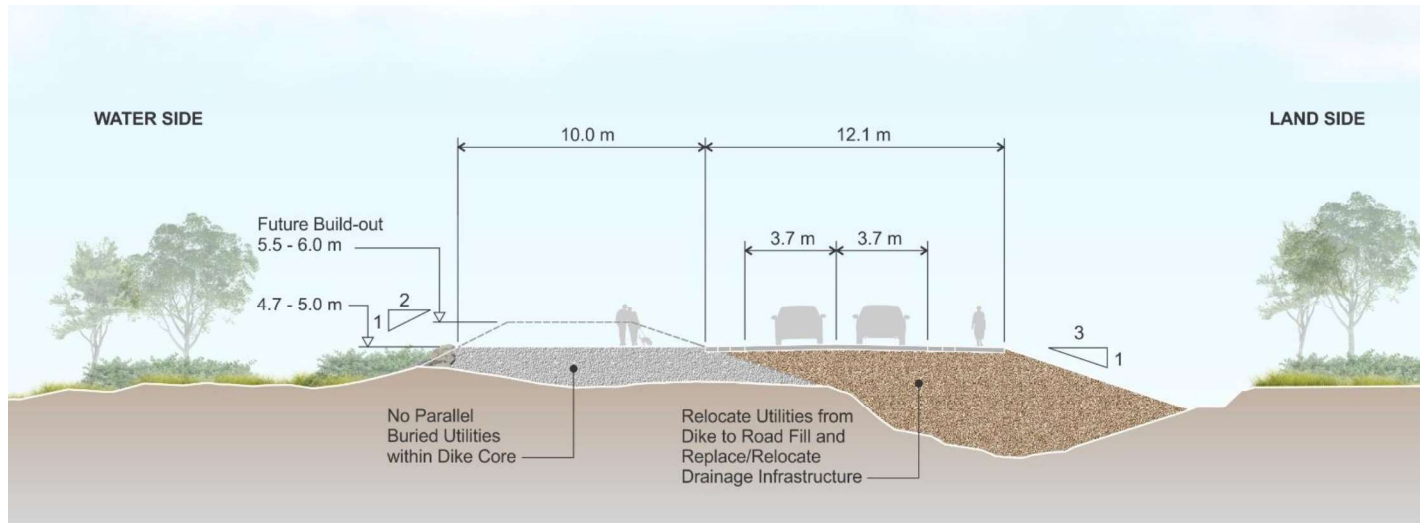
North East Bog Forest
Align with 2009 Waterfront Strategy
Connect to existing and planned trails and public amenities
Wayfinding and public information signs



Environmental

Fraser River side habitat includes narrow low-brush riparian zone on 1/2 of reach
Land side includes drainage channels adjacent to and North East Bog Forest at eastern end of the reach

Reach 4: Bog and Rail - Recommended Improvements



Master Plan Features

Flood Protection

Raise dike to 4.7 m and separate and raise road inland of the dike as illustrated above.

Dike alignment will typically shift into the river, with some widening inland.

Provide erosion protection along the face of the dike, typically consisting of rip rap revetment.

Industrial

Coordinate work around rail trestle with rail company.

Social

Construct multi-use path along dike, separate from road. Link to parks, trails, public amenities, and wayfinding, per Lululoop concept developed in Phase 3. Ensure barriers are in place where the road and path narrow into closer proximity at the rail trestle.

Environmental

The proposed footprint would impact an estimated 300 m² of high quality Fraser River riparian habitat, 100 m² of high quality Fraser River intertidal habitat, 23,500 m² drainage channel riparian habitat, and 10,200 m² drainage channel aquatic habitat
NOTE: This is an estimate based on 2007 FREMP mapping and 2017 orthoimagery interpretation. Exact numbers will require an aquatic habitat survey and aquatic effects assessment

Reach 4: Bog and Rail - Recommended Improvements

Priority

Priority is ranked 2nd out of 6 reaches.

This is ranked high due to low crest elevations and road safety issues.

Regulatory and rail company approvals may take extra time due to proposed widening into river and work around the trestle structure.

Land acquisition may be required, but the large agricultural/residential lots typically include adequate setbacks to provide enough space without redevelopment.

Land raising during redevelopment will also reduce the width required for dike and road work, and the need for interim access ramps.

Construction Cost

Costs below are for 2.2 km of dike similar to cross-section above.

Item	Cost per metre	Cost
<i>Option 1</i>		
Dike Raising	\$4,500	\$10.3 Million
Road Structure	\$5,300	\$12.1 Million
Raise Road to Dike Height	\$1,900	\$4.3 Million
Pathway	\$600	\$1.4 Million
Other (Driveways, Ramps or Road Reconstruction)		\$6 Million
Utilities (Drainage, Water)	\$2,000	\$4.8 Million
<i>Option 6 Only at Rail Trestle Crossing</i>		
9.6 m wide Dike Crest at 4.7 m c/w riprap with 15-20 m widening at base	\$4,500	\$3 Million
9.6 m wide asphalt road with 2x1.1 m shoulder	\$1,900	\$1 Million
Contingency (40%)		\$13.5 Million
Total		\$47.1 Million

Cost opinions are in 2018 Canadian Dollars.

Reach 5: Hamilton Frontages



Existing Conditions

This reach of the dike is located on a narrow strip of right-of-way between the Fraser River, and agricultural/residential lots.

On the Fraser River side of the dike, there is a strip of riprap for bank protection. The inland side of the dike includes a minor drainage channel, agricultural land and residential lots at the east side of the reach.

There is a major Metro Vancouver pipe crossing in this reach.

Unique Features

- ALR parcels south of road with houses located close to road.
- No space between road edge and river channel (existing riprap bank protection).
- Metro Vancouver Big Bend forcemain crossing west of 21920 River Road.
- Queens North drainage pump station west of Westminster Highway.

Considerations



Flood Protection

Dike alignment
Dike crest elevation
Erosion protection
Seismic performance
Static stability and seepage
River toe stability and setbacks
Boat waves



Industrial

Pump station on waterside of dike
Road design and driveway grade



Social

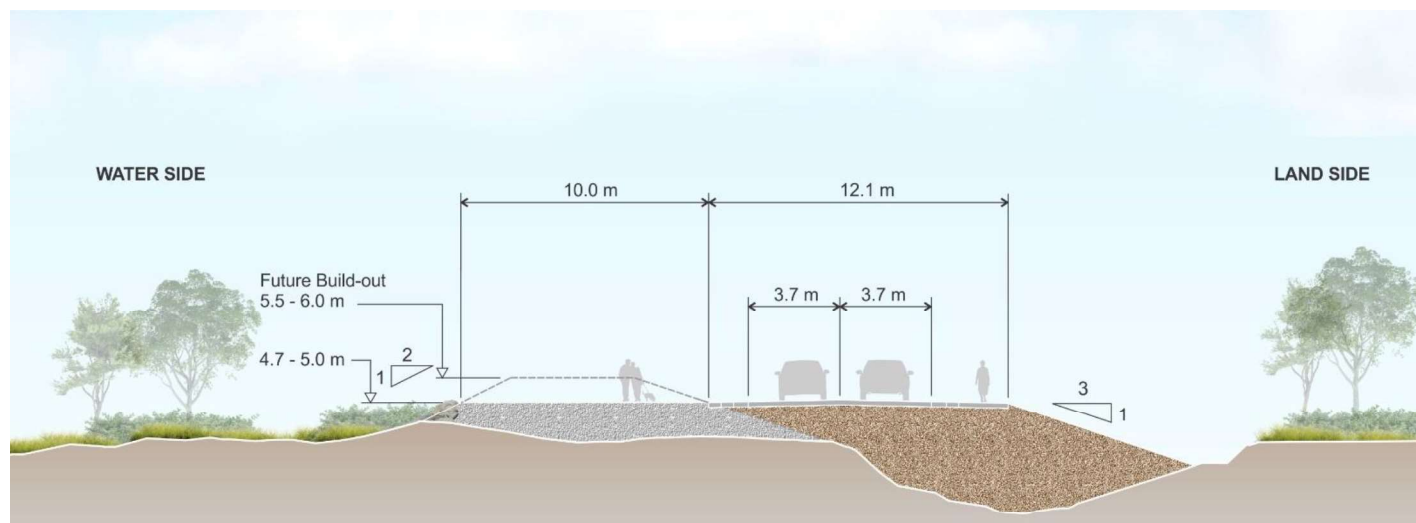
Align with 2009 Waterfront Strategy
Connect to existing and planned trails and public amenities
Wayfinding and public information signs



Environmental

Fraser River side has narrow riprap slope, with low-quality habitat
Land side includes agricultural land for 1/2 of reach, and low-quality habitat and maintained lawn (residential) for remainder of reach. Drainage channels and associated riparian and aquatic habitat area present along the full length of the reach

Reach 5: Hamilton Frontages - Recommended Improvements



Master Plan Features

Flood Protection

Raise dike to 4.7 m and separate and raise road inland of the dike as illustrated above.

Dike alignment will typically extend up from the current face of dike, and widen inland.

Provide erosion protection along the face of the dike, typically consisting of rip rap revetment.

Raise properties 200 m inland to 4.7 m or densify to the depth of potential liquefaction.

Replace channels with storm sewers and swales to improve stability and reduce seepage.

Industrial

Driveway ramps required to extend to access private properties until properties raised.

Social

Construct multi-use path along dike, separate from road. Link to parks, trails, public amenities, and wayfinding.

Environmental

The proposed footprint would impact an estimated 900 m² of high quality Fraser River intertidal habitat, 23,700 m² of drainage channel riparian habitat, and 5,900 m² of drainage channel aquatic habitat

NOTE: This is an estimate based on 2007 FREMP mapping and 2017 orthoimagery interpretation. Exact numbers will require an aquatic habitat survey and aquatic effects assessment

Priority

Priority is ranked 3rd out of 6 reaches.

This is ranked just above average high due to moderate elevations, but relatively straightforward implementation.

There are some active redevelopment plans for the area, including road realignment at the east end of the reach. Road and development changes may change the priority of this reach.

Land acquisition may be required, but the large agricultural/residential lots typically include adequate setbacks to provide enough space without redevelopment.

Land raising during redevelopment will also reduce the width required for dike and road work, and the need for interim access ramps.

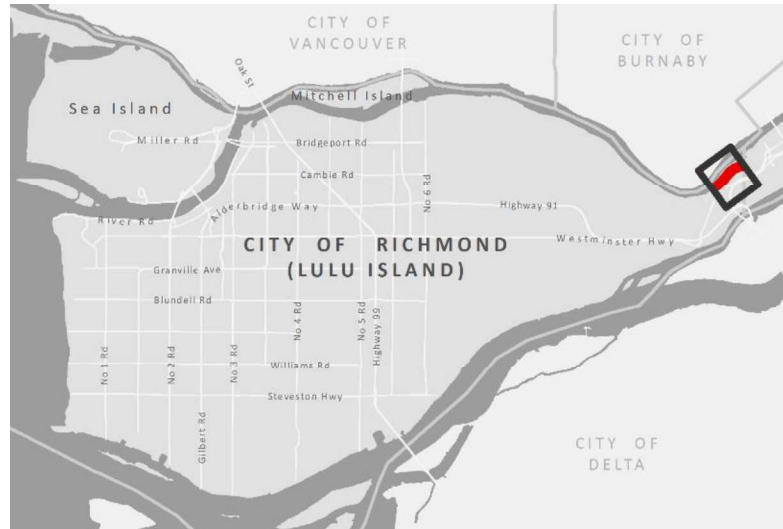
Construction Cost

Costs below are for 1.6 km of dike similar to cross-section above.

Item	Cost per metre	Cost
Dike Raising	\$4,500	\$7.3 Million
Road Structure & Utilities	\$5,300	\$8.6 Million
Raise Road to Dike Height	\$1,900	\$3. Million
Pathway	\$600	\$1. Million
Other (Driveways, Ramps or Road Reconstruction)		\$6 Million
Utilities (Drainage, Water)	\$2,000	\$3.2 Million
Contingency (40%)		\$9.5 Million
Total		\$33.1 Million

Cost opinions are in 2018 Canadian Dollars.

Reach 6: Tree Island Slough and Boundary



Existing Conditions

The dike system in this reach is between a slough and the backyards of single family residential homes. Riprap bank protection exists along the river-side slope.

The slough on the Fraser River side of the dike provides high-quality marsh and mudflat habitat.

The existing dike alignment is not well-defined east of the Hamilton Transit Centre. It is understood that the current tie-in with the City of New Westminster's portion of the dike is along Boundary Road. The Tree Island Steel property (3933 Boundary Road) has rail access across Boundary Road which may be an obstacle to dike raising.

Existing city-owned lots provide an opportunity for a Richmond-New Westminster boundary secondary dike.

Unique Features

- River Road dike alignment from Queens Road to Westminister Highway, then a river-bank dike runs north of Westminister Highway houses to edge of new Hamilton Transit Centre.
- Tree Island Steel site (3933 Boundary Road) creates a slough north of the dike that shelters the road/dike from the river.
- Backyards of single family homes located south of dike.
- Dike alignment not well defined from Hamilton Transit Centre to City of New Westminster river-bank dike.
- Potential tie-in with proposed secondary dike to separate Richmond and New Westminster.

Considerations

Flood Protection

Dike alignment
Dike crest elevation
Erosion protection
Seismic performance
Static stability and seepage
River toe stability and setbacks
Boat waves

Industrial

Hamilton Transit Centre
Tree Island Steel with rail connection

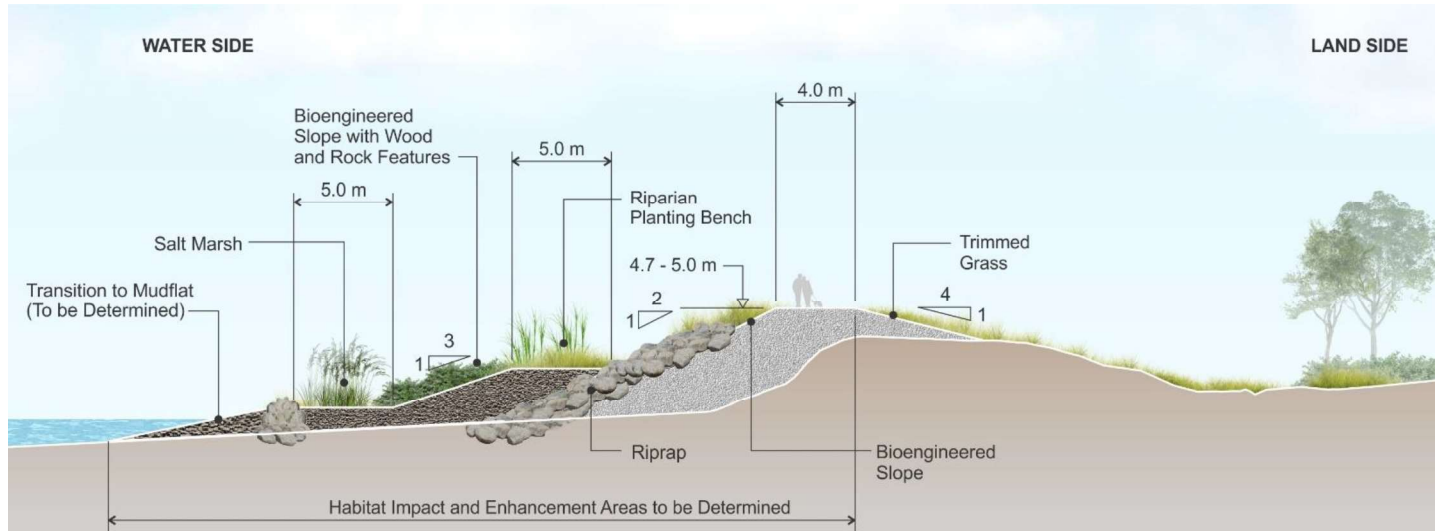
Social

Align with 2009 Waterfront Strategy
Connect to existing and planned trails and public amenities
Wayfinding and public information signs

Environmental

Slough located on the Fraser River side of the dike
High-quality mud flats and marsh found within the slough
Land side of dike includes maintained backyards for the western portion of the reach

Reach 6: Tree Island Slough and Boundary



Master Plan Features

Flood Protection

Raise dike to 4.7 m as illustrated above. Dike alignment will typically extend up from the current face of dike, and widen inland.

Provide erosion protection along the face of the dike, typically consisting of rip rap revetment.

Raise properties 200 m inland to 4.7 m or densify to the depth of potential liquefaction.

Construct north section of secondary dike near Boundary Road.

Industrial

Seek shift of dike alignment to include the Tree Island Steel side and Tree Island Slough if and when this site redevelops.

Raise the dike through the Hamilton Transit Centre during future redevelopment.

Social

Construct multi-use path along dike. Link to parks, trails, public amenities, and wayfinding, per Lululoop. Develop trail link to south dike at Boundary Road, plus links to New Westminster dike trail.

Environmental

The proposed footprint would impact an estimated 2,200 m² of high quality Fraser River intertidal habitat

NOTE: This is an estimate based on 2007 FREMP mapping and 2017 orthoimagery interpretation. Exact numbers will require an aquatic habitat survey and aquatic effects assessment

Reach 6: Tree Island Slough and Boundary

Priority

The is the lower ranked priority reach. This dike is higher than other sections. Stalling construction increases the chance that a realignment opportunity could arise with Tree Island Steel. Alternatively, Hamilton Neighbourhood Plan implementation may provide early opportunities to raise the dike along with road realignment, park development, and some property development.

Construction Cost

Costs below are for 1 km of dike similar to cross-section above.

Item	Cost per metre	Cost
<i>Option 4</i>		
Dike Raising	\$4,500	\$3.6 Million
Pathway	\$600	\$0.5 Million
Bioengineering Slopes	\$1,000	\$0.8 Million
Marsh Benches	\$100	\$0.08 Million
Utilities (Drainage, Water)	\$2,000	\$1.6 Million
Other (Driveways, Ramps or Road Intersection Reconstruction)		\$0.3 Million
<i>Option 8 – Through ROW between Hamilton Transit Centre and Tree Island Slough</i>		
Dike Raising	\$4,500	\$1.1 Million
Pathway	\$600	\$0.1 Million
Retaining Walls	\$1,500	\$0.8 Million
Utilities (Drainage, Water)	\$2,000	\$0.5 Million
<i>Option 8 – Raise Boundary Road from ROW between Hamilton Transit Centre and Tree Island Steel River Bank</i>		
Raise boundary road to become dike	\$5,400	\$1.6 Million
Road Structure	\$2,850	\$0.9 Million
Utilities (Drainage, Water)	\$2,000	\$0.6 Million
Contingency (40%)		\$0.5 Million
Total		\$17.4 Million

Cost opinions are in 2018 Canadian Dollars.



6. Recommendations

It is recommended that the City adopt the Phase 4 Dike Master Plan as documented in this report, including the main features described below.

- Raise the dike crest to allow for 1 m of sea level rise. West of Nelson Road, the raised dike crest would be 4.7 m (CGVD28). East of Nelson Road, the raised dike crest would increase to 5.1 m at Boundary Road. The plan also allows for longer term upgrading to accommodate a further 1 m of sea level rise (i.e. 2 m of sea level rise).
- Widen the dike on the land side rather than into the Fraser River North Arm.
- Move River Road inside the dike to facilitate short-term and long-term dike upgrading. This will require the road to be reconfigured and reconstructed, with some additional need for land tenure. Moving the road will allow removal of utilities within the dike.
- Raise the relocated River Road to the dike crest elevation. This will facilitate driveway access over the dike to riverside properties. It will also be compatible with the desire to raise land inside the dike.
- Replace the drainage channel immediately inside the dike with storm sewers and swales. This will improve dike stability, and will provide some of the land needed to relocate River Road.
- Raise land and roads immediately inside the dike (during redevelopment) to improve seismic resilience. This will also improve liveability by allowing residents to look down over the water, rather than at the backside of a dike.
- Improve pedestrian and cyclist safety by constructing a separate multi-use path along the dike. This would be consistent with the City Parks vision for a perimeter trail system (Appendix B)
- Construct the north section of a secondary dike near Boundary Road.

It is also recommended that the City prepare a comprehensive implementation plan for dike upgrading that incorporates the elements of the Phase 4 Dike Master Plan, and the elements of the other Dike Master Plans.

To address habitat compensation issues associated with the Dike Master Plans, it is further recommended that the City consider development of a habitat banking program that could provide effective large-scale compensation for the environmental impacts of dike upgrading. This could include the potential Tree Island Slough project identified in this report.

For all phases of the Dike Master Plan, continue to research alternative densification strategies for seismic stability, consider the proposed alternative seismic performance criteria in Section 3.2, and plan to fill land for approximately 200 m inland of the dike to crest elevation. The required fill distance requires additional evaluation and may be addressed in the pending update to the Flood Protection Management Strategy.



Report Submission

KERR WOOD LEIDAL ASSOCIATES LTD.



Colin Kristiansen, MBA, P.Eng.
Project Manager

Reviewed by:

Mike V. Currie, M.Eng., P.Eng., FEC
Project Director and Technical Reviewer

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Revision History

Revision #	Date	Status	Revision	Author
0	April 28, 2023	Final	Add stakeholder and public engagement summary	CAK

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Appendix A

Plans and Sections for Richmond Dike Master Plan – Phase 4

City of Richmond

Lulu Island Dike Master Plan - Phase 4

Legend

- Parcel (from BC Data Catalogue Parcel Map BC)
Easements
Active ROW
City Owned Lots
Dike Footprint
Encroachment onto Non-municipal Parcels

- Water Network**
Water Service Lateral
Watermain
Alternate Node
Blow Off

- Cap
Hydrant
PRV Chamber
Valve
Valve Chamber

- Storm Network**
Storm Main
Service Lateral
Culvert
Perimeter Drain
Drainage Ditch

- Chamber
Catch Basin
Storm Manhole
Headwall
Rain Gauge
Drainage Pump

- Sanitary Network**
Service Lateral
Forcemain
Sanitary Main
Trunk Sewer

- Alternate Node
Cap
Chamber
Sanitary Manhole
Sanitary Pump

- Fish Habitat Compensation Sites
Habitat Quality
High Quality Interstitial Habitat
High Quality Riparian Habitat

- Concept Linework**
Dike Concept
Road Concept
Dike/Road Slope
Dike/Road Fill Extent

Note: 2016 Imagery Shown.

CNCL - 429

Potential Secondary
Dike Alignment
(Mid-Island Dike)

Coordinate System: NAD 83 UTM Zone 18N
Datum: NAD 83
Units: Meter
Scale Factor: 0.999 996 37
False Easting: 500 000
False Northing: 6 000 000
Projection: UTM
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Project No. 651.122

Date April 2023

Scale 1:2,500



























Lulu Island Dike Master Plan - Phase 4

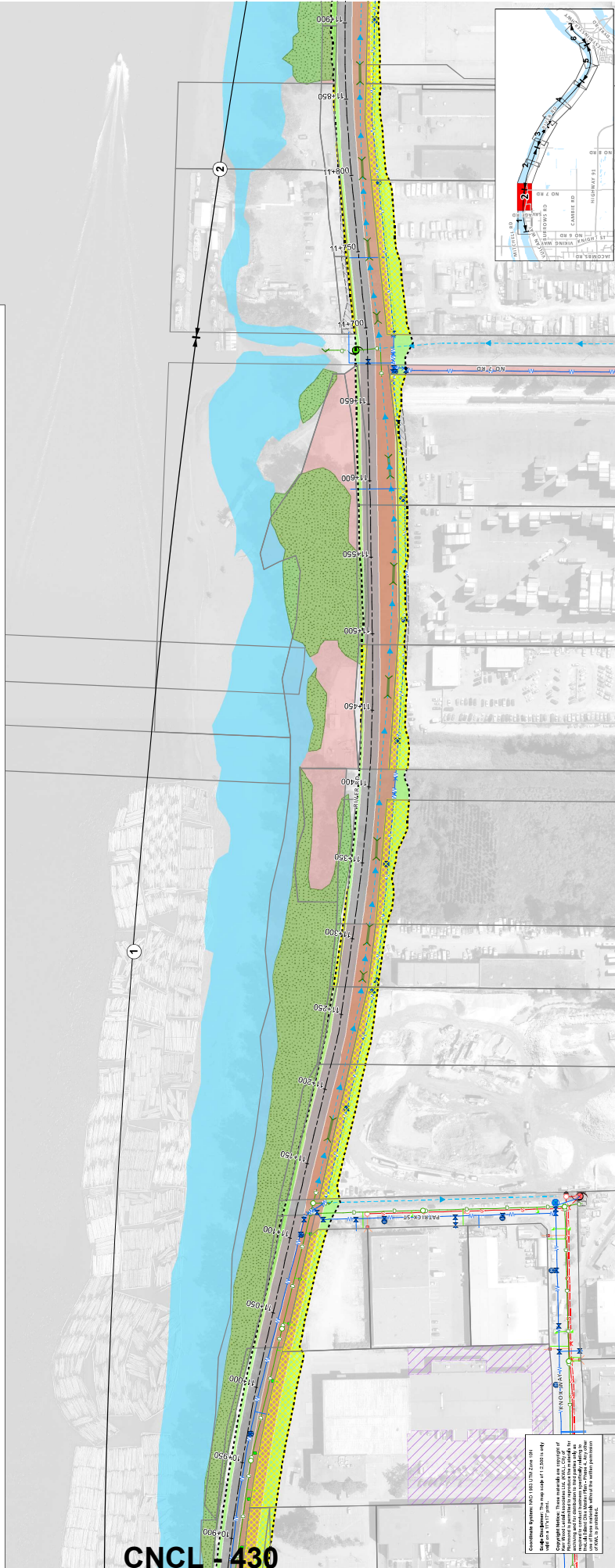
City of Richmond

Lulu Island Dike Master Plan - Phase 4

Legend

								
Parcel (from BC Data Catalogue Parcel Map BC)	Water Network	Cap	Storm Network	Chamber	Sanitary Network	Alternate Node	Fish Habitat Compensation Sites	Concept Linework
								
Easements	Water Service Lateral	Hydrant	Storm Main	Catch Basin	Service Lateral	Cap	Habitat Quality	Dike Concept
								
Active ROW	Watermain	PRV Chamber	Service Lateral	Storm Manhole	Force Main	Chamber	High Quality Interstitial Habitat	Road Concept
								
City Owned Lots	Alternate Node	Valve	Culvert	Headwall	Sanitary Main	Sanitary Manhole	High Quality Riparian Habitat	Dike/Road Slope
								
Dike Footprint	Blow Off	Valve Chamber	Perimeter Drain	Rain Gauge	Trunk Sewer	Sanitary Pump		Dike/Road Fill Extent
								
Encroachment onto Non-municipal Parcels			Drainage Ditch	Drainage Pump				

Note: 2016 Imagery Shown.



Project No. 651.122

Date April 2023

Scale 1:2,500

Lulu Island Dike Master Plan - Phase 4

City of Richmond

Lulu Island Dike Master Plan - Phase 4

Legend

- Parcel (from BC Data Catalogue Parcel Map BC)
- Parcel (from BC Data Catalogue Parcel Map BC)
- Easements
- Active ROW
- City Owned Lots
- Dike Footprint
- Encroachment onto Non-municipal Parcels

- Water Network
- Water Service Lateral
- Watermain
- Alternate Node
- Blow Off

- Cap
- Hydrant
- PRV Chamber
- Valve
- Valve Chamber

- Storm Network
- Storm Main
- Service Lateral
- Culvert
- Perimeter Drain
- Drainage Ditch

- Chamber
- Catch Basin
- Storm Manhole
- Headwall
- Rain Gauge
- Drainage Pump

- Sanitary Network
- Service Lateral
- Forcemain
- Sanitary Main
- Trunk Sewer

- Alternate Node
- Cap
- Chamber
- Sanitary Manhole
- Sanitary Pump

- Fish Habitat Compensation Sites
- Habitat Quality
- High Quality Interstitial Habitat
- High Quality Riparian Habitat

- Concept Linework
- Dike Concept
- Road Concept
- Dike/Road Slope
- Dike/Road Fill Extent

Note: 2016 Imagery Shown.

CNCL - 431

Coordinate System: NAD 83 UTM Zone 12N
Units: Metres
Datum: North American Datum of 1983
Projection: Universal Transverse Mercator
Spheroid: GRS 1980
Datum Shift: 1199017.000 m
Scale Factor: 0.999 601 271 401 5
False Easting: 500 000 m
False Northing: 1000 000 m
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Project No. 651.122

Date April 2023

Scale 1:2,500



Lulu Island Dike Master Plan - Phase 4

City of Richmond

Lulu Island Dike Master Plan - Phase 4

Legend

- Parcel (from BC Data Catalogue Parcel Map BC) [White Box]
Easements [Pink Hatched Box]
Active ROW [Blue Hatched Box]
City Owned Lots [Red Box]
Dike Footprint [Yellow Box]
Encroachment onto Non-municipal Parcels [Yellow Box with Dashed Border]

- Water Network**
Water Service Lateral [Blue Line]
Watermain [Blue Line]
Alternate Node [Blue X]
Blow Off [Blue Circle]

- Storm Network**
Cap [Blue X]
Hydrant [Blue Circle]
PRV Chamber [Blue Circle with A]
Valve [Blue Triangle]
Valve Chamber [Blue Square]
- Storm Main [Green Line]
Service Lateral [Green Line]
Culvert [Green Line with X]
Perimeter Drain [Green Line]
Drainage Ditch [Blue Dashed Line]

- Chamber [Green Square]
Catch Basin [Green Triangle]
Storm Manhole [Green Circle]
Headwall [Green Triangle]
Rain Gauge [Green Circle]
Drainage Pump [Green Circle with G]

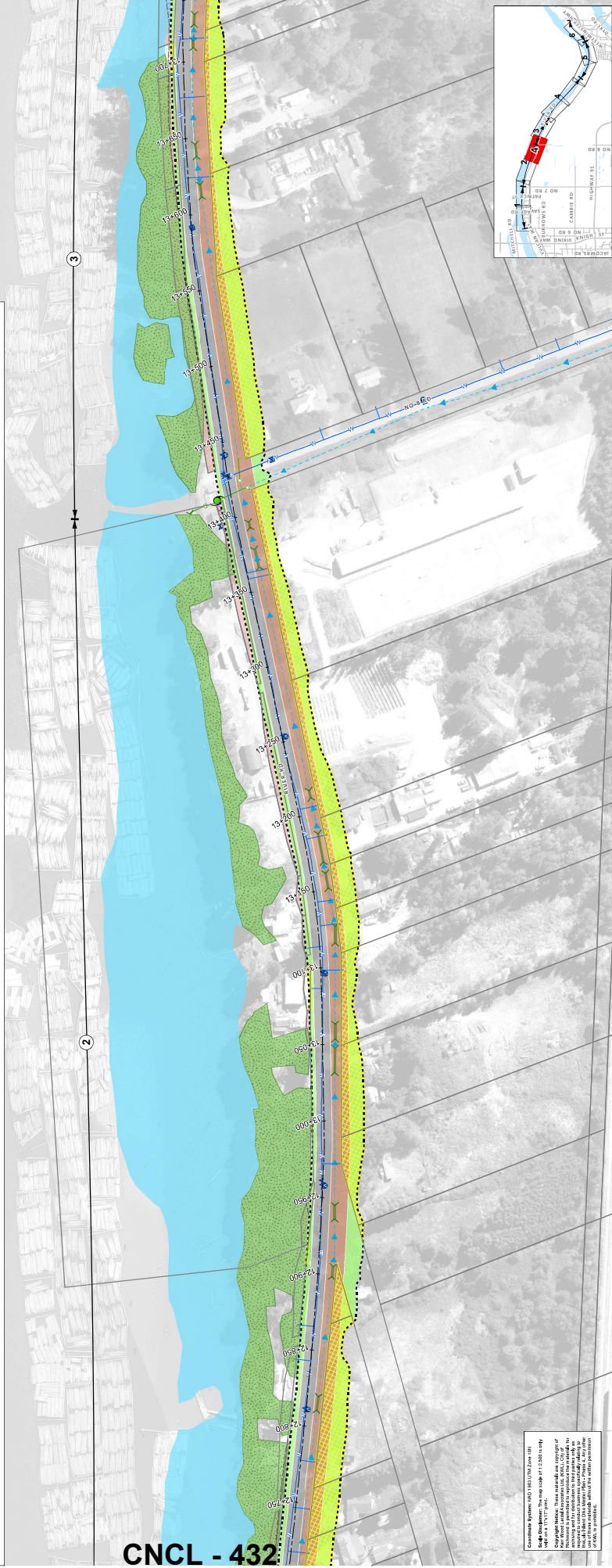
- Sanitary Network**
Service Lateral [Red Line]
Forcemain [Red Line]
Sanitary Main [Red Line]
Trunk Sewer [Red Line]

- Alternate Node**
Cap [Red X]
Chamber [Red Square]
Sanitary Manhole [Red Circle]
Sanitary Pump [Red Circle with P]

- Fish Habitat Compensation Sites**
[Blue Box]
- Habitat Quality**
High Quality Interstitial Habitat [Blue Box]
High Quality Riparian Habitat [Green Box]

- Concept Linework**
Dike Concept [Grey Line]
Road Concept [Orange Line]
Dike/Road Slope [Green Line]
Dike/Road Fill Extent [Dashed Box]

Note: 2016 Imagery Shown.



Project No. 651.122

Date April 2023











Scale 1:2,500

Lulu Island Dike Master Plan - Phase 4

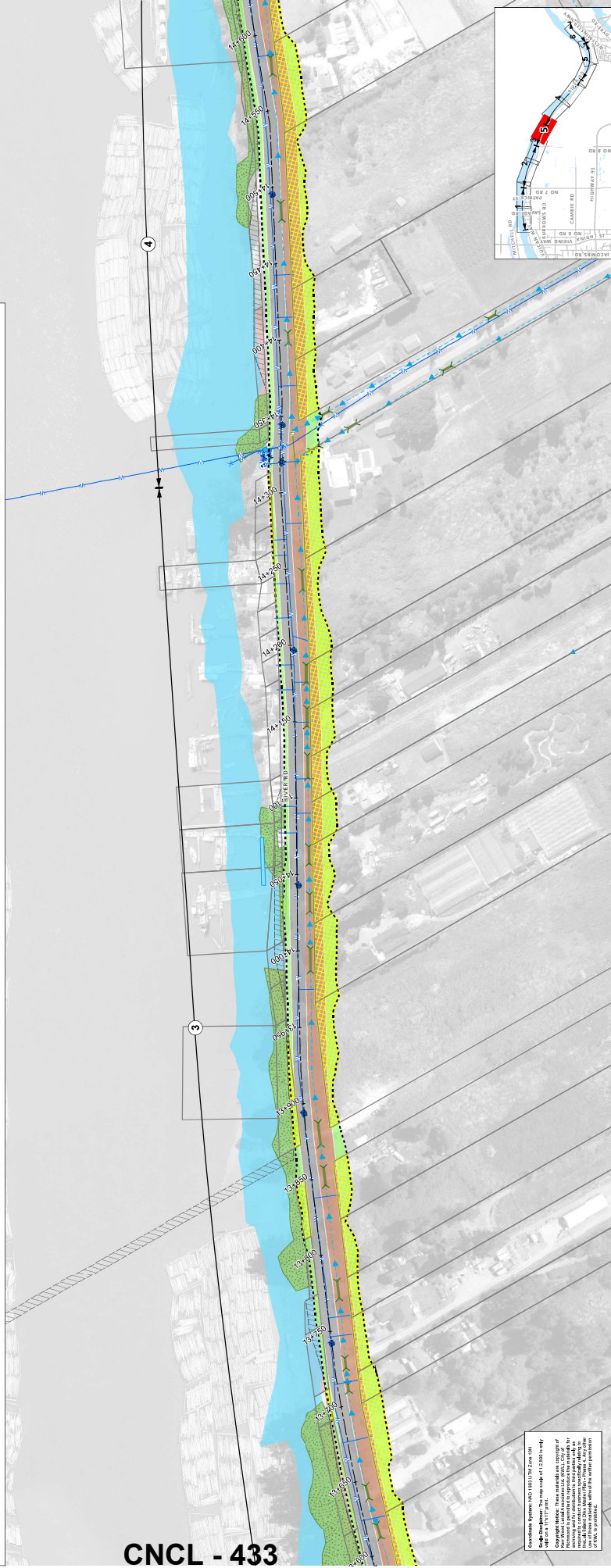
City of Richmond

Lulu Island Dike Master Plan - Phase 4

Legend

Note: 2016 Imagery Shown.



CNCL - 433

Project No. 651.122

Date April 2023






Scale 1:2,500

Lulu Island Dike Master Plan - Phase 4

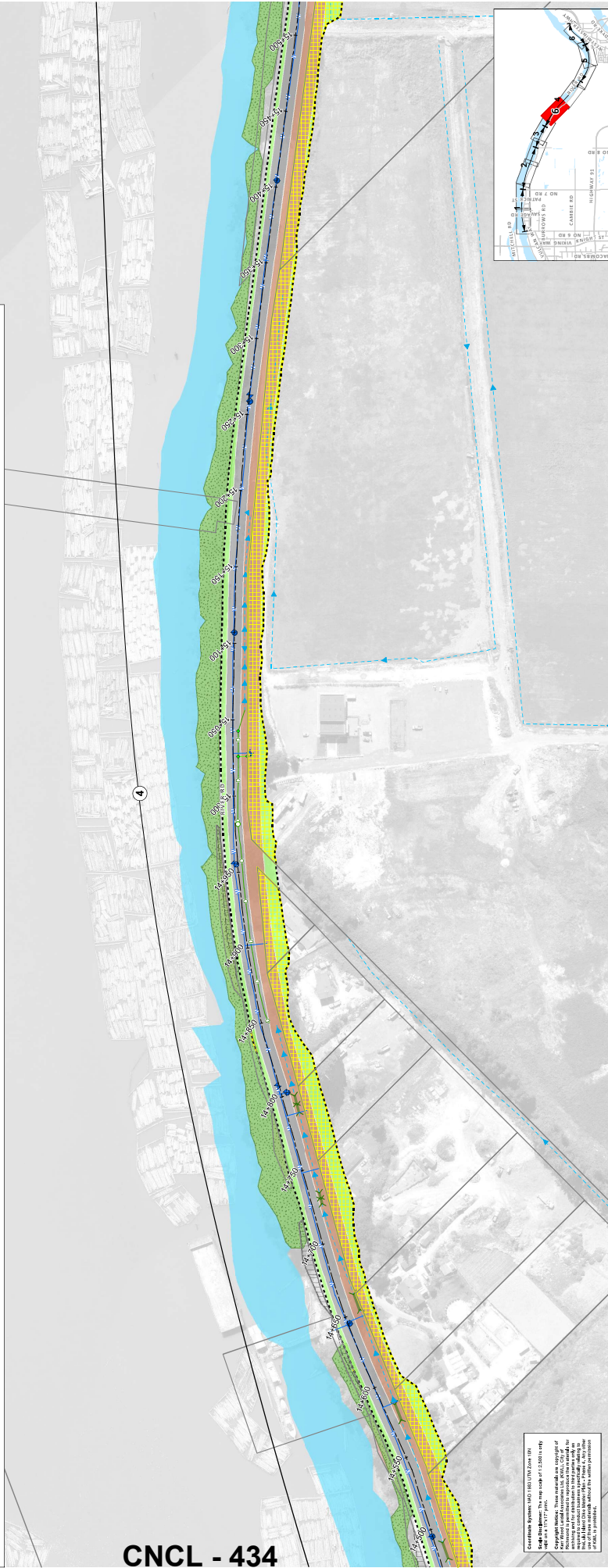
City of Richmond

Lulu Island Dike Master Plan - Phase 4

Legend

Note: 2016 Imagery Shown.



CNCL - 434

Project No. 651.122

Date April 2023












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Lulu Island Dike Master Plan - Phase 4

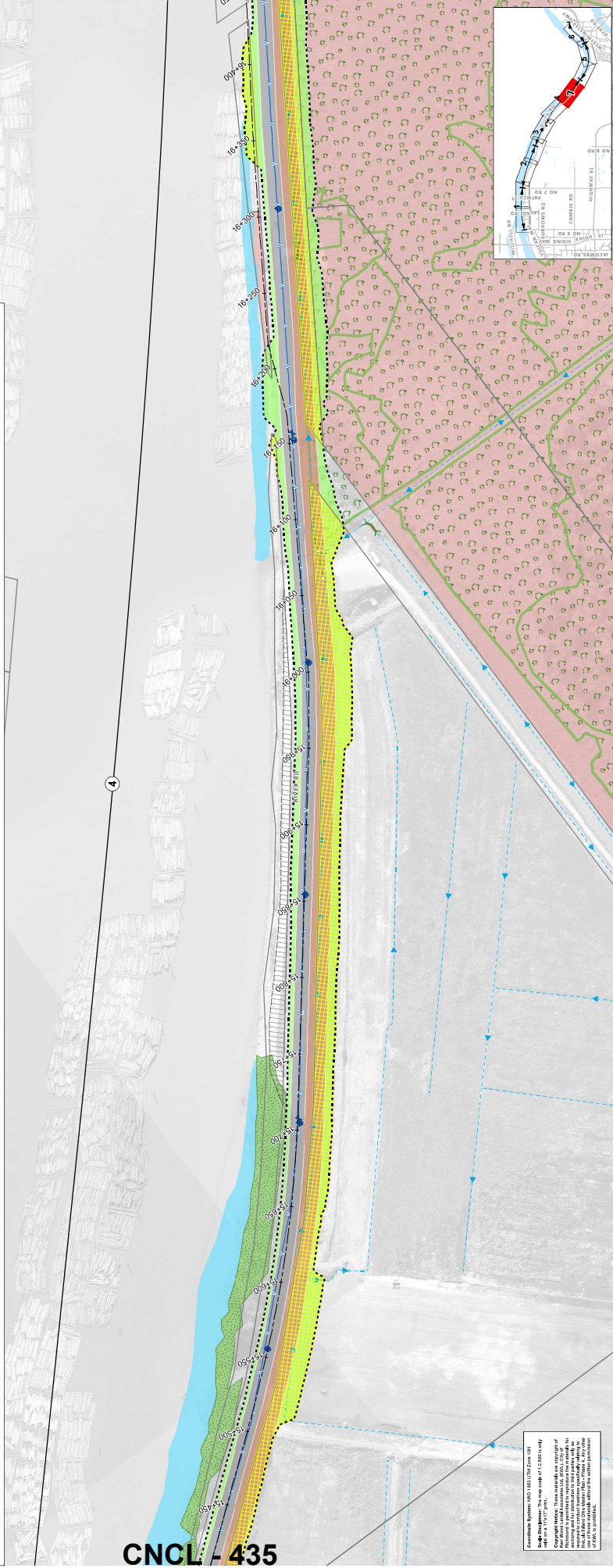
City of Richmond

Lulu Island Dike Master Plan - Phase 4

Legend

Note: 2016 Imagery Shown.



Project No. 651.122

Date April 2023

Scale 1:2,500

Lulu Island Dike Master Plan - Phase 4

City of Richmond

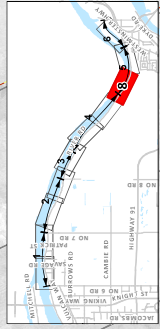
Lulu Island Dike Master Plan - Phase 4



Legend

	Water Network		Storm Network		Sanitary Network		Concept Linework

Note: 2016 Imagery Shown.



Project No. 651.122

Date April 2023

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Lulu Island Dike Master Plan - Phase 4

City of Richmond

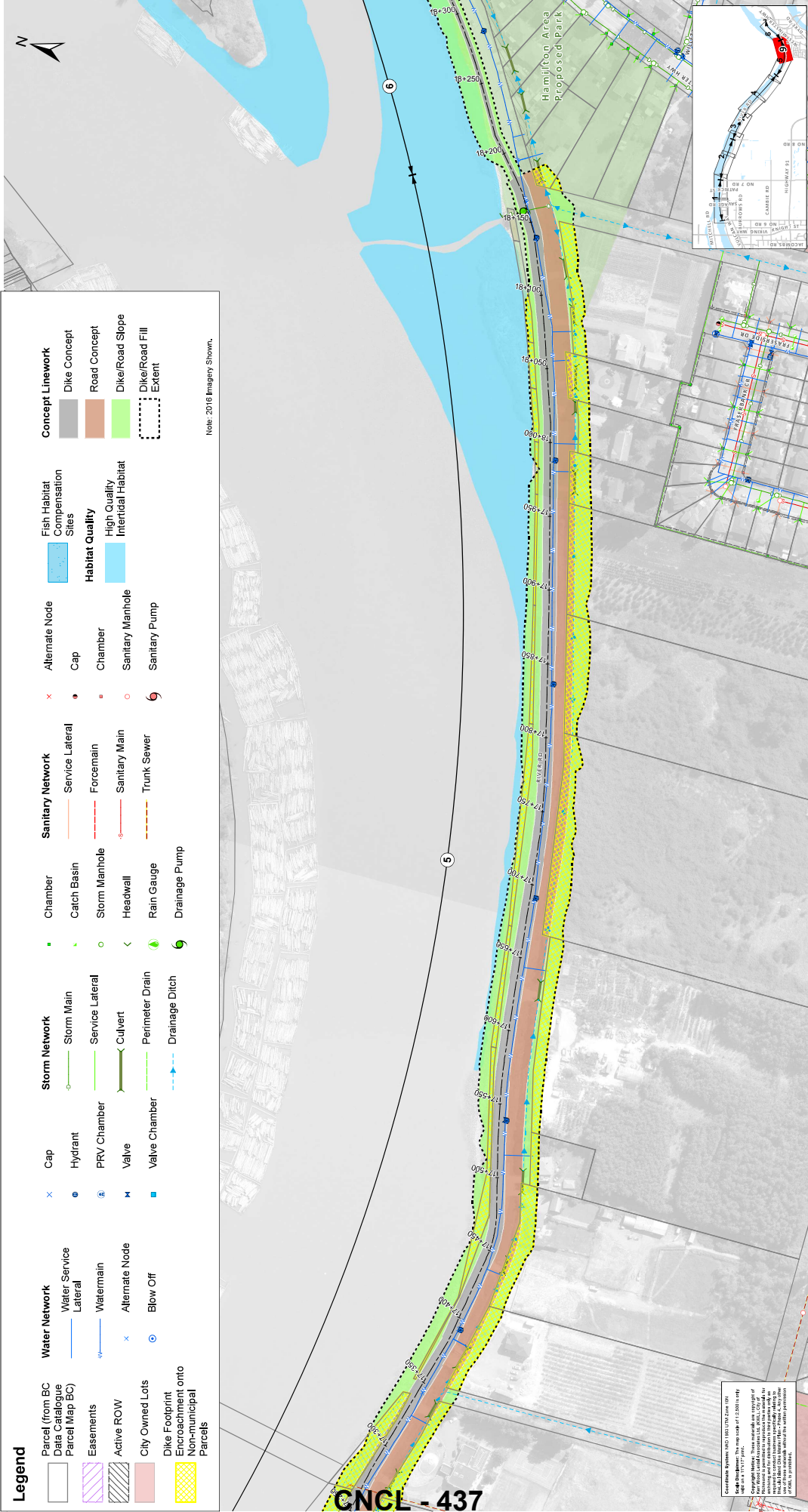
Lulu Island Dike Master Plan - Phase 4



KERR WOOD LEIDAL
consulting engineers

Legend

Note: 2016 Imagery Shown.



Coordinate System: NAD 83 UTM Zone 18N
Map Scale: 1:2,500
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Project No. 651.122

Date

April 2023

Scale

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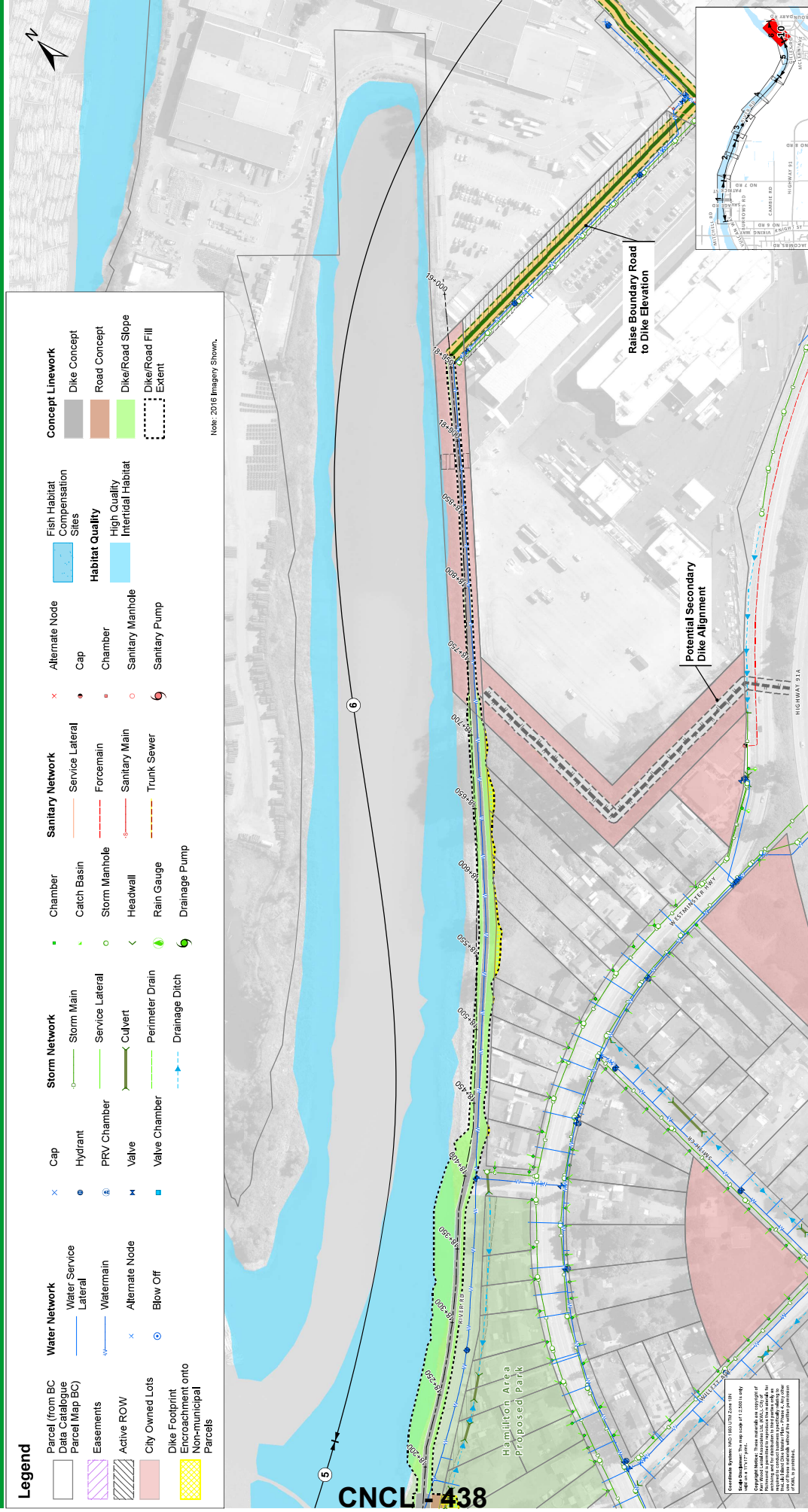
Lulu Island Dike Master Plan - Phase 4



Legend

- | Parcel (from BC Data Catalogue Parcel Map BC) | Water Network | Storm Network | Sanitary Network | Fish Habitat Compensation Sites | Concept Linework |
|---|-----------------------|-----------------|------------------|-----------------------------------|-----------------------|
| Parcel | Water Service Lateral | Storm Main | Service Lateral | | Dike Concept |
| Easements | Watermain | Service Lateral | Service Lateral | | Road Concept |
| Active ROW | Alternate Node | Culvert | Sanitary Main | Habitat Quality | Dike/Road Slope |
| City Owned Lots | Blow Off | Perimeter Drain | Trunk Sewer | High Quality Interstitial Habitat | Dike/Road Fill Extent |
| Dike Footprint | | | | | |
| Encroachment onto Non-municipal Parcels | | | | | |

Note: 2016 Imagery Shown.



Project No. 651.122

Date _____

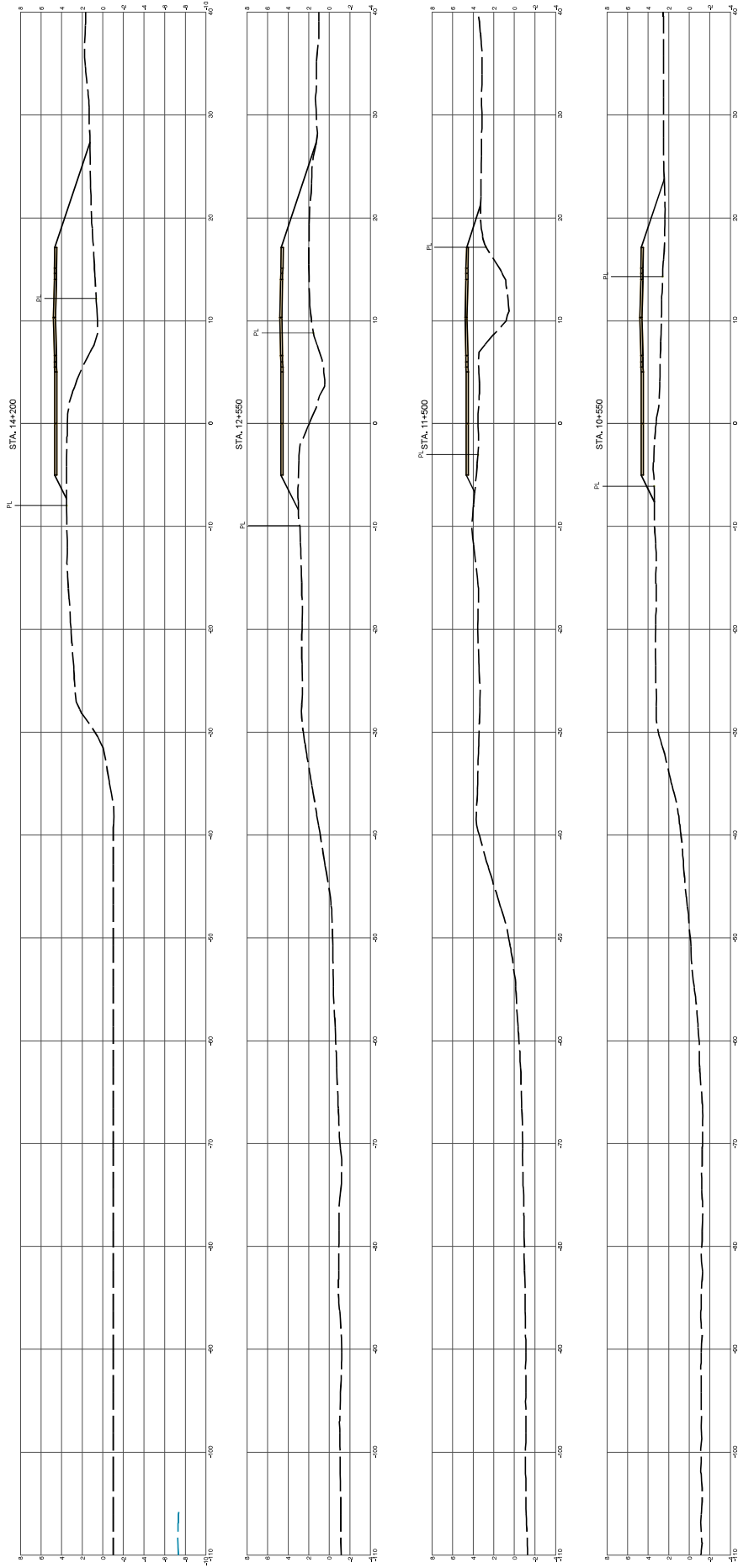
April 2023

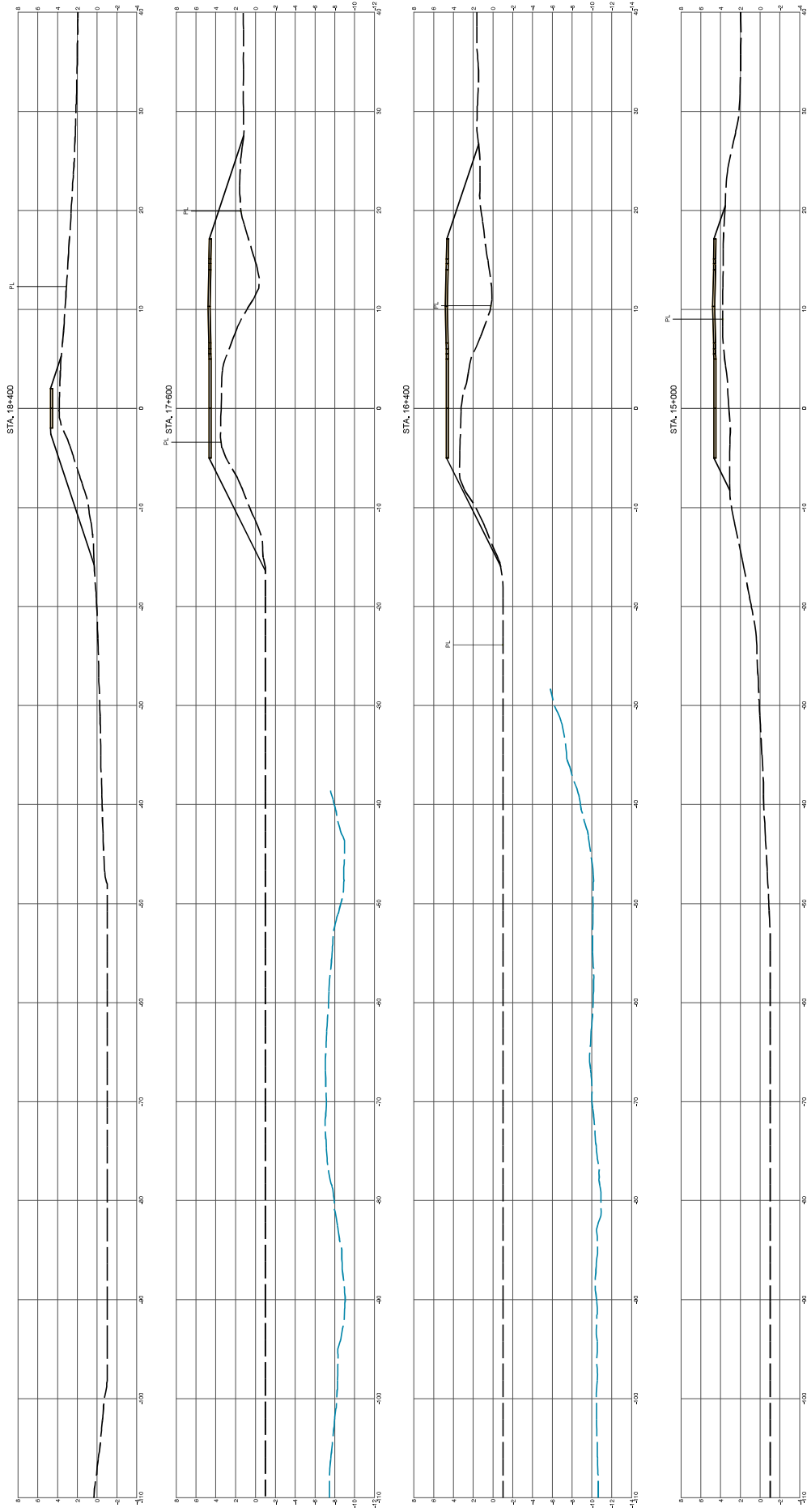
Scale

April 2023

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Lulu Island Dike Master Plan - Phase 4





CNCL - 440

Project No. 651.122
Date April 2023
Scale 1:400

NOTE:
2016 1m DEM SURFACE FROM
EMBC LIDAR DATA 2016 LOWER MAINLAND
SURVEY 2015

BATHYMETRY DATA FROM
EMBC LIDAR DATA 2016
SURVEY 2015

Lulu Island Dike Master Plan - Phase 4 Cross-sections

Figure 2



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consulting engineers

Appendix B

Richmond Dike Master Plan Landscape Concepts and Dike Typologies



LULULOOOP

CNCL - 442

RICHMOND DIKE MASTER PLAN LANDSCAPE CONCEPTS

August 8th, 2018

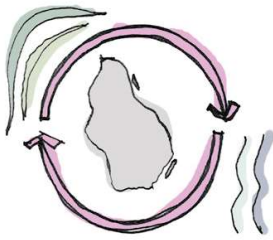


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H A P A

RICHMOND DIKE MASTER PLAN

LANDSCAPE DESIGN PRINCIPLES

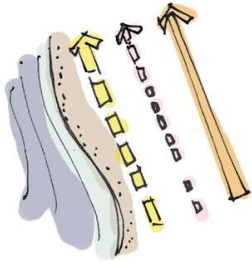


CNCF 443

THE LULU LOOP

Connect a network of paths to create a continuous public trail along the dike:

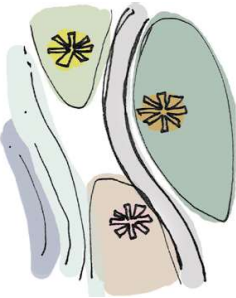
- circumnavigate Richmond and observe how infrastructure supports the island and its nature;
- resolve gaps in the trail, threading together tricky connections;
- delight the trail user from start to finish with attention to the unique places along the way.



ALL TOGETHER NOW

Integrate the movement of pedestrians, bikes, and vehicles safely and respectfully:

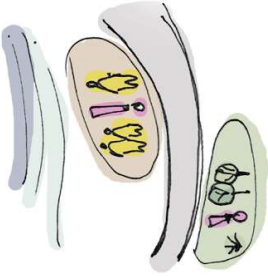
- mark out pedestrian areas with bollards, lighting, and furnishings;
- ensure the safety of cyclists by separating paths or providing safe road shoulders;
- include parking where appropriate and allow accessible transitions between modes of travel.



A PATH WORTH TAKING

Enhance the edges of roads, trail, and river with durable, maintainable materials that are also beautiful:

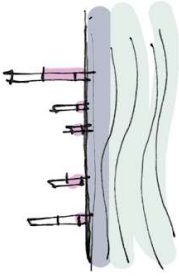
- utilize planting to soften hardscape and infiltrate stormwater;
- look for opportunities for street trees to provide a rhythm and buffer to roads;
- provide furnishings as points of rest, observation, and wayfinding.



ISLAND INTEREST

Activate special areas of public realm with a deployable toolkit sharing a consistent design language:

- determine best locations for public space based on context, connectivity, and distribution;
- leverage areas of ecological, industrial, and cultural value for social connection;
- find opportunities for wonder in constrained spaces.



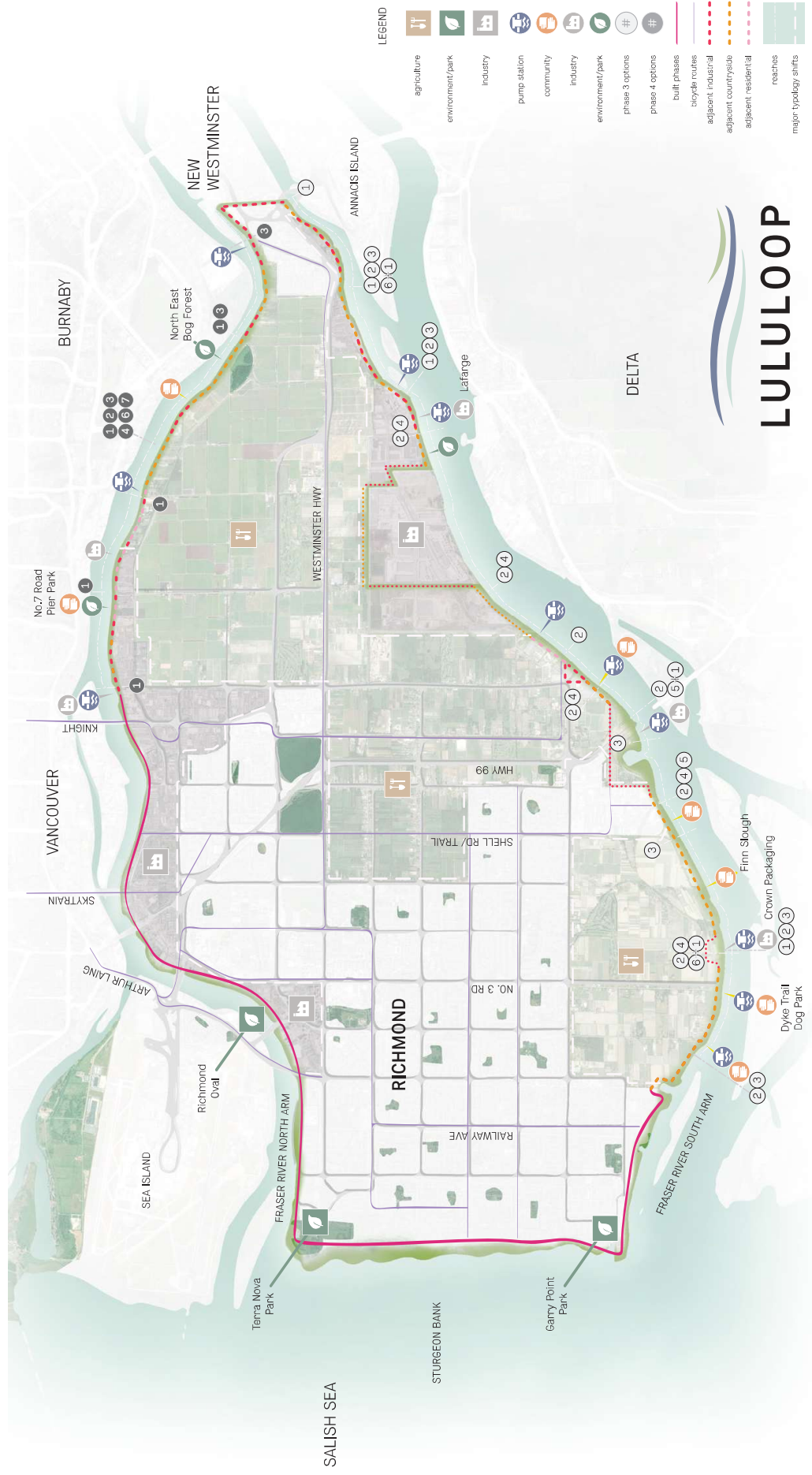
THE STORY OF THE RIVER

Illustrate the river's changing nature through features that allow glimpses of its past and future:

- reveal the important systems of the river and weather through interactive installations;
- acknowledge the diverse cultures that have gathered and modified the shoreline;
- educate the public on adaptations to sea level rise.

RICHMOND DIKE MASTER PLAN CONCEPT PLAN

CNCL - 444



TOOLKIT

ECOLOGICAL ENHANCEMENT

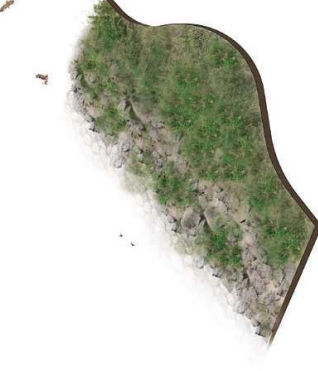
WATER SIDE



Approaches to treatment of the water side of dike; sites and planting to be developed with biologists and subject to environmental review:

- planting exclusively with native species;
- consideration of Ecological Network Management Strategy, Waterfront Strategy and applicable Provincial Acts;
- important habitat for 'charismatic' wildlife such as salmon, White Sturgeon, and migratory birds that hold public interest.

CNCL - 445

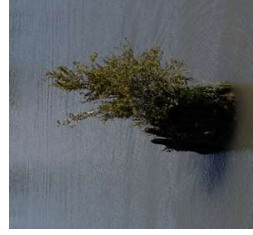


SUB-AQUATIC

At or in the water, sometimes interspersed in rip-rap or driftwood:

- aquatic and semi-aquatic plants;
- low-lying and submersive, following the water's edge;
- home to fish including salmon and sturgeon, and the foraging grounds of wading birds.

PRECEDENTS



INTERTIDAL

Frequently inundated by water, characteristic of river's edge:

- bullrushes and shrubs with small trees at the edges;
- long and with variable width;
- teeming with song birds and hunting hawks, a common sight along the dike.

RIPARIAN

Interface between river and land with high ecological value:

- rich variety of plantlife;
- expanding width following intertidal zone;
- sensitive habitat but with a terrestrial connection that allows it to be more habitable by people under the right conditions.

TOOLKIT

ECOLOGICAL ENHANCEMENT

ROAD EDGES



Contained, maintainable planting along road edge, without conflict with dike fill profile:

- drought-tolerant native and adaptive species;
- adherence to Street Tree and Planting guidelines and Urban Forestry Management Strategy;
- creation of softscape buffers with ecological function between traffic and pedestrians.

CNCL - 446



RAINGARDEN

Roadside infiltration of stormwater with grasses, sedges, and shrubs :

- native plant species that can withstand inundation but also summer drought;
- linear with suitable sloped depressions;
- permeable function but clean, maintainable design.

HARDY SHRUB BUFFER

Durable shrub planting suited to high-use areas:

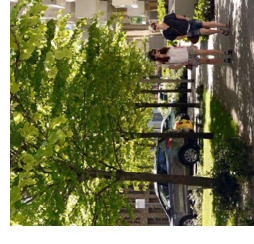
- heavy duty shrubs that are resistant to damage;
- below waist height for clear sightlines but as soft, barrier swatches;
- planted median between road and path through shrub density.

STREET TREES

Providing consistent element and canopy cover along urban edges:

- urban tolerant deciduous trees;
- tightly spaced with consistent canopies, straight leaders, and shallow roots;
- species selected to withstand roadside pressures but fit rural and natural context.

PRECEDENTS



TOOLKIT

ECOLOGICAL ENHANCEMENT

LAND SIDE



Land side approaches to natural space using medium to larger scale areas of habitat:

- contextual and sensitive interventions to enhance existing ecologies and unique natural features;
- consideration of Ecological Network Management Strategy and Parks and Open Space Strategy along with Tree Protection

Bylaw; opportunity to increase public access to nature through trails and public realm features.

CNCL - 447



MEADOW

Open grassland with seasonal flowering interest:

- native grasses and forbs with pollinator-favoured species;
- flowing, elongated shapes accented with blooms;
- idyllic and appealing planting with low impact on ground and sightlines.

PRECEDENTS



WOODLAND

Layered plant community with texture and small trees:

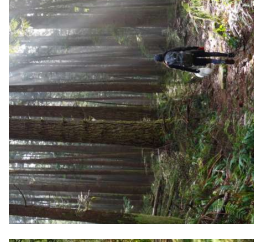
- native grasses, shrubs, and deciduous trees;
- more concentrated and concentric than meadow and with clusters of short trees and shrubs;
- less penetrable, but ecologically important to nesting birds and small mammals.



FOREST

Densest, most vertical patches of planting along wildlife corridor:

- native deciduous and coniferous trees, shrubs, and ground cover;
- tight and somewhat tall, with shorter edges for windbreak, taking a clustered and wide shape;
- occurring in specific areas where land provides suitable space.



TOOLKIT

PUBLIC REALM

REST AND RELAX

- Small scale features to accomodate pedestrians and people on bikes along the dike trail:
- aim to provide seating as much as every 200m in high pedestrian use areas;
 - review of Waterfront Strategy, Trail Plan, and Parks and Open Space Strategy;
 - situate elements with consideration of context: views to river, traffic noise, and connected parks or other areas of public interest.

CNCL - 448

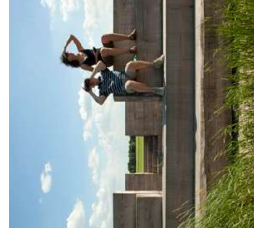


BENCH

Heavy timber wood benches spaced to provide frequent resting:

- cedar timbers with powdercoated exposed steel and galvanized components;
- heavy, durable form but comfortably tuned to human body;
- references logs washed up on river bank.

PRECEDENTS



BIKE RACK

Steel bike rack for two bikes, side by side:

- powdercoated steel;
- simple, functional form easy to manufacture and difficult to vandalize;
- industrial character but obviously legible as a place to lock your bike.



LONG TABLE

The ultimate picnic table, tailored to the linear form of the trail:

- cedar timber table and seats with powdercoated exposed steel and galvanized components;
- long, linear form with mass and presence;
- evocative of river industry.



TOOLKIT

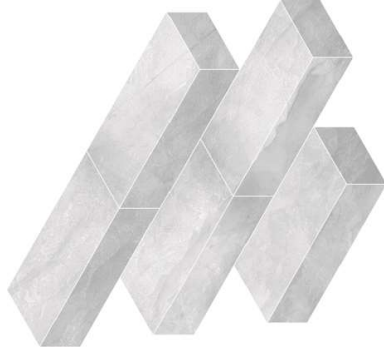
PUBLIC REALM

ACCESSIBLE GRADES

Small scale features to accomodate pedestrians and people on bikes along the dike trail:

- means for accessibly taking people from the dike crest down to lower areas on water side and land side;
- respect BC Accessibility Handbook;
- combine features with other elements of observation or exploration to create destinations and reduce negative impact on sensitive constructions and habitats.

CNCL - 449



RAMP

Graded wood ramp for rolling accessibility to lower area:

- tight, level wood members run lengthwise;
- unobtrusive form but securely constructed on foundation and drain rock;
- practical, functional feature without ornament.

PRECEDENTS



STEPS

Heavy timber steps for access to area of interest:

- cedar timbers marked for slip resistance;
- simple form with guardrails where appropriate, and securely embedded in landscape;
- characteristically familiar to bench and table furnishings.

SEAT STEPS

Stone or heavy timber seat steps where view and context allows:

- granite stone or large cedar timbers;
- cascading form sized for presence and comfortable depth of seating;
- industrial or geologic reference to river edge conditions of rip rap or glacial erratics.

TOOLKIT

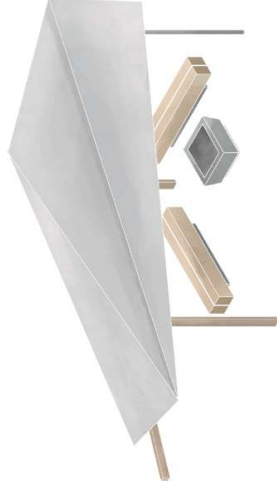
PUBLIC REALM

OBSERVE

Medium scale features for observation and connection to larger landscapes:

- habitable and sometimes sheltered elements for larger or longer public gatherings;
- acknowledge Waterfront Strategy and Parks and Open Space Strategy;
- situate in well-used areas and park spaces, especially with connection to event or sports areas (especially fishing and kayaking), important spaces for birdwatching, and places of historic or cultural importance.

CNCL - 450

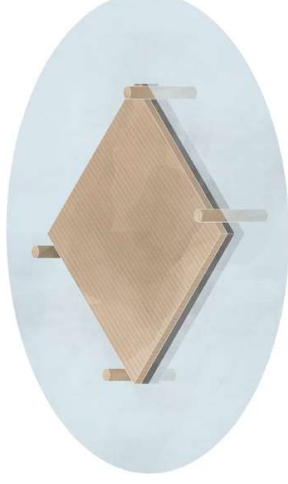
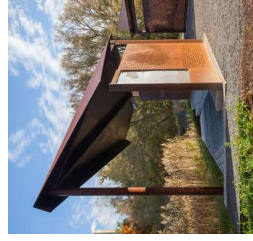


SHELTER

A shaded or warming respite from the weather and place of gathering:

- post and beam structure with tin roof;
- simple form with sloped roof and seating around a hearth;
- contemporary boathouse feel.

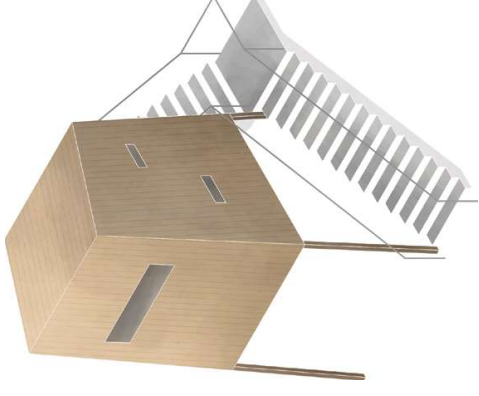
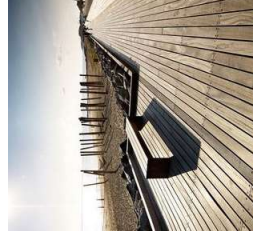
PRECEDENTS



VIEWPOINT

Deck and boardwalk to allow viewing of the river from its banks:

- cedar boards with simple guardrail;
- geometric alignment of boards or slats into different planes for sitting and leaning;
- appearing like a deconstructed boat deck oriented to bridge the river and bank.



TOWER

Vantage point up a set of stairs for looking out and birdwatching:

- cedar posts, deck, and cladding;
- zig-zagging or spiral stairs leading up to a shielded bird blind with sightholes and shelter;
- referencing the historic radar reflectors on Sturgeon Bank or stilted fishing shacks.



TOOLKIT

PUBLIC REALM

EXPLORE

- Special features for fun and exploration, for all ages and abilities:
- use principles of nature play and adventure playgrounds;
 - understand Trail Plan, Waterfront Strategy, and Parks and Open Space Strategy;
 - consideration of safety but also the importance of risky play and challenge to provide positive developmental engagement with landscapes.

CNCL - 451



KAYAK LAUNCH

For launching and landing small self-propelled water craft:

- wood with stainless steel details;
- floating pier or slip with covered area;
- clean, minimal intrusion into the water that adapts to ebb and flood of tide.

BIKE JUMPS

Short ramps for small thrills along the path:

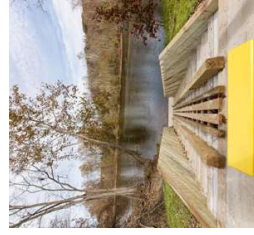
- graded dirt or asphalt with bright warnings;
- height geared towards younger rides or the young at heart;
- undeniable features for the aspiring daredevil.

LOG JUMP + CROW'S NEST

Nature play features for jumping and climbing:

- dried timbers structurally supported and textured for slip-resistance;
- placed seemingly randomly but within reach;
- evoking driftwood and raptor perches.

PRECEDENTS



TOOLKIT

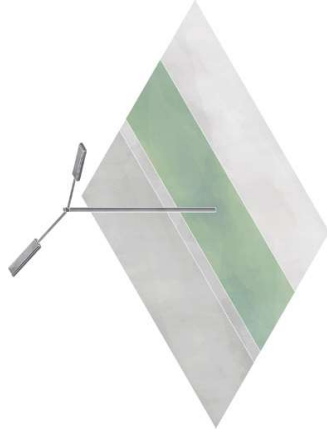
SPECIAL FEATURES

LIGHTING AND FENCES

Safety features for providing light and vertical or barrier separation of travel modes:

- mediating between automobile movement and the slower speeds and scale of pedestrian and people on bikes;
- acknowledge Urban Design Guidelines and also dark sky principles;
- engage cycling groups to provide safe solutions to conflicts between user groups, slowing traffic, increasing visibility, and ensuring pedestrians feel safe.

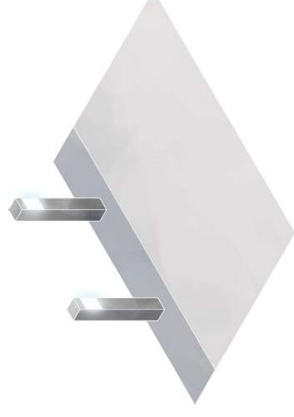
CNCL - 452



PEDESTRIAN LIGHT POLE

Highest output lighting for urban edges and darkest zones:

- wooden pole or light gray steel;
- 5m high with dual luminaire design between bike and walking pathes;
- wooden pole or light gray steel and sleek, modern fixture.



BOLLARD

Vertical separation of paths with option for safety lighting:

- heavy timber with powdercoated steel;
- simple design with stable, secure presence;
- industrial or shipbuilding aesthetic through contemporary lens.

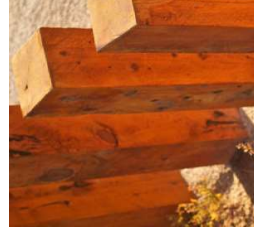


SCREEN/BARRIER

For creating a safe barrier or noise wall between two conditions:

- vertical wood slats;
- 1.1m high with durable construction;
- simple, contemporary design.

PRECEDENTS



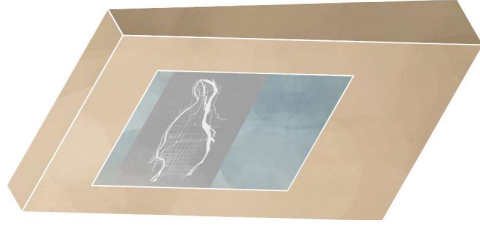
TOOLKIT

SPECIAL FEATURES

WAYFINDING AND DATA STATIONS

- Small, repeatable elements for wayfinding, services, and education:
- consistent design language to tie the trail together as a linear park;
 - use Trail Plan, Waterfront Strategy, and Parks and Open Space Strategy;
 - tie together existing bike routes, paths, and park spaces to the dike and provide amenity and interest along the course of the trail with respect to the landscape and infrastructure as it relates to sea level rise.

CNCL - 453

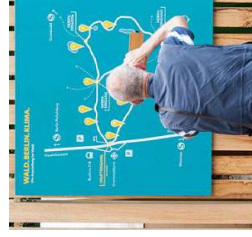


WAYFINDING

Mapboard with clear, legible graphics and consistent design language:

- cedar with steel or resin board;
- post-like and visible from a distance but human-scaled;
- simple character with bold colour allowing quick reading by diverse groups.

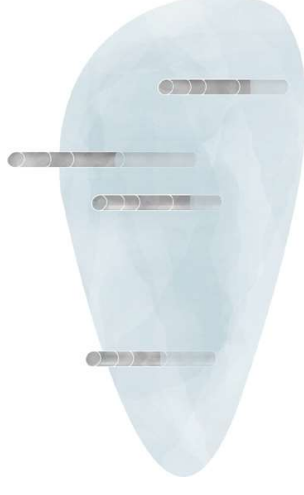
PRECEDENTS



BIKE REPAIR/WATER FOUNTAIN

Refill with air or water from a multi-use checkpoint:

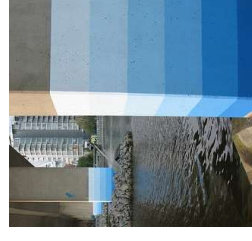
- concrete and powdercoated steel construction;
- durable, tamperproof design with overflow water well-drained;
- utilitarian industrial aesthetic with discrete design accents.



WEATHER/TIDE STATION

Marker reflecting weather and tide changes in analog form:

- stainless or powdercoated steel;
- simple, legible form with playful metaphor;
- inspiring curiosity and return to track the river's changes.



DIKE TYPOLOGIES

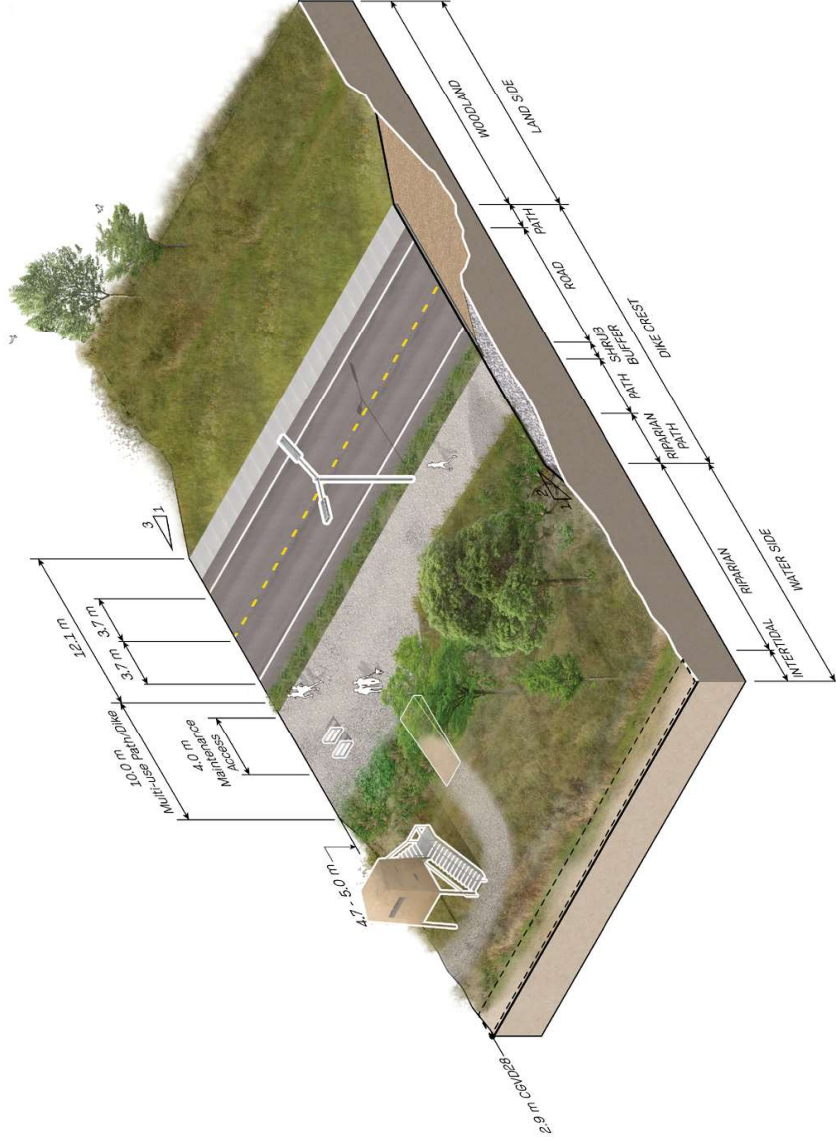
PHASE 4, OPTION 1

RAISE DIKE AND ROAD AND EXTEND LAND-SIDE (REACHES 1-5)

Excellent public realm opportunity within interesting stretch of riverfront landscape:

- provide observation features where appropriate – existing parks, pump stations, and road pullouts where habitat already exists;
 - reduce scale of path through planted edges and light features in areas without significant development;
- connect to new bog park, local agriculture including roadside fruit stands, and river-based businesses.

.CNCL - 454



DIKE TYPOLOGIES

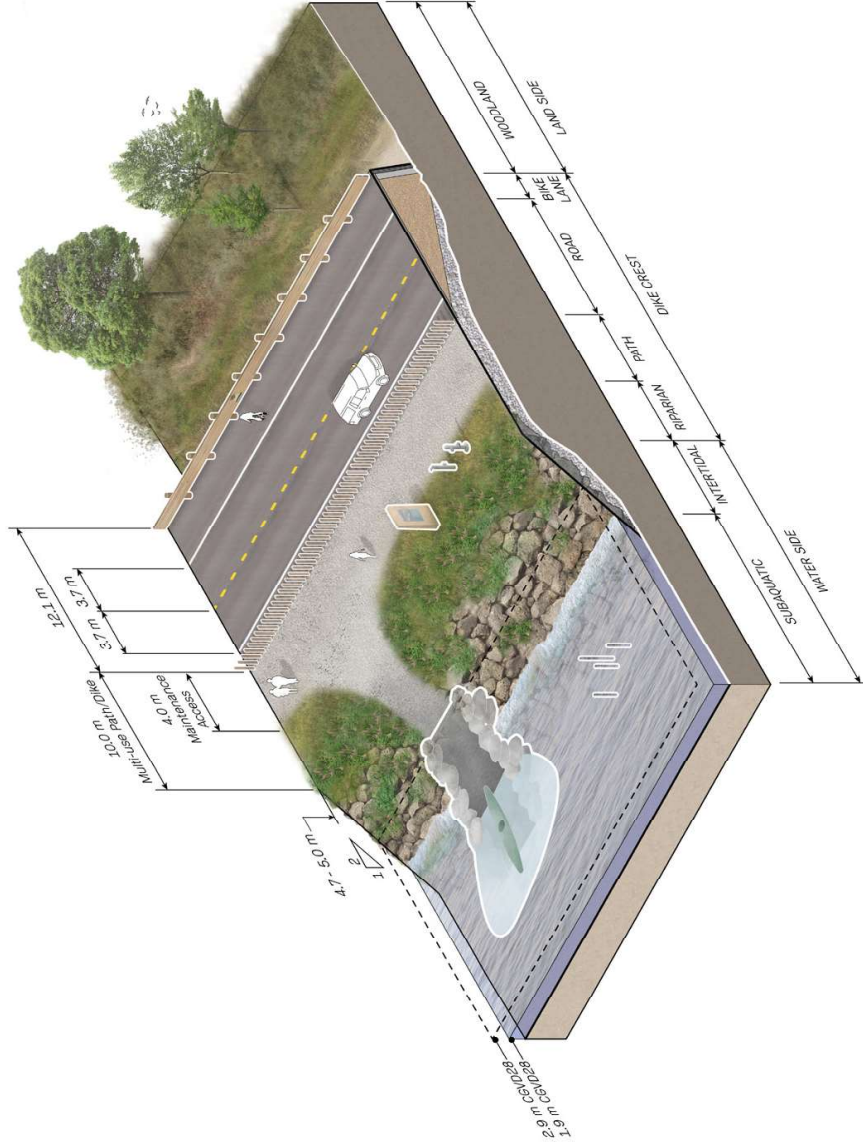
PHASE 4, OPTION 2

RAISE DIKE AND ROAD WITH RETAINING WALLS (REACH 4)

Constrained road shoulder provides opportunities for mediating traffic speeds and providing access to adjacent areas:

- explore use of special barrier to provide safety at retaining wall while reducing vehicle speeds for people on bikes and contributing to local character;
- provide safe division between roadway and path to make most of path experience
- key areas of riverfront could be provided with access for non-motorized boating, observation, or interpretive feature at location higher up the river;

CNCL - 455



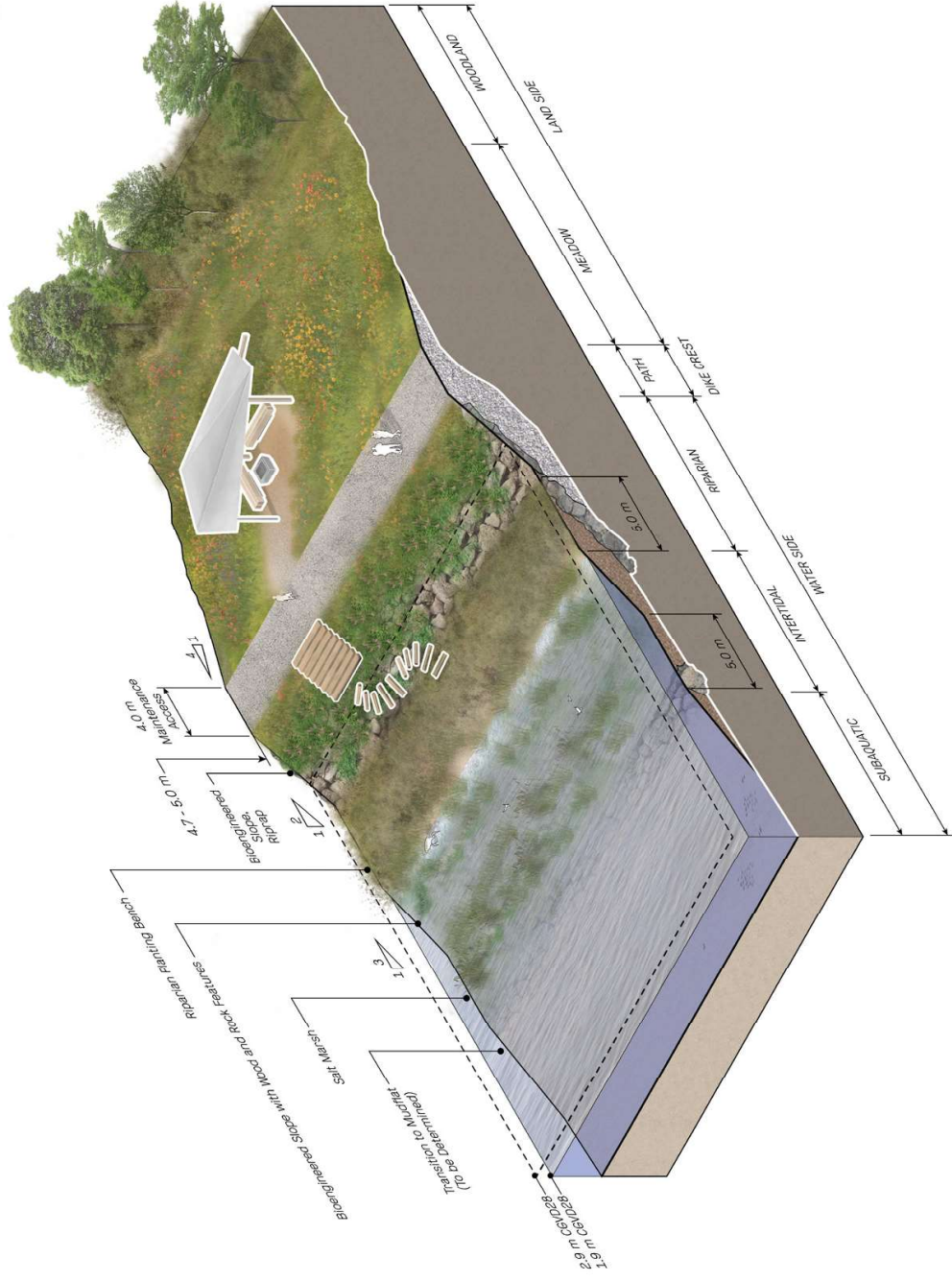
DIKE TYPOLOGIES PHASE 4, OPTION 3

RAISE DIKE ONLY AND EXTEND RIVER-SIDE (REACHES 4-6)

Highly naturalized condition with opportunity for public engagement with river ecology and dike enhancement:

- provide public gathering elements to encourage public use of special conditions;
- provide access off of dike crest where appropriate, consider natural play features;
- enhance connections to bog forest, riverside pullout areas, and intertidal habitat through sensitive pathways and connections that augment natural spaces with a public engagement component.

CNCL - 456



Phase 4, Fig 3-4

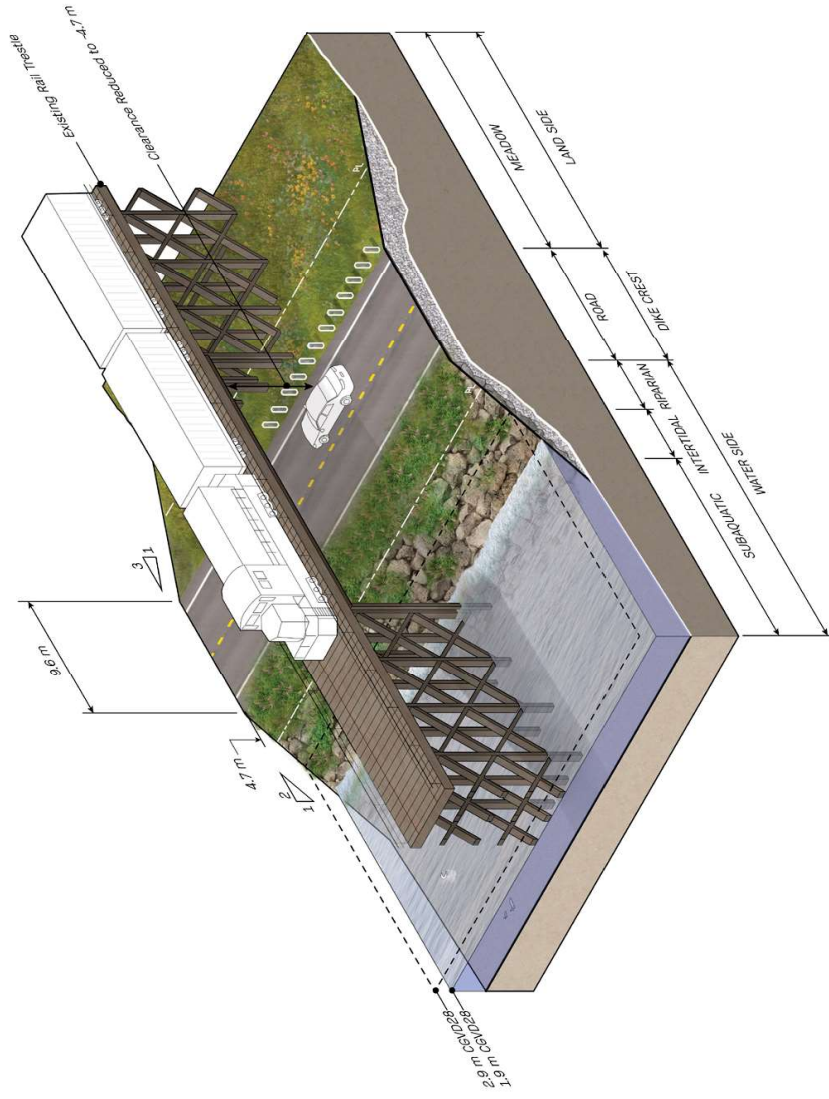
DIKE TYPOLOGIES PHASE 4, OPTION 6

RAIL TRESTLE - RAISE ROAD / DIKE UNDER TRESTLE (REACH 4)

Constrained roadway under rail trestle:

- look to routing path around area, possibly nearer bog forest;
- explore innovative approaches to the trestle under structure including public art or incorporated wayfinding;
- provide lighting and barriers around structure for protection but also to draw attention to its unique character.

CNCL - 457



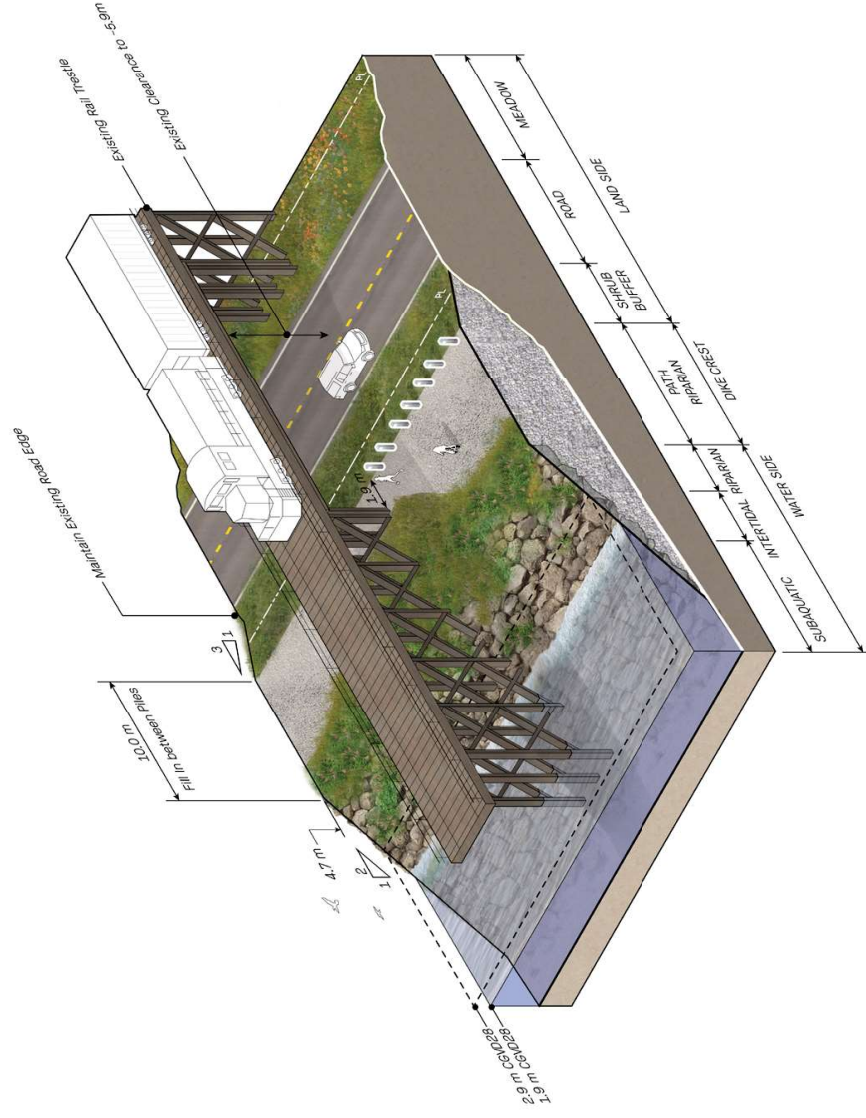
PHASE 4, OPTION 7

RAIL TRESTLE - FILL IN-BETWEEN TRESTLE PILE (REACH 4)

Path below rail trestle on water side:

- rail trestle and river provide excellent opportunities for incorporating public art or wayfinding features;
- wide path funnels into narrower space at trestle to encourage people on bikes to dismount and others to proceed with caution but also enjoy the unique character of the train line;
- provide bollards for pedestrian safety and protection of structure.

C.NCL - 458



City of Richmond
FLOOD PROTECTION

What We Heard Report

November 2022



Contents

EXECUTIVE SUMMARY	4
BACKGROUND AND OVERVIEW	6
Dike Master Plan Phase 4	8
Engagement Overview	10
COMMUNICATION AND OUTREACH PROGRAM	21
Online Materials	23
Print Materials	29
KEY FINDINGS	34
MOVING FORWARD	40

List of Figures

<i>Figure 1: Dike Master Plan Timeline</i>	8
<i>Figure 2: Richmond flood protection timeline</i>	9
<i>Figure 3: Richmond Flood Protection Engagement Summary</i>	11
<i>Figure 4: Steveston Farmers Market Community Pop-up</i>	14
<i>Figure 5: Community Pop-up at Emergency Preparedness Week</i>	15
<i>Figure 6: Burkeville Daze Community Pop-up</i>	16
<i>Figure 7: Blair Elementary School presentation</i>	17
<i>Figure 8: Blair Elementary School student drawings</i>	17
<i>Figure 9: Works on Wheels bus ride and site visit</i>	18
<i>Figure 10: Posters at the Island City bike tour</i>	19
<i>Figure 11: Dike Master Plan Phase 4 Community Conversation</i>	20
<i>Figure 12: Final Open House at Hamilton Community Centre</i>	20
<i>Figure 13: Summary timeline of the communications and outreach program</i>	22
<i>Figure 14: The City of Richmond's Flood Protection animation</i>	23
<i>Figure 15: Richmond's flood protection StoryMap</i>	23
<i>Figure 16: Number of page visits to the main Richmond.ca Flood Management hub</i>	24
<i>Figure 17: Number of page visits to the Dike Master Plan webpage</i>	24
<i>Figure 18: Number of page visits to the Flood Protection Strategy</i>	24
<i>Figure 19: Frequently asked questions and facts sheets made available online</i>	25
<i>Figure 20: Highlights of visitor interactions with Let's Talk Richmond Flood Protection</i>	26
<i>Figure 21: Visitors to Let's Talk Richmond Flood Protection webpage</i>	26
<i>Figure 22: Summary of visitors to the Let's Talk Richmond Flood Protection</i>	26
<i>Figure 23: Facebook post example</i>	27
<i>Figure 24: Twitter post example</i>	27
<i>Figure 25: Instagram post example</i>	27
<i>Figure 26: Instagram story example</i>	28
<i>Figure 27: Richmond Flood Protection promoted in the Climate Action e-newsletter</i>	28
<i>Figure 28: Climate Change Fact Sheet and Flood Protection Q&A brochure</i>	29
<i>Figure 29: Richmond flood protection postcard</i>	30
<i>Figure 30: One-pager distributed in the Hamilton neighbourhood</i>	31
<i>Figure 31: Community poster</i>	31
<i>Figure 32: Transit shelter ads in the community</i>	32
<i>Figure 33: Map of transit shelters where flood protection materials were posted</i>	32
<i>Figure 34: Image of a lawn sign in English and Traditional Chinese</i>	33
<i>Figure 35: Community pop-up feedback about awareness of the accelerated flood program</i>	35
<i>Figure 36: Let's Talk Richmond Flood Protection webpage quiz</i>	35
<i>Figure 37: Community pop-up feedback about support of the accelerated flood program</i>	36
<i>Figure 38: Let's Talk Richmond Flood Protection weekly quick poll example</i>	36
<i>Figure 39: Collaborative Let's Talk Richmond map of desired dike changes and amenities</i>	37
<i>Figure 40: Frequency of amenity categories mentioned on the Let's Talk Richmond mapping tool</i>	37
<i>Figure 41: Poster board at the Steveston Farmers Market Community Pop-up</i>	38



Executive Summary



This report summarizes the public engagement that was conducted for the City of Richmond's flood protection program and *Dike Master Plan Phase 4*. The engagement campaign was carried out over a five-month period from May 2022 to September 2022. The purpose of this outreach and engagement was to:

- Inform residents about the accelerated timelines of the flood protection program.
- Gauge and improve community awareness of climate change impacts and flood protection plans and initiatives in Richmond.
- Gather feedback on the amenities, features, and design of the upgraded dikes.

The feedback will be used to inform the City's budget process and support the *Dike Master Plan Phase 4 Report*.

The public engagement was designed to reach a wide range of residents and interested parties. Activities included community pop-ups, online and in-person engagement events, the production of online materials, and the development of physical materials that were distributed at in-person events, community venues, and facilities. In total, approximately **1,000 people attended in-person** engagement activities and events. Over **2,000 people participated online**, both through the City's flood protection webpage and a *Let's Talk Richmond* project page that was set up to support community outreach.

Feedback from all engagement activities revealed the following key findings:



The public is aware of the City of Richmond's flood protection measures and is supportive of the City's flood protection work and efforts.

- Residents and other stakeholders found that the public information materials were useful and wanted to learn more.
- Participants were generally aware of Richmond's flood protection work. However, there is room for continued outreach and education on Richmond's flood risk mitigation and management plans, and climate change induced flood risks (e.g., sea level rise, increased frequency and intensity of extreme weather).



The public is supportive of the City of Richmond's accelerated flood protection program and the associated utility rate increases.

- Residents and stakeholders were fully supportive of Richmond's plan to expedite flood protection improvements projects and the associated rate increases.
- Many residents and other stakeholders would like to stay involved/up to date on future implementation work and detailed planning work.



The public is most supportive of upgrades that provide other community benefits and amenities.

- Environmental features (e.g., habitat areas and habitat benches), recreational amenities (e.g., seating, bike racks, signage – wayfinding and information), and multi-modal transportation improvements (e.g., separated bike lanes, improved wayfinding and walking paths) are the most highly rated and sought-after features for new and upgraded flood protection measures.
- Many participants would like to see improvements to pedestrian and bicycle safety along River Road.

Comments received during the public engagement for the 2018 Dike Master Plan Phase 2, 2019 Dike Master Plan Phase 3, and 2019 Dike Master Plan Phase 5 were generally consistent with the feedback received during the engagement for this project. In particular, the topics of proactive planning and flood protection improvements, dike aesthetics and recreational use, and environmental and habitat considerations.

During the public engagement for Dike Master Plan Phase 2, Phase 3 and Phase 5, comments and questions were received regarding climate science and climate change projections. Such

questions and comments were not received during this round of outreach and engagement. Anecdotally, in-person public engagement reported more conversations around people's personal experiences of climate change-related incidents, including the November 2021 atmospheric rivers and flooding, the June/July 2021 heat dome and wildfires, and the 2020 wildfires and smoke/air quality issues. Collectively, these direct and personal experiences with climate change impacts and the climate emergency are enhancing public awareness of climate change and reinforcing public support for Richmond's accelerated flood protection program.



Background and Overview

Surrounded by the Fraser River and the Strait of Georgia, the City of Richmond is situated approximately one metre above sea level and is subject to flood hazards, such as climate change induced sea level rise. Richmond is planning for 1 metre of sea level rise by 2100. During this same period, land in Richmond is expected to subside by 0.2 metres.

The City currently has 49 kilometres of dikes and 39 drainage pump stations that can withstand high water events, such as spring freshet, storm surges, and king tides and are designed to handle an extreme 1:500 return period Fraser River freshet events. Upgrades of the City's flood protection system are required to protect the City's residents, infrastructure, and economic vitality.

Richmond's Flood Protection Management Strategy and dike master plans provide a guiding framework for upgrades and improvements to this flood protection system and to address climate change-induced sea level rise and heightened flood risks. Dike Master Plan Phase 4 (DMP4) provides flood protection from the north arm of the Fraser River and spans from No. 6 Road to Boundary Road.

Currently, Richmond is focusing on raising the perimeter dikes from, on average, 3.5 metres to 4.7 metres. The City recently accelerated the implementation timeline for its flood protection program from 75 years to 50 years to improve diking infrastructure in advance of currently anticipated climate change impacts. The strategy plans for approximately 1 km of dikes being upgraded per year and may be further accelerated if sea level rise intensifies.

From May 2022 to September 2022, the City of Richmond carried out a public engagement campaign on the City's flood protection work and DMP4. The purpose of this outreach and engagement was to:

- Inform residents about the accelerated flood protection program.
- Gauge and improve community awareness of flood protection and climate change impacts and plans in Richmond.
- Gather feedback on the amenities, features, and design of the upgraded dikes.

This report summarizes the engagement campaign and key findings that emerged about participants' awareness and support of the flood protection program and their ideas of how dike upgrades could simultaneously address other community and user needs.



**FLOOD PROTECTION
INFRASTRUCTURE**



**49 KM
OF DIKES**



**39 DRAINAGE
PUMP STATIONS**

DIKE MASTER PLAN PHASE 4

DMP4 is the final phase of a five-phase plan to upgrade the City's dikes to prepare for sea level rise, climate change, and flood impacts. Phases 1-3 and 5 are completed. DMP4 encompasses the north dike between No. 6 Road and Boundary Road, which is a unique area given it is largely agricultural with few residences and businesses, including both marine businesses on the Fraser River and some industrial operations.

DMP4 recommends the following typical dike upgrade approaches:

- Separated dike and road.
- Standard dike in areas without existing roads.
- Superdike (land behind the dike built up to the same elevation as the dike itself).

Ongoing dike upgrades around the City of Richmond, including those included in DMP4, provide ample opportunity to engage with the public about challenges and opportunities that are posed by sea level rise and other climate change impacts. Additional future public engagement will also shape how the upgrades are enacted.

The figure illustrates locations for each phase of the dike master plan and the year completed.

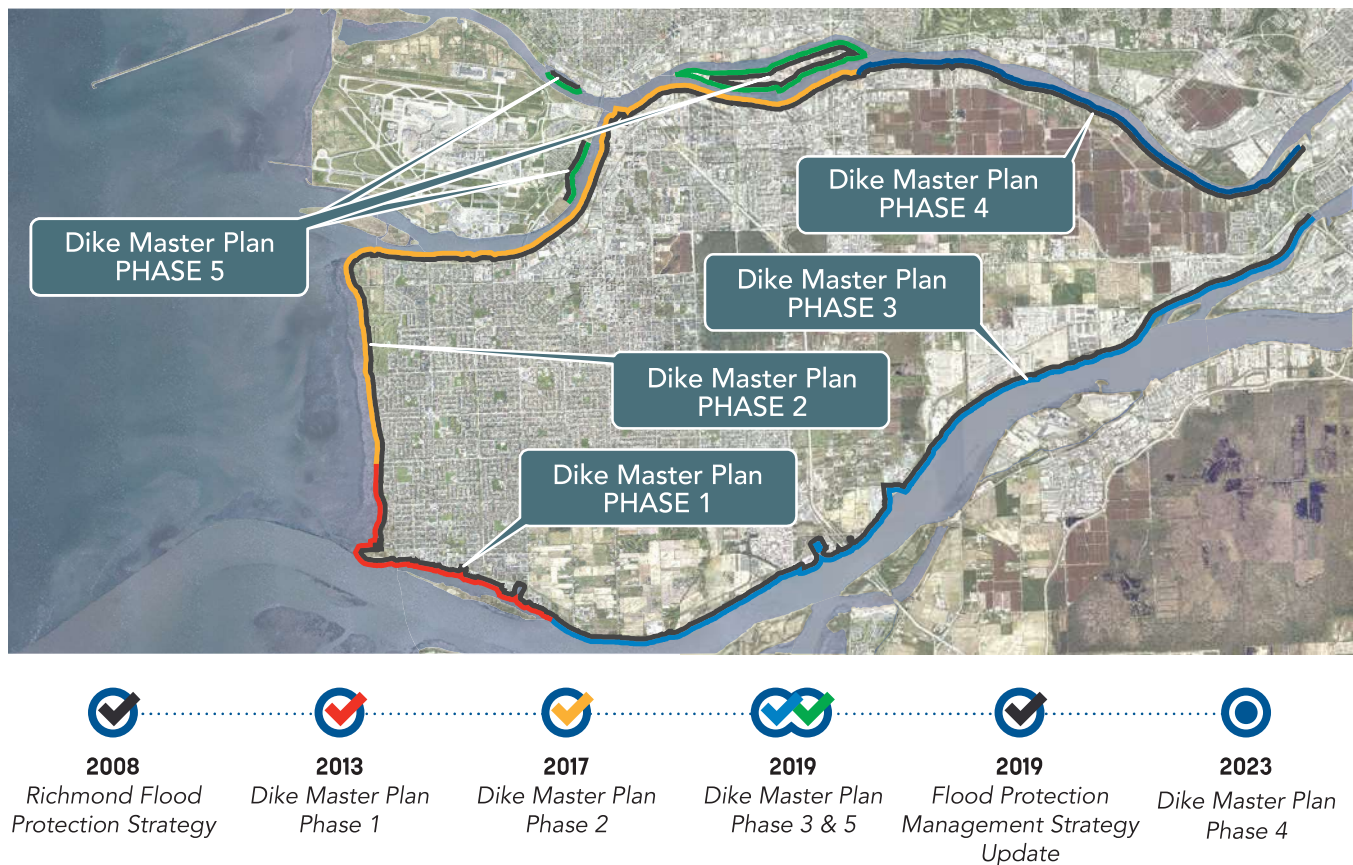


FIGURE 1: Dike Master Plan Timeline

RICHMOND FLOOD PROTECTION

TIMELINE



PUMP STATION UPGRADES AND REBUILDS:

2000-2005	2006-2010	2011-2015	2016-present
 <ul style="list-style-type: none"> Peace Arch Tipping Road South No. 1 Road South Gilbert Road North 	<ul style="list-style-type: none"> Francis Road West Cambie Road West Comstock Road Gilbert Road South Duck Island 	<ul style="list-style-type: none"> No. 4 Road North Williams Road No. 1 Road North Bath Slough Woodward Slough 	<ul style="list-style-type: none"> No. 2 Road North Horseshoe Slough Shell Road Slough No. 7 Road South Steveston Hwy & Gilbert Road Steveston Hwy & No. 3 Road

FIGURE 2: Richmond flood protection timeline

ENGAGEMENT OVERVIEW

Community engagement and outreach took place over a five-month period from May 2022 to September 2022.

Engagement was designed to reach a wide range of residents and interested parties. Engagement activities in this phase included community pop-ups, online, and in-person engagement events and the production of a wide range of new information materials that were distributed online at in person events, and at different community venues and facilities. Engagement included the following, which are also summarized in the following figure.

- 5 community pop-ups (Emergency Preparedness Week, Kwantlen Street Farmers Market, Steveston Farmers & Artisans Market, Burkeville Daze, "Island City, by Bike" tour)
- 2 in-person open houses (Hamilton Community Centre)
- 3 bus tours (Works on Wheels)
- 4 online Community Conversation engagement sessions
- 1 elementary school presentation
- 1 walking tour (Walk Richmond)
- Updated and expanded flood protection page on [Richmond.ca](https://richmond.ca)
- [LetsTalkRichmond.ca](https://letsTalkRichmond.ca) flood protection project page
- 1 new Flood Protection [StoryMap](#)



RICHMOND FLOOD PROTECTION

ENGAGEMENT AND COMMUNICATIONS SUMMARY



PROJECT OPEN HOUSE
at Hamilton Community Centre
40+ participants



**COMMUNITY
POP-UPS**
1000 visitors



**COMMUNITY
CONVERSATIONS**
online



**WORKS ON WHEELS
BUS TOURS**
66 participants

100+

DOOR-TO-DOOR VISITS
in Hamilton /
River Road area



**NEW FLOOD PROTECTION
INFORMATION PRODUCTS**
print and online



36

SOCIAL MEDIA POSTS
with over 800
engagements



ONLINE INTERACTIONS
and over 80 comments from
4 weekly polls, online Q&As,
and an interactive mapping tool



**NEW FLOOD
PROTECTION
STORYMAP**



20

**FLOOD PROTECTION
LAWN SIGNS**
distributed along
popular dike trails

1200

**UNIQUE VISITS TO
LET'S TALK RICHMOND**
flood protection page



**WALK RICHMOND
WALKING TOUR**
23 attendees



**PROJECT
POSTCARDS**
distributed



TRANSIT SHELTER ADS



28

ELEMENTARY SCHOOL STUDENTS
attended project
presentation



FIGURE 3: Richmond Flood Protection Engagement Summary

ACTIVITY TYPE	EVENT DETAILS	SUMMARY
Community Pop-ups <i>In Person</i> May 7, 2022 – September 9, 2022	Emergency Preparedness Week Location: Brighthouse Fire Hall No. 1 Date: Saturday, May 7 11:00am-5:00pm Visitors: Approximately 200 Kwantlen Street Farmer's Market Location: Brighthouse Neighbourhood Park Date: Tuesday, May 24 12:00pm-4:00pm Visitors: Approximately 50 Steveston Farmer's & Artisans Market Location: 4320 Moncton St Date: Sunday, June 5 10:30am-3:30pm Visitors: Approximately 450 Island City, by Bike Tour Location: Minoru Centre for Active Living Date: Sunday, June 12 9:30am – 12:30pm Attendees: 100 Burkeville Daze Location: Burkeville Neighbourhood Park Date: Sunday, June 26, 3:00pm-6:00pm Visitors: 40 Hamilton Night Out Location: Hamilton Community Centre Date: Friday, September 9 5:30pm-8:00pm Visitors: Approximately 250	<ul style="list-style-type: none"> · In total, there were approximately 1,000 interactions with residents at the community pop-up events · Passers-by and interested residents had the opportunity to attend or stop by at a pop-up event and learn more about flood protection measures in Richmond, including the DMP4 · Materials included interactive poster boards (with sticky notes and dots to share and vote on ideas), flyers, postcards with a QR code to Richmond.ca, flood protection-themed stickers, and reusable shopping bags · Each pop-up resulted in more community members becoming aware of Richmond's flood protection measures in general, with some becoming informed by interacting with pop-up staff and the poster boards, and some engaging with the DMP4 project by taking materials home to review, leaving a sticky note comment on the poster, signing up for the newsletter, or connecting through the QR code · Hamilton Night Out was one of the busiest events, with approximately 60 public interactions and over 250 people dropping by the tent
Open Houses <i>In Person</i> September 9, 2022	Dike Master Plan Phase 4 Community Open House Location: Hamilton Community Centre Date: Tuesday, June 21 11:30am-1:00pm Participants: 40	<ul style="list-style-type: none"> · 40 people attended the first open house which included lunch for participants and a project presentation from City staff · Materials included interactive poster boards (with sticky notes and dots to share and vote on ideas), flyers, postcards

ACTIVITY TYPE	EVENT DETAILS	SUMMARY
Blair Elementary School presentation <i>In Person</i> May 17, 2022	School Presentation Location: Blair Elementary School Tuesday, May 17 Students: 28	<ul style="list-style-type: none"> · City of Richmond staff presented to a grade 5/6 split class · Activities included a presentation, Mentimeter trivia questions, and a drawing exercise.
Walking and bus tours <i>In person</i> May 21, 2022 – June 19, 2022	South Dike Walking Tour Location: South Dike Trail Date: Saturday, May 21 10:00am – 11:00 am Attendees: 23 Works on Wheels Bus Tour Location: Richmond Public Works Yard Dates: June 11, 18, and July 9 11:00am – 2:00pm Attendees: 66 (22 each tour)	<ul style="list-style-type: none"> · Approximately 90 residents participated in the tours. · <i>Walk Richmond</i> walking tour was a free guided walk coordinated by the City of Richmond. City of Richmond Staff attended the walk where they shared project materials and spoke about flood management and other areas of interest. · Three interactive <i>Works on Wheels</i> bus tours showcasing Richmond's flood protection projects were held in June, and due to popular demand, a third date was held in July · The tours offered a behind-the-scenes visit to a recent dike upgrade, a recently built pump station, and the Britannia flood wall in Steveston · Each tour was fully booked and there were 23 people on the waitlist
Community Conversations <i>Online</i> June 21, 2022 – June 22, 2022	Dike Master Plan Community Conversation Date: Monday, June 20 12:00pm – 1:00pm Flood Protection Community Conversations Date: Wednesday, June 22 12:00pm – 1:00pm 2:30pm – 3:30pm Date: Thursday, June 23 12:00pm – 1:00pm	<ul style="list-style-type: none"> · In total, there were 10 attendees at the Community Conversations · Participants attended an hour-long presentation where staff introduced the City's flood protection program and provided space for discussion and questions · Attendance was limited, but the participants provided positive feedback and were able to ask staff questions about the project

ACTIVITY TYPE	EVENT DETAILS	SUMMARY
Richmond.ca Online May 2022 – September 2022	Project and flood protection information was available from May 2022 – September 2022 at Richmond.ca, including: <ul style="list-style-type: none"> Project overview videos StoryMap PDF versions of all information materials 	<ul style="list-style-type: none"> Approximately 1,957 visitors accessed the Flood Protection materials on the <i>Let's Talk Richmond</i> website
Let's talk Richmond Online May 2022 – September 2022	Online opportunities for engagement and information were available from May 2022 – September 2022 at LetsTalkRichmond.ca Engagement tools: <ul style="list-style-type: none"> Weekly polls Question and Answer Mapping tool 	<ul style="list-style-type: none"> Approximately 848 visitors accessed the Flood Protection materials on the <i>Let's Talk Richmond</i> website Interactive tools available on the website included an ArcGIS StoryMap, weekly polls, interactive mapping features, videos, downloadable information write-ups and a place to ask questions
Advisory Committee on the Environment	Location: Richmond City Hall May 11, 2022	<ul style="list-style-type: none"> 13 committee members Members offered their feedback of their priorities based on the Advisory Committee mandate



FIGURE 4: Steveston Farmers Market Community Pop-up

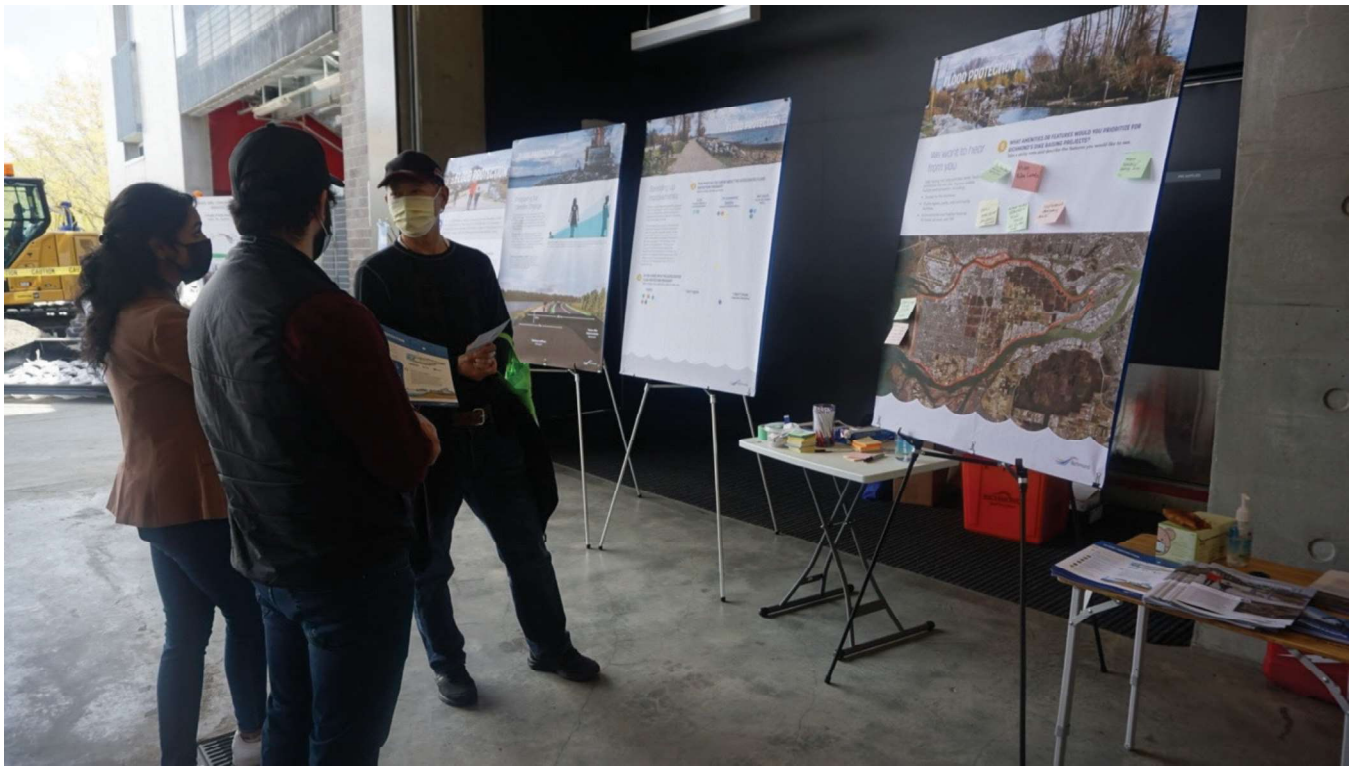


FIGURE 5: Community Pop-up at Emergency Preparedness Week



FIGURE 6: Burkeville Daze Community Pop-up



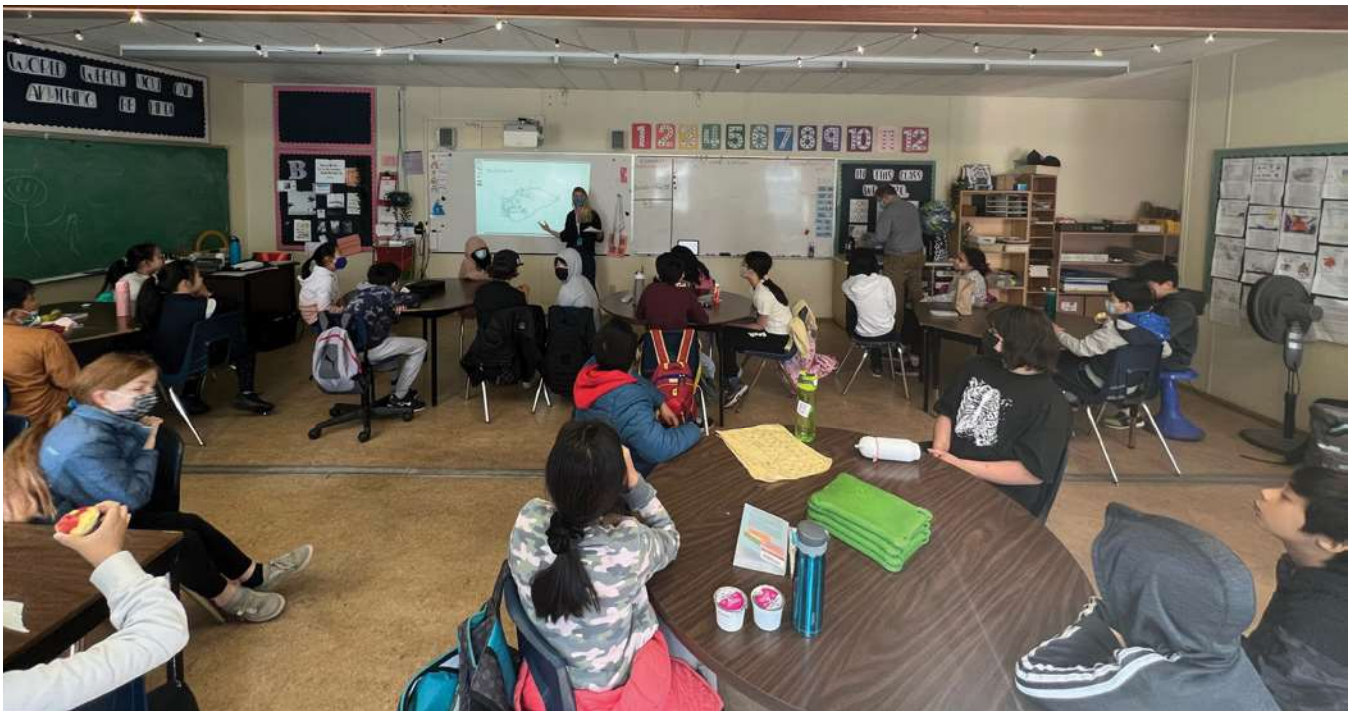


FIGURE 7: Blair Elementary School presentation

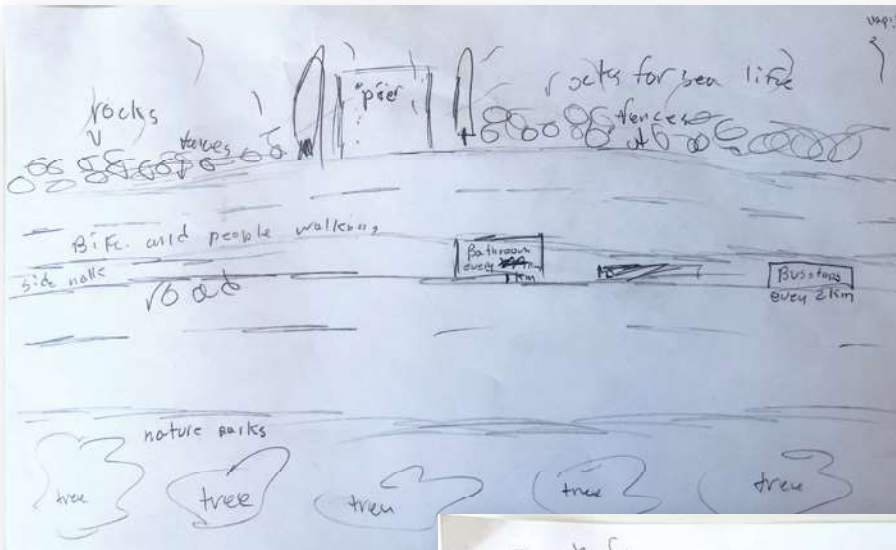
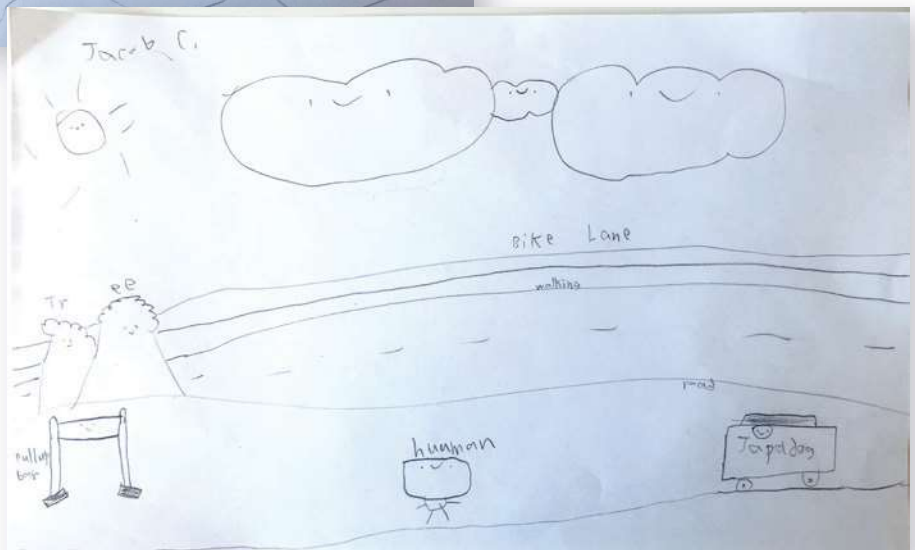


FIGURE 8: Blair Elementary School student drawings envisioning flood protection in the City of Richmond



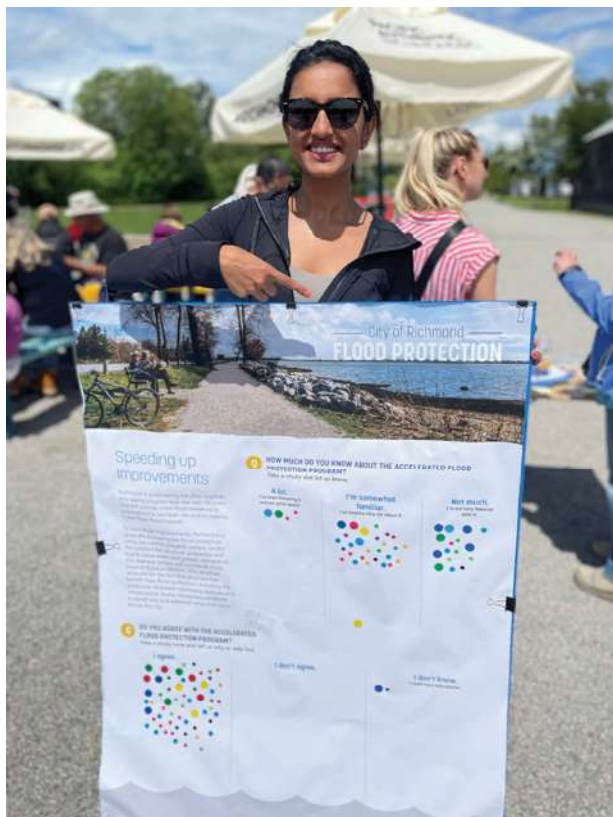


FIGURE 9: Works on Wheels bus ride and site visit



FIGURE 10: Posters at the Island City bike tour



FIGURE 11: Dike Master Plan Phase 4 Community Conversation

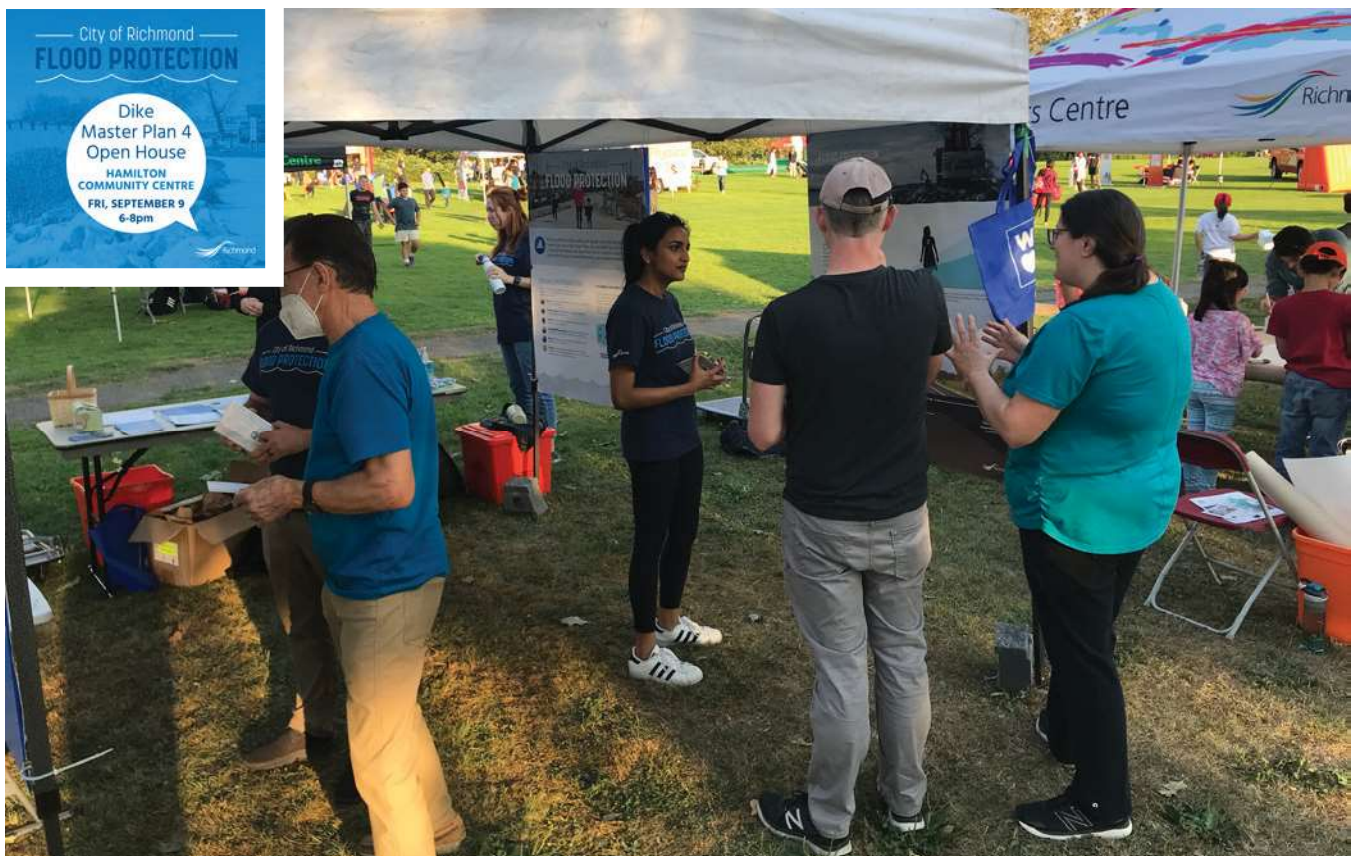


FIGURE 12: Final Open House at Hamilton Community Centre, marking the end of a successful engagement and outreach period



Communication and Outreach Program

From May 2022 to September 2022, staff ran a communications and outreach program to share information about Richmond's flood protection program and to promote outreach events and activities. Materials included:

- Social media posts
- Updated and expanded flood protection page on [Richmond.ca](https://richmond.ca)
- [LetsTalkRichmond.ca](https://letstalkrichmond.ca) flood protection project page
- A new flood protection [StoryMap](#)
- Five new Flood Protection information products – print and online (Fact Sheets, Q&A, Richmond Flood Protection Overview in English and Traditional Chinese, Flood Protection Timeline)
- Transit shelter ads
- Lawn signs
- Postcards

FIGURE 13: Summary timeline of the communications and outreach program

COMMUNICATIONS AND OUTREACH PROGRAM SUMMARY TIMELINE						
	APR	MAY	JUN	JUL	AUG	SEP
Online Materials						
Social Media						
Richmond.ca Flood Protection						
Let's Talk Richmond Flood Protection						
E-Newsletter						
Print Materials for Distribution						
Postcards						
Information materials						
Print Materials for Promotion						
Transit Shelter Ads						
Lawn Signs						

Communication and outreach materials are described in the following sections.



ONLINE MATERIALS

City of Richmond staff used online materials to share information with the public about flood hazards and protection measures in Richmond and to promote engagement events and other project updates. The purpose of many of the online materials was also to create a Flood Management information hub to be updated and added to as Richmond implements the Flood Protection Management Strategy.

Richmond.ca Flood Protection

The flood protection webpage at [Richmond.ca](https://richmond.ca) is a hub for all things related to flooding and flood protection in the City of Richmond. In addition to project overview videos and a new flood protection [StoryMap](#), the site also includes PDF versions of all information materials (fact sheets, Q&A, flood protection overview flyers, etc.).



FIGURE 14: The City of Richmond's Flood Protection animation

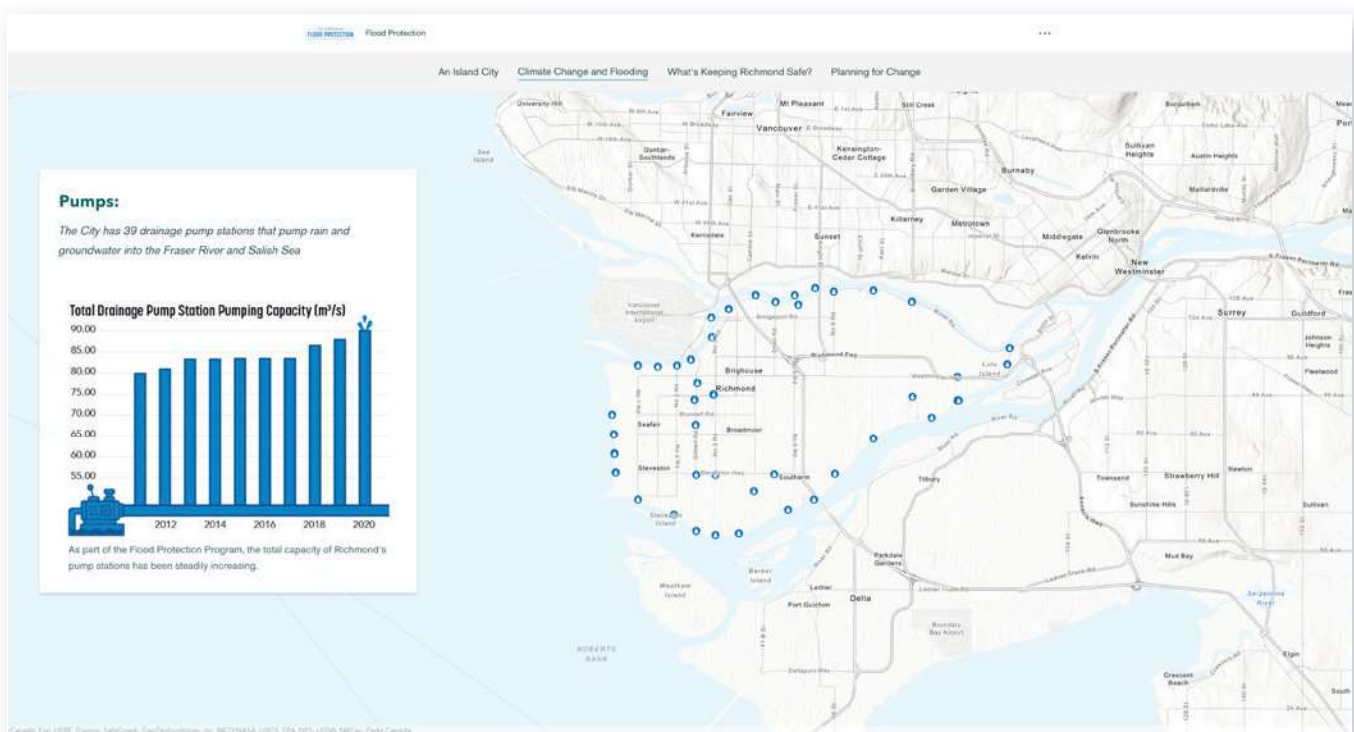


FIGURE 15: Image of Richmond's flood protection StoryMap providing information about the City's drainage pumps. An ESRI StoryMap is a web map that has been thoughtfully created, given context, and provided with supporting information so it becomes a stand-alone resource. It integrates maps, legends, text, photos, and video and provides functionality, such as swipe, pop-ups, and time sliders, that helps users explore this content.

From May to mid-September 2022, the total number of page views was 369 more than this same period in 2021. In total, there were 2,863 views and 1,957 unique visitors. Views peaked at the beginning of June when outreach efforts and engagement events were highest.

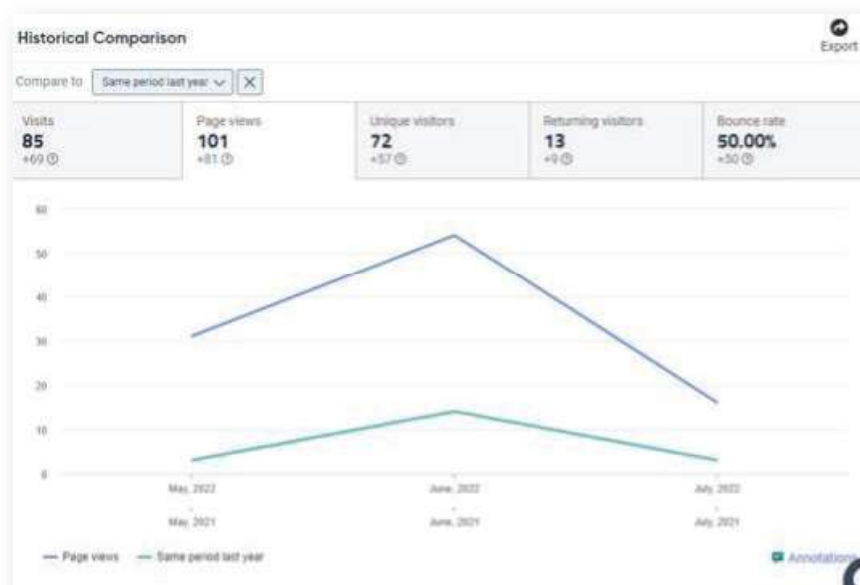
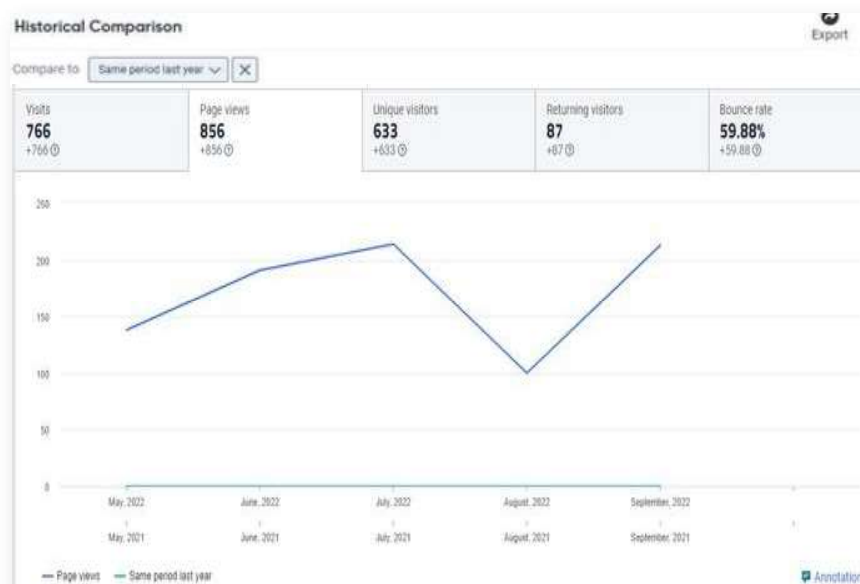
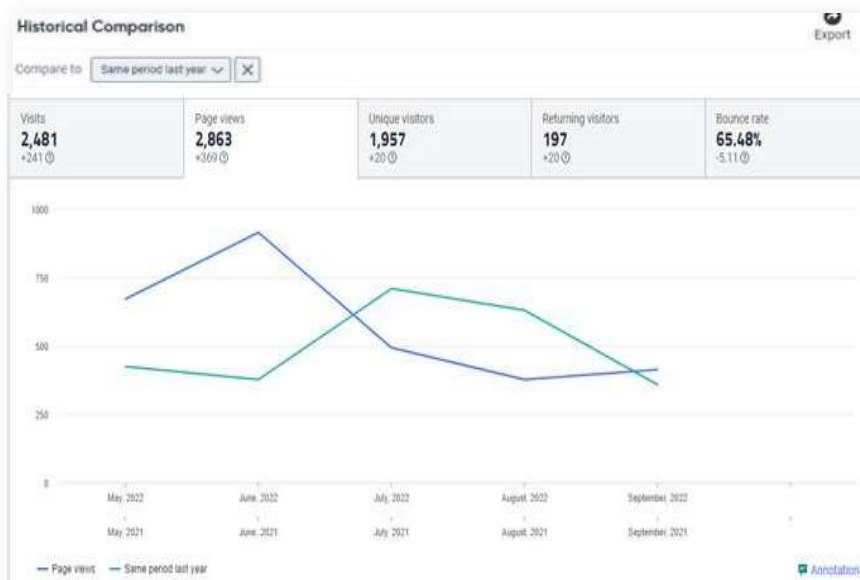
The page also included links to the Dike Master Plan webpage and the Flood Protection Strategy. A new webpage, the Dike Master Plan page experienced 856 page views from 633 unique visitors who visited the site between May and September 2022. Dike Master Plan views peaked in July. From May to July 2022, the Flood Protection Strategy had 101 page views from 72 unique visitors.

The Richmond.ca Flood Management webpage also included a link to the *Let's Talk Richmond* flood protection page, where visitors could learn more about the project and provide input and feedback on flooding and flood management in Richmond.

TOP FIGURE 16: Number of page visits to the main Richmond.ca Flood Management hub: <https://www.richmond.ca/services/rdws/dikes.htm>

MIDDLE FIGURE 17: Number of page visits to the Dike Master Plan webpage (May 2022 – September 2022)

BOTTOM FIGURE 18: Number of page visits to the Flood Protection Strategy



Let's Talk Richmond Flood Protection


May 2022 – September 2022

In mid-May, an informative and interactive webpage about flood protection went live on the City of Richmond's engagement website, *Let's Talk Richmond*. The *Let's Talk Richmond* Flood Protection webpage is a place to "Learn about events and opportunities to have your say" (an online stakeholder engagement service). Here, visitors could learn more about Richmond's flood protection measures and the accelerated flood protection program by reading informational materials, or become engaged by participating in interactive tools that included:

- Weekly quick polls about knowledge of flood management and support for the accelerated program
- A mapping tool to indicate places for amenities and features to priorities with the dike upgrades
- A place to submit specific questions for the project team to answer

Since going live, the webpage experienced a steady flow of visitors daily, with a peak of 104 in a single day near the beginning. As of September 20, more than 1,000 people visited the *Let's Talk Richmond* Flood Protection webpage at least once. Of these visitors, more than 260 learned about the project by clicking on informational materials, while more than 90 participated by interacting with the tools.

FIGURE 19: Frequently asked questions and facts sheets made available at the [Richmond.ca](https://richmond.ca) and *Let's Talk Richmond* Flood protection webpages



Climate Change and Flooding
FACTSHEET SERIES

The City of Richmond is a collection of islands with an average height of 1 metre (3 feet) above sea level and is part of the historic floodplain of the Fraser River. The City relies on a network of dikes, pumps, and other systems to protect it from flooding. Richmond is exposed to flooding from the river, the ocean, and from heavy rainfall events. Sea levels are rising due to global warming, and the frequency and intensity of storms are increasing. As climate change continues, Richmond's exposure to coastal and river flood hazards will increase.

Richmond Flood Hazards

SEA LEVEL RISE

With climate change, warmer temperatures melt glaciers and ice caps and increase the temperature of the ocean, causing water to expand. As a result, global sea levels are rising. Sea level rise increases flood risks posed by:

- **king tides:** the highest tides of the year;
- **coastal storm surges:** high tides mixed with high water levels caused by wind and waves.


The Province of British Columbia advises municipalities to plan for 1 metre of sea level rise by 2100. During this same period, land in Richmond is expected to move downwards by 0.2 metres as land settles into the Fraser River delta.

FRESHET


Freshet is the term used to describe river floods caused by snowmelt that typically occurs in the spring. Changes in snowmelt and precipitation patterns in the Fraser Basin are expected to contribute to larger and more frequent floods on the Fraser River. Sea level rise will heighten water levels in the lower Fraser River during spring freshet.

RAINFALL

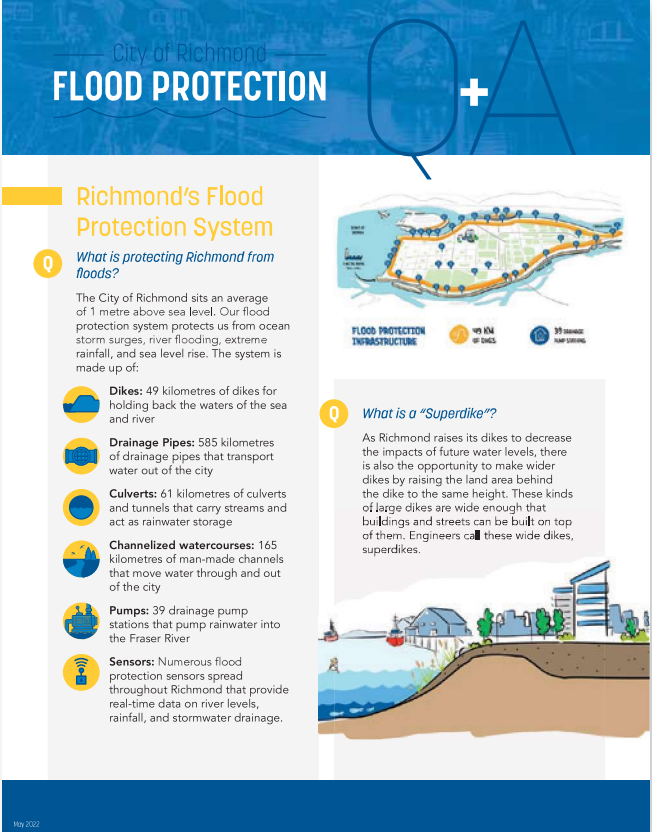
Over the past 20 years, the average intensity of rainfall events in Richmond has increased by approximately 15 per cent. With climate change, this trend is expected to continue. Extreme rainfall events can increase the flow, speed, and height of the water in the Fraser River.



• SALISH SEA RISING: A child born today can expect 50 centimetres of sea level rise by the time they're 30 and 1 metre by the time they are 80. The lighter shaded area shows a higher range of sea level rise that could occur if global emissions reduction targets are not met.



• RICHMOND ATMOSPHERIC RIVER: The atmospheric river events that hit the province in November 2021 are examples of extreme rainfall events that can lead to flooding. While Richmond did not experience the same level of rainfall or flooding as some areas of the Fraser Valley, it did receive over 130 millimetres of rain in a three-day period, which is the biggest storm Richmond has faced in half a century. The image shows the flooded low-lying park fields around Walter Lee elementary during the atmospheric river events in November 2021. Low lying areas like this park help store excess rainwater during extreme events and will drain when the system has capacity to do so. Carlos Silva photo, via Twitter.



City of Richmond FLOOD PROTECTION

Richmond's Flood Protection System



Q What is protecting Richmond from floods?

The City of Richmond sits an average of 1 metre above sea level. Our flood protection system protects us from ocean storm surges, river flooding, extreme rainfall, and sea level rise. The system is made up of:

- Dikes:** 49 kilometres of dikes for holding back the waters of the sea and river
- Drainage Pipes:** 585 kilometres of drainage pipes that transport water out of the city
- Culverts:** 61 kilometres of culverts and tunnels that carry streams and act as rainwater storage
- Channelized watercourses:** 165 kilometres of man-made channels that move water through and out of the city
- Pumps:** 39 drainage pump stations that pump rainwater into the Fraser River
- Sensors:** Numerous flood protection sensors spread throughout Richmond that provide real-time data on river levels, rainfall, and stormwater drainage.

Q What is a "Superdike"?

As Richmond raises its dikes to decrease the impacts of future water levels, there is also the opportunity to make wider dikes by raising the land area behind the dike to the same height. These kinds of large dikes are wide enough that buildings and streets can be built on top of them. Engineers call these wide dikes, superdikes.



Aware, Informed, Engaged – What it means on the web

AWARE: An aware visitor has made at least one single visit to the project webpage project.

INFORMED: An informed visitor has taken the 'next step' from being aware if they:

- Viewed a video
- Viewed a photo
- Downloaded a document
- Visited the Key Dates page
- Visited a FAQ list page
- Visited multiple project pages (that means clicking from one project into the next or clicking on pages within the project, for example into a forum discussion)

ENGAGED: Every webpage visitor that contributes to a tool is noted as being 'engaged' if they:

- Contributed to a Forum
- Participated in a Survey
- Participated in Quick Polls
- Posted a comment on the guestbook
- Asked Questions
- Placed Pins on Maps
- Contributed to Ideas

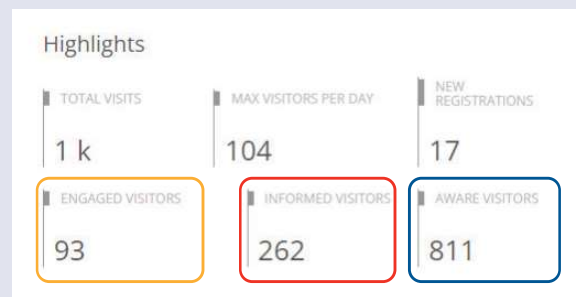


FIGURE 20: Highlights of visitor interactions with Let's Talk Richmond Flood Protection webpage (May 2022 – September 2022)



FIGURE 21: Visitors to Let's Talk Richmond Flood Protection webpage, by month (May 2022 – September 2022)

FIGURE 22: Summary of visitors to the Let's Talk Richmond Flood Protection webpage. By September 20, 811 people visited the webpage (aware). Of these visitors, 226 clicked on webpage tools (informed), and 93 provided input in the tools (engaged).

Social Media

The flood protection project team promoted upcoming engagement events via social media including Facebook, Instagram, and Twitter. Some posts included hyperlinks to a webpage with a full list of upcoming events and opportunities to be involved. Social media included animated reels and gifs.

In total, between May 11 and September 3, there were 36 social media posts with over 800 engagements (e.g., likes, comments, shares):

- 11 Facebook posts with 312 engagements
- 13 Twitter posts with 251 engagements
- 12 Instagram posts with 239 engagements

Posts that were boosted outperformed non-paid content. The social media content did not generate significant comments or discussion from audiences on the City's social media platforms.

To encourage more engagement, the City of Richmond partnered with the Richmond Public Library to offer participants a chance to win a \$100 gift card by liking the June 8 Facebook post, following the City's and Library's Facebook pages, and registering for an engagement session.



FIGURE 23: Facebook post example with rules for contest to engage in Richmond Flood Protection Activities and be entered to win a \$100 Visa gift card



FIGURE 24: Twitter post example



FIGURE 25: Instagram post example



FIGURE 26: Instagram story example

Climate Action E-Newsletter

The City of Richmond's spring Climate Action e-newsletter promoted in-person and virtual event series to raise awareness and understanding of the importance of flood protection in Richmond as a response to climate change. The e-newsletter included a link to the Richmond.ca Flood Protection webpage.

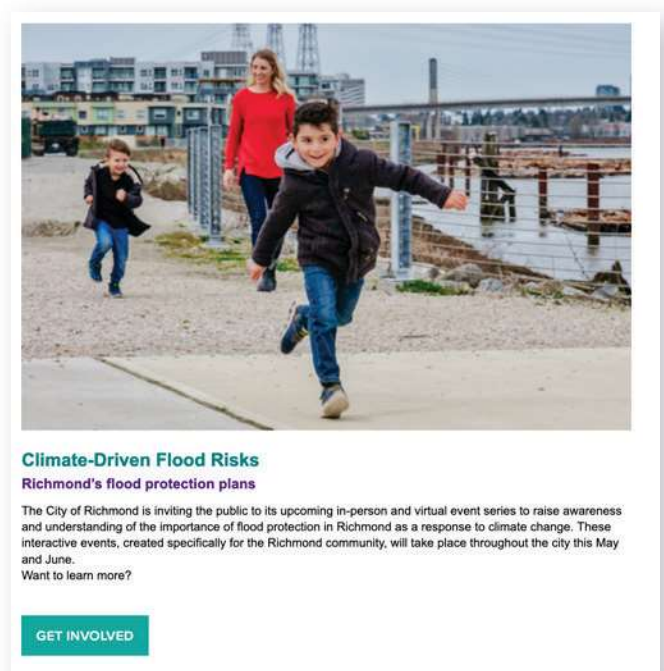


FIGURE 27: Richmond Flood Protection engagement promoted in the Climate Action spring e-newsletter

PRINT MATERIALS

A range of print materials were developed to support outreach and engagement. These materials educated people about local flood hazards and provided information about flood protection and dike upgrades, including the DMP4 process. Materials included:

- Project Postcards
- Fact Sheets (Climate Change and Flooding, Flood Protection and Coastal Ecology)
- Flood Protection Q&A brochure
- Flood Protection Overview (English and Traditional Chinese)
- Flood Protection Timeline

These materials were available for hand out at community pop-ups, for downloading online, and for pick up at community venues (Hamilton Community Centre, Library – Brighthouse Branch, City Hall).

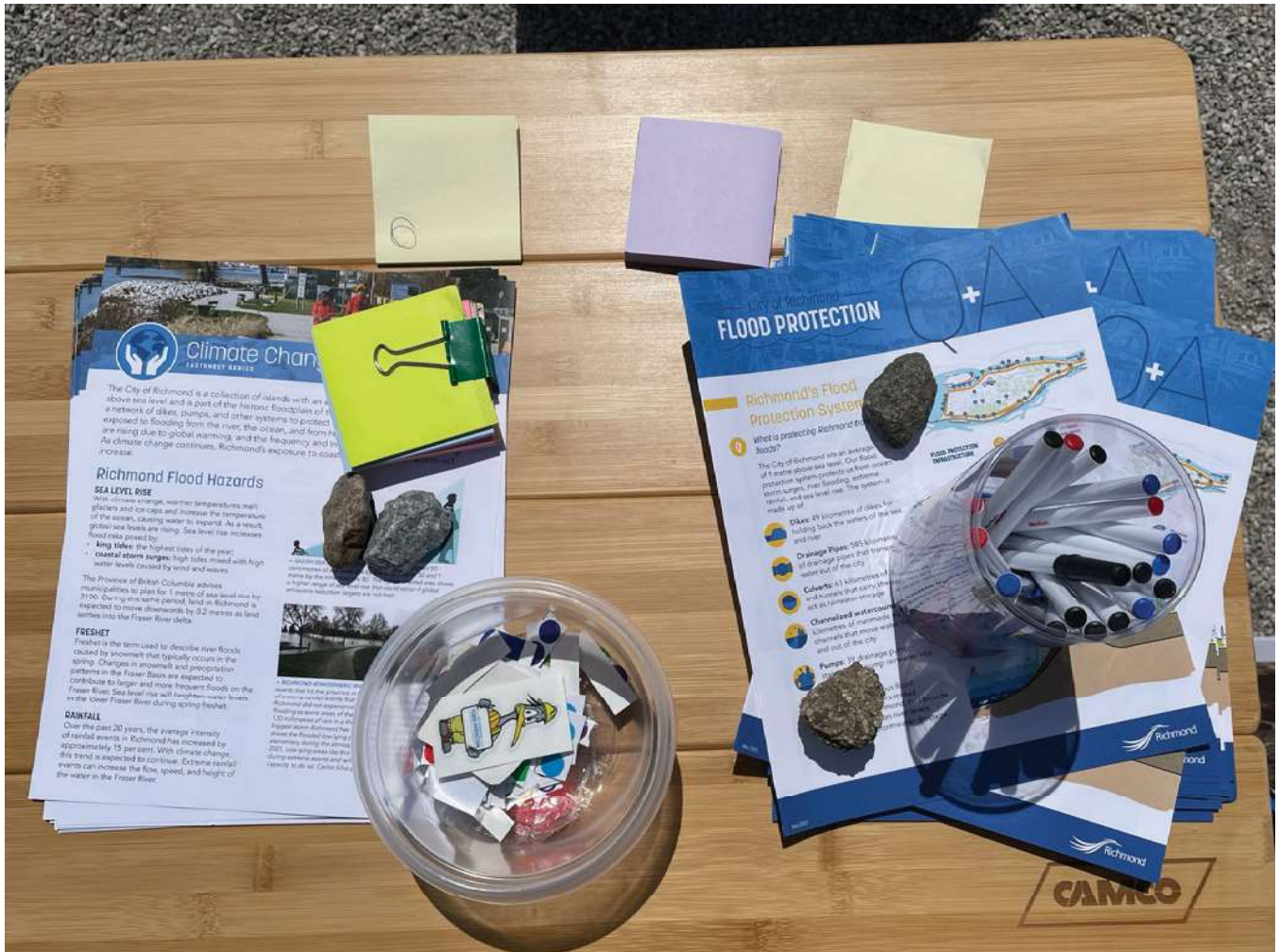


FIGURE 28: Climate Change Fact Sheet and Flood Protection Q&A brochure

Postcards

Approximately 2,000 postcards were distributed with project information and a brief explanation of flood management in the City of Richmond. A QR code linked to more information at Richmond.ca.

The postcards were handed-out at community pop-ups, door-to-door, and at other events around the DMP4 area. They were also available online and for pick up at City Hall.



FIGURE 29: Front and back of the Richmond flood protection postcard

Information Flyers

A one-page information flyer that promoted upcoming engagement events and where to find more information about the project. A QR code linked to more information at *Richmond.ca*.

In the Hamilton neighbourhood, City staff went door-to-door distributing the information flyers and postcards. Staff also spoke with residents who were home. In total, approximately 100 households, farms, and businesses were visited.

FIGURE 30: One-pager distributed in the Hamilton neighbourhood

Posters

A large format 11X17 poster was developed. They provided an overview of the challenges Richmond is facing from climate change-driven flooding and the actions the city has taken to address them. A QR code linked to more information at *Richmond.ca*.

Posters were displayed at the Hamilton Community Centre and other locations, including City Hall and the Brighthouse Public Library.

FIGURE 31: Community poster

Transit Shelter Ads

From June 2022 to September, ads promoting the project were posted at 10 transit shelters. There was also a digital version that was played on transit shelters with digital ad capability. The transit shelter ads included information about flooding and flood management in the City of Richmond and a link and QR code to the project hub webpage on Richmond.ca.

FIGURE 32: Transit shelter ads in the community



FIGURE 33: Map showing the location of the transit shelters where flood protection materials were posted from June to September 2022

Lawn Signs

Twenty graphically compelling H-frame lawn signs with a simple “think” message and a QR code that linked to the main project website on Richmond.ca were printed for distribution. Signs were in English on one side and Traditional Chinese on the other.

Signs were placed around popular Richmond walking dikes in the project area.

FIGURE 34: Image of a lawn sign with the message, “Sea levels are rising, Richmond is preparing”



Key Findings



Feedback from both in-person and online activities determined the following key findings:



The public is aware of the City of Richmond's flood protection measures and is supportive of the City's flood protection work and efforts.

- Residents and other stakeholders found that the public information materials were useful and wanted to learn more.
- Participants were generally aware of Richmond's flood protection work. However, there is room for continued outreach and education on Richmond's flood risk mitigation and management plans, and climate change induced flood risks (e.g., sea level rise, increased frequency and intensity of extreme weather).



The public is supportive of the City of Richmond's accelerated flood protection program and the associated utility rate increases.

- Residents and stakeholders were fully supportive of Richmond's plan to expedite flood protection improvements projects and the associated utility rates.
- Many residents and other stakeholders would like to stay involved/up to date on future implementation work and detailed planning work.



The public is most supportive of upgrades that provide other community benefits and amenities.

- Environmental features (e.g., habitat areas and habitat benches), recreational amenities (e.g., seating, bike racks, signage – wayfinding and information), and multi-modal transportation improvements (e.g., separated bike lanes, improved wayfinding and walking paths) are the most highly rated and sought-after features for new and upgraded flood protection measures.
- Many participants would like to see improvements to pedestrian and bicycle safety along River Road.

Comments received during the public engagement for the 2018 Dike Master Plan Phase 2, 2019 Dike Master Plan Phase 3, and Dike Master Plan Phase 5 were generally consistent with the feedback received during the engagement for this project. In particular, the topics of proactive planning and flood protection improvements, dike aesthetics and recreational use, and environmental and habitat considerations.

During the public engagement for Dike Master Plan Phase 2, Phase 3 and Phase 5, comments and questions were received regarding climate science and climate change projections. Such questions and comments were not received during this round of outreach and engagement. Anecdotally, in-person public engagement reported more conversations around people's personal experiences of climate change-related incidents, including the November 2021 atmospheric rivers and flooding, the June/July 2021 heat dome and wildfires, and the 2020 wildfires and smoke/air quality issues. Collectively, these direct and personal experiences climate change impacts emergency may be enhancing public awareness of climate change and reinforcing public support for Richmond's accelerated flood protection program.

Each finding is expanded in the following sections.



The public is aware of the City of Richmond's flood protection measures and is supportive of the City's flood protection work and efforts.

In general, most engagement participants said they were somewhat familiar with Richmond's existing flood protection measures. Very few knew a lot about Richmond's flood protection measures and several engagement participants said they were not very familiar with the accelerated program. Just under half of the *Let's Talk Richmond* weekly poll participants indicated that they did know about the accelerated dike upgrade program, which indicate that there is a continued need for communication and education about flooding and dike upgrades in the City of Richmond.

How much do you know about the accelerated flood program?

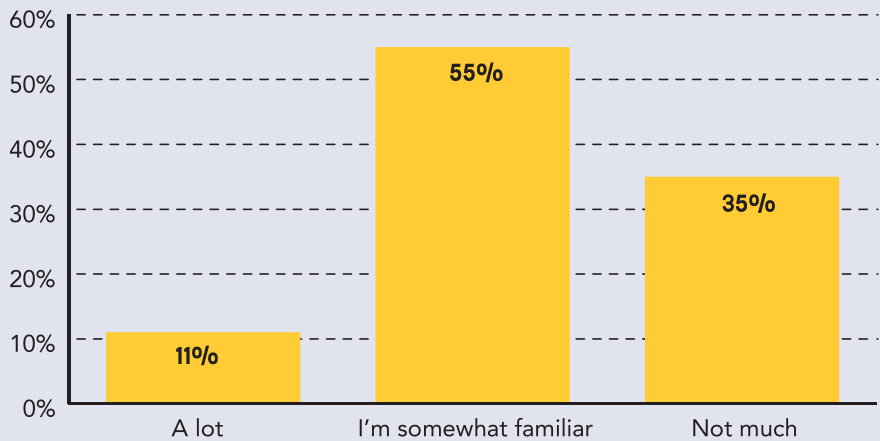


FIGURE 35: Community pop-up feedback about awareness of the accelerated flood program

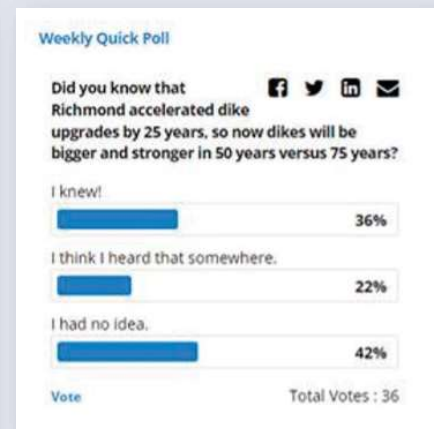
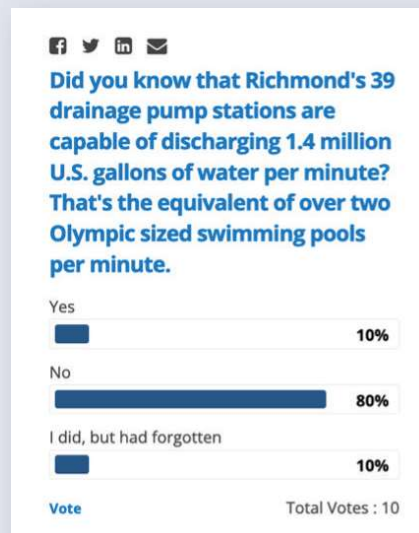
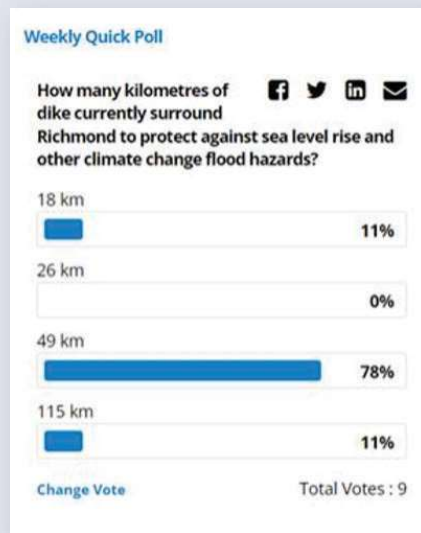


FIGURE 36: The *Let's Talk Richmond* Flood Protection webpage quizzed general knowledge about the City's flood protection measures



The public is supportive of the City of Richmond's accelerated flood protection program and the associated utility rate increases.

Although information about Richmond's flood protection measures was new to some engagement participants, feedback received through the engagement campaign generally supported the accelerated program. There was no negative reaction to the expedited rate increase. Some comments even suggested accelerating the program even more and upscaling work by partnering with neighbouring waterfront municipalities (e.g., New Westminster). Many participants requested more information sessions to keep updated on the project, especially related in the Hamilton neighbourhood.

Do you agree with the accelerated flood protection program?

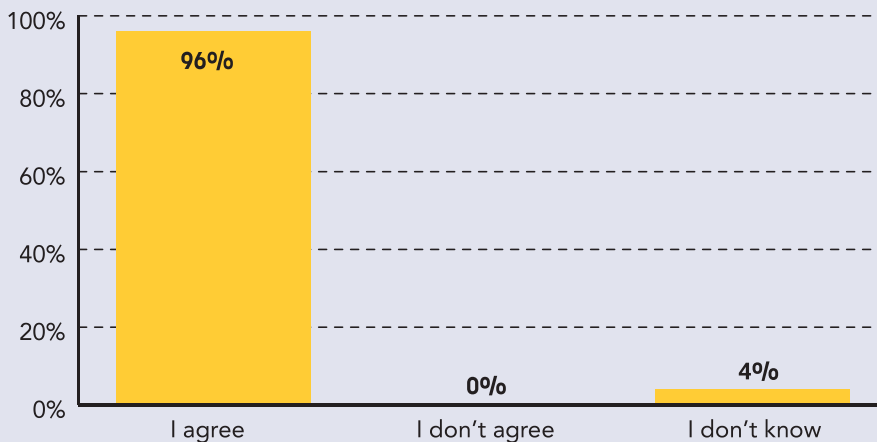


FIGURE 37: Community pop-up feedback about support of the accelerated flood program

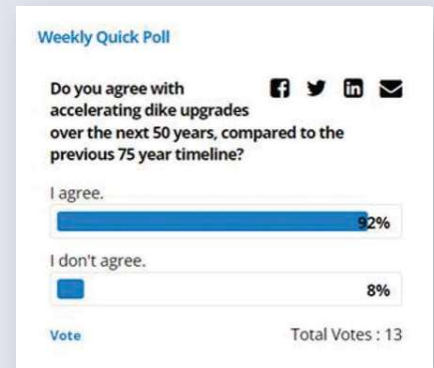


FIGURE 38: Weekly quick poll questions on the Let's Talk Richmond Flood Protection webpage asked about resident's support of the accelerated Flood Protection Program



The public is most supportive of upgrades that provide other community benefits and amenities.

Participants were asked about their ideas and suggestions on how the dike upgrades could be implemented to better meet the community's and users' needs.

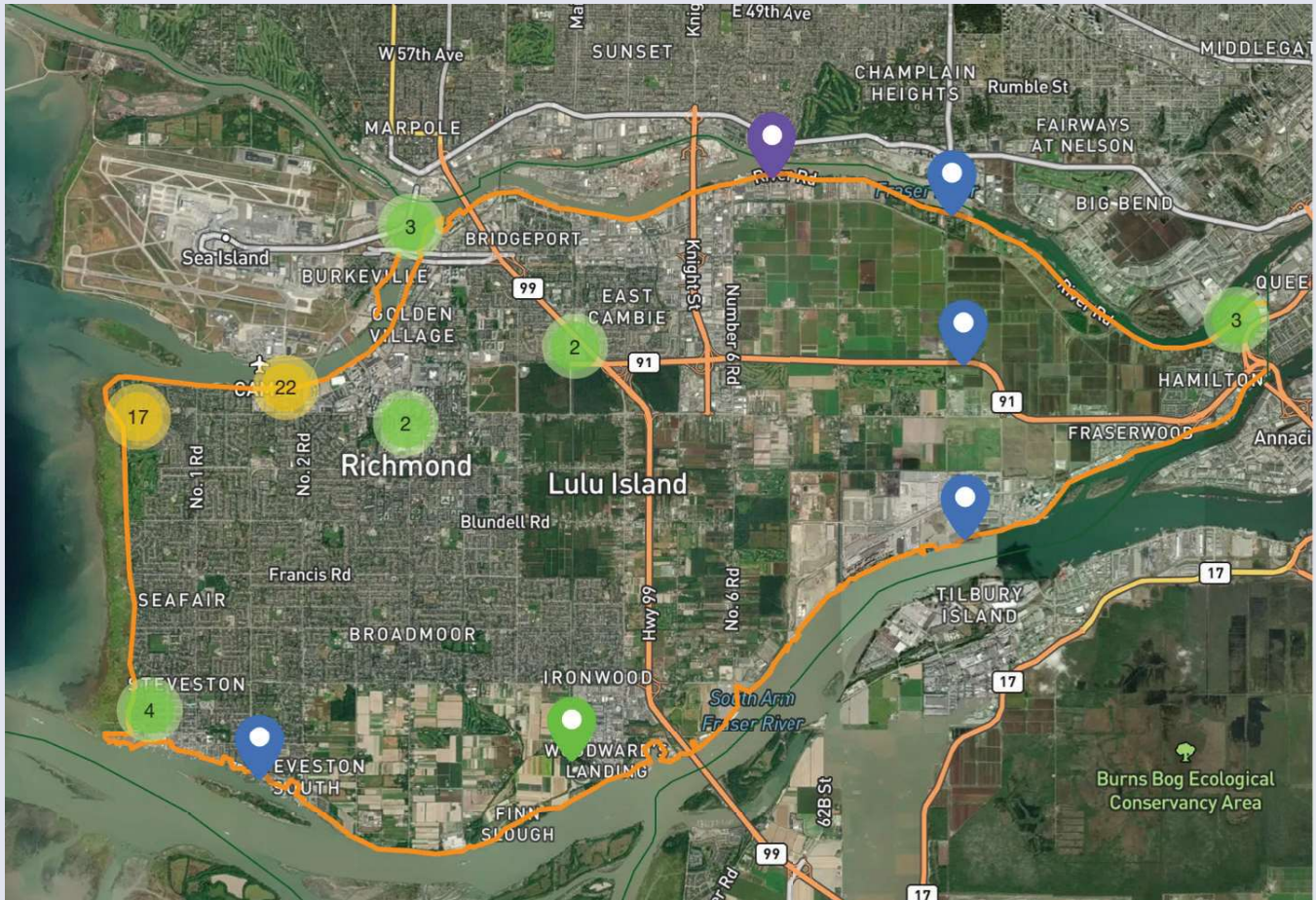


FIGURE 39: Collaborative mapping tool on Let's Talk Richmond that shows where participants want to see changes and amenities with the dike upgrades

Frequency of amenity categories mentioned

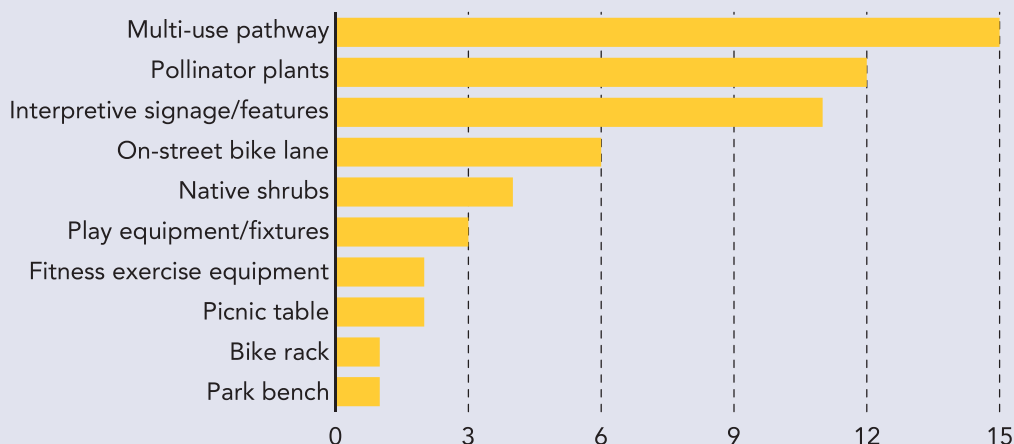


FIGURE 40: Frequency of amenity categories mentioned on the Let's Talk Richmond mapping tool. The mapping tool provided Let's Talk Richmond webpage visitors the opportunity to indicate what types of amenities and changes they would like to see implemented and where, as the flood protection system is upgraded. Visitors could place a pin on the map, choose a category that the pin represents, and explain their idea.

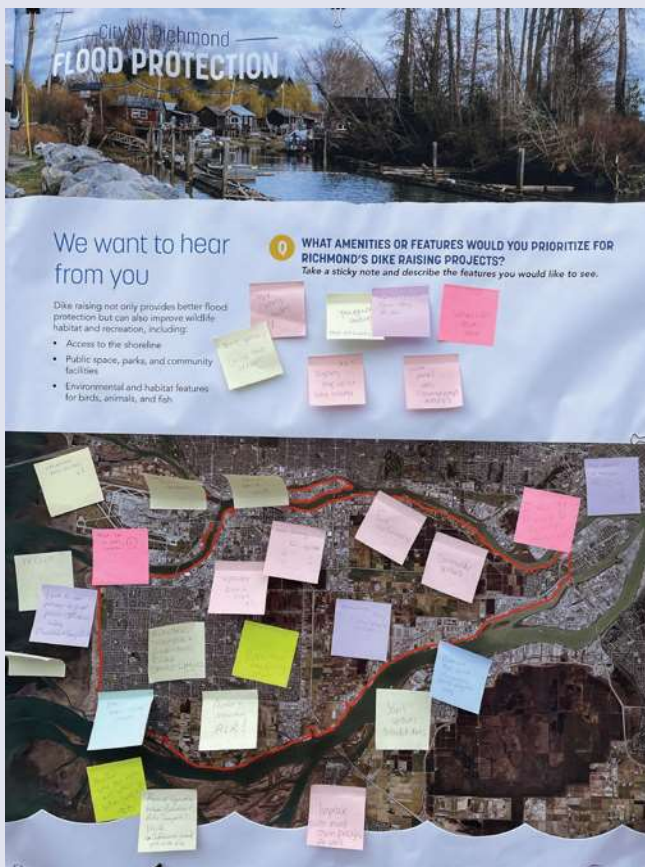


FIGURE 41: Poster board with sticky note comments and dots at the Steveston Farmers Market Community Pop-up

The following summarizes ideas shared by participants, organized by common topic themes.

TRANSPORTATION AND MOBILITY

Most ideas shared at the Community pop-ups, Community Conversations, and *Let's Talk Richmond* and other engagement focused on transportation, mobility, and connectivity for pedestrians, bikes, and motorized vehicles. Collectively, most comments were about:

- **Multi-use pathway** – ways to make the path safer (e.g., avoid pedestrian-vehicle conflicts, improve slippery and uneven surfaces), and increase access to walk by the water.
- **Bike lanes and amenities** – where to add, extend, or improve on-street bike lanes, increasing bike safety on River Road, bike repair at pump stations.
- **Traffic and Roadways** – use dike upgrades to improve traffic conditions and road upgrades for River Road and fix traffic safety (especially truck safety) concerns. Expand Bridgeport Road and National Avenue to remove trucks from River Road.
- **River Road improvements** – truck traffic, cyclist safety, and wildlife impacts resulting from traffic speeds need to be addressed on River Road.

CLIMATE CHANGE MITIGATION

Many comments suggested finding ways to reduce emissions and mitigate climate change with the dike upgrades.

- **Clean energy** – incorporate renewable energy opportunities with upgrades (e.g., solar, offshore wind power)

NATURE AND THE ENVIRONMENT

Several comments focused on nature, including enjoying, protecting, and enhancing the natural environment. Common ideas include:

- **Ecosystems and Wildlife** – Protect the trees and bird/eagle nests along River Road where possible. Replace trees that are removed further inland and consider river depth and sediment when constructing the dikes. Consider removing log storage near important habitat areas.

- **Natural features** – Use natural features for environmental benefits and wildlife concerns. Plant pollinator plants (e.g., lilac, borage, wild roses) and other native shrubs for their ecosystem benefits (e.g., beauty, shade, erosion control, and sound dampening).

RECREATION

Participants noted a range of recreation and play opportunities they would like to see prioritized with the dike upgrades. Ideas included playgrounds, fitness equipment, and seating areas. Another key recreation opportunity focused on food, including opportunities to dine and to grow food.

- **Play elements/features** – Build playgrounds, fishing piers, and paths, as well as where to place exercise equipment (dip bar and pullup bar), and bike racks (with surveillance).
- **Spaces to rest** – Build benches and sheltered areas. Having seating and washrooms along the waterfront is important.
- **Spaces to eat** – Develop picnic spaces and areas with food and drink vendors.
- **Growing food** – Plant fruit bearing trees and establish community gardens. Comments also acknowledged the importance of protecting the Agricultural land reserve.

SIGNAGE AND WAYFINDING

Participants noted places to add signage about heritage, emergency preparedness, transit, and dike upgrades.

- **Interpretive signage/features** – Added signage on heritage (e.g., Britannia shipyards), educational (e.g., habitat), emergency warning (e.g., tsunami), transit schedules (e.g., ferries real time signage), and directions.
- **Pedestrians, cyclists, and motor vehicles** – Include speed limits and signage to keep bikes and pedestrians separate.
- **Dike upgrade notices** – Create signage/ notices and further engagement to explain why trees need to be removed around dike areas or build park areas and plant trees behind dikes.

Moving Forward

Overall, many engagement participants shared that they have little-to-moderate knowledge of flood protection and the accelerated dike upgrades in Richmond but are strongly supportive of the accelerated program, recognizing the importance of these actions in the face of climate change.

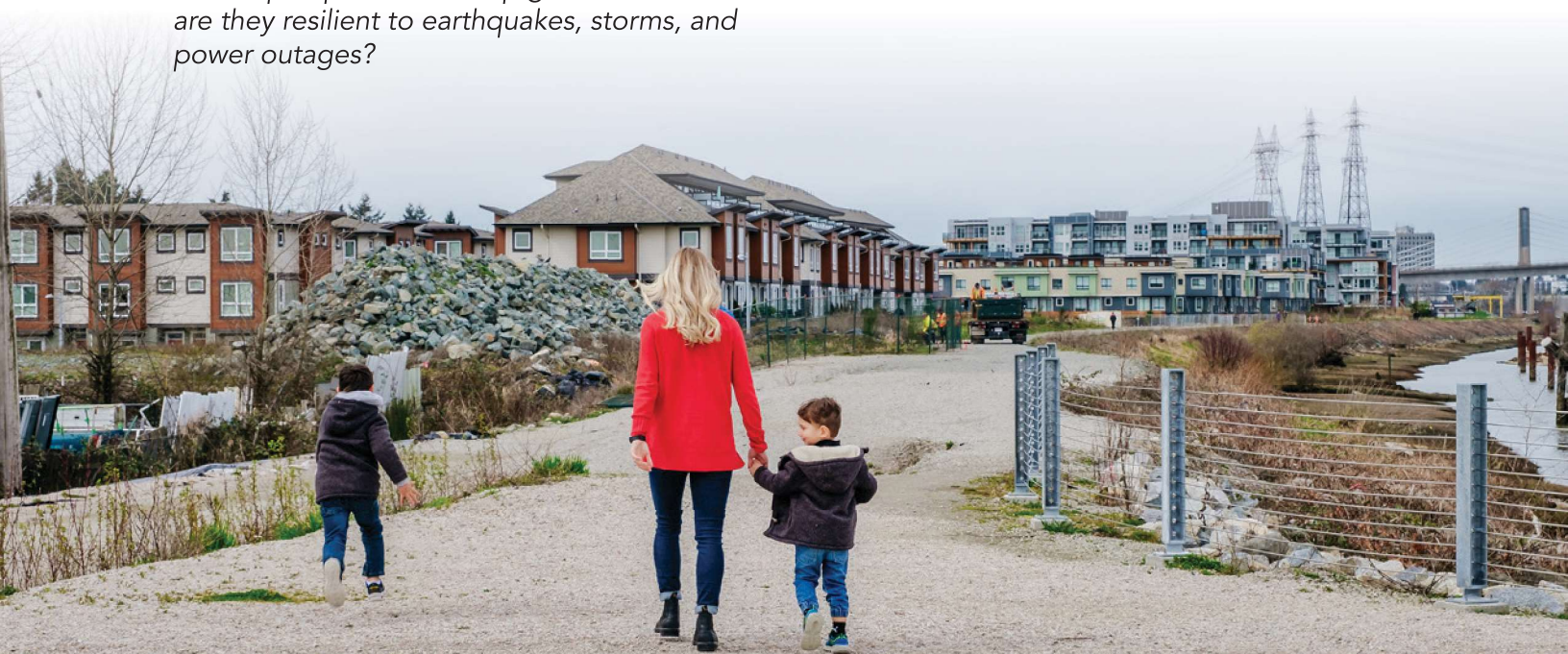
Moving forward, information sharing about challenges and opportunities that are posed by sea level rise and climate change impacts, as well as progress on Richmond's Flood Protection Management Strategy and Dike Master Plans will continue to be important.

Common questions from engagement participants that could inform future materials included:

- *Will homes with water access on their property retain safe access?*
- *Is truck traffic safe along dike roads, or will it cause seismic/erosion problems?*
- *How does the program manage for inland flooding? (Specifically for the Hamilton area).*
- *Do the pumps have backup generators and are they resilient to earthquakes, storms, and power outages?*

- *Is Richmond preparing for long-term sea level rise, with 2 metres of sea level rise considered unavoidable?*
- *How is the City of Richmond working with The City of New Westminster?*
- *Will the City add more washrooms and trails?*
- *When will upgrades will occur and how they are prioritized?*
- *Can the program be further accelerated?*
- *Does dredging impacts flood hazards?*
- *Does sea level rise affect groundwater levels?*
- *Where will land be raised and by how much?*

Overall, participants expressed positive sentiments towards the Richmond's ongoing flood protection work and expedited dike improvement project. Participants look forward to learning more about flooding and flood management in the City of Richmond as the accelerated project unfolds.









City of Richmond

Report to Committee

To: General Purposes Committee

Date: May 25, 2023

From: Todd Gross
Director, Parks Services

File: 11-7200-20-01/2023-
Vol 01

Mark Corrado
Director, Community Bylaws and Licensing

Re: Pilot Project for the Consumption of Alcohol in Public Parks

Staff Recommendation

That a Bylaw be drafted to permit the implementation of a Pilot Project for the consumption of liquor in designated areas in a limited number of City of Richmond parks as detailed in the report "Pilot Project For the Consumption of Alcohol in Public Parks," dated May 25, 2023, from the Directors of Parks Services and Community Bylaws.

Todd Gross
Director, Parks Services
(604-247-4942)

Mark Corrado
Director, Community Bylaws and Licensing
(604-204-8673)

Att. 7

REPORT CONCURRENCE		
ROUTED TO:	CONCURRENCE	CONCURRENCE OF GENERAL MANAGER
Law	<input checked="" type="checkbox"/>	
Community Safety Administration	<input checked="" type="checkbox"/>	
RCMP	<input checked="" type="checkbox"/>	
Engineering Public Works	<input checked="" type="checkbox"/>	
SENIOR STAFF REPORT REVIEW	INITIALS: 	APPROVED BY CAO

Staff Report

Origin

A number of municipalities in Metro Vancouver have implemented initiatives to permit the consumption of liquor in public spaces to provide park users with enhanced opportunities to socialize, recreate and relax with friends and family. While some municipalities provide the opportunity to consume alcohol in a variety of designated areas throughout their respective open public space system, others have restricted it to limited parks. In both models, a pilot project was usually initiated prior to permanent or full scale program implementation.

Staff received the following referral arising from discussion at the May 9, 2023, Community Safety Committee:

That staff explore how the City can move forward this summer on a pilot project for the consumption of alcohol beverages in City parks similar to what other Municipalities in the region have in place, and report back to General Purposes Committee.

This report supports Council's Strategic Plan 2022-2026 Focus Area #3 A Safe and Prepared Community:

Community safety and preparedness through effective planning, strategic partnerships and proactive programs.

3.4 Ensure civic infrastructure, assets and resources are effectively maintained and continue to meet the needs of the community as it grows.

This report supports Council's Strategic Plan 2022-2026 Focus Area #6 A Vibrant, Resilient and Active Community:

Vibrant, resilient and active communities supported by a wide variety of opportunities to get involved, build relationships and access resources.

6.1 Advance a variety of program, services, and community amenities to support diverse needs and interests and activate the community.

6.3 Foster intercultural harmony, community belonging, and social connections.

Findings of Fact

Background

Over the past three years, parks and open spaces have seen an increase in the number of visitors due to the need for recreation, exercise, connectivity and socialization. Additionally, increasingly warmer summer weather has increased outdoor resident activity, particularly, in higher density areas where access to privately owned green space is limited.

Liquor Control and Licensing Act and Regulation

The Province's Liquor Cannabis Regulation Branch (LCRB) is the lead agency regulating alcohol consumption, sales and licensing of liquor primary and food establishments. However, municipalities play a key role in the issuance of liquor primary licenses and more recently in regulating the consumption of alcohol on City properties such as park spaces. The Province amended the *Liquor Control and Licensing Act* in June 2021 enabling municipalities to designate public places where alcohol consumption is permitted. The *Liquor Control and Licensing Act*, Section 73 and the *Liquor Control and Licensing Regulations*, Section 197, allow municipalities to designate, by Bylaw, a public space or a portion of it where alcohol can be consumed. Under the current Provincial legislation, the City would be required to implement a bylaw to regulate the public consumption of alcohol in the City of Richmond, either for a pilot project or a fully implemented program.

Regional Precedents

Since 2021, 12 of the 23 Metro Vancouver jurisdictions have implemented alcohol consumption in public spaces pilot projects or permanent programs. A detailed chart of these municipalities are included as Attachment 1.

Of the five largest municipalities (aside from Richmond), three have designated public places where alcohol consumption is permitted.

	Municipality	Pop.	Program Type	No. of Public Places
1	Vancouver	662,248	Pilot and Permanent	54
2	Surrey	568,322	None	0
3	Burnaby	249,125	Pilot	TBD
4	Coquitlam	148,625	Pilot	57
5	Langley (Township)	132,603	None	0

Over the past two years, the apparent success of these programs has been such that a few municipalities have added additional sites or transitioned pilot projects to permanent ones. While participating municipalities have mostly experienced positive outcomes, many experienced an increase in waste management maintenance responsibilities. Port Moody, which is still in the pilot phase, has removed one site from the program due to issues with sand clean-up related to broken glass and the proximity of its swimming area.

Pilot Project Guidelines

Piloting this initiative in a limited number of parks throughout the City would be considered an initial first step prior to a potential full implementation, pending a pilot project review. The following are proposed pilot guidelines:

- **Form:** The open consumption of alcohol would be permitted in designated areas within public parks. A balance will need to be struck between providing alcohol partakers adequate space with amenities close by and ensuring that other park uses are not negatively impacted.

- Duration: The proposed duration of the pilot project would be approximately two to three months, beginning July and ending September 30, 2023. Consistent with other municipalities that have implemented similar programs, staff propose that the consumption of alcohol be permitted between 11:00 a.m. and 9:00 p.m., seven days a week.
- Site Selection: A limited number of locations throughout the City will be selected for the pilot project based on multiple criteria, including but not limited to:
 - a. Geographic Location: Locate and pilot at limited sites throughout the City in neighbourhoods representative of various densities and park uses;
 - b. Minimize Impacts to Other Park and Park-Adjacent Uses: Locate away from school grounds and active play areas;
 - c. Proximity to Publicly Accessible Washrooms: Either within the park or nearby at a public facility;
 - d. Proximity to Food and Beverage Businesses: Either within the park itself or nearby;
 - e. Proximity to Multi-Family Housing: There is greater need for public greenspace for local residents with limited access to private outdoor spaces;
 - f. Accessibility of Transit: Ease of access to designated pilot project sites, and to provide alternative means of safe transportation;
 - g. Walkability: Ease of access to designated pilot project sites and to provide alternative means of safe transportation;
 - h. Visible, Non-Remote Locations: Promote prosocial activities and provide safe access for bylaw enforcement personnel, staff, and maintenance vehicles for waste and recyclable materials management; and
 - i. Park Amenities: Provide a mix of soft and hard landscapes, picnic tables, benches, waste and recycling receptacles, and shelters.
- Potential Impacts to Youth: To minimize the risk of adverse role-modelling, alcohol consumption should be avoided within the vicinity where youth and children typically congregate, such as playgrounds, spray parks, and athletic facilities such as baseball diamonds, sports fields, and extreme sports parks (e.g., skate or bike parks). Staff propose that a minimum prohibitive buffer of approximately ten metres (33 feet) be established around the aforementioned amenities.

Monitoring and Enforcement

In all municipalities that have passed bylaws to allow for the consumption of alcohol in public spaces, the authority to enforce these bylaws has been shared by both local police (RCMP) department and the Bylaw department. Police play the sole role in the enforcement of *Criminal Code* offences associated with alcohol.

Staff conducted a preliminary scan of jurisdictions with bylaws regulating alcohol in public spaces and determined that a majority of municipalities have bylaw enforcement ticketing provisions regarding the consumption of alcohol in a non-designated area. These tickets could be issued both by police and bylaw staff.

The majority of jurisdictions utilized a call response model involving both police and bylaw staff to address public complaints. Only a minority of jurisdictions engaged a limited number of proactive patrols during peak summer months. Most jurisdictions did not report a substantial increase in alcohol or park related bylaw calls for service. Typically, founded calls for service involved individuals drinking in a non-designated area. Unfounded calls for service usually involved a member of the public who was unaware of the new bylaw. The resolution of these unfounded calls frequently occurred at the call-intake phase where staff took the opportunity to explain the new bylaw provisions. The potential risk of unfounded calls was viewed as being mitigated by a strong public awareness and education campaign.

Should the City introduce alcohol consumption in parks, it is recommended that ticketing provisions be established to, specifically, prohibit the consumption of alcohol outside of designated areas. Moreover, it is recommended that the City continue its current stepped approach to bylaws enforcement: proactive education, warnings, tickets, and court action. More serious incidents regarding public intoxication and impaired driving will continue to be enforced through the *Criminal Code*, as well as the consumption of alcohol by minors under the *Liquor Control and Licensing Act*.

Next Steps

Implement a Pilot Project

Should Council direct staff to proceed with a pilot project to permit the consumption of alcohol in public parks, staff recommend the following incremental implementation process:

1. Bring forward a bylaw to permit the implementation of a pilot project this summer. A bylaw could be prepared for Council's consideration at the next Council Meeting;
2. Implement a pilot project in designated areas in five City parks;
3. Conduct public consultation (during and after the pilot project) to gather feedback from residents; and
4. Report back to Council on the results of the public consultation process, feedback on the pilot project and recommendations for next steps.

Proposed Pilot Project Locations

Based on the pilot project and, monitoring and enforcement guidelines, staff are recommending that the pilot project designated zones be established at five parks throughout the City (Attachment 2). Additional detailed location maps can be viewed in Attachments 3 to 7.

1. Garry Point Park

This site meets several key site selection criteria including park amenities such as publicly accessible washrooms, picnic tables and benches, and proximity to public transit and local businesses. As a popular regional tourist destination, utilizing this park as a pilot site will provide staff with key project evaluation opportunities due to its high profile and activity rate, and broad user base. See Attachment 3 for the Garry Point Park Pilot Project Location Map.

2. Aberdeen Neighbourhood Park

This park is located in the heart of the City Centre, close to public transit and central to nearby high-density residential areas. Additionally, with the recent completion of Phase 2 of the park, amenities such as sitting areas, picnic tables, a washroom, the Zhengzhou Exchange Garden and covered pavilion support this site as a highly urban and programmed park. See Attachment 4 for the Aberdeen Neighbourhood Park Pilot Project Location Map.

3. Minoru Park

While a significant portion of the park does not meet the site selection criteria due to incompatible uses such as sports fields and playgrounds, the proposed pilot project location in the northern section of the park meets several key site selection criteria. With the Minoru Lakes renewal project nearing completion, the widespread passive recreational areas make the Lakes area an appealing location as a pilot site. See Attachment 5 for the Minoru Park Pilot Project Location Map.

4. King George/Cambie Community Park

Although the park features a children's play area and spray park, the large and popular picnic area at the west end of the park, where residents regularly gather for events, along with nearby public washroom facilities, make this park an appropriate pilot site. See Attachment 6 for the King George/Cambie Community Park Pilot Project Location Map.

5. McLean Neighbourhood Park

This park is central to the Hamilton neighbourhood, and features numerous seating opportunities, lawn areas, and shade trees that provide ample recreation space for residents to enjoy. A pilot site in the passive recreational areas of the park would give the residents of Hamilton the opportunity to participate and provide their feedback on the pilot project. See Attachment 7 for the McLean Neighbourhood Park Pilot Project Location Map.

It should be noted that alcohol sales are not proposed to be a component of this pilot project. Alcohol will not be available for purchase in any park space connected with this project. Residents will need to purchase alcohol through licensed alcohol distributors and bring it to the park space.

Signage and Awareness

The effectiveness of the pilot project is contingent on an effective implementation and administration plan throughout the project's duration. Staff propose that signage be installed at

each of the proposed pilot sites informing park users of the pilot project itself, the location of the permitted alcohol consumption zones (depicted on a reduced scale map of the respective park), and contact information should residents have any questions, comments or concerns. Signage which is a requirement pursuant to the legislation, would be posted at entry points to the park, as well as key locations at the approximate boundaries of the permitted consumption zones. While the permitted consumption zones will not be physically delineated on the ground, site signage will provide residents the necessary information to locate the zones.

Although other municipalities have applied prohibited buffer zones that vary from five metres (16 feet) to 20 metres (66 feet) around amenities where kids and youth congregate as well as ecologically-sensitive areas, staff recommend that a ten metre (33 feet) prohibitive buffer be utilized around playgrounds, water play features and active recreation areas (e.g., sports fields and baseball diamonds) in consideration of the restricted conditions at several proposed pilot sites such as King George/Cambie Community Park and McLean Neighbourhood Park.

Public Consultation

Staff will engage with residents through a number of means including the City's Let's Talk Richmond platform and direct staff-resident dialogue at pilot project locations for the duration of the project. Having an open line for feedback and communication with residents will allow staff to be responsive to operational needs, enforcement issues, requests for services and overall project feedback.

Post Project Completion Public Consultation, Program Evaluation and Report Back to Council

Upon completion of the pilot project on September 30, 2023, staff will launch a Let's Talk Richmond survey requesting stakeholder feedback. While a specific feedback survey has not yet been developed, questions posed will attempt to garner feedback on the frequency and level of participation by residents, any positive or negative experiences as a result of the pilot project and the general level of support for expanding (or reducing) the pilot program to a permanent City-wide program or restricting it to only key locations. Additionally, staff propose that the survey should include an opportunity for residents to provide general feedback.

Staff will compile the results of the post-project survey, feedback received during the pilot project's operation and staff service requests including calls for bylaw enforcement and maintenance concerns. Staff will also evaluate operational service impacts to, for example, staffing areas involving Community Safety, RCMP, Parks and Environmental Services. Findings will be summarized in a Report to Council in Q4, 2023, or early Q1, 2024. The report will provide Council options for consideration to expand, reduce or conclude the program on a permanent basis.

Financial Impact

None.

Conclusion

As our community densifies, residents are using public spaces for activities previously reserved for private outdoor spaces such as backyards, patios or decks. Just as residents responsibly enjoy an alcoholic beverage on private property while partaking in these pro-social activities, providing residents the same opportunity to do so in public parks is a potential initiative for the City to consider through a pilot project in a restricted number of parks.

Should Council direct staff to proceed with a pilot project to permit the consumption of alcohol in public parks, staff will bring forward a bylaw to permit the implementation of the proposed pilot project for designated areas in five parks, located throughout the City. Implementing this project on a pilot basis will provide both the City and residents time to evaluate whether such a program is suitable to become a normal practice in City parks, consistent with other municipalities in the region where similar programs have been successfully implemented.



Alex Kurnicki
Manager, Parks Programs
(604-276-4099)

- Att. 1: Metro Vancouver Jurisdictions with Alcohol Consumption in Public Places Programs
2: City-Wide Pilot Project Location Map
3: Garry Point Park Pilot Project Location Map
4: Aberdeen Neighbourhood Park Pilot Project Location Map
5: Minoru Park Pilot Project Location Map
6: King George/Cambie Community Park Pilot Project Location Map
7: McLean Neighbourhood Park Pilot Project Location Map

Metro Vancouver Jurisdictions with Alcohol Consumption in Public Places Programs

Attachment 1

	Municipality Population	Program Type No. of Public Places	Permitted Hours	Prohibited Areas	Public Consultation
1.	Vancouver 662,248 pop.	Pilot (summer only) 7 beaches Permanent (summer only) 10 parks Permanent (year-round) 31 parks	11:00 am to 9:00 pm <i>Daily</i>	<ul style="list-style-type: none">• Playgrounds or schools (+ 20 m. buffer zone)• Pools or water parks (+ 5 m. buffer zone)• Beaches (except those in pilot)• Ponds, lakes or docks• Sport fields and courts• Skate parks• Fitness amenities• Pitch & putt golf courses• Ecologically sensitive natural areas (+ 20 m. buffer zone)• Garden or horticultural display areas• Off-leash dog areas• Community centres• Seawall• Fieldhouses• Building entrances• Washrooms• Parking lots• Roadways• During recreational programs or special events (temporarily) <p><i>Alcohol contained in glass bottles or containers are also prohibited due to the risk of broken glass.</i></p>	<ul style="list-style-type: none">• Surveys

Metro Vancouver Jurisdictions with Alcohol Consumption in Public Places Programs

Attachment 1

	Municipality <i>Population</i>	Program Type <i>No. of Public Places</i>	Permitted Hours	Prohibited Areas	Public Consultation
2.	Coquitlam 148,625 pop.	Pilot (year-round) 56 parks	Dawn to dusk <i>Daily</i>	<ul style="list-style-type: none"> Playgrounds Pools and wading pool grounds Indoor park areas School District No. 43 lands 	N/A
3.	Langley (City) 28,963 pop.	Permanent (summer/fall only) 3 parks	11:00 am to 8:00 pm <i>Thursday to Saturday</i> 11:00 am to 6:00 pm <i>Sunday</i>	<ul style="list-style-type: none"> Playgrounds Pools and spray parks 	<ul style="list-style-type: none"> Surveys
4.	North Vancouver (District) 88,168 pop.	Permanent (year-round) 14 parks	11:00 am to dusk <i>Daily</i>	<ul style="list-style-type: none"> Playgrounds (+ 10 m. buffer zone) Sport courts and skate bowls (+ 10 m. buffer zone) Playing fields (during games or events) Artificial turf fields (at any time) Trails, pathways, natural parklands and forested areas Wharves or boat launches Buildings, structures, or other installations Vehicles 	N/A
5.	New Westminster 78,916 pop.	Permanent (year-round) 7 parks	11:00 am to dusk <i>Daily</i>	<ul style="list-style-type: none"> Playgrounds Pools Off-leash dog areas Indoor park areas 	<ul style="list-style-type: none"> <i>Be Heard New West</i> website Surveys Poll Mapping tool

Metro Vancouver Jurisdictions with Alcohol Consumption in Public Places Programs

Attachment 1

	Municipality Population	Program Type No. of Public Places	Permitted Hours	Prohibited Areas	Public Consultation
6.	Port Coquitlam 61,498 pop.	Permanent (year-round) 10 parks	Dawn to dusk Daily	<ul style="list-style-type: none"> Playgrounds (+ 10 m. buffer zone) School District No. 43 lands 	<ul style="list-style-type: none"> Let's Talk PoCo website Surveys
7.	North Vancouver (City) 58,120 pop.	Permanent (year-round) 7 parks	11:00 am to dusk Daily	<ul style="list-style-type: none"> Playgrounds or childcare areas (+ 20 m. buffer zone) 	<ul style="list-style-type: none"> Web-based submissions
8.	West Vancouver 44,122 pop.	Pilot (year-round) 3 parks Permanent (year-round) 1 park	12:00 pm to dusk Daily	<ul style="list-style-type: none"> Playgrounds Piers 	N/A
9.	Port Moody 33,535 pop.	Pilot (year-round) 5 parks* * Neighbourhood parks were not considered due to insufficient time for public consultation.	11:00 am to dusk Daily	<ul style="list-style-type: none"> Playgrounds (+10 m. buffer zone) Skateboard parks (+ 10 m. buffer zone) Spray parks (+ 10 m. buffer zone) Trails Labyrinth Healing Garden Sidewalks School District No. 43 lands 	To be conducted at end of pilot program (December 31, 2023).
10.	Delta 108,455 pop. Ladner 23,016 pop. Tsawwassen (First Nation) 2,256 pop.	Permanent (summer/early fall only) 3 parks	11:00 am to dusk Daily	<ul style="list-style-type: none"> Playgrounds 	<ul style="list-style-type: none"> Let's Talk Delta website

City-Wide Pilot Project Location Map



Garry Point Park Pilot Project Location Map



Aberdeen Neighbourhood Park Pilot Project Location Map



Note:
Boundary of proposed Alcohol Consumption Permitted Zone is provided for illustrative purposes and subject to change upon implementation.



Minoru Park Pilot Project Location Map



Note:
Boundary of proposed Alcohol Consumption Permitted Zone is provided
for illustrative purposes and subject to change upon implementation.



King George/Cambie Community Park Pilot Project Location Map



Note:
Boundary of proposed Alcohol Consumption Permitted Zone is provided
for illustrative purposes and subject to change upon implementation.



McLean Neighbourhood Park Pilot Project Location Map



Note:
Boundary of proposed Alcohol Consumption Permitted Zone is provided
for illustrative purposes and subject to change upon implementation.





City of Richmond

Report to Committee

To: Finance Committee
From: Jerry Chong
General Manager, Finance and Corporate Services
Date: May 12, 2023
File: 01-0375-01/2023-Vol 01
Re: 2022 Annual Report and 2022 Annual Report Highlights

Staff Recommendation

That the reports titled, "2022 Annual Report and 2022 Annual Report – Highlights" be approved.

Jerry Chong
General Manager, Finance and Corporate Services
(604-276-4064)

Att. 2

REPORT CONCURRENCE	
CONCURRENCE OF GENERAL MANAGER 	
SENIOR STAFF REPORT REVIEW	INITIALS:
APPROVED BY CAO 	

Staff Report

Origin

Pursuant to Section 98 of the Community Charter, before June 30th, in each year, a Council must:

- a) Prepare an annual report
- b) Make the report available for public inspection
- c) Have the report available for public inspection at a Council or other public meeting

This report supports Council's Strategic Plan 2022-2026 Focus Area #4 Responsible Financial Management and Governance:

Responsible financial management and efficient use of public resources to meet the needs of the community.

4.1 Ensure effective financial planning to support a sustainable future for the City.

4.3 Foster community trust through open, transparent and accountable budgeting practices and processes.

Analysis

The City of Richmond's annual report formally presents the audited financial statements and other relevant financial, economic and demographic indicators to the public. The report also highlights many of the City's significant achievements and milestones from 2022.

Two versions of the Annual Report are produced each year in order to reach the different audiences interested in this information. The comprehensive 2022 Annual Report meets all legislative requirements for financial reporting as required under the Community Charter for British Columbia's local governments. This version will be publicly available through the City's [website](#) and printed only on a demand basis. The comprehensive version includes the City's audited consolidated financial statements; the City's corporate objectives and success indicators, as identified through Council's Term Goals; and a listing of permissive exemptions. In addition to the statutorily required information, the comprehensive version provides information on the City's milestones from 2022, including awards and achievements and a variety of key corporate financial and community demographic statistical data for the year.

For a broader audience, the City also produces a condensed financial reporting document known as the 2022 Annual Report – Highlights. This shorter version, which is designed to be accessible and easily understandable for a general audience, provides information about the City of Richmond, its services, highlights from 2022 and the City's financial condition. In order to support sustainable practices the condensed version is available through the City's website and distribution will be done electronically. There will be limited printed copies for presentation purposes and to fulfill statutory obligations.

Both copies will be submitted to the Government Finance Officers Association for consideration in their annual awards program. The previous year's awards for the 2021 reports were received for both the Canadian Award for Financial Reporting (20th consecutive year) and the Outstanding Achievement in Popular Financial Reporting Award (13th consecutive year).

The reports are produced entirely in house through the joint efforts of the Finance Department and the Corporate Communications and Marketing Department, with design by the in-house Production Centre team. The 2022 reports also feature photos submitted by City of Richmond employees who were asked to submit images to showcase their city, and recognize the talent and contributions of staff outside their day-to-day work environments.

Financial Impact

None.

Conclusion

The City of Richmond 2022 Annual Report and the 2022 Annual Report – Highlights satisfy the Community Charter requirements for financial reporting and are important instruments in ensuring public transparency and accountability for the management of City finances. The reports also provide useful information on the City's achievements and milestones during the 2022 fiscal year.



Mike Ching
Director, Finance
(604-276-4137)



Clay Adams
Director, Corporate Communications and
Marketing
(604-276-4399)

- Att. 1: 2022 Annual Report
2: 2022 Annual Report – Highlights



City of
Richmond
British Columbia, Canada

2022 Annual Report

For the year ended December 31, 2022





City of Richmond

British Columbia, Canada

2022 Annual Report

For the year ended December 31, 2022

*Our vision is to be the most appealing, livable
and well-managed community in Canada*

Contents

Introductory section

Message from the Mayor	2
Richmond City Council.....	3
City of Richmond Senior Management Team.....	4
Message from the Chief Administrative Officer	5
Council Strategic Plan: 2018 to 2022	6
Richmond: vibrant, confident and connected	10
2022 Awards	12
Report from the General Manager, Finance and Corporate Services.....	14

Financial section

City of Richmond audited financial statements.....	17
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Statistical section

City of Richmond statistical data	47
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Tax exemption section

2022 permissive property tax exemptions.....	63
Major services provided by the City of Richmond	67
City of Richmond contacts	68

For an online copy of this report, please visit <https://richmond.ca/city-hall/finance/reporting/reports.htm>



The City of Richmond is proud of its diverse and committed workforce. This year, we asked our employees to take photos and send us images of “their Richmond” for this report. Photos with the camera icon are just some of the submissions, and we are delighted to share them with you. None are professional photographers.

COVER PHOTO: SPRING TIME AT RICHMOND CITY HALL

Message from the Mayor



The City of Richmond has always been a civic leader, and our City Council is known for its bold, innovative, sustainable programs and strategies that benefit residents and businesses.

Those programs and strategies were key to our City's continuing emergence from the pandemic and supported the community through the economic challenges and increasingly forceful impacts of climate change. Throughout 2022, Council worked tirelessly to support our 225,000 residents and almost 14,000 businesses to ensure Richmond continued to be a safe, strong, active and resilient city.

Investment and growth supported by implementation of the City's Resilient Economy Strategy resulted in sustained job creation, with Richmond businesses now providing around 130,000 local jobs. With one of the strongest job-to-worker ratios in the region, Richmond continues to be an important employment centre and almost 20 per cent more new business licenses were issued in 2022 compared to the previous year. That meant new jobs, new opportunities and renewed economic energy.

Council supported building permits for over \$926 million in construction value, not only leading to economic growth but more housing options for our community. In 2022, several significant projects were opened or announced. The award-winning Keltic Paramount development at No. 3 and Cook Roads is one example. Beyond its stunning First Nations-themed façade and artwork are 530 residential units, including 27 affordable housing units, as well as a large City-owned child care hub that has drawn accolades and awards.

Approval was given to another development in the emerging Hamilton Village Centre at the corner of Westminster Highway and Gilley Road, which will feature 223 residential units—including much-needed affordable housing—and around 25,000 square feet of commercial space.

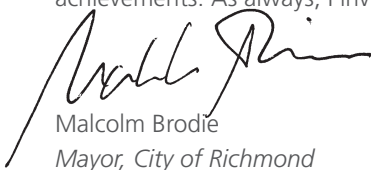
Ground was broken on the long-awaited replacement Steveston Community Centre and Library. This \$95 million, three-storey, 60,000 square foot facility will include a double gymnasium, fitness centre and active studio, as well as an extensive library to showcase enhanced collections with child and youth spaces and educational program rooms.

Maintaining strong infrastructure to keep our city safe from extreme weather was another priority. Council approved several initiatives including the raising of an additional 1.5 kilometres of dikes as well as new drainage pump stations at No. 3 and Gilbert Roads. Upgrades were made to over 1,270 feet of water mains, 2,200 feet of sanitary mains and 1,400 feet of drainage in the Burkeville neighbourhood alone.

Over the past year, Council took sustainable action and invested for future generations through the support and approval of several environmentally-focused initiatives such as the Circular City Strategy to guide the transition to a fully circular economy in Richmond by 2050. Coupled with our ground-breaking single-use plastics bylaw, expansion of electric vehicle use and active transportation alternatives, as well as increased investment in our award-winning Lulu Island District Energy program, the City of Richmond continued to be a leader in sustainability and environmental stewardship.

This past year also saw a number of significant changes in governance and administration. Long-standing Councillors Harold Steves and Linda McPhail retired after years of dedicated community leadership, choosing not to seek re-election. In their place, Council welcomed Laura Gillanders and Kash Heed as newly-elected members. The City also welcomed long-serving staff member Serena Lusk to a new role as Chief Administrative Officer following the retirement of George Duncan, as well as Jim Wishlove as the new Chief of Richmond Fire-Rescue. Chief Superintendent Dave Chauhan was also appointed as the new Officer in Charge of the Richmond RCMP detachment.

While the past year may have seen changes, through wise investments, sound management and innovative action, our staff, volunteers and businesses—as well as our community and government partners—continued to work together to make Richmond a better place for all. This 2022 Annual Report contains examples of just some of our goals and achievements. As always, I invite your comments and questions through my office.



Malcolm Brodie
Mayor, City of Richmond

Richmond City Council

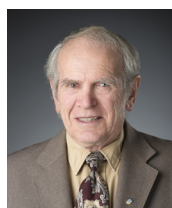


Back row, left to right:

Lieutenant Jim Dickson—Richmond Fire-Rescue, Councillor Andy Hobbs, Councillor Kash Heed*, Councillor Laura Gillanders*, Councillor Michael Wolfe, Constable Jordan Hitchon—Richmond RCMP

Front row, left to right:

Councillor Alexa Loo, Councillor Bill McNulty, Mayor Malcolm Brodie, Councillor Chak Au, Councillor Carol Day



Left: Councillor Harold Steves

Right: Councillor Linda McPhail

(did not seek re-election in October 2022)

*elected to Council October 2022

Connect with Richmond City Council

To contact Council, email MayorAndCouncillors@richmond.ca or call 604-276-4000.

For Council Meetings agendas and minutes, visit <https://citycouncil.richmond.ca/agendas.htm>.

To live stream Council meetings or view videos of past meetings, visit

<https://citycouncil.richmond.ca/meetings/watch-video.htm>.

City of Richmond Senior Management Team 2022



Chief Administrative Officer	Serena Lusk (as of July 1, 2022*)
General Manager, Community Services	Elizabeth Ayers
General Manager, Community Safety.....	Cecilia Achiam
General Manager, Engineering and Public Works	John Irving
General Manager, Finance and Corporate Services	Jerry Chong
General Manager, Planning and Development.....	Joe Erceg
General Manager, Law and Legislative Services.....	Tony Capuccinello Iraci

Public safety agencies

Chief, Richmond Fire-Rescue	Jim Wishlove
Officer in Charge, Royal Canadian Mounted Police	Dave Chauhan

Banker

Scotiabank

Auditors

KPMG

* replaced George Duncan who retired June 30, 2022

Message from the Chief Administrative Officer



I am pleased to present the City of Richmond's 2022 Annual Report. It details our strong financial position and outlines many of the important initiatives we are undertaking to serve our community.

This past year, the City continued its restoration of programs and services as we emerged from the isolation and restrictions of the pandemic. Richmond City Hall, which had provided services remotely since closing in March 2020, reopened its doors to the public once again. Many of our recreation and fitness programs and activities also fully returned and were quickly embraced by the community. Recreation and day camp registration jumped 50 per cent as over 20,000 youth and children signed up.

Physical activity and healthy lifestyles are important to our community and Richmond was named BC's Most Active Community in the 2022 ParticipACTION Community Better Challenge. This nation-wide initiative recognized our community's activity levels along with the creative ways we engaged people to become more physically active.

Many popular festivals and events became in-person again, with over 40,000 visitors attending the Richmond Maritime Festival. Thousands also enjoyed the 75th Steveston Salmon Festival and Canada Day celebration. While the Cherry Blossom Festival remained online, it attracted over 66,000 social media visits and 7,400 video views, paving the way for an in-person return in 2023.

The City's Remembrance Day ceremony also returned to City Hall in-person for the first time since 2019, with the community, veterans and military representatives attending to show their respects.

Promoting diversity and inclusiveness is essential in a city as uniquely multicultural as Richmond. Over 80 per cent of our population is a visible minority, the highest proportion of any British Columbia municipality, so accessibility and acceptance is important as we build strong, healthy communities in Richmond. Our Newcomers Video Series is one example of how we welcome immigrants to our city, with the online videos captioned in Chinese, Punjabi, Ukrainian, Arabic and Farsi.

The City and Richmond Multicultural Community Services began working together to encourage diversity and promote multiculturalism through an anti-racism arts project. The Aspire | Build | Celebrate (ABC) project was funded by a grant from the Department of Canadian Heritage Community Support, Multiculturalism and Anti-Racism Initiatives program and is another example of our commitment to diversity and inclusion.

Richmond also commemorated National Indigenous History Month (June) and National Indigenous Peoples Day (June 21) with a number of in-person and virtual events to recognize the heritage and strength of Indigenous Peoples. Canada's National Day for Truth and Reconciliation (September 30) was another opportunity to learn, commemorate and reflect on the historical and ongoing impacts of residential schools.

Building a sense of community is important, and several new parks were opened to provide more outdoor options for people to gather and connect. Alexandra Park in the east Cambie neighbourhood, phase two of Aberdeen Neighbourhood Park in the Capstan area and Tait Riverfront Community Park in Bridgeport were all unveiled.

However, the year was not without challenges. Housing affordability continued to drive exploration of new and innovative ways to meet the growing housing needs of existing and incoming residents. Rezoning applications for around 2,500 units received initial approval in 2022, of which over 40 per cent will be rental units at market, below-market or Low End Market Rental rates.

Child care remained important to support young families and make Richmond an active, engaged and family-oriented community. The City and its partners provide almost 600 licensed childcare spaces throughout Richmond including Sprouts at Capstan Village and Seedlings in Brighthouse Village, which both opened in 2022.

The overall foundation for success of our city is sound financial stewardship, and the long-term financial management strategy is a hallmark of our administration. It enabled us to continue to maintain effective and responsive service levels so Richmond remains a strong community that is committed to continued growth and success within a framework of diversity, sustainability and value for our taxpayers.

Since my appointment as Chief Administrative Officer in July 2022, I have been continually proud of the commitment of our staff and volunteers to improving the well-being of the community and thank everyone for their efforts and support of me in my new leadership role.

A handwritten signature in black ink that reads "Serena".

Serena Lusk
Chief Administrative Officer

Council Strategic Plan: 2018 to 2022

The Community Charter requires BC municipalities to include a statement in the Annual Report of their objectives for the current and future years, along with measures to track success towards those objectives.

The City of Richmond's objectives and success indicators are expressed through the Council Strategic Plan. Soon after Council began its four-year term in October 2018, it undertook a strategic planning process to help fulfill its governance role and achieve a successful term of office. Through that process, Council adopted a revised set of eight Strategic Focus areas, which provided the framework for the City's programs and services during 2022. With a new Council term commencing in October 2022, it is anticipated that these strategies will be reviewed and modified if required for the 2022-2026 Council term.



1. A Safe and Resilient Community

Enhance and protect the safety and well-being of Richmond.

2022 Achievement

The deployment of 16 additional police resources, delayed due to the pandemic, completed Council's Safe Community Program strategy and supported significant enhancements to the Richmond RCMP's organizational structure and operational response capability. Residential break and enter offences decreased 13 per cent, theft from automobiles dropped 10 per cent, and the number of hate-related events was down 24 per cent from the previous year. Through communications in multiple languages, RCMP investigators were better able to target complex cyber fraud, reducing the number of cases by almost 10 per cent in 2022. Almost half of Richmond's detachment members are non-Caucasians, with 56 per cent of them speaking at least one of 40 languages and dialects spoken in the city as a second language. Richmond Fire-Rescue (RFR) also welcomed new firefighters to strengthen the local complement. Over 10 per cent are women and many self-identify as First Nations, Asian and Middle Eastern, making Richmond among the most diverse departments in the province. RFR continued development of a Fire Risk Prediction Model, using fire incident, inspection and property data to develop predictive models of structure fire risks in the city. Safety also extended to the roads, as City snow and ice response crews pretreated or de-iced over 65,000 kilometres of roadways during winter, the equivalent of driving from Richmond to New York City and back seven times. Through the use of brine, the City has now reduced the amount of salt spread onto our roads by over 6,400 tonnes over the past three years.



2. A Sustainable and Environmentally Conscious City

Environmentally conscious decision-making that demonstrates leadership in implementing innovative, sustainable practices and supports the City's unique biodiversity and island ecology.

2022 Achievement

Richmond continued as a leader in sustainable practices and innovation. The City secured \$175 million in long-term funding from the Canada Infrastructure Bank for the expansion of its award-winning Lulu Island District Energy project. Once implemented to capacity, the project is expected to reduce greenhouse gas emissions by over one million tonnes. Richmond was also the first municipality in Canada to receive an E3 Platinum Rating Certification in the national E3 Fleet program for excellence in fleet management and environmental performance. The City's commitment to water conservation through its water meter and water demand management programs continued to reduce waste, with total water consumption decreasing by 3.5 per cent in 2022 despite a 1.5 per cent population increase. Overall, the City has realized savings of \$10 million in water purchase costs over the past decade.

3. One Community Together

Vibrant and diverse arts and cultural activities and opportunities for community engagement and connection.

2022 Achievement

Easing of pandemic restrictions meant the return of many in-person festivals and events. The Steveston Salmon Festival saw thousands walk the streets to enjoy the festivities as it marked its 75th anniversary in July, while over 40,000 residents and visitors attended the Richmond Maritime Festival in August. The popular Culture Days celebration returned in the fall with an array of free, artist-led activities to promote arts, culture and creativity. Richmond is consistently recognized as among Canada's top 10 most engaged cultural cities in the country. Richmond's natural beauty and excellent location makes it attractive to the film industry with many popular series and movies filmed in and around the city over the years. Emerging from the shutdown, approximately 75 film production permits were issued in 2022, yielding over \$250,000 in service and location fees alone.

4. An Active and Thriving Richmond

An active and thriving community characterized by diverse social and wellness programs, services and spaces that foster health and well-being for all.

2022 Achievement

Richmond's rich maritime heritage, the culinary delights of its many restaurants and the beauty of its trails and dikes makes it one of Canada's most culturally unique and diverse populations who provide a welcoming environment to all. Several new community parks opened in 2022 to provide recreational options, including Alexandra Park in east Cambie, phase two of Aberdeen Neighbourhood Park in the Capstan area and Tait Riverfront Community Park in Bridgeport. The upgraded Bark Park off-leash dog park in south Richmond offered a new outdoor space for four-legged users and their

human friends. Recognizing its commitment to promoting the benefits of physical health and well-being, Richmond was named BC's Most Active Community in the 2022 ParticipACTION Community Better Challenge, while the recently-opened Minoru Centre for Active Living received the Recreation Facilities Association of British Columbia's Outstanding Facility Award for its innovation, design and community-focused services. The City, in partnership with BC Housing and the Provincial Attorney General and Ministry Responsible for Housing, officially opened Aster Place in September, a 40-unit supportive housing building to provide housing and a stable home for residents experiencing or at risk of homelessness.

5. Sound Financial Management

Accountable, transparent and responsible financial management that supports the needs of the community into the future.

2022 Achievement

Council again supported a budget that enabled several key infrastructure projects to proceed while ensuring operating resources for key operations continued. Over \$1.7 million in one-time grants were approved to support immediate social and community operational and infrastructure needs, while \$107.8 million was approved and allocated to key capital projects ranging from continued disaster and flood mitigation, to improving traffic intersection safety and transit accessibility. Council maintained a 1 per cent commitment to investment for future capital needs and, due to ongoing financial resiliency and strategic management, kept the overall impact to residential property owners to a tax change of around 19 cents per day.



6. Strategic and Well-Planned Growth

Leadership in effective and sustainable growth that supports Richmond's physical and social needs.

2022 Achievement

Development interest in Richmond continued to grow, reinforcing its importance as one of the most desirable business and residential locations in the region. Building permits for over \$926 million in construction value were issued in 2022, an increase of over 25 per cent from the previous year and higher than the City's 10-year average. Rezoning applications for approximately 2,500 multi-family units received initial approval by Council during 2022. Of these, over 40 per cent are rental units at market, below market and Low End Market Rental rates. Over \$30 million in development cost charges were also collected to help finance future infrastructure and amenities such as parks, utilities, roads and dikes. During the past year, Council officially opened the new animal shelter on No. 5 Road, a purpose-built facility that will enhance access for stray and abandoned animals in a safe, supportive environment, as well as breaking ground on the 60,000 square foot, \$95 million replacement Steveston Community Centre and Library, which is expected to be completed in 2026.

7. A Supported Economic Sector

Facilitate diversified economic growth through innovative and sustainable policies, practices and partnerships.

2022 Achievement

The City's Resilient Economy Strategy continued to support business investment and growth post-pandemic, resulting in sustained job creation and one of the strongest job-to-worker ratios in the region. The number of new business licences rose almost 20 per cent in 2022, and the City implemented its MyBusiness online portal to enable new and existing business owners the ability to conveniently apply for, update and renew their licences 24/7. In the first few weeks, over 20 per cent of businesses registered for the service. While Richmond has one of the largest industrial land inventories in the region with more than 45 million square feet of built industrial space, Council provided further support to the sector by approving a rezoning application for an additional 180,000 square feet of phased industrial space in East Richmond.



8. An Engaged and Informed Community

Ensure that the citizenry of Richmond is well-informed and engaged about City business and decision-making.

2022 Achievement

Richmond is proud to be one of the most culturally diverse and unique populations in Canada. In November, the City launched a Newcomers Video Series as a resource for newly-arrived residents. The videos, available online, highlight different ways newcomers can experience our city and are captioned in Chinese, Punjabi, Ukrainian, Arabic and Farsi. Work began on redesigning the City's website to provide a more efficient and user-focused experience for the 3.4 million visits annually, while almost 25,000 users participated in 27 engagement initiatives on the City's LetsTalkRichmond.ca platform.

Richmond: vibrant, confident and connected



As communities across the country began to emerge from the challenges of the COVID-19 pandemic, the City of Richmond continued to move forward with confidence thanks to a strong history of sound infrastructure investment, planning and leadership.

As 2022 went on, the City was able to safely move away from many of the public health restrictions and return to in-person events and services that strengthened our already vibrant community.

The year began with the re-opening of the City's fitness centres in January, enabling people of all ages to return to the activities and social interactions they had missed since early-2020. A number of new City parks opened – Alexandra Park (June); Aberdeen Neighbourhood Park (July); Tait Riverfront Community Park (August); and the Bark Park off-leash dog park (September). Work also began on the renewal of the popular Minoru Park lakes district in April, with an extensive revitalization expected by mid-2023. The Richmond Curling Club officially re-opened in September, while the Minoru Centre for Active Living received more accolades including the 2022 Outstanding Facility Award from the Recreation Facilities Association of BC.

Several festivals and events returned as in-person gatherings including the 75th annual Steveston Salmon Festival, Richmond Maritime Festival, Garlic Festival at Terra Nova and Culture Days.

With its long-standing commitment to creating accessible and engaging outdoor and indoor spaces, it was no surprise when Richmond was named British Columbia's Most Active Community in the national ParticipACTION Community Better Challenge. Richmond boasts among the highest life expectancy in the world, and a 2022 BC Centre for Disease Control survey found Richmond residents actually used the pandemic to make positive changes to their health and well-being. It said 35 per cent of Richmond respondents were walking, running or cycling more than before the pandemic, while 28 per cent were eating more fruits and vegetables compared to 2020.

The City also supported residents to emerge from the pandemic in other ways. Active transportation remained a priority to support Council's Community Energy and Emissions Plan (CEEP) 2050 – adopted in February 2022 – to set Richmond on a path to achieving a 50 per cent reduction in community greenhouse gas emissions by 2030, and reaching net zero emissions by 2050.

Richmond became the first Metro Vancouver community to offer a shared e-scooter and e-bike service, with around 20,000 users making over 45,000 trips on the electric machines in the first few months. The popular Island City by Bike Tour returned in June, with hundreds of cyclists of all ages coming out to enjoy a free seven or 22 kilometre ride through Richmond. The City also became the first municipality in Canada to receive an E3 Platinum Rating Certification from the national E3 Fleet program for excellence in fleet management and environmental performance, further demonstrating its leadership in the use of green technologies.

While encouraging activity and connectedness was important to reinforce Richmond's sense of community, so too was the need to support businesses as they re-established themselves post-pandemic. City Hall reopened to in-person service in March, and the new online business licencing portal, MyBusiness, was launched in July to enable new and existing business owners to conveniently apply for, update and renew their licences 24/7. In partnership with Tourism

Richmond, the free Richmond Discovery Shuttle and Bike Valet Service returned to Steveston Village to assist residents and visitors to enjoy this popular tourist destination and its many shopping, dining and sightseeing locations.

The year also saw a number of governance and leadership changes. The municipal election in October saw two new members elected to Council after the retirement of two long-serving members. Serena Lusk moved from within to the role of Chief Administrative Officer following the retirement of her predecessor, while Richmond Fire-Rescue welcomed a new Chief, and the RCMP detachment a new Officer in Charge.

The City of Richmond has always been a leader through its development and implementation of bold, innovative programs and strategies that recognize and reflect our character, heritage and reputation as a safe, sustainable and culturally diverse community. The many accomplishments and achievements of the past year demonstrate why Richmond remains one of the most appealing, livable and well-managed communities in Canada.



COLOURFUL SKY ABOVE THE DIKE ON NO. 3 ROAD
PHOTO BY SUSAN STEEVES, RECORDS COORDINATOR, CITY CLERK'S OFFICE
CITY EMPLOYEE SINCE 2002

2022 Awards

A measurement of the City's success in achieving its goals are the honours and recognition from our peers and others. In 2022, Richmond again received numerous international, national and provincial awards recognizing our commitment to excellence and innovation.

Protecting our environment

The City received national recognition for its city-wide Pollinator Program from the Canadian Association of Municipal Administrators (CAMA). Presented with the 2022 CAMA Environmental Leadership and Sustainability Award in the 100,000+ population category, the award was given for excellence in conserving pollinators and developing and protecting their habitat. CAMA said Richmond exemplified how a land manager can be a leader through conscientious community programming and meaningful community engagement, and that "there is much that other municipalities can learn" from the City.

Healthy lives, healthy communities

Health and well-being is essential to creating healthy communities, and Richmond has long been recognized for its commitment to physical activity and programs aimed to engage and create a sense of community. The National ParticipACTION Community Better Challenge named Richmond British Columbia's Most Active Community in 2022. The award recognized the city's activity levels and the creative ways staff and community partners in Richmond motivated the community to get physically active throughout the national challenge.



Going green

Richmond's commitment to green energy was again recognized by being named as the only municipal recipient of a Platinum Rating by the national E3 Fleet, a program that assists trucking, utility, urban delivery, courier, government and other fleets to improve their fuel efficiency, reduce emissions, manage expenses and incorporate new technologies. Richmond was the only municipality in Canada to receive the Platinum rating with a performance score of 98 points out of 100. It was the second time the City has received coveted Platinum status.

Leading edge design and functionality

The Minoru Centre for Active Living, the City of Richmond's state-of-the-art fitness and aquatic facility, continues to be recognized for its design, functionality and innovation. It received the Outstanding Facility Award from the Recreation Facilities Association of British Columbia for its innovative design, energy management, operations, revenue generation and service delivery. The facility was also recognized by Athletic Business as one of its 10 Facilities of Merit for 2022. It was selected for setting a new standard for wellness-oriented facilities that balances the needs of traditional aquatic uses while integrating a wide variety of other amenities that encourage healthy lifestyles, especially for an older-adult population.

Financial reporting

Once again, the Government Finance Officers Association of the US and Canada presented Richmond with the Canadian Award for Financial Reporting (the 20th year in a row) and the Outstanding Achievement in Popular Financial Reporting Award (the 13th successive year) for its 2021 Annual Reports. Richmond also received an 'A' grade—the highest amongst 32 major Canadian cities—in C.D. Howe's annual Report Card on municipal budgeting, financial reporting and fiscal transparency for 2021.

Sustainability

The International City Management Association, a US-based group that advances professional local government through leadership, management, innovation and ethics, awarded Richmond its 2022 Community Sustainability Award (Population 50,000 and Greater) for its Recycled Asphalt Pavement Project. In partnership with Lafarge Canada and the National Zero Waste Council, the City pioneered the use of 40 per cent recycled asphalt in paving a major Richmond thoroughfare. The project received the award for setting new standards and demonstrating innovation, excellence and success in balancing the community's economic, environmental and social needs.



Government Finance Officers Association

Canadian Award for Financial Reporting

Presented to

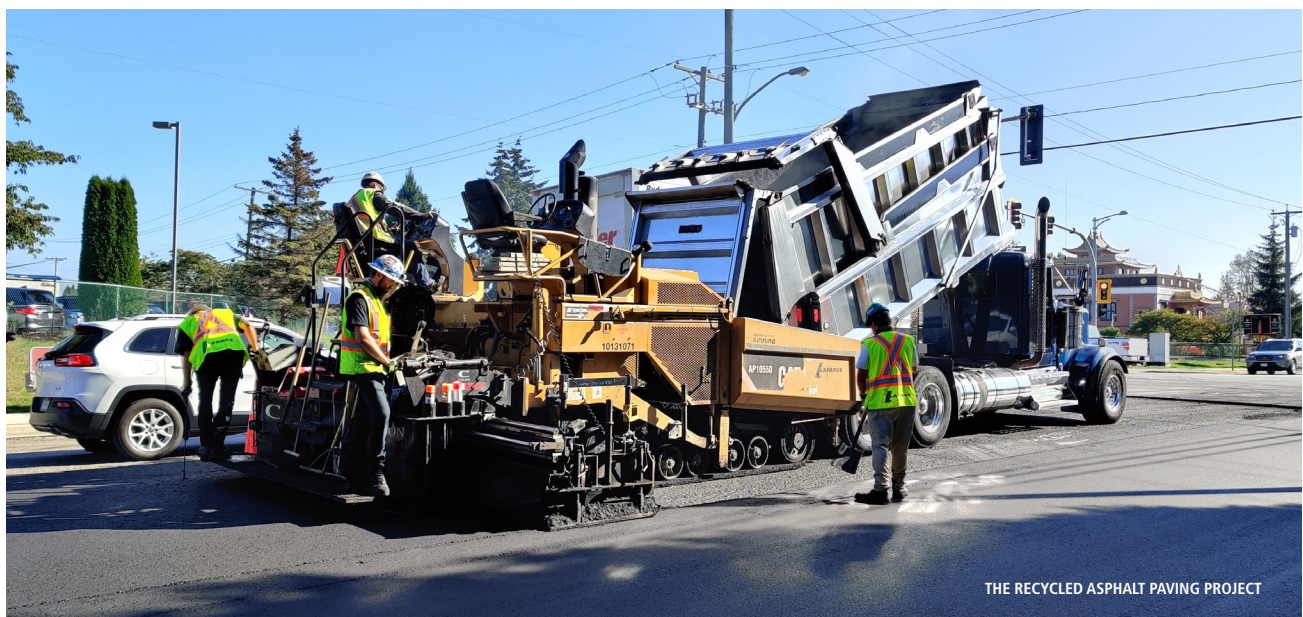
**City of Richmond
British Columbia**

For its Annual
Financial Report
for the Year Ended

December 31, 2021

Christopher P. Morill

Executive Director/CEO



THE RECYCLED ASPHALT PAVING PROJECT

Report from the General Manager, Finance and Corporate Services

Mayor Malcom Brodie and Members of Richmond City Council,

I am pleased to submit the Consolidated Financial Statements and Auditors' Report for the fiscal year ended December 31, 2022 for the City of Richmond, pursuant to Section 98 and 167 of the Community Charter. The consolidated financial statements have been prepared in accordance with Canadian public sector accounting standards as prescribed by the Public Sector Accounting Board of the Chartered Professional Accountants of Canada. Preparation of the financial statements is management's responsibility.

KPMG LLP was appointed by City Council to independently audit the City's consolidated financial statements. They have expressed an opinion that the City's consolidated financial statements present fairly, in all material respects, the consolidated financial position of the City of Richmond as at December 31, 2022 and its consolidated results of operations, its changes in net consolidated financial assets and its consolidated cash flows for the year then ended in accordance with Canadian public sector accounting standards.

These financial statements combine the accounts of the City of Richmond, Richmond Olympic Oval, and Richmond Public Library (collectively referred to as the "City"), as well as the City's investment in Lulu Island Energy Company, which is accounted for as a Government Business Enterprise.

Consolidated Statement of Financial Position (in \$000s)

	2022 Actual	2021 Actual	Change
Financial Assets	\$ 1,721,772	\$ 1,468,241	\$ 253,531
Liabilities	696,047	528,238	167,809
Net Financial Assets	1,025,725	940,003	85,722
Non-Financial Assets	2,603,444	2,547,884	55,560
Accumulated Surplus	\$ 3,629,169	\$ 3,487,887	\$ 141,282

The City's overall financial position improved by \$141.3 million, with accumulated surplus (similar to net worth of a corporation) totaling \$3.6 billion. A significant part of this increase is due to additions to capital assets and transfers to the statutory reserves for future capital improvements.

The City's cash and investments are \$1.6 billion while long-term debt increased by \$96.0 million with the addition of a new loan for the construction of Steveston Community Centre and Library in order to lock in favourable rates. Meanwhile, the City's tangible capital assets increased by \$54.9 million, which includes \$41.3 million of in-kind contributions from development as conditions of re-zoning.

Statutory Reserves (in \$000s)

	2018	2019	2020	2021	2022
Total Reserves	\$540,153	\$557,576	\$609,533	\$647,209	\$703,184

Statutory reserves are established by Bylaw for specific purposes, mainly capital expenditures.

The increase in the balance to \$703.2 million is mainly attributable to the timing of these capital expenditures, contributions and increased investment income earned on the balances. There are annual transfers through the City's utility and operating budget as well as through other respective entities annual budget. Council's Long Term Financial Management Strategy also states that increases in transfers through the City's operating budget be done annually.

Consolidated Statement of Operations (in \$000s)

	2022 Budget	2022 Actual	2021 Actual
Revenue	\$604,730	\$644,348	\$575,444
Expenses	522,614	503,066	471,763
Annual Surplus	\$82,116	\$141,282	\$103,681

The City's consolidated revenue for the year totaled \$644.3 million, an increase of \$68.9 million from 2021 mainly due to increased investment income, property tax and utility fee rates and the continued easing of the impacts from the COVID-19 closures.

Expenses increased by \$31.3 million from prior year mainly due to additional firefighters authorized in 2021 working their first full year in 2022, increased Greater Vancouver Sewerage and Drainage District costs and the increased operational levels of service due to the easing of the impact of the pandemic.

The annual surplus for 2022 was \$141.3 million and represents the change in investment in tangible capital assets, reserves and other accumulated surplus.

Budget Variance

Consolidated revenue of \$644.3M was greater than budgeted revenue by \$39.6M mainly due to:

- \$17.1M in investment income due to higher investment rates.
- \$15.0M in developer cash contributions that are not budgeted included in other revenue.
- \$6.7M higher than budgeted payments-in-lieu of taxes primarily due to a one-time receipt for properties previously under dispute.
- \$19.9M lower than budgeted other capital funding revenue due to contributed assets received through development and the timing of externally funded capital expenditures.

Consolidated expenses of \$503.1M were lower than budgeted by \$19.5M. The main variances include:

- \$8.3M lower than budgeted community safety costs mainly due to lower policing contract costs.
- \$6.6M lower than budgeted community services costs mainly due to savings in salaries and contract expenses as operations have not fully returned to pre-pandemic levels.
- \$6.6M lower than budgeted general government costs mainly due to vacant positions.

The City's consolidated annual surplus of \$141.3 million exceeded the budgeted annual surplus of \$82.1 million by \$59.2 million, prior to transfers to reserves and other accumulated surplus.

Year over year change

Consolidated revenue of \$644.3M increased by \$68.9M from 2021 mainly due to:

- an increase of \$23.6M in property taxes and utility fees mainly due to the approved rate increases and growth related to new development.
- an increase of \$15.3M in investment income due to the elevated interest rate environment.
- an increase of \$13.3M in other revenue mainly due to increases in developer cash contributions of \$8.4M.
- an increase of \$8.9M in sales of service mainly due to higher recreational program revenue.
- an increase of \$6.5M in payments-in-lieu of taxes primarily due to a one-time receipt for properties previously under dispute.

Consolidated expenses of \$503.1M increased by \$31.3M over 2021 mainly due to:

- \$9.0M increase in engineering, public works and project development mainly due to costs related to implementing capital projects, increased amortization expense and increased road maintenance and snow response costs.
- \$6.5M increase in general government costs mainly due to higher labour and fringe expenses as operations return towards pre-pandemic levels.
- \$5.1M increase in community services mainly due to expanded operations towards the pre-pandemic levels.
- \$4.5M increase in community safety mainly due to additional firefighters authorized in 2021 working their first full year in 2022.

Financial Sustainability

The City's consolidated financial position improved in 2022 as operations and programs recover from pandemic levels in prior years. The guiding principles of Council's Long Term Financial Management Strategy was the main factor in supporting the City through the pandemic, while positioning the City in achieving long-term goals and maintaining ongoing financial sustainability to deliver on Council priorities.

Respectfully submitted,



Jerry Chong, CPA, CA
General Manager, Finance and Corporate Services

May 8, 2023

City of Richmond audited financial statements

Year ended December 31, 2022



KPMG LLP
PO Box 10426 777 Dunsmuir Street
Vancouver BC V7Y 1K3
Canada
Telephone (604) 691-3000
Fax (604) 691-3031

INDEPENDENT AUDITOR'S REPORT

To the Mayor and Council of the City of Richmond

Opinion

We have audited the consolidated financial statements of the City of Richmond (the "City"), which comprise:

- the consolidated statement of financial position as at December 31, 2022
- the consolidated statement of operations for the year then ended
- the consolidated statement of changes in net financial assets for the year then ended
- the consolidated statement of cash flows for the year then ended
- and notes to the consolidated financial statements, including a summary of significant accounting policies

(hereinafter referred to as the "financial statements").

In our opinion, the accompanying financial statements present fairly, in all material respects, the consolidated financial position of the City as at December 31, 2022, and its consolidated results of operations, its consolidated changes in net financial assets and its consolidated cash flows for the year then ended in accordance with Canadian public sector accounting standards.

Basis for Opinion

We conducted our audit in accordance with Canadian generally accepted auditing standards. Our responsibilities under those standards are further described in the "***Auditor's Responsibilities for the Audit of the Financial Statements***" section of our auditor's report.

We are independent of the City in accordance with the ethical requirements that are relevant to our audit of the financial statements in Canada and we have fulfilled our other ethical responsibilities in accordance with these requirements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.



Responsibilities of Management and Those Charged with Governance for the Financial Statements

Management is responsible for the preparation and fair presentation of the financial statements in accordance with Canadian public sector accounting standards, and for such internal control as management determines is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, management is responsible for assessing the City's ability to continue as a going concern, disclosing as applicable, matters related to going concern and using the going concern basis of accounting unless management either intends to liquidate the City or to cease operations, or has no realistic alternative but to do so.

Those charged with governance are responsible for overseeing the City's financial reporting process.

Auditor's Responsibilities for the Audit of the Financial Statements

Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion.

Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with Canadian generally accepted auditing standards will always detect a material misstatement when it exists.

Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of the financial statements.

As part of an audit in accordance with Canadian generally accepted auditing standards, we exercise professional judgment and maintain professional skepticism throughout the audit.

We also:

- Identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion.

The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.

- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the City's internal control.
- Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by management.



City of Richmond
Page 3

- Conclude on the appropriateness of management's use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the City's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditor's report to the related disclosures in the financial statements or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditor's report. However, future events or conditions may cause the City to cease to continue as a going concern.
- Evaluate the overall presentation, structure and content of the financial statements, including the disclosures, and whether the financial statements represent the underlying transactions and events in a manner that achieves fair presentation.
- Communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.
- Obtain sufficient appropriate audit evidence regarding the financial information of the entities or business activities within the group entity to express an opinion on the financial statements. We are responsible for the direction, supervision and performance of the group audit. We remain solely responsible for our audit opinion.

A handwritten signature in black ink that reads 'KPMG LLP'. The signature is written in a cursive, stylized font and is underlined with a single horizontal stroke.

Chartered Professional Accountants

Vancouver, Canada

May 8, 2023

CITY OF RICHMOND

Consolidated Statement of Financial Position
(Expressed in thousands of dollars)

December 31, 2022, with comparative information for 2021

	2022	2021
Financial Assets		
Cash and cash equivalents	\$ 654,651	\$ 672,031
Investments (note 3)	921,493	696,886
Investment in Lulu Island Energy Company ("LIEC") (note 4)	35,028	33,647
Accrued interest receivable	14,676	8,932
Accounts receivable (note 5)	35,446	29,655
Taxes receivable	15,791	14,157
Development fees receivable	43,219	12,425
Debt reserve fund - deposits (note 6)	1,468	508
	1,721,772	1,468,241
Liabilities		
Accounts payable and accrued liabilities	104,482	86,575
Post-employment benefits (note 7)	37,628	37,395
Development cost charges (note 8)	237,051	224,655
Deposits and holdbacks (note 9)	150,007	106,041
Deferred revenue (note 10)	59,063	56,186
Debt, net of sinking fund deposits (note 11)	107,816	17,386
	696,047	528,238
Net financial assets	1,025,725	940,003
Non-Financial Assets		
Tangible capital assets (note 12)	2,594,212	2,539,267
Inventory of materials and supplies	5,405	4,696
Prepaid expenses	3,827	3,921
	2,603,444	2,547,884
Accumulated surplus (note 13)	\$ 3,629,169	\$ 3,487,887

Contingent demand notes (note 6)
Commitments and contingencies (note 17)

See accompanying notes to consolidated financial statements.

Approved on behalf of Council:



General Manager, Finance and Corporate Services

CITY OF RICHMOND

Consolidated Statement of Operations
(Expressed in thousands of dollars)

Year ended December 31, 2022, with comparative information for 2021

	2022 Budget (notes 2(p) and 23)	2022	2021
Revenue:			
Taxation and levies (note 19)	\$ 268,044	\$ 269,582	\$ 255,837
Utility fees	124,190	127,965	118,144
Sales of services	44,600	44,494	35,601
Payments-in-lieu of taxes	14,650	21,314	14,789
Provincial and federal contributions	10,683	12,893	12,704
Development cost charges (note 8)	17,749	22,434	16,223
Other capital funding sources	71,162	51,220	64,695
Other revenue:			
Investment income	13,165	30,250	14,968
Gaming revenue	14,500	12,562	5,700
Licenses and permits	11,358	15,047	13,995
Other (note 20)	13,683	35,206	21,877
Equity income in LIEC (note 4)	946	1,381	911
	604,730	644,348	575,444
Expenses:			
Community safety	135,999	127,727	123,232
Utilities:			
Water, sewer and sanitation	114,406	110,490	106,519
Engineering, public works and project development	81,335	89,103	80,083
Community services	71,522	64,955	59,873
General government	66,058	59,492	52,995
Planning and development	25,874	23,890	25,166
Richmond Olympic Oval	16,290	16,844	14,079
Richmond Public Library	11,130	10,565	9,816
	522,614	503,066	471,763
Annual surplus	82,116	141,282	103,681
Accumulated surplus, beginning of year	3,487,887	3,487,887	3,384,206
Accumulated surplus, end of year	\$ 3,570,003	\$ 3,629,169	\$ 3,487,887

See accompanying notes to consolidated financial statements.

CITY OF RICHMOND

Consolidated Statement of Changes in Net Financial Assets (Expressed in thousands of dollars)

Year ended December 31, 2022, with comparative information for 2021

	2022 Budget (notes 2(p) and 23)	2022	2021
Annual surplus for the year	\$ 82,116	\$ 141,282	\$ 103,681
Acquisition of tangible capital assets	(113,051)	(87,100)	(61,150)
Contributed tangible capital assets	(54,782)	(41,332)	(61,004)
Amortization of tangible capital assets	68,561	72,722	68,519
Net loss on disposal of tangible capital assets	-	222	1,714
Proceeds on sale of tangible capital assets	-	543	793
	(17,156)	86,337	52,553
Acquisition of inventory of materials and supplies	-	(5,405)	(4,696)
Acquisition of prepaid expenses	-	(3,827)	(3,921)
Consumption of inventory of materials and supplies	-	4,696	4,285
Use of prepaid expenses	-	3,921	2,797
Change in net financial assets	(17,156)	85,722	51,018
Net financial assets, beginning of year	940,003	940,003	888,985
Net financial assets, end of year	\$ 922,847	\$ 1,025,725	\$ 940,003

See accompanying notes to consolidated financial statements.

CITY OF RICHMOND

Consolidated Statement of Cash Flows (Expressed in thousands of dollars)

Year ended December 31, 2022, with comparative information for 2021

	2022	2021
Cash provided by (used in):		
Operating activities:		
Annual surplus	\$ 141,282	\$ 103,681
Items not involving cash:		
Amortization of tangible capital assets	72,722	68,519
Net loss on disposal of tangible capital assets	222	1,714
Contributions of tangible capital assets	(41,332)	(61,004)
Equity income in LIEC	(1,381)	(911)
Changes in non-cash operating working capital:		
Accrued interest receivable	(5,744)	765
Accounts receivable	(5,791)	(8,134)
Taxes receivable	(1,634)	262
Development fees receivable	(30,794)	16,092
Debt reserve fund	(960)	-
Inventory of materials and supplies	(709)	(411)
Prepaid expenses	94	(1,124)
Accounts payable and accrued liabilities	17,907	(70,400)
Post-employment benefits	233	2,274
Development cost charges	12,396	3,504
Deposits and holdbacks	43,966	8,596
Deferred revenue	2,877	7,162
Net change in cash from operating activities	203,354	70,585
Capital activities:		
Cash used to acquire tangible capital assets	(87,100)	(61,150)
Proceeds on disposal of tangible capital assets	543	793
Net change in cash from capital activities	(86,557)	(60,357)
Financing activities:		
Proceeds from issuance of debt	96,000	-
Repayments of debt	(5,570)	(5,355)
Net change in cash from financing activities	90,430	(5,355)
Investing activities:		
Net sale (purchase) of investments	(224,607)	137,124
Increase (decrease) in cash and cash equivalents	(17,380)	141,997
Cash and cash equivalents, beginning of year	672,031	530,034
Cash and cash equivalents, end of year	\$ 654,651	\$ 672,031

See accompanying notes to consolidated financial statements.

CITY OF RICHMOND

Notes to Consolidated Financial Statements

(Tabular amounts expressed in thousands of dollars, unless otherwise indicated)

Year ended December 31, 2022

1. Operations:

The City of Richmond (the "City") is incorporated under the Local Government Act of British Columbia. The City's principal activities include the provision of local government services to residents of the incorporated area. These include administrative, protective, transportation, infrastructure, environmental, recreational, water, sewer, and drainage.

2. Significant accounting policies:

These consolidated financial statements of the City have been prepared in accordance with Canadian public sector accounting standards as prescribed by the Public Sector Accounting Board ("PSAB") of the Chartered Professional Accountants of Canada.

(a) Basis of consolidation:

These consolidated financial statements reflect a combination of the City's General Revenue, General Capital and Loan, Waterworks and Sewerworks, and Reserve Funds consolidated with the Richmond Public Library (the "Library") and the Richmond Olympic Oval (the "Oval"). The Library is consolidated as the Library Board is appointed by the City. The Oval is consolidated as they are a wholly-owned municipal corporation of the City. Interfund and interentity transactions, fund balances and activities have been eliminated on consolidation. The City's investment in Lulu Island Energy Company ("LIEC"), a wholly-owned government business enterprise ("GBE"), is accounted for using the modified equity method.

(i) General Revenue Fund:

This fund is used to account for the current operations of the City as provided for in the Annual Budget, including collection of taxes, administering operations, policing, and servicing general debt.

(ii) General Capital and Loan Fund:

This fund is used to record the City's tangible capital assets and work-in-progress, including engineering structures such as roads and bridges, and the related debt.

(iii) Waterworks and Sewerworks Funds:

These funds have been established to cover the costs of operating these utilities, with related capital and loan funds to record the related tangible capital assets and debt.

(iv) Reserve Funds:

Certain funds are established by bylaws for specific purposes. They are funded primarily by budgeted contributions from the General Revenue Fund and developer contributions plus interest earned on fund balances.

CITY OF RICHMOND

Notes to Consolidated Financial Statements

(Tabular amounts expressed in thousands of dollars, unless otherwise indicated)

Year ended December 31, 2022

2. Significant accounting policies (continued):

(b) Basis of accounting:

The City follows the accrual method of accounting for revenue and expenses. Revenue is recognized in the year in which it is earned and measurable. Expenses are recognized as they are incurred and measurable as a result of receipt of goods and services and/or the creation of a legal obligation to pay.

(c) Government transfers:

Restricted transfers from governments are deferred and recognized as revenue as the related expenditures are incurred or the stipulations in the related agreement are met. Unrestricted transfers are recognized as revenue when received or if the amount to be received can be reasonably estimated and collection is reasonably assured.

(d) Cash and cash equivalents:

Cash and cash equivalents consist of cash, highly liquid money market investments and short-term investments with maturities of less than 90-days from date of acquisition.

(e) Investments:

Investments are recorded at cost, adjusted for amortization of premiums or discounts. Provisions for losses are recorded when they are considered to be other than temporary.

(f) Investment in government business enterprises:

Government business enterprises are recorded using the modified equity method of accounting. The City's investment in the GBE is recorded as the value of the GBE's shareholder's equity. The investment's income or loss is recognized by the City when it is earned by the GBE. Inter-organizational transactions and balances are not eliminated, except for any gains or losses on assets remaining within the City.

(g) Accounts receivable:

Accounts receivable are net of an allowance for doubtful accounts and therefore represent amounts expected to be collected.

(h) Development cost charges:

Development cost charges are restricted by legislation to expenditures on capital infrastructure. These amounts are deferred upon receipt and recognized as revenue when the expenditures are incurred in accordance with the restrictions.

(i) Post-employment benefits:

The City and its employees make contributions to the Municipal Pension Plan. As this plan is a multi-employee plan, contributions are expensed as incurred.

CITY OF RICHMOND

Notes to Consolidated Financial Statements

(Tabular amounts expressed in thousands of dollars, unless otherwise indicated)

Year ended December 31, 2022

2. Significant accounting policies (continued):

(i) Post-employment benefits (continued):

Post-employment benefits also accrue to the City's employees. The liabilities related to these benefits are actuarially determined based on service and best estimates of retirement ages and expected future salary and wage increases. The liabilities under these benefits plans are accrued based on projected benefits prorated as employees render services necessary to earn the future benefits.

(j) Non-financial assets:

Non-financial assets are not available to discharge existing liabilities and are held for use in the provision of services. They have useful lives extending beyond the current year and are not intended for sale in the ordinary course of operations.

(i) Tangible capital assets:

Tangible capital assets are initially recorded at cost, which includes amounts that are directly attributable to acquisition, construction, development, or betterment of the assets. The cost, less estimated residual value, of the tangible capital assets, excluding land, are amortized on a straight line basis over their estimated useful lives as follows:

Asset	Useful life - years
Buildings and building improvements	10 - 75
Infrastructure	5 - 100
Vehicles, machinery and equipment	3 - 40
Library's collections, furniture and equipment	4 - 20

Amortization is charged over the asset's useful life commencing when the asset is acquired. Assets under construction are not amortized until the asset is available for productive use.

(ii) Contributions of tangible capital assets:

Tangible capital assets received as contributions are recorded at their fair value at the date of receipt and also are recorded as revenue.

(iii) Natural resources, works of art, and cultural and historic assets:

Natural resources, works of art, and cultural and historic assets are not recorded as assets in the consolidated financial statements.

(iv) Interest capitalization:

The City does not capitalize interest costs associated with the construction of a tangible capital asset.

CITY OF RICHMOND

Notes to Consolidated Financial Statements

(Tabular amounts expressed in thousands of dollars, unless otherwise indicated)

Year ended December 31, 2022

2. Significant accounting policies (continued):

(j) Non-financial assets (continued):

(v) Labour capitalization:

Internal labour directly attributable to the construction, development or implementation of a tangible capital asset is capitalized.

(vi) Leased tangible capital assets:

Leases which transfer substantially all of the benefits and risks incidental to ownership of property are accounted for as leased tangible capital assets. All other leases are accounted for as operating leases and the related payments are charged to expenses as incurred.

(vii) Impairment of tangible capital assets:

Tangible capital assets are written down when conditions indicate that they no longer contribute to the City's ability to provide goods and services, or when the value of future economic benefits associated with the tangible capital assets are less than their net book value. The net write-downs are accounted for as expenses in the consolidated statement of operations.

(viii) Inventory of materials and supplies:

Inventory is recorded at cost, net of an allowance for obsolete stock. Cost is determined on a weighted average basis.

(k) Revenue recognition:

Revenue is recognized in the period in which the transactions or events occurred that gave rise to the revenue. All revenue is recorded on an accrual basis, except when the accruals cannot be determined with a reasonable degree of certainty or when their estimation is impractical.

(l) Taxes:

The City establishes property tax rates based on assessed market values provided by the British Columbia Assessment Authority ("BCA"). Market values are determined as of July 1st of each year. The City records taxation revenue at the time the property tax bills are issued. The City is entitled to collect interest and penalties on overdue taxes.

The City is required to act as the agent for the collection of certain taxes and fees imposed by other authorities. Collections for other authorities are excluded from the City's taxation revenue.

Payments in Lieu of Taxes ("PILT") for federal properties are calculated on the basis of values and rates which would apply if these properties were taxable. The annual tax rates together with the assessed value on the Grant Roll are used to calculate the PILT levy. The PILT revenue is recorded when the payment is received.

CITY OF RICHMOND

Notes to Consolidated Financial Statements

(Tabular amounts expressed in thousands of dollars, unless otherwise indicated)

Year ended December 31, 2022

2. Significant accounting policies (continued):

(m) Deferred revenue:

The City defers a portion of the revenue collected from permits, licenses and other fees and recognizes this revenue in the year in which related inspections are performed, other related expenses are incurred or services are provided.

Deferred revenue also represents funds received from external parties for specified purposes. This revenue is recognized in the period in which the related expenses are incurred.

(n) Deposits:

Receipts restricted by the legislation of senior governments or by agreement with external parties are deferred and reported as deposits and are refundable under certain circumstances. When qualifying expenses are incurred, deposits are recognized as revenue at amounts equal to the qualifying expenses.

(o) Debt:

Debt is recorded net of related sinking fund balances.

(p) Budget information:

Budget information, presented on a basis consistent with that used for actual results, was included in the City's Consolidated 5 Year Financial Plan (2022-2026) ("Consolidated Financial Plan") and was adopted through Bylaw No. 10327 on January 24, 2022.

(q) Contaminated sites:

Contaminated sites are a result of contamination being introduced into air, soil, water, or sediment of a chemical, organic or radioactive material of live organism that exceeds an environmental standard. Liabilities are recorded net of any expected recoveries.

A liability for remediation of contaminated sites is recognized when a site is not in productive use and the following criteria are met:

- (i) An environmental standard exists;
- (ii) Contamination exceeds the environmental standard;
- (iii) The City is directly responsible or accepts responsibility;
- (iv) It is expected that future economic benefits will be given up; and
- (v) A reasonable estimate of the amount can be made.

The liability is recognized as management's estimate of the cost of post-remediation including operation, maintenance and monitoring that are an integral part of the remediation strategy for a contaminated site.

CITY OF RICHMOND

Notes to Consolidated Financial Statements

(Tabular amounts expressed in thousands of dollars, unless otherwise indicated)

Year ended December 31, 2022

2. Significant accounting policies (continued):

(r) Use of accounting estimates:

The preparation of consolidated financial statements requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the consolidated financial statements and the reported amount of revenue and expenditures during the reporting period. Areas requiring the use of management estimates relate to performing the actuarial valuation of employee future benefits, the value of contributed tangible capital assets, value of developer contributions, useful lives for amortization, determination of provisions for accrued liabilities, performing the actuarial valuation of employee future benefits, allowance for doubtful accounts, and provision for contingencies. Actual results could differ from those estimates. Adjustments, if any, will be reflected in the consolidated financial statements in the period that the change in estimate is made, as well as in the period of settlement if the amount is different.

(s) Segment disclosures:

A segment is defined as a distinguishable activity or group of activities of a government for which it is appropriate to separately report financial information to achieve the objectives of the standard. The City has provided definitions of segments as well as presented financial information in segment format.

3. Investments:

	2022		2021	
	Cost	Market value	Cost	Market value
Short-term notes and deposits	\$ 379,378	\$ 379,378	\$ 257,701	\$ 257,701
Government and government guaranteed bonds	361,297	350,352	280,063	280,802
Other bonds	180,818	175,405	159,122	159,283
	<u>\$ 921,493</u>	<u>\$ 905,135</u>	<u>\$ 696,886</u>	<u>\$ 697,786</u>

4. Investment in Lulu Island Energy Company Ltd.:

The City owns 100% of the issued and outstanding shares of LIEC, which was incorporated under the British Columbia Business Corporations Act on August 19, 2013. LIEC develops, manages and operates district energy utilities in the City of Richmond, on the City's behalf, including but not limited to energy production, generation or exchange, transmission, distribution, maintenance, marketing and sales to customers, customer service, profit generation, financial management and advisory services for energy and infrastructure.

CITY OF RICHMOND

Notes to Consolidated Financial Statements

(Tabular amounts expressed in thousands of dollars, unless otherwise indicated)

Year ended December 31, 2022

4. Investment in Lulu Island Energy Company Ltd. (continued):

Summarized financial information relating to LIEC is as follows:

	2022	2021
Cash, cash equivalents, and investments	\$ 15,516	\$ 15,755
Accounts receivable	2,241	1,676
Tangible capital assets	45,745	38,905
Total assets	63,502	56,336
Accounts payable and accrued liabilities	3,853	2,671
Government grants	241	-
Deferred contributions	13,018	7,754
Project agreement/concession liability	11,362	12,264
Total liabilities	28,474	22,689
Shareholder's equity	\$ 35,028	\$ 33,647
Total revenue	\$ 7,608	\$ 6,431
Total expenses	6,227	5,520
Net income	\$ 1,381	\$ 911

Included in accounts payable and accrued liabilities in the City's consolidated statement of financial position are payables to LIEC in the amount of \$152,937 (2021 - \$151,454).

On October 30, 2014, LIEC and Corix Utilities Inc. ("Corix") entered into a 30-year Concession agreement (the "Concession Agreement"), where Corix will design, construct, finance, operate and maintain the infrastructure for the district energy utility at the Oval Village community (the "OVDEU project"). On September 22, 2022, the LIEC terminated the Concession Agreement after the Company entered into a new project agreement (the "Project Agreement") with Project Contractor, a wholly-owned subsidiary of Corix to design, build, finance, operate and maintain City Centre District Energy Utility infrastructure providing heating and cooling services to new residential and mixed use commercial developments within the City Centre area (the "CCDEU project"). The existing OVDEU project has been transferred into the CCDEU project, and the OVDEU plant and equipment, financing and operations are now executed by the Project Contractor under the Project Agreement.

CITY OF RICHMOND

Notes to Consolidated Financial Statements

(Tabular amounts expressed in thousands of dollars, unless otherwise indicated)

Year ended December 31, 2022

5. Accounts receivable:

	2022	2021
Water and sewer utilities	\$ 14,760	\$ 13,243
Casino revenue	3,363	2,701
Capital grants	9,536	6,873
Other trade receivables	7,787	6,838
	<u>\$ 35,446</u>	<u>\$ 29,655</u>

6. Debt reserve fund deposits and contingent demand notes:

The City issues its debt instruments through the Municipal Finance Authority (the "MFA"). As a condition of these borrowings, a portion of the debenture proceeds is withheld by the MFA in a Debt Reserve Fund. The City also executes demand notes in connection with each debenture whereby the City may be required to loan certain amounts to the MFA. These demand notes are contingent in nature and are not reflected in the City's accounts. The details of the cash deposits and contingent demand notes at December 31, 2022 are as follows:

	Cash deposits	Contingent demand notes
General Revenue Fund	\$ 1,468	\$ 5,147

7. Post-employment benefits:

The City provides certain post-employment benefits, non-vested sick leave, compensated absences, and termination benefits to its employees.

	2022	2021
Accrued benefit obligation, beginning of year	\$ 35,324	\$ 35,414
Current service cost	2,698	2,644
Interest cost	872	728
Past service cost	21	992
Benefits paid	(2,923)	(2,035)
Actuarial gain	(3,255)	(2,419)
Accrued benefit obligation, end of year	<u>\$ 32,737</u>	<u>\$ 35,324</u>

An actuarial valuation for these benefits was performed to determine the City's accrued benefit obligation as at December 31, 2022. This actuarial gain is being amortized over a period equal to the employees' expected average remaining service lifetime of 11-years.

CITY OF RICHMOND

Notes to Consolidated Financial Statements

(Tabular amounts expressed in thousands of dollars, unless otherwise indicated)

Year ended December 31, 2022

7. Post-employment benefits (continued):

	2022	2021
Accrued benefit obligation, end of year	\$ 32,737	\$ 35,324
Unamortized net actuarial gain	4,891	2,071
Accrued benefit liability, end of year	\$ 37,628	\$ 37,395

Actuarial assumptions used to determine the City's accrued benefit obligation are as follows:

	2022	2021
Discount rate	4.40%	2.40%
Expected future inflation rate	2.50%	2.00%
Expected wage and salary range increases	2.50% to 3.00%	2.50% to 3.00%

8. Development cost charges:

	2022	2021
Balance, beginning of year	\$ 224,655	\$ 221,151
Contributions	30,053	16,873
Interest	4,777	2,854
Revenue recognized	(22,434)	(16,223)
Balance, end of year	\$ 237,051	\$ 224,655

9. Deposits and holdbacks:

	Balance December 31, 2021	Deposit contributions / interest earned	Refund/ expenditures	Balance December 31, 2022
Security deposits	\$ 84,096	\$ 47,514	\$ (5,329)	\$ 126,281
Developer contributions	7,912	17	(10)	7,919
Damage deposits	5,793	3,533	(2,183)	7,143
Contract holdbacks	3,860	4,778	(3,849)	4,789
Other	4,380	677	(1,182)	3,875
	\$ 106,041	\$ 56,519	\$ (12,553)	\$ 150,007

CITY OF RICHMOND

Notes to Consolidated Financial Statements

(Tabular amounts expressed in thousands of dollars, unless otherwise indicated)

Year ended December 31, 2022

10. Deferred revenue:

	Balance December 31, 2021	Externally restricted inflows	Revenue earned	Balance December 31, 2022
Taxes and utilities	\$ 25,116	\$ 26,231	\$ (25,116)	\$ 26,231
Building permits/development	14,265	10,052	(7,198)	17,119
Oval	1,551	2,048	(478)	3,121
Capital grants	6,074	6,824	(9,887)	3,011
Business licenses	2,637	2,300	(2,256)	2,681
Parking easement/leased land	2,418	60	(50)	2,428
Other	4,125	4,587	(4,240)	4,472
	\$ 56,186	\$ \$52,102	\$ (49,225)	\$ 59,063

11. Debt, net of MFA sinking fund deposits:

The City obtains debt instruments through the MFA pursuant to security issuing bylaws under authority of the Community Charter to finance certain capital expenditures.

Gross amount for the debt less principal payments and actuarial adjustments to date are as follows:

MFA issue	Loan authorization bylaw	Gross amount borrowed	Repayments and actuarial adjustments	Net debt 2022	Net debt 2021
127	9075	\$ 50,815	\$ 38,999	\$ 11,816	\$ 17,386
158	10334	96,000	-	96,000	-
		\$ 146,815	\$ 38,999	\$ 107,816	\$ 17,386

Current borrowing includes:

MFA issue	Issue date	Term (yrs.)	Maturity date	Interest rate	Refinancing date
127	April 7, 2014	10	April 7, 2024	3.30%	-
158	September 23, 2022	20	September 23, 2042	4.09%	September 23, 2032

CITY OF RICHMOND

Notes to Consolidated Financial Statements

(Tabular amounts expressed in thousands of dollars, unless otherwise indicated)

Year ended December 31, 2022

11. Debt, net of MFA sinking fund deposits (continued):

Interest expense incurred for the year on the long-term debt was \$2,750,689 (2021 - \$1,676,895).

Repayments on net outstanding debt over the next five years and thereafter are as follows:

2023	\$ 9,187
2024	9,538
2025	3,636
2026	3,764
2027	3,895
Thereafter	77,796
	\$ 107,816

12. Tangible capital assets:

Cost	Balance December 31, 2021	Additions and transfers	Disposals	Balance December 31, 2022
Land	\$ 1,077,254	\$ 44,227	\$ -	\$ 1,121,481
Building and building improvements	576,752	22,907	(4,048)	595,611
Infrastructure	1,912,378	45,169	(6,370)	1,951,177
Vehicles, machinery and equipment	166,131	12,419	(1,602)	176,948
Library's collections, furniture and equipment	10,710	1,029	(613)	11,126
Assets under construction	60,690	2,681	-	63,371
	\$ 3,803,915	\$ 128,432	\$ (12,633)	\$ 3,919,714

Accumulated amortization	Balance December 31, 2021	Disposals	Amortization expense	Balance December 31, 2022
Building and building improvements	\$ 229,433	\$ (3,548)	\$ 20,340	\$ 246,225
Infrastructure	916,345	(6,233)	41,043	951,155
Vehicles, machinery and equipment	111,216	(1,474)	10,408	120,150
Library's collections, furniture and equipment	7,654	(613)	931	7,972
	\$ 1,264,648	\$ (11,868)	\$ 72,722	\$ 1,325,502

CITY OF RICHMOND

Notes to Consolidated Financial Statements

(Tabular amounts expressed in thousands of dollars, unless otherwise indicated)

Year ended December 31, 2022

12. Tangible capital assets (continued):

Net book value	December 31, 2022	December 31, 2021
Land	\$ 1,121,481	\$ 1,077,254
Buildings and building improvements	349,386	347,319
Infrastructure	1,000,022	996,033
Vehicles, machinery and equipment	56,798	54,915
Library's collection, furniture and equipment	3,154	3,056
Assets under construction	63,371	60,690
Balance, end of year	\$ 2,594,212	\$ 2,539,267

(a) Assets under construction:

Assets under construction having a value of \$63,371,507 (2021 - \$60,690,017) have not been amortized. Amortization of these assets will commence when the asset is put into service.

(b) Contributed tangible capital assets:

Contributed tangible capital assets have been recognized at fair market value at the date of contribution and recorded in other capital funding revenue on the statement of operations. The value of contributed assets received during the year is \$41,331,921 (2021 - \$61,004,232) comprised of land in the amount of \$30,863,846 (2021 - \$17,281,008), infrastructure in the amount of \$5,123,075 (2021 - \$20,810,489), buildings in the amount of \$5,345,000 (2021 - \$22,682,598). There were no machinery and equipment contributed in 2022 (2021 - \$230,137).

(c) Tangible capital assets disclosed at nominal values:

Where an estimate of fair value could not be made, the tangible capital asset was recognized at a nominal value.

(d) Works of art and historical treasures:

The City manages and controls various works of art and non-operational historical cultural assets including building, artifacts, paintings, and sculptures located at City sites and public display areas. The assets are not recorded as tangible capital assets and are not amortized.

(e) Write-down of tangible capital assets:

There were no write-down of tangible capital assets in 2022 (2021 - nil).

CITY OF RICHMOND

Notes to Consolidated Financial Statements

(Tabular amounts expressed in thousands of dollars, unless otherwise indicated)

Year ended December 31, 2022

13. Accumulated surplus:

	General and Reserve Fund	Waterworks Utility Fund	Sewerworks Utility Fund	Richmond Olympic Oval	Library	2022 Total	2021 Total
Investment in tangible capital assets	\$ 2,570,222	\$ -	\$ -	\$ 7,872	\$ 3,155	\$ 2,581,249	\$ 2,521,629
Reserves (note 14)	693,338	-	-	9,846	-	703,184	647,209
Appropriated surplus	245,113	19,157	11,775	1,166	3,351	280,562	256,020
Investment in LIEC	35,028	-	-	-	-	35,028	33,647
Surplus	14,954	885	6,621	610	830	23,900	24,826
Other equity	5,246	-	-	-	-	5,246	4,556
Balance, end of year	\$ 3,563,901	\$ 20,042	\$ 18,396	\$ 19,494	\$ 7,336	\$ 3,629,169	\$ 3,487,887

14. Reserves:

	Balance, December 31, 2021	Change during year	Balance, December 31, 2022
Affordable housing	\$ 14,293	\$ 1,134	\$ 15,427
Arts, culture and heritage	3,526	47	3,573
Capital building and infrastructure	122,720	6,905	129,625
Capital reserve	244,445	19,380	263,825
Capstan station	11,149	3,433	14,582
Child care development	10,078	91	10,169
Community legacy and land replacement	1,458	87	1,545
Drainage improvement	57,159	2,581	59,740
Equipment replacement	25,206	1,682	26,888
Hamilton area plan community amenity	3,007	598	3,605
Leisure facilities	18,970	8,798	27,768
Local improvements	7,571	189	7,760
Neighborhood improvement	8,037	551	8,588
Oval	8,100	1,746	9,846
Public art program	4,405	423	4,828
Sanitary sewer	49,611	3,907	53,518
Steveston off-street parking	336	3	339
Steveston road ends	155	(8)	147
Waterfront improvement	187	(6)	181
Watermain replacement	56,796	4,434	61,230
	\$ 647,209	\$ 55,975	\$ 703,184

CITY OF RICHMOND

Notes to Consolidated Financial Statements

(Tabular amounts expressed in thousands of dollars, unless otherwise indicated)

Year ended December 31, 2022

15. Pension plan:

The City and its employees contribute to the Municipal Pension Plan (a jointly trustee pension plan). The board of trustees, representing plan members and employers, is responsible for administering the plan, including investment of assets and administration of benefits. The plan is a multi-employer defined benefit pension plan. Basic pension benefits are based on a formula. As at December 31, 2021, the plan has about 227,000 active members and approximately 118,000 retired members. Active members include approximately 42,000 contributors from local governments.

Every three years, an actuarial valuation is performed to assess the financial position of the plan and adequacy of plan funding. The actuary determines an appropriate combined employer and member contribution rate to fund the plan. The actuary's calculated contribution rate is based on the entry-age normal cost method, which produces the long-term rate of member and employer contributions sufficient to provide benefits for average future entrants to the plan. This rate may be adjusted for the amortization of any actuarial funding surplus and will be adjusted for the amortization of any unfunded actuarial liability.

The most recent valuation for the Municipal Pension Plan as at December 31, 2021, indicated a \$3,761 million funding surplus for basic pension benefits on a going concern basis.

The next valuation will be as at December 31, 2024, with results available in 2025.

Employers participating in the plan record their pension expense as the amount of employer contributions made during the fiscal year (defined contribution pension plan accounting). This is because the plan records accrued liabilities and accrued assets for the plan in aggregate, resulting in no consistent and reliable basis for allocating the obligation, assets and cost to individual employers participating in the plan.

The City paid \$13,914,367 (2021 - \$14,125,356) for employer contributions while employees contributed \$12,078,813 (2021 - \$11,777,413) to the plan in fiscal 2022.

16. Contingent assets and contractual rights:

(a) Contingent assets:

Contingent assets are possible assets arising from existing conditions or situations involving uncertainty. That uncertainty will ultimately be resolved when one or more future events not wholly within the City's control occurs or fails to occur.

The City has legal claims, service agreements, and land dedications that may qualify as contingent assets. Amounts cannot be estimated as of December 31, 2022. Contingent assets are not recorded in the consolidated financial statements.

CITY OF RICHMOND

Notes to Consolidated Financial Statements

(Tabular amounts expressed in thousands of dollars, unless otherwise indicated)

Year ended December 31, 2022

16. Contingent assets and contractual rights (continued):

(b) Contractual rights:

The City has entered into contracts or agreements in the normal course of operations that it expects will result in revenue and assets in future fiscal years. The City's contractual rights are comprised of leases, licenses, grants and various other agreements, including the provision of police services with the Vancouver Airport Authority. The following table summarizes the expected revenue from the City's contractual rights:

2023	\$ 37,876
2024	13,377
2025	2,947
2026	1,707
2027	1,729
Thereafter	5,778

The City is entitled to receive revenue from certain other agreements. The revenue from these agreements cannot be quantified and has not been included in the amounts noted above.

17. Commitments and contingencies:

(a) Joint and several liabilities:

The City has a contingent liability with respect to debentures of the Greater Vancouver Water District, Greater Vancouver Sewerage and Drainage District and Metro Vancouver Regional District, to the extent provided for in their respective Enabling Acts, Acts of Incorporation and Amending Acts. Management does not consider payment under this contingency to be likely and therefore no amounts have been accrued.

(b) Lease payments:

The City is committed to operating lease payments for premises and equipment in the following approximate amounts:

2023	\$ 3,839
2024	3,545
2026	2,305
2026	2,173
2027 and thereafter	4,012

CITY OF RICHMOND

Notes to Consolidated Financial Statements

(Tabular amounts expressed in thousands of dollars, unless otherwise indicated)

Year ended December 31, 2022

17. Commitments and contingencies (continued):

(c) Litigation:

As at December 31, 2022, there were a number of claims or risk exposures in various stages of resolution. The City has made no specific provision for those where the outcome is presently not determinable.

(d) Municipal Insurance Association of British Columbia ("Association"):

The City is a participant in the Association. Should the Association pay out claims in excess of premiums received, it is possible that the City, along with other participants, would be required to contribute towards the deficit. Management does not consider external payment under this contingency to be likely and therefore, no amounts have been accrued.

(e) Contractual obligation:

The City has entered into various contracts for services and construction with periods ranging beyond one year. These commitments are in accordance with budgets passed by Council.

(f) E-Comm Emergency Communications for Southwest British Columbia Incorporated ("E-Comm"):

The City is a shareholder of the E-Comm whose services provided include: regional 9-1-1 call centre for the Greater Vancouver Regional District; Wide Area Radio network; dispatch operations; and records management. The City has 2 Class A shares and 1 Class B share (of a total of 37 Class A and 18 Class B shares issued and outstanding as at December 31, 2022). As a Class A shareholder, the City shares in both funding the future operations and capital obligations of E-Comm (in accordance with a cost sharing formula), including any lease obligations committed to by E-Comm up to the shareholder's withdrawal date.

(g) Community associations:

The City has agreements with the various community associations which operate the community centers throughout the City. The City generally provides the buildings and grounds, pays the operating costs of the facilities, and provides certain staff and other services such as information technology. Typically the community associations are responsible for providing programming and services to the community. The community associations retain all revenue which they receive.

CITY OF RICHMOND

Notes to Consolidated Financial Statements

(Tabular amounts expressed in thousands of dollars, unless otherwise indicated)

Year ended December 31, 2022

18. Trust funds:

Certain assets have been conveyed or assigned to the City to be administered as directed by agreement or statute. The City holds the assets for the benefit of and stands in fiduciary relationship to the beneficiary. The following trust fund is excluded from the City's consolidated financial statements.

	2022	2021
Richmond Community Associations	\$ 696	\$ 1,928

19. Taxation and levies:

	2022	2021
Taxes collected:		
Property taxes	\$ 524,934	\$ 496,172
Payment-in-lieu of taxes and grants	37,860	24,326
Local improvement levies	84	84
	562,878	520,582
Less transfers to other authorities:		
Province of British Columbia - School taxes	(210,071)	(192,631)
TransLink	(45,904)	(42,926)
Metro Vancouver	(9,116)	(8,029)
BC Assessment Authority	(6,741)	(6,297)
Sewer debt collect via payment in lieu of taxes	(114)	(43)
Other	(36)	(30)
	(271,982)	(249,956)
Less payment-in-lieu of taxes retained by the City	(21,314)	(14,789)
	\$ 269,582	\$ 255,837

20. Other revenue:

	2022	2021
Developer contributions	\$ 14,957	\$ 6,580
Tangible capital assets gain on sale of land	260	722
Penalties and fines	6,382	4,210
Parking program	1,781	1,343
Recycle BC	3,083	2,884
Other	8,743	6,138
	\$ 35,206	\$ 21,877

CITY OF RICHMOND

Notes to Consolidated Financial Statements

(Tabular amounts expressed in thousands of dollars, unless otherwise indicated)

Year ended December 31, 2022

21. Government transfers:

Government transfers are received for operating and capital activities. The operating transfers consist of gaming revenue and provincial and federal contributions. Capital transfers are included in other capital funding sources revenue. The source of the government transfers are as follows:

	2022	2021
Operating		
Province of British Columbia	\$ 19,273	\$ 12,590
TransLink	3,891	3,815
Government of Canada	2,291	1,999
Capital		
Province of British Columbia	8,619	6,069
TransLink	885	2,947
Government of Canada	1,410	567
	\$ 36,369	\$ 27,987

22. Segmented reporting:

The City provides a wide variety of services to its residents. For segment disclosure, these services are grouped and reported under service areas/departments that are responsible for providing such services. They are as follows:

- (a) **Community Safety** brings together the City's public safety providers such as Police (RCMP), Fire-Rescue, Emergency Programs, and Community Bylaws. It is responsible for ensuring safe communities by providing protection services with a focus on law enforcement, crime prevention, emergency response, and protection of life and properties.
- (b) **Utilities** provide such services as planning, designing, constructing, operating, and maintaining the City's infrastructure of water, sewer, drainage and diking networks and sanitation and recycling.
- (c) **Engineering, Public Works and Project Development** comprises of General Public Works, Roads and Construction, Storm Drainage, Fleet Operations, Engineering, Project Development, Sustainability and Facility Management. The services provided are construction and maintenance of the City's infrastructure and all City owned buildings, maintenance of the City's road networks, managing and operating a mixed fleet of vehicles, heavy equipment and an assortment of specialized work units for the City operations, development of current and long-range engineering planning and construction of major projects.

CITY OF RICHMOND

Notes to Consolidated Financial Statements

(Tabular amounts expressed in thousands of dollars, unless otherwise indicated)

Year ended December 31, 2022

22. Segmented reporting (continued):

- (d) **Community Services** comprises of Parks, Recreation, Arts, and Culture and Heritage Services. These departments ensure recreation opportunities in Richmond by maintaining a variety of facilities such as arenas, community centres, pools, etc. It designs, constructs and maintains parks and sports fields to ensure there is adequate open green space and sports fields available for Richmond residents. It also addresses the economic, arts, culture, and community issues that the City encounters.
- (e) **General Government** comprises of Mayor and Council, Corporate Administration, and Finance and Corporate Services. It is responsible for adopting bylaws, effectively administering city operations, levying taxes, legal services, providing sound management of human resources, information technology, finance, and ensuring high quality services to Richmond residents.
- (f) **Planning and Development** is responsible for land use plans, developing bylaws and policies for sustainable development in the City including the City's transportation systems, and community social development.
- (g) **Richmond Olympic Oval Corporation** is formed as a wholly owned subsidiary of the City. The City uses the Richmond Olympic Oval facility as a venue for a wide range of sports, business and community activities.
- (h) **Richmond Public Library** provides public access to information by maintaining 5 branches throughout the City.

	Community safety	Utilities	Engineering public works and project development	Community services	General government	Planning and development	Total city subtotal
Revenue:							
Taxation and levies	\$ -	\$ -	\$ -	\$ -	\$ 269,582	\$ -	\$ 269,582
User fees	-	113,417	14,548	-	-	-	127,965
Sales of services	9,062	2,269	2,439	10,996	10,280	1,778	36,824
Payments-in-lieu of taxes	-	-	-	-	21,314	-	21,314
Provincial and federal grants	219	15	4,061	220	3,724	65	8,304
Development cost charges	-	415	2,392	12,527	2,202	4,898	22,434
Other capital funding sources	350	1,275	10,086	501	30,864	8,144	51,220
Other revenue:							
Investment income	-	272	-	-	29,959	-	30,231
Gaming revenue	753	-	-	-	11,809	-	12,562
Licenses and permits	4,681	41	295	-	15	10,015	15,047
Other	2,037	4,092	1,137	673	11,268	240	19,447
Equity income	-	-	-	-	1,381	-	1,381
	17,102	121,796	34,958	24,917	392,398	25,140	616,311
Expenses:							
Wages and salaries	53,029	15,694	28,210	34,955	31,909	13,634	177,431
Public works maintenance	21	6,793	6,230	2,324	(1,483)	479	14,364
Contract services	68,317	10,010	5,367	2,971	4,331	2,058	93,054
Supplies and materials	2,965	37,634	1,686	11,644	12,548	933	67,410
Interest and finance	103	28,707	9	146	2,370	1	31,336
Transfer from (to) capital for tangible capital assets	(68)	2,654	12,910	2,364	483	3,207	21,550
Amortization of tangible capital assets	3,294	8,947	34,792	10,318	9,100	3,558	70,009
Loss (gain) on disposal of tangible capital assets	66	51	(101)	233	234	20	503
	127,727	110,490	89,103	64,955	59,492	23,890	475,657
Annual surplus (deficit)	\$ (110,625)	\$ 11,306	\$ (54,145)	\$ (40,038)	\$ 332,906	\$ 1,250	\$ 140,654

CITY OF RICHMOND

Notes to Consolidated Financial Statements

(Tabular amounts expressed in thousands of dollars, unless otherwise indicated)

Year ended December 31, 2022

22. Segmented reporting (continued):

	Total City subtotal	Richmond Public Library	Richmond Olympic Oval	2022 Consolidated	2021 Consolidated
Revenue:					
Taxation and levies	\$ 269,582	\$ -	\$ -	\$ 269,582	\$ 255,837
User fees	127,965	-	-	127,965	118,144
Sales of services	36,824	57	7,613	44,494	35,601
Payments-in-lieu of taxes	21,314	-	-	21,314	14,789
Provincial and federal grants	8,304	377	4,212	12,893	12,704
Development cost charges	22,434	-	-	22,434	16,223
Other capital funding sources	51,220	-	-	51,220	64,695
Other revenue:					
Investment income	30,231	19	-	30,250	14,968
Gaming revenue	12,562	-	-	12,562	5,700
Licenses and permits	15,047	-	-	15,047	13,995
Other	19,447	10,448	5,311	35,206	21,877
Equity income	1,381	-	-	1,381	911
	616,311	10,901	17,136	644,348	575,444
Expenses:					
Wages and salaries	177,431	7,789	10,396	195,616	179,260
Public works maintenance	14,364	26	-	14,390	13,011
Contract services	93,054	409	-	93,463	89,086
Supplies and materials	67,410	1,771	4,666	73,847	68,056
Interest and finance	31,336	4	-	31,340	30,301
Transfer from (to) capital for tangible capital assets	21,550	(344)	-	21,206	21,094
Amortization of tangible capital assets	70,009	931	1,782	72,722	68,519
Loss (gain) on disposal of tangible capital assets	503	(21)	-	482	2,436
	475,657	10,565	16,844	503,066	471,763
Annual surplus (deficit)	\$ 140,654	\$ 336	\$ 292	\$ 141,282	\$ 103,681

23. Budget data:

The budget data presented in these consolidated financial statements is based on the Consolidated 5 Year Financial Plan adopted by Council on January 24, 2022. The table below reconciles the adopted Consolidated Financial Plan to the budget amounts reported in these consolidated financial statements.

	Financial plan Bylaw No. 10327	Financial statement budget
Consolidated financial plan:		
Revenue	\$ 604,730	\$ 604,730
Expenses	522,614	522,614
Annual surplus	82,116	82,116
Less:		
Acquisition of tangible capital assets	(255,375)	-
Contributed tangible capital assets	(54,782)	-
Transfer to reserves	(78,319)	-
Debt principal	(5,570)	-
Add:		
Capital funding	303,542	-
Transfer from surplus	8,388	-
Annual surplus	\$ -	\$ 82,116

CITY OF RICHMOND

Notes to Consolidated Financial Statements

(Tabular amounts expressed in thousands of dollars, unless otherwise indicated)

Year ended December 31, 2022

24. Comparative information:

Certain comparative information has been reclassified to conform to the consolidated financial statement presentation adopted for the current year.

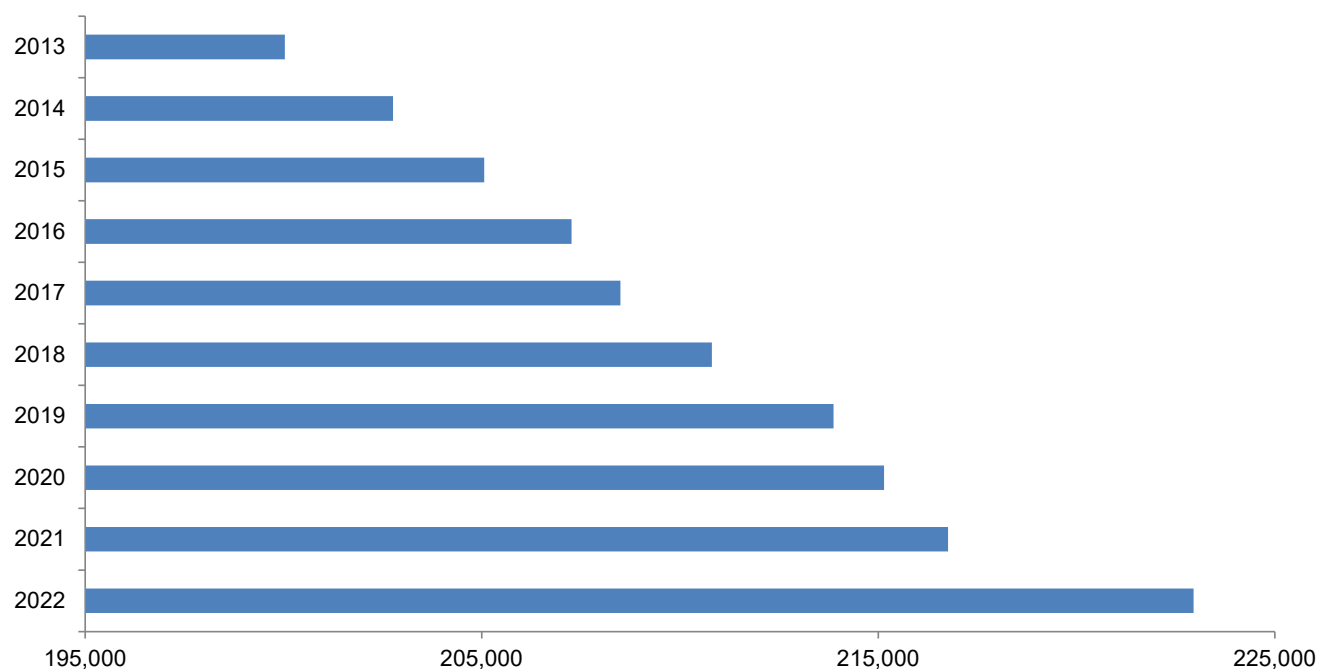
25. Subsequent events:

In March 2023, the City received \$20,354,000 from the Province of B.C. relating to the Growing Communities Fund grant. The Growing Communities Fund grant is a one-time grant that can be used to address the City's infrastructure and amenity needs. This amount will be recognized as revenue in 2023.

City of Richmond statistical data

City of Richmond population 2013–2022.....	48
Total population by age groups.....	48
Immigrant status of Richmond residents by period of immigration	49
Language spoken most often at home	49
Highest level of education attained for the population aged 25 to 64	50
Occupations of Richmond residents	50
Major employers in Richmond.....	51
Housing starts in Richmond 2013–2022	51
Richmond housing starts by type of units 2022	52
New dwelling units constructed 2013–2022	52
Construction value of building permits issued 2013–2022 (in \$000s)	53
Richmond business licences 2018–2022	53
City of Richmond budgeted capital costs 2018–2022 (in \$000s).....	54
Capital program by type 2022	54
Breakdown of residential tax bill 2022	55
Registration in Richmond Recreation and Cultural Services programs 2018–2022.....	55
2022 tax rates.....	56
2022 general revenue fund assessment and taxation by property class (in \$000s).....	56
Taxes levied on behalf of taxing authorities (in \$000s)	56
2018–2022 general assessment by property class (in \$000s)	57
Top 10 corporate taxpayers in Richmond.....	57
Debt servicing costs compared to general taxation revenue 2018–2022 (in \$000s).....	58
Liability servicing limit 2018–2022 (in \$000s)	58
City of Richmond debt per capita 2018–2022	58
Net debt 2018–2022 (in \$000s)	58
Expenses by function 2018–2022 (in \$000s)	59
Expenses by object 2018–2022 (in \$000s).....	59
Revenue by source 2018–2022 (in \$000s).....	60
Accumulated surplus 2018–2022 (in \$000s).....	60
Changes in net financial assets 2018–2022 (in \$000s).....	60
Reserves 2018–2022 (in \$000s).....	61
Investment portfolio per type 2021–2022 (in \$000s).....	62
Ratio analysis indicators of financial condition.....	62

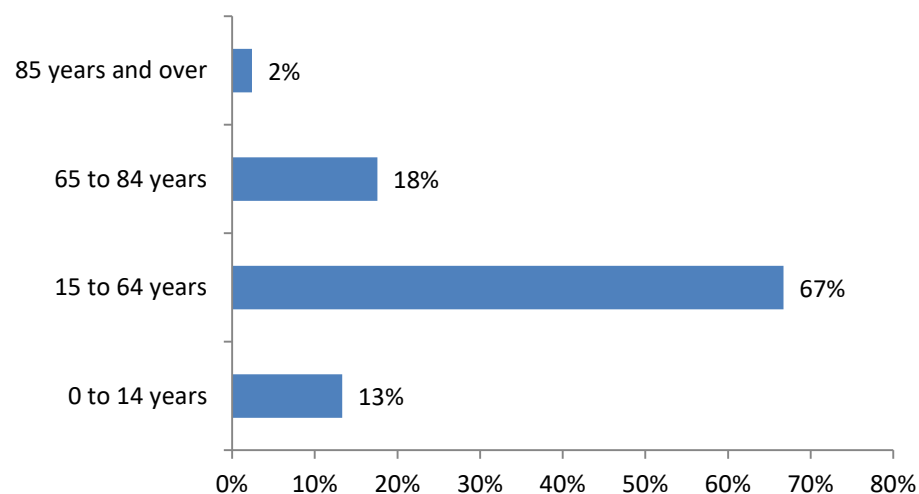
City of Richmond population 2013–2022



Numbers were revised for 2019—restated based on BC Stats estimates.

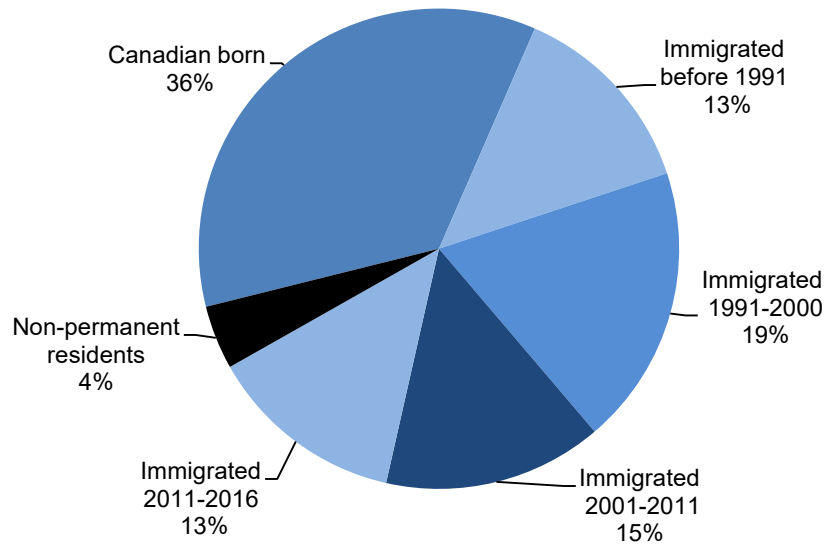
Source: BC Stats population figures

Total population by age groups



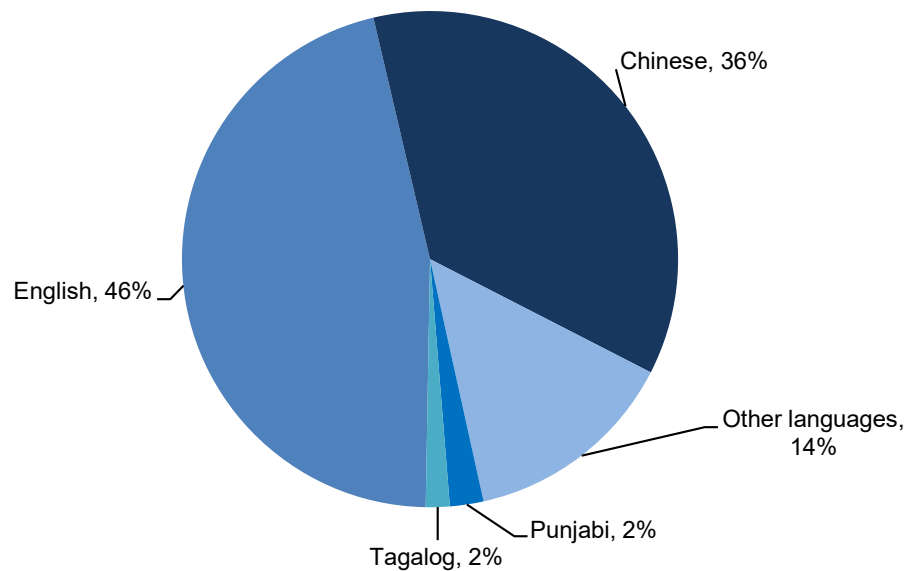
Source: Statistics Canada, 2021 Census of Population

Immigrant status of Richmond residents by period of immigration



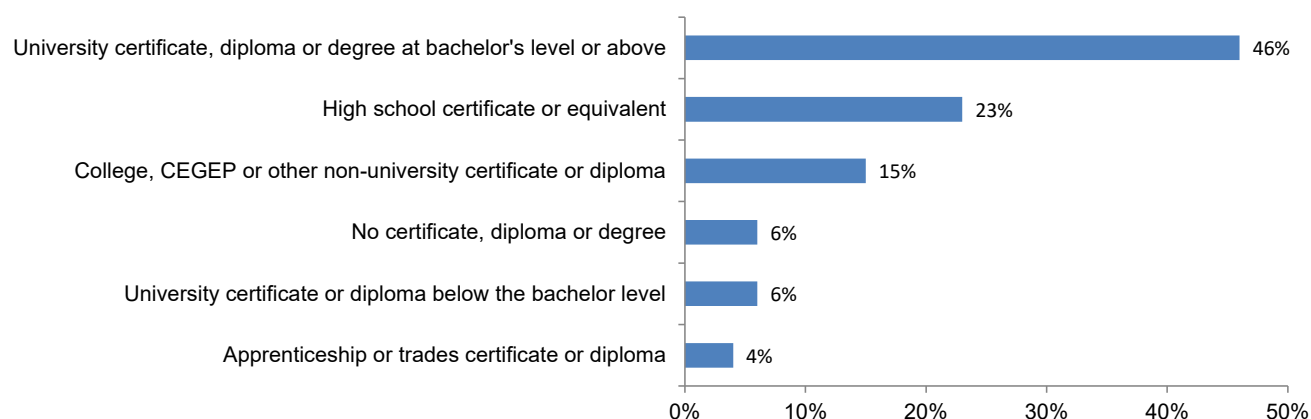
Source: Statistics Canada, 2021 Census of Population

Language spoken most often at home



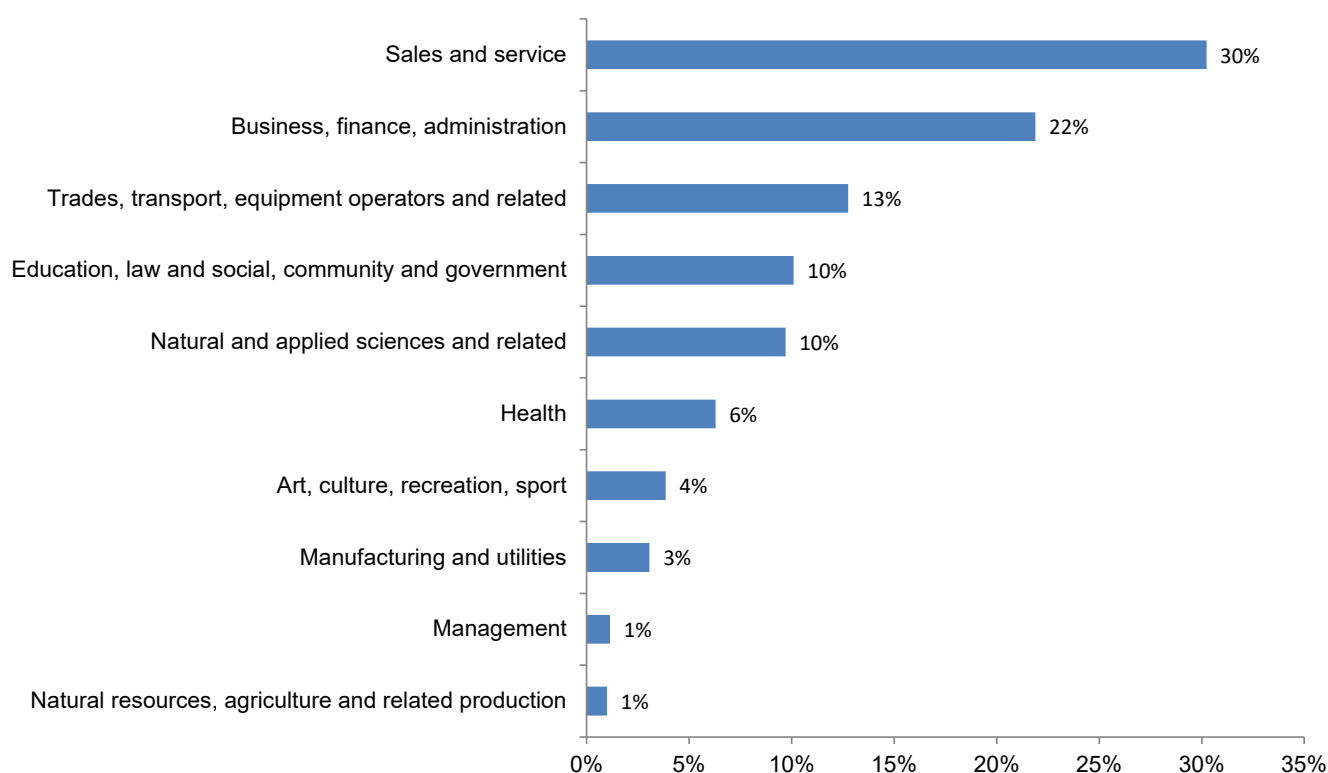
Source: Statistics Canada, 2021 Census of Population

Highest level of education attained for the population aged 25 to 64



Source: Statistics Canada, 2021 Census of Population

Occupations of Richmond residents

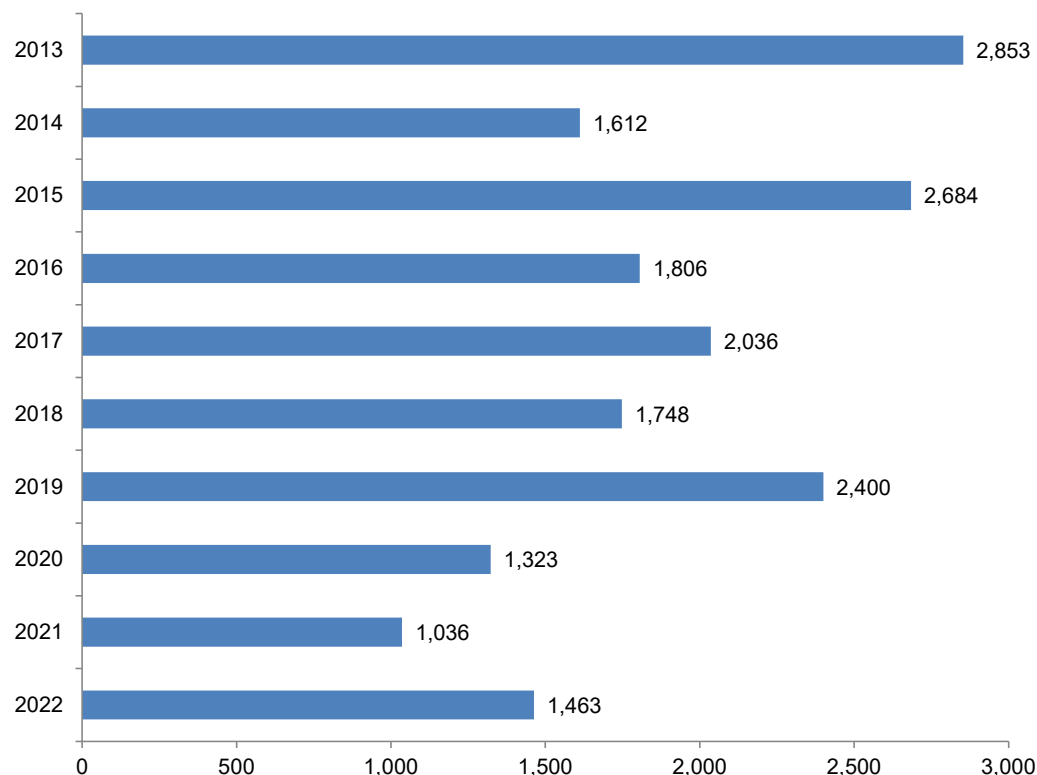


Source: Statistics Canada, 2021 Census of Population

Major employers in Richmond (in alphabetical order)

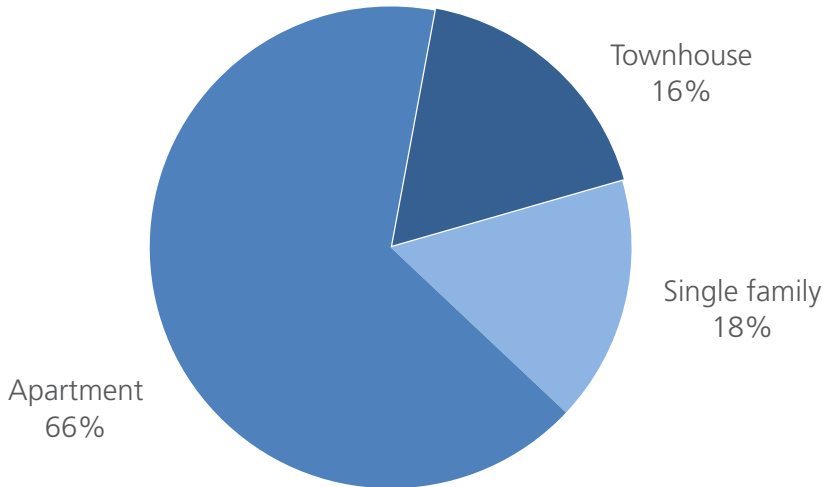
- Air Canada
- Allied Universal Security Services of Canada
- Amazon Canada
- Change Healthcare Canada
- City of Richmond
- Crown Packaging Ltd.
- Gate Gourmet Canada Inc.
- London Drugs Ltd.
- MDA Systems Ltd.
- Richmond Plywood Corporation Ltd.
- River Rock Casino Resort
- School District No.38
- T&T Supermarket
- The Real Canadian Superstore
- Vancouver Coastal Health, Richmond
- WorkSafeBC

Housing starts in Richmond 2013–2022



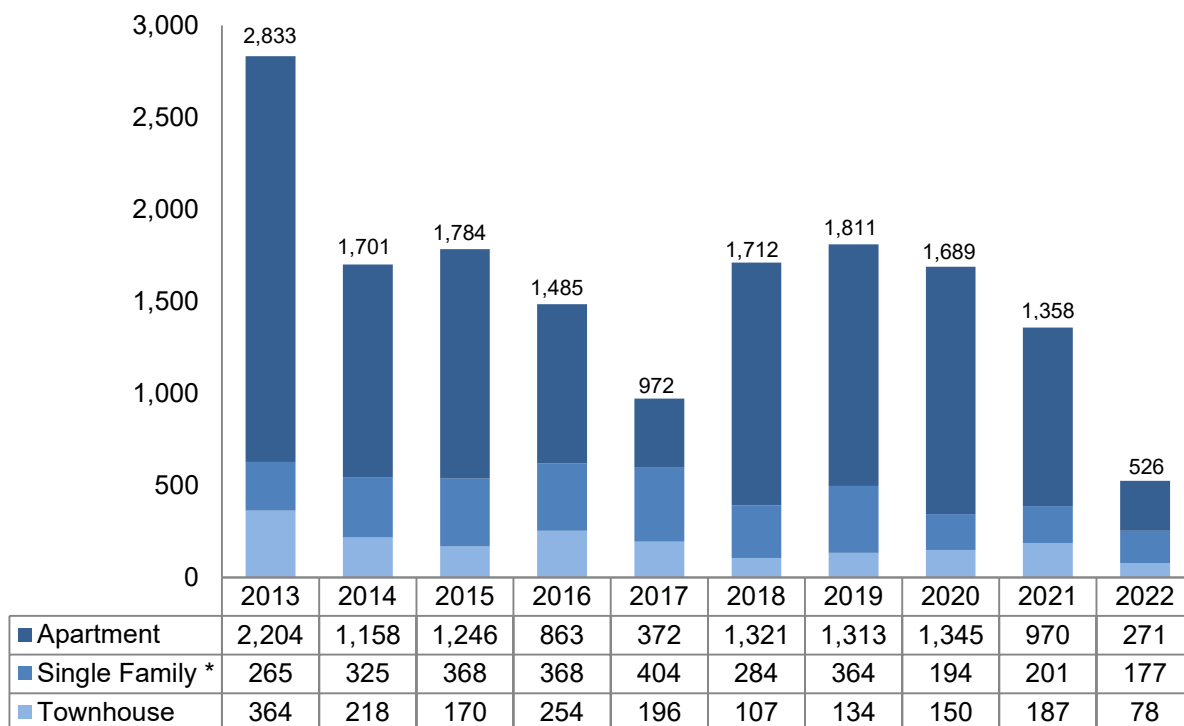
*Includes only projects for new residential construction receiving final building permit in given year.
Source: City of Richmond building permit records*

Richmond housing starts by type of units 2022



*Includes only projects for new residential construction receiving final building permit in given year.
Source: City of Richmond building permit records*

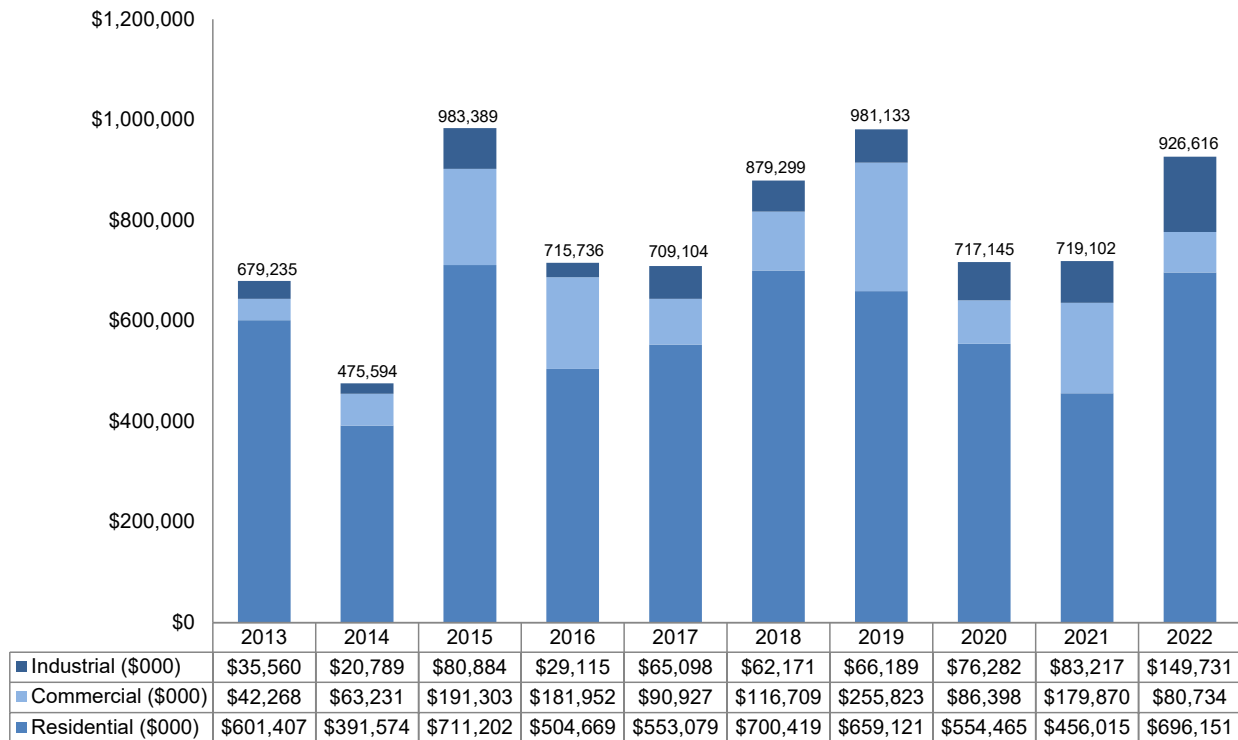
New dwelling units constructed 2013–2022



* Includes one family and two family dwellings.

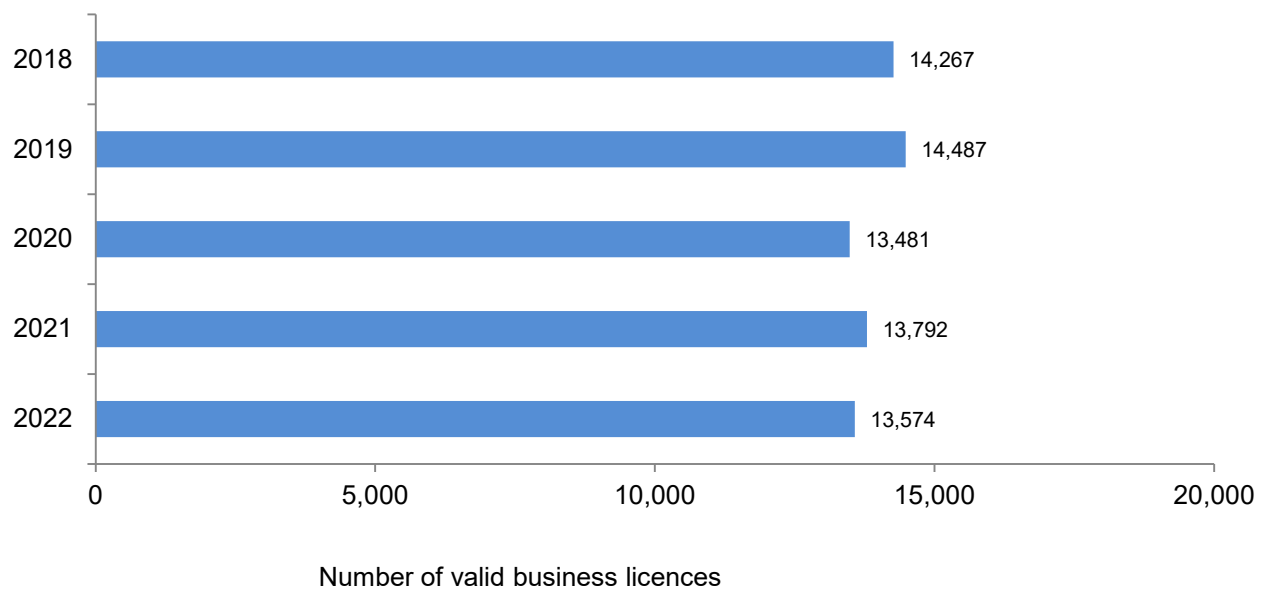
*Includes only projects for new residential construction receiving final building permit in given year.
Source: City of Richmond building permit records*

Construction value of building permits issued 2013–2022 (in \$000s)



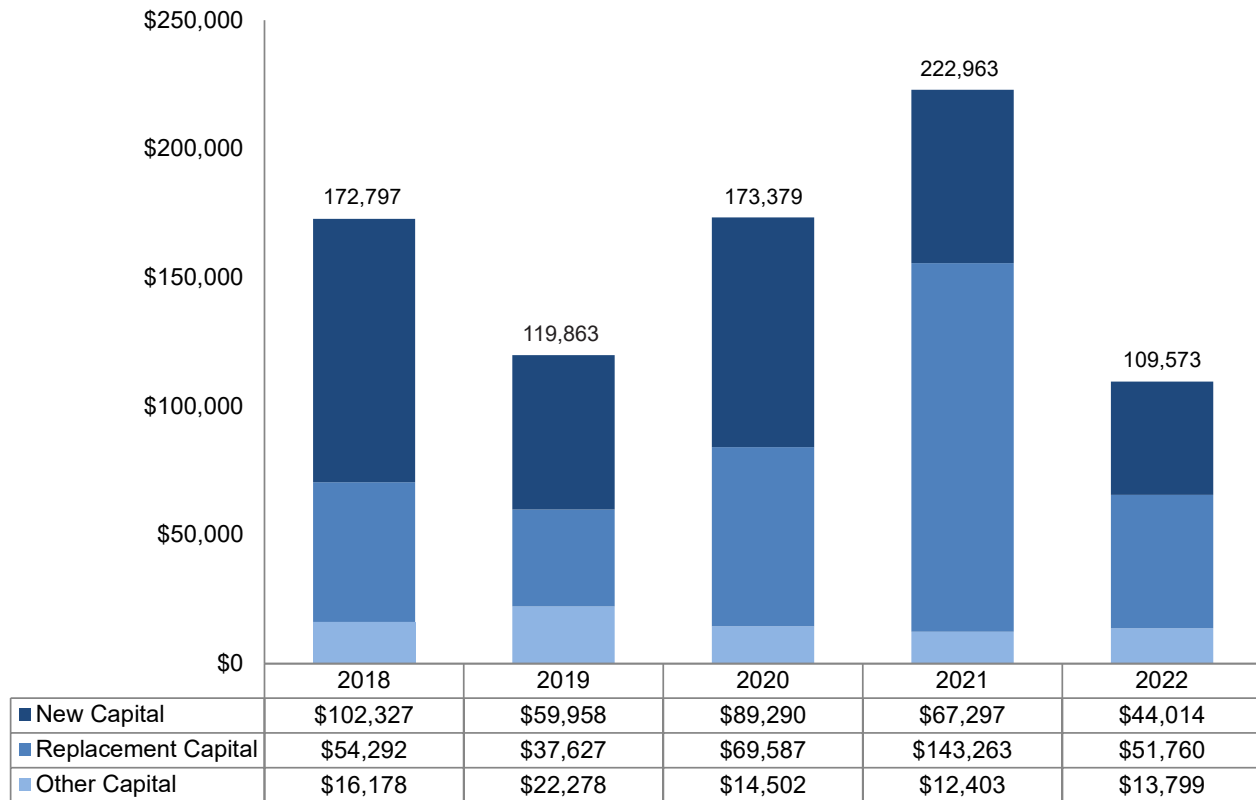
Source: City of Richmond building permit records

Richmond business licences 2018–2022



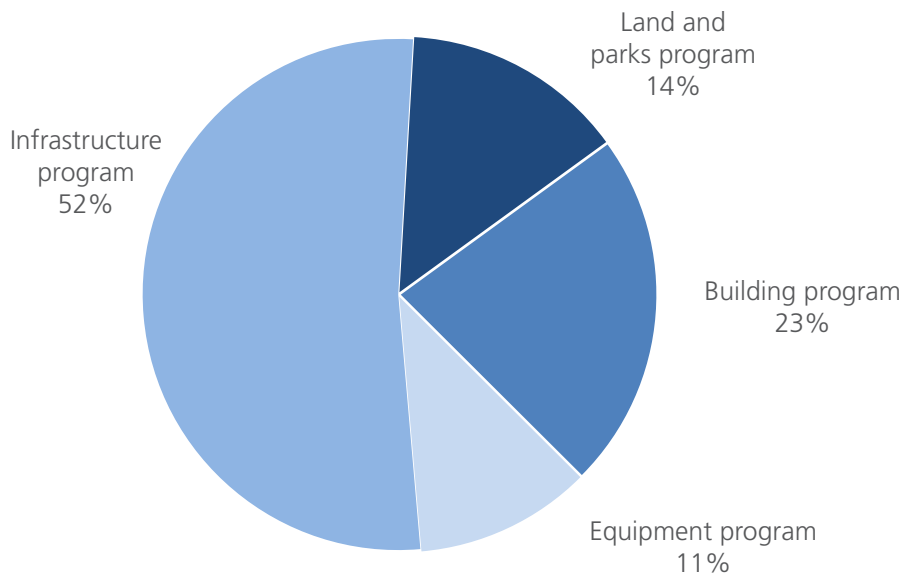
Source: 2022 City of Richmond business licences

City of Richmond budgeted capital costs 2018–2022 (in \$000s)



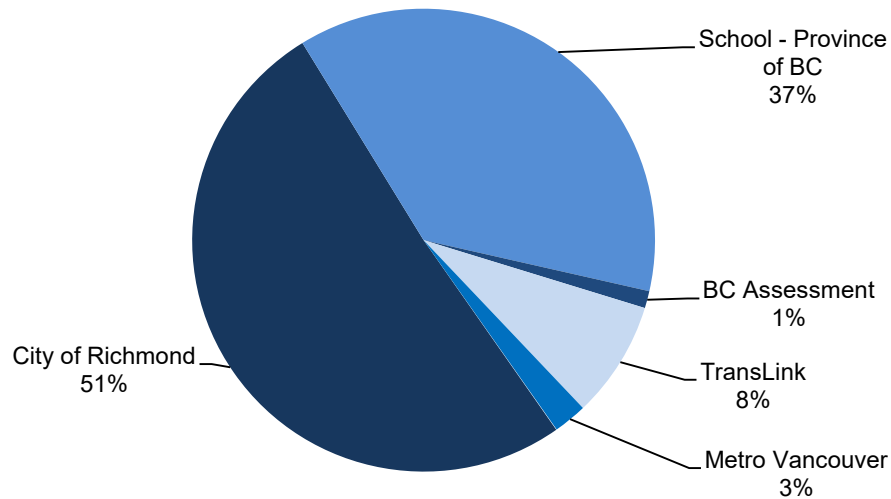
Source: City of Richmond Finance and Corporate Services

Capital program by type 2022



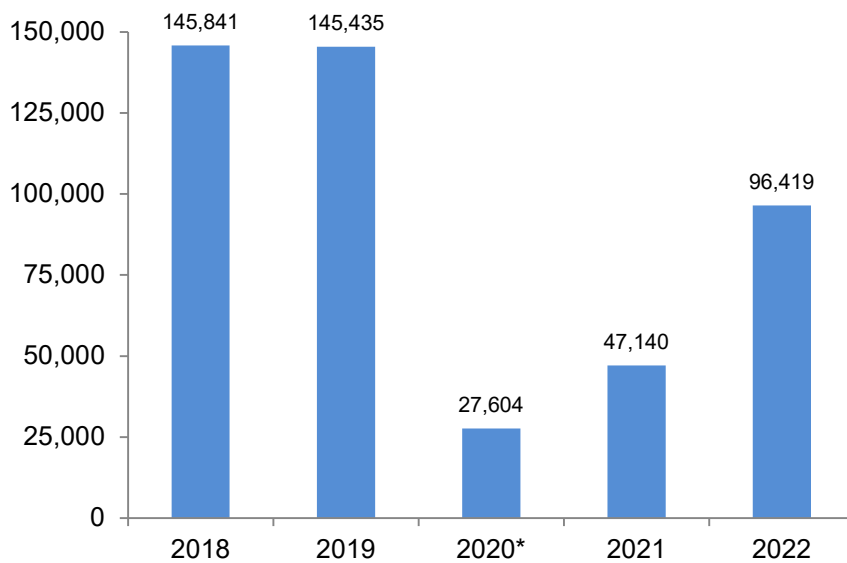
Source: City of Richmond Finance and Corporate Services

Breakdown of residential tax bill 2022



Source: City of Richmond Finance and Corporate Services

Registration in Richmond Recreation and Cultural Services programs 2018–2022



*2020 figure has been restated.

Source: City of Richmond Finance and Corporate Services

2022 tax rates

	City of Richmond	School - Province of BC	Metro Vancouver	BC Assessment	Municipal Finance Authority	TransLink
Residential	1.65745	0.99580	0.05127	0.03490	0.00020	0.22590
Business	4.00065	3.52000	0.12562	0.10360	0.00050	0.77870
Light industrial	4.00065	3.52000	0.17433	0.10360	0.00070	0.78220
Seasonal / Recreational	1.35615	2.03000	0.05127	0.03490	0.00020	0.15640
Major industrial	7.51512	1.40800	0.17433	0.46620	0.00070	1.40220
Farm	15.63913	3.49000	0.05127	0.03490	0.00020	0.32390
Utilities	38.53459	12.72000	0.17946	0.46620	0.00070	2.23700

Source: City of Richmond Finance and Corporate Services

2022 general revenue fund assessment and taxation by property class (in \$000s)

	Assessment	% of assessment by class	Taxation	% of taxation by class
Residential	\$92,961,083	76.60%	\$154,079	57.09%
Business	22,213,156	18.31%	88,867	32.93%
Light industrial	5,368,958	4.42%	21,479	7.96%
Seasonal / Recreational	353,571	0.29%	480	0.18%
Major industrial	389,851	0.32%	2,930	1.09%
Farm	26,496	0.02%	414	0.15%
Utilities	43,033	0.04%	1,658	0.60%
Total	\$121,356,148	100.00%	\$269,907	100.00%

Amounts are based on billing.

Source: City of Richmond Finance and Corporate Services

Taxes levied on behalf of taxing authorities (in \$000s)

	2018	2019	2020	2021	2022
City of Richmond	\$216,908	\$231,100	\$241,739	\$257,088	\$269,907
School Board	169,005	181,863	121,559	186,528	197,657
Metro Vancouver	5,915	6,922	9,145	11,146	12,410
BC Assessment	5,737	5,894	6,008	6,088	6,344
TransLink	35,991	38,863	40,189	41,576	43,301
Other	26	29	116	112	117
Total Taxes	\$433,582	\$464,671	\$418,756	\$502,538	\$529,736

Amounts are less supplementary adjustments.

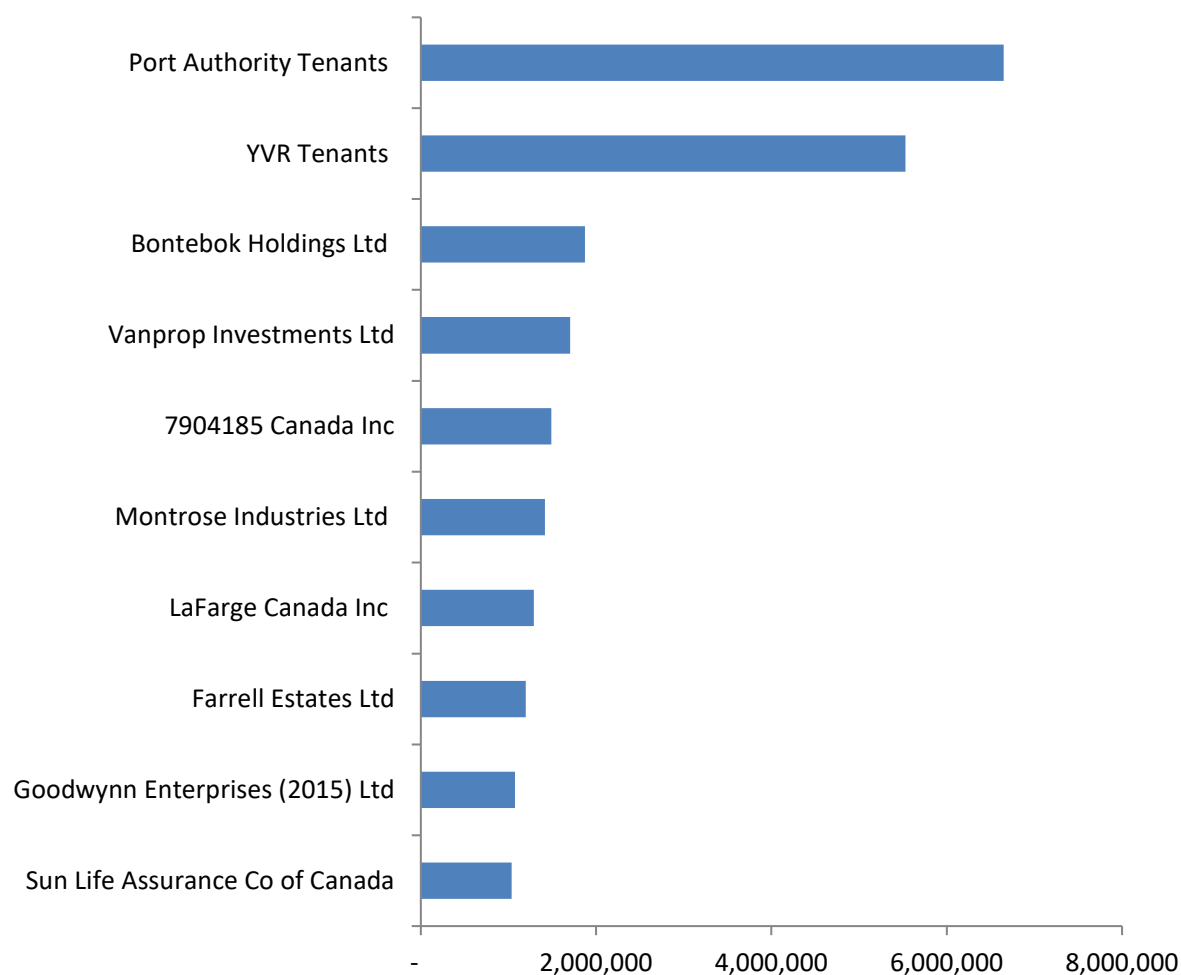
Source: City of Richmond Finance and Corporate Services

2018–2022 general assessment by property class (in \$000s)

	2018	2019	2020	2021	2022
Residential	\$80,530,838	\$84,391,147	\$75,895,923	\$78,838,953	\$92,961,083
Business	15,848,533	18,964,170	19,613,458	18,856,561	22,213,156
Light industrial	2,998,757	3,528,011	3,850,127	4,286,605	5,368,958
Seasonal / recreational	200,893	221,291	211,659	213,776	353,571
Major industrial	204,542	259,457	289,800	336,999	389,851
Farm	26,297	26,166	26,103	26,044	26,496
Utilities	29,250	35,869	55,674	41,633	43,033
Total	\$99,839,110	\$107,426,111	\$99,942,744	\$102,600,571	\$121,356,148

Source: City of Richmond Finance and Corporate Services

Top 10 corporate taxpayers in Richmond



Source: City of Richmond Finance and Corporate Services

Debt servicing costs compared to general taxation revenue 2018–2022 (in \$000s)

	2018	2019	2020	2021	2022
Debt servicing costs	5,909	6,628	6,826	7,032	8,320
General taxation revenue	\$216,908	\$230,198	\$239,991	\$255,837	\$269,582
Debt servicing costs as a % of general taxation revenue	2.72%	2.88%	2.84%	2.75%	3.09%

Source: City of Richmond Finance and Corporate Services

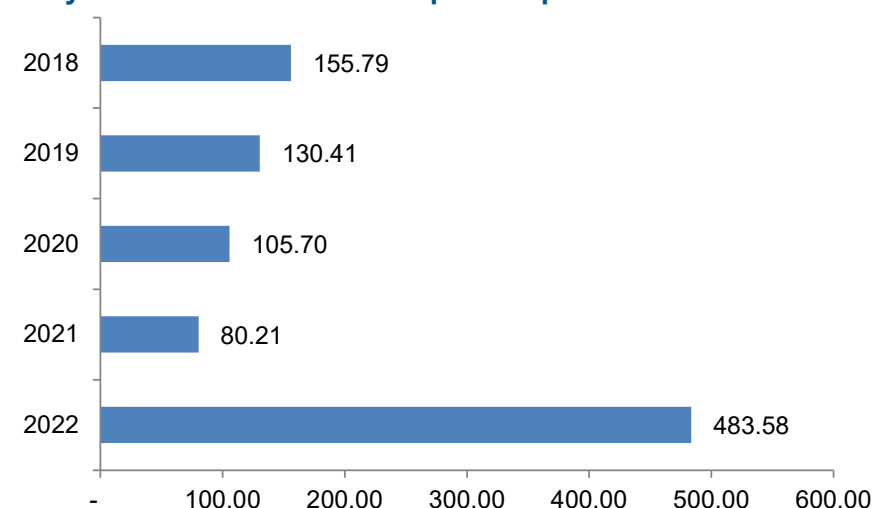
Liability servicing limit 2018–2022 (in \$000s)

	2018	2019	2020	2021	2022
Liability servicing limit	\$114,285	\$117,239	\$113,768	\$113,663	\$127,512

The liability servicing limit is a calculated amount based on 25% of specific municipal revenues.

Source: City of Richmond Finance and Corporate Services

City of Richmond debt per capita 2018–2022



Source: City of Richmond Finance and Corporate Services

Net debt 2018–2022 (in \$000s)

	2018	2019	2020	2021	2022
Net debt	\$32,842	\$27,891	\$22,741	\$17,386	\$107,816

Source: City of Richmond Finance and Corporate Services

Expenses by function 2018–2022 (in \$000s)

	2018	2019	2020	2021	2022
Community safety	\$98,500	\$106,209	\$112,895	\$123,232	\$127,727
Engineering and public works	68,793	80,940	75,314	80,083	89,103
Community services	63,882	67,522	50,833	59,873	64,955
General government	52,549	55,689	51,495	52,995	59,492
Utilities	89,959	98,653	102,824	106,519	110,490
Planning and development	15,368	48,104*	19,201	25,166	23,890
Library services	9,981	10,601	9,040	9,816	10,565
Richmond Olympic Oval	15,424	15,972	12,586	14,079	16,844
Total expenses	\$414,456	\$483,690	\$434,188	\$471,763	\$503,066

* Includes one-time TransLink contribution for Capstan Station.

Source: City of Richmond Finance and Corporate Services

Expenses by object 2018–2022 (in \$000s)

	2018	2019	2020	2021	2022
Wages, salaries and benefits	\$162,331	\$177,363	\$164,788	\$179,260	\$195,616
Public works maintenance	13,405	15,299	13,343	13,011	14,390
Contract services	73,479	79,098	81,642	89,086	93,463
Supplies, materials	67,919	68,801	64,437	68,056	73,847
Interest and finance	23,149	26,089	29,779	30,301	31,340
Transfer from (to) capital for tangible capital assets	13,307	52,244	13,568	21,094	21,206
Amortization of tangible capital assets	60,542	64,228	66,254	68,519	72,722
Loss/(gain) on disposal of tangible capital assets	324	568	377	2,436	482
Total expenses	\$414,456	\$483,690	\$434,188	\$471,763	\$503,066

Source: City of Richmond Finance and Corporate Services

Revenue by source 2018–2022 (in \$000s)

	2018	2019	2020	2021	2022
Taxation and levies	\$216,908	\$230,198	\$239,991	\$255,837	\$269,582
User fees	102,915	111,472	114,335	118,144	127,965
Sales of services	39,111	42,747	29,090	35,601	44,494
Licences and permits	13,637	13,030	19,407	13,995	15,047
Investment income	20,705	25,142	20,175	14,968	30,250
Grants including casino revenue	42,681	42,104	16,953	18,404	25,455
Development cost charges	17,432	13,802	16,737	15,223	22,434
Capital funding	95,859	39,028	71,051	64,695	51,220
Other	50,169	64,419	51,313	38,577	57,901
Total revenue	\$599,417	\$581,942	\$579,052	\$575,444	\$644,348

Source: City of Richmond Finance and Corporate Services

Accumulated surplus 2018–2022 (in \$000s)

	2018	2019	2020	2021	2022
Accumulated surplus, beginning of year	\$2,956,129	\$3,141,090	\$3,239,342	\$3,384,206	\$3,487,887
Annual surplus	184,961	98,252	144,864	103,681	141,282
Accumulated surplus, end of year	\$3,141,090	\$3,239,342	\$3,384,206	\$3,487,887	\$3,629,169

Source: City of Richmond Finance and Corporate Services

Changes in net financial assets 2018–2022 (in \$000s)

	2018	2019	2020	2021	2022
Change in net financial assets	\$65,031	\$42,748	\$83,116	\$51,018	\$85,722
Net financial assets, end of year	\$763,121	\$805,869	\$888,985	\$940,003	\$1,025,725

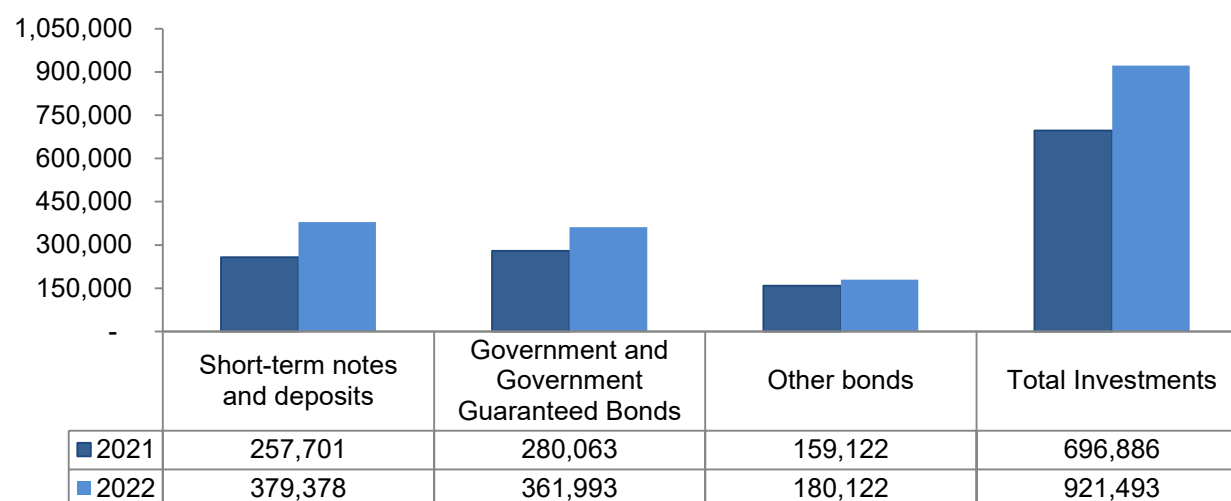
Source: City of Richmond Finance and Corporate Services

Reserves 2018–2022 (in \$000s)

	2018	2019	2020	2021	2022
Affordable housing	\$10,836	\$11,705	\$12,250	\$14,293	\$15,427
Arts, culture and heritage	4,003	3,726	3,721	3,526	3,573
Capital building and infrastructure	81,763	100,686	111,528	122,720	129,625
Capital reserve	176,142	171,976	222,778	244,445	263,825
Capstan Station	32,332	32,318	11,477	11,149	14,582
Child care development	6,806	8,922	10,055	10,078	10,169
Community legacy and land replacement	8,852	1,310	1,387	1,458	1,545
Drainage improvement	56,132	55,645	60,597	57,159	59,740
Equipment replacement	19,600	20,203	22,577	25,206	26,888
Hamilton area plan community amenity	752	1,720	2,762	3,007	3,605
Leisure facilities	18,765	17,676	18,097	18,970	27,768
Local improvements	7,155	7,327	7,459	7,571	7,760
Neighbourhood improvement	7,520	7,860	7,919	8,037	8,588
Richmond Olympic Oval	6,324	8,856	7,810	8,100	9,846
Public art program	4,860	4,858	4,582	4,405	4,828
Sanitary sewer	44,107	47,731	48,903	49,611	53,518
Steveston off-street parking	317	325	331	336	339
Steveston road ends	155	150	153	155	147
Waterfront improvement	317	202	195	187	181
Watermain replacement	53,415	54,380	54,952	56,796	61,230
Total reserves	\$540,153	\$557,576	\$609,533	\$647,209	\$703,184

Source: City of Richmond Finance and Corporate Services

Investment portfolio per type 2021–2022 (in \$000s)



Source: City of Richmond Finance and Corporate Services

Ratio analysis indicators of financial condition

	2022	2021	2020
Sustainability ratios			
Assets to liabilities (times)	6.2	7.6	6.8
Financial assets to liabilities (times)	2.5	2.8	2.5
Net debt to total revenues	16.7%	3.0%	3.9%
Net debt to the total assessment	0.09%	0.02%	0.02%
Expenses to the total assessment	0.4%	0.5%	0.6%
Flexibility ratios			
Public debt charges to revenues	0.4%	0.3%	0.3%
Net book value of capital assets to its cost	66.2%	66.8%	67.3%
Own source revenue to the assessment	0.5%	0.5%	0.5%
Vulnerability ratios			
Government transfers to total revenues	4.0%	3.2%	3.4%

Source: City of Richmond Finance and Corporate Services

2022 permissive property tax exemptions

In accordance with Section 98 (2)(b) of the Community Charter, we disclose that the following properties were provided permissive property tax exemptions by Richmond City Council in 2022. Permissive tax exemptions are those exemptions granted by bylaw in accordance with Section 224 of the Community Charter.

Property / Organization	Address	2022 Municipal tax exempted
Churches and religious properties		
Aga Khan Foundation Canada	4000 May Drive	\$ 13,662
BC Muslim Association	12300 Blundell Road	2,308
Bakerview Gospel Chapel	8991 Francis Road	3,051
Beth Tikvah Congregation	9711 Geal Road	18,413
Bethany Baptist Church	22680 Westminster Highway	8,711
Brighthouse United Church	8151 Bennett Road	17,231
Broadmoor Baptist Church	8140 Saunders Road	4,569
Canadian Martyrs Parish	5771 Granville Avenue	24,806
Christian and Missionary Alliance	3360 Sexsmith Road	13,342
Christian Reformed Church	9280 No. 2 Road	22,021
Church in Richmond	4460 Brown Road	2,686
Church of Latter Day Saints	8440 Williams Road	20,967
Conference of the United Mennonite Churches of BC	11571 Daniels Road	14,736
Cornerstone Evangelical Baptist Church	12011 Blundell Road	739
Dharma Drum Mountain Buddhist Temple	8240 No. 5 Road	1,243
Emmanuel Christian Community	10351 No. 1 Road	10,097
Fraserview Mennonite Brethren Church	11295 Mellis Drive	6,644
Fujian Evangelical Church	12200 Blundell Road	3,196
Gilmore Park United Church	8060 No. 1 Road	3,420
I Kuan Tao (Fay Chungder) Association	8866 Odlin Crescent	3,384
Immanuel Christian Reformed Church	7600 No. 4 Road	3,570
India Cultural Centre	8600 No. 5 Road	3,121
International Buddhist Society	9160 Steveston Highway	4,683
Johrei Fellowship Inc.	10380 Odlin Road	7,084
Lansdowne Congregation Jehovah's Witnesses	11014 Westminster Highway	3,332
Ling Yen Mountain Temple	10060 No. 5 Road	5,286
Meeting Room	8020 No. 5 Road	2,653
Nanaksar Gurdwara Gursikh Temple	18691 Westminster Highway	2,203
North Richmond Alliance Church	9140 Granville Avenue	5,656
Our Savior Lutheran Church	6340 No. 4 Road	3,485

Churches and religious properties continued . . .

Parish of St. Alban's	7260 St. Albans Road	\$ 16,399
Peace Evangelical Church	8280 No. 5 Road	1,249
Richmond Alliance Church	11371 No. 3 Road	2,538
Richmond Baptist Church	6560 Blundell Road	3,920
Richmond Baptist Church	6640 Blundell Road	13,017
Richmond Bethel Mennonite Church	10160 No. 5 Road	4,267
Richmond Chinese Alliance Church	10100 No. 1 Road	16,248
Richmond Chinese Evangelical Free Church	8040 No. 5 Road	2,567
Richmond Emmanuel Church	7451 Elmbridge Way	7,241
Richmond Faith Fellowship	11960 Montego Street	4,183
Richmond Gospel Hall	5651 Francis Road	5,002
Richmond Pentecostal Church	9300 Westminster Highway	3,320
Richmond Pentecostal Church	9260 Westminster Highway	1,959
Richmond Presbyterian Church	7111 No. 2 Road	12,841
Richmond Sea Island United Church	8711 Cambie Road	22,298
Salvation Army Church	8280 Gilbert Road	4,071
Science of Spirituality SKRM Inc.	11011 Shell Road	1,176
Shia Muslim Community	8580 No. 5 Road	1,974
South Arm United Church	11051 No. 3 Road	1,277
St. Anne's Anglican Church	4071 Francis Road	6,808
St. Gregory Armenian Apostolic Church	13780 Westminster Highway	1,242
St. Joseph the Worker Roman Catholic Church	4451 Williams Road	46,480
St. Monica's Roman Catholic Church	12011 Woodhead Road	4,145
St. Paul's Roman Catholic Parish	8251 St. Albans Road	17,181
Steveston Buddhist Temple	4360 Garry Street	19,225
Steveston Congregation Jehovah's Witnesses	4260 Williams Road	11,450
Steveston United Church	3720 Broadway Street	4,762
Subramaniya Swamy Temple	8840 No. 5 Road	1,598
Thrangu Monastery Association	8140 No. 5 Road	3,454
Thrangu Monastery Association	8160 No. 5 Road	1,710
Towers Baptist Church	10311 Albion Road	11,440
Trinity Lutheran Church	7100 Granville Avenue	17,743
Trinity Pacific Church	10011 No. 5 Road	8,027
Ukrainian Catholic Church	8700 Railway Avenue	4,001
Vancouver International Buddhist Progress Society	6690 - 8181 Cambie Road	9,752
Vancouver International Buddhist Progress Society	8271 Cambie Road	10,469
Vedic Cultural Society of BC	8200 No. 5 Road	3,751
Walford Road Gospel Church	9291 Walford Street	1,227

Recreation, child care and community service properties

Atira Women's Resource Society	650 - 5688 Hollybridge Way	\$6,745
Cook Road Children's Centre	8300 Cook Road	2,008
Cranberry Children's Centre	23591 Westminster Highway	6,357
Gardens Children's Centre	10640 No. 5 Road	4,915
Girl Guides of Canada	11551 Dyke Road	33,139
Girl Guides of Canada	4780 Blundell Road	6,802
Navy League of Canada	7411 River Road	7,519
Phileo Development Ltd.	5900 Minoru Boulevard	89,563
Richmond Caring Place	7000 Minoru Boulevard	106,409
Richmond Family Place	8660 Ash Street	7,081
Richmond Gymnastics Association	140 - 7400 River Road	15,965
Richmond Lawn Bowling Club	6131 Bowling Green Road	39,589
Richmond Public Library	11580 Cambie Road	3,484
Richmond Public Library	11688 Steveston Highway	3,893
Richmond Rod and Gun Club	140 - 7400 River Road	7,982
Richmond Rod and Gun Club	7760 River Road	28,274
Richmond Tennis Club	6820 Gilbert Road	45,666
Richmond Winter Club	5540 Hollybridge Way	204,624
River Run Early Care and Learning Centre	10277 River Drive	7,888
Riverside Children's Centre	5862 Dover Crescent	1,012
Scotch Pond Heritage	2220 Chatham Street	2,613
Seasoning Child Care Centre	10380 No. 2 Road	16,183
Sharing Farm	2900 River Road	18,526
Terra Nova Children's Centre	6011 Blanshard Drive	2,189
Treehouse Learning Centre	100 - 5500 Andrews Road	1,924
Watermania	14300 Entertainment Boulevard	145,128
West Cambie Children's Centre	4033 Stolberg Street	3,477
YMCA of Greater Vancouver	3368 Carscallen Road	9,872

Senior citizen housing

Richmond Legion Senior Citizen Society	7251 Langton Road	\$ 29,581
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Community care facilities

Developmental Disabilities Association	6531 Azure Road	\$ 2,911
Developmental Disabilities Association	8400 Robinson Road	3,188
Developmental Disabilities Association	7611 Langton Road	3,182
Greater Vancouver Community Service	4811 Williams Road	3,364
Pinegrove Place, Mennonite Care Home Society	11331 Mellis Drive	12,471
Richmond Lions Manor	9020 Bridgeport Road	25,423
Richmond Society for Community Living	5728 Woodward's Road	2,837
Richmond Society for Community Living	303 - 7560 Moffatt Road	1,012
Richmond Society for Community Living	4433 Francis Road	2,482
Richmond Society for Community Living	9580 Pendleton Road	3,474
Richmond Society for Community Living	431 Catalina Crescent	2,165
Rosewood Manor, Richmond Intermediate Care Society	6260 Blundell Road	39,594
Turning Point Recovery Society	10411 Odlin Road	3,098

Major services provided by the City of Richmond

Administration

Includes the office of the Chief Administrative Officer who oversees the overall administration of the City's operations. Also includes Human Resources, Intergovernmental Relations and Protocol, Corporate Communications and Marketing, Corporate Planning and Organizational Development and the Corporate Programs Management Group.

Community Safety

Brings together the City's public safety providers including RCMP, Fire-Rescue, Emergency Programs, Community Bylaws and Business Licences.

Community Services

Coordinates, supports and develops Richmond's community services including Parks Services, Recreation and Sport Services and Arts, Culture and Heritage Services.

Engineering and Public Works

The Engineering and Public Works Departments deliver public works services and utilities, engineering planning, design, construction and maintenance services for all utility and City building infrastructure, as well as sustainability and environmental programs.

Finance and Corporate Services

Includes Customer Service, Information Technology, Finance, Economic Development, Real Estate Services and Business Services.

Planning and Development

Includes the Policy Planning, Transportation, Development Applications, Building Approvals and Community Social Development Departments. This division provides policy directions that guide growth and change in Richmond with emphasis on land use planning, development regulations, environmental protection, heritage and livability.

Law and Legislative Services

Includes the Law Department and the City Clerk's Office.

Other City entities

Gateway Theatre

Operates the City's performing arts theatre.

Lulu Island Energy Company

Operates the City's district energy utilities.

Richmond Olympic Oval Corporation

Operates the Richmond Olympic Oval and the Richmond Sport Hosting program.

Richmond Public Library

Operates Richmond's public library, including four branches.

City of Richmond contacts

The City of Richmond offers many civic services to the community. Additional services are provided through the Richmond Olympic Oval, Richmond Public Library, Gateway Theatre and Lulu Island Energy Company. For more information on City services contact:

City of Richmond

6911 No. 3 Road
Richmond, BC V6Y 2C1
Phone: 604-276-4000
Email: InfoCentre@Richmond.ca
www.richmond.ca

 @CityofRichmondBC

 @Richmond_BC

 @CityofRichmondBC

 /CityofRichmondBC

Gateway Theatre

6500 Gilbert Road
Richmond, BC V7C 3V4
Phone: 604-270-6500
Box Office: 604-270-1812
www.GatewayTheatre.com

 @GatewayThtr

 @GatewayThtr

 @GatewayThtr

Lulu Island Energy Company

6911 No. 3 Road
Richmond, BC V6Y 2C1
Phone: 604-276-4011
Email: Info@LuluIslandEnergy.ca
www.LuluIslandEnergy.ca

Richmond Public Library

100-7700 Minoru Gate (Brighthouse Branch)
Richmond, BC V6Y 1R8
Library Hours Line: 604-231-6401
www.YourLibrary.ca

 @YourLibraryRichmond

 @RPLBC

 @RPLBC

 /YourLibraryRichmond

 Account: RPLYourlibrary1

Richmond Olympic Oval

6111 River Road
Richmond, BC V7C 0A2
Phone: 778-296-1400
Email: Info@RichmondOval.ca
www.RichmondOval.ca

 @RichmondOval

 @RichmondOval

 @RichmondOval

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City of Richmond

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City of
Richmond
British Columbia, Canada

2022 Annual Report Highlights

For the year ended December 31, 2022



RICHMOND CITY COUNCIL



Back row, left to right:

Lieutenant Jim Dickson—Richmond Fire-Rescue, Councillor Andy Hobbs, Councillor Kash Heed*, Councillor Laura Gillanders*, Councillor Michael Wolfe, Constable Jordan Hitchon—Richmond RCMP

Front row, left to right:

Councillor Alexa Loo, Councillor Bill McNulty, Mayor Malcolm Brodie, Councillor Chak Au, Councillor Carol Day



Left: Councillor Harold Steves

Right: Councillor Linda McPhail
(did not seek re-election in October 2022)

*elected to Council October 2022

CONNECT WITH RICHMOND CITY COUNCIL

To contact Council, email MayorAndCouncillors@richmond.ca or call 604-276-4000.

For Council meeting agendas and minutes, visit <https://citycouncil.richmond.ca/agendas.htm>.

To live stream Council meetings or view videos of past meetings, visit <https://citycouncil.richmond.ca/meetings/watch-video.htm>.



The City of Richmond is proud of its diverse and committed workforce. This year, we asked our employees to take photos and send us images of “their Richmond” for this report. Photos with the camera icon are just some of the submissions, and we are delighted to share them with you. None are professional photographers.

COVER PHOTO: SPRING TIME AT RICHMOND CITY HALL

CITY OF RICHMOND, BRITISH COLUMBIA 2022 ANNUAL REPORT HIGHLIGHTS

FOR THE YEAR ENDED DECEMBER 31, 2022

CONTENTS

Richmond City Council	2
Message from the Mayor.....	4
Message from the Chief Administrative Officer	6
2022 Achievement highlights.....	8
Richmond: vibrant, confident and connected	12
2022 Awards	15
Report from the General Manager, Finance and Corporate Services	18
Richmond at a glance	20
Major services provided by the City of Richmond.....	22
City of Richmond contacts.....	23

This report features highlights from Richmond’s 2022 Annual Report. For the detailed 2022 Annual Report that meets legislated requirements, or for an online copy of this highlights report, please visit <https://richmond.ca/city-hall/finance/reporting/reports.htm>.

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“Our vision is to be the most appealing, livable and well-managed community in Canada.”

MESSAGE FROM THE MAYOR



The City of Richmond has always been a civic leader, and our City Council is known for its bold, innovative, sustainable programs and strategies that benefit residents and businesses.

Those programs and strategies were key to our City's continuing emergence from the pandemic and supported the community through the economic challenges and increasingly forceful impacts of climate change. Throughout 2022, Council worked tirelessly to support our 225,000 residents and almost 14,000 businesses to ensure Richmond continued to be a safe, strong, active and resilient city.

Investment and growth supported by implementation of the City's Resilient Economy Strategy resulted in sustained job creation, with Richmond businesses now providing around 130,000 local jobs. With one of the strongest job-to-worker ratios in the region, Richmond continues to be an important employment centre and almost 20 per cent more new

business licenses were issued in 2022 compared to the previous year. That meant new jobs, new opportunities and renewed economic energy.

Council supported building permits for over \$926 million in construction value, not only leading to economic growth but more housing options for our community. In 2022, several significant projects were opened or announced. The award-winning Keltic Paramount development at No. 3 and Cook Roads is one example. Beyond its stunning First Nations-themed façade and artwork are 530 residential units, including 27 affordable housing units, as well as a large City-owned child care hub that has drawn accolades and awards.

Approval was given to another development in the emerging Hamilton Village Centre at the corner of Westminster Highway and Gilley Road, which will feature 223 residential units—including much-needed affordable housing—and around 25,000 square feet



MUSQUEAM ARTWORK BY THOMAS CANNELL IS FRONT AND CENTRE ON NO. 3 AND COOK ROADS
PHOTO BY MARCOS ALEJANDRO BADRA, PROGRAM MANAGER, CIRCULAR ECONOMY, SUSTAINABILITY
CITY EMPLOYEE SINCE 2018



of commercial space.

Ground was broken on the long-awaited replacement Steveston Community Centre and Library. This \$95 million, three-storey, 60,000 square foot facility will include a double gymnasium, fitness centre and active studio, as well as an extensive library to showcase enhanced collections with child and youth spaces and educational program rooms.

Maintaining strong infrastructure to keep our city safe from extreme weather was another priority. Council approved several initiatives including the raising of an additional 1.5 kilometres of dikes as well as new drainage pump stations at No. 3 and Gilbert Roads. Upgrades were made to over 1,270 feet of water mains, 2,200 feet of sanitary mains and 1,400 feet of drainage in the Burkeville neighbourhood alone.


Over the past year, Council took sustainable action and invested for future generations through the support and approval of several environmentally-

focused initiatives such as the Circular City Strategy to guide the transition to a fully circular economy in Richmond by 2050. Coupled with our ground-breaking single-use plastics bylaw, expansion of electric vehicle use and active transportation alternatives, as well as increased investment in our award-winning Lulu Island District Energy program, the City of Richmond continued to be a leader in sustainability and environmental stewardship.

This past year also saw a number of significant changes in governance and administration. Long-standing Councillors Harold Steves and Linda McPhail retired after years of dedicated community leadership, choosing not to seek re-election. In their place, Council welcomed Laura Gillanders and Kash Heed as newly-elected members. The City also welcomed long-serving staff member Serena Lusk to a new role as Chief Administrative Officer following the retirement of George Duncan, as well as Jim Wishlove as the

new Chief of Richmond Fire-Rescue. Chief Superintendent Dave Chauhan was also appointed as the new Officer in Charge of the Richmond RCMP detachment.

While the past year may have seen changes, through wise investments, sound management and innovative action, our staff, volunteers and businesses—as well as our community and government partners—continued to work together to make Richmond a better place for all. This 2022 Annual Report contains examples of just some of our goals and achievements. As always, I invite your comments and questions through my office.


Malcolm Brodie
Mayor, City of Richmond



MESSAGE FROM THE CHIEF ADMINISTRATIVE OFFICER



I am pleased to present the City of Richmond's 2022 Annual Report. It details our strong financial position and outlines many of the important initiatives we are undertaking to serve our community.

This past year, the City continued its restoration of programs and services as we emerged from the isolation and restrictions of the pandemic. Richmond City Hall, which had provided services remotely since closing in March 2020, reopened its doors to the public once again. Many of our recreation and fitness programs and activities also fully returned and were quickly embraced by the community. Recreation and day camp registration jumped 50 per cent as over 20,000 youth and children signed up.

Physical activity and healthy lifestyles are important to our community and Richmond was named BC's Most Active Community in the 2022 ParticipACTION Community Better Challenge. This nation-wide initiative recognized our community's activity levels along with the creative ways we engaged people to become more physically active.

Many popular festivals and events became in-person again, with over 40,000 visitors attending the Richmond Maritime Festival. Thousands also enjoyed the 75th Steveston Salmon Festival and Canada Day celebration. While the Cherry Blossom Festival remained online, it attracted over 66,000 social media visits and 7,400 video views, paving the way for an in-person return in 2023.

The City's Remembrance Day ceremony also returned to City Hall in-person for the first time since 2019, with the community, veterans and military representatives attending to show their respects.

Promoting diversity and inclusiveness is essential in a city as uniquely multicultural as Richmond. Over 80 per cent of our population is a visible minority, the highest proportion of any British Columbia municipality, so accessibility and acceptance is important as we build strong, healthy communities in Richmond. Our Newcomers Video Series is one example of how we welcome immigrants to our city, with the



THE SEINE NET LOFT AT BRITANNIA SHIPYARDS NATIONAL HISTORIC SITE
PHOTO BY SUSAN STEEVES, RECORDS COORDINATOR, CITY CLERK'S OFFICE
CITY EMPLOYEE SINCE 2002

online videos captioned in Chinese, Punjabi, Ukrainian, Arabic and Farsi.

The City and Richmond Multicultural Community Services began working together to encourage diversity and promote multiculturalism through an anti-racism arts project. The Aspire | Build | Celebrate (ABC) project was funded by a grant from the Department of Canadian Heritage Community Support, Multiculturalism and Anti-Racism Initiatives program and is another example of our commitment to diversity and inclusion.

Richmond also commemorated National Indigenous History Month (June) and National Indigenous Peoples Day (June 21) with a number of in-person and virtual events to recognize the heritage and strength of Indigenous Peoples. Canada's National Day for Truth and Reconciliation (September 30) was another opportunity to learn, commemorate and reflect on the historical and ongoing impacts of residential schools.

Building a sense of community is

important, and several new parks were opened to provide more outdoor options for people to gather and connect. Alexandra Park in the east Cambie neighbourhood, phase two of Aberdeen Neighbourhood Park in the Capstan area and Tait Riverfront Community Park in Bridgeport were all unveiled.


However, the year was not without challenges. Housing affordability continued to drive exploration of new and innovative ways to meet the growing housing needs of existing and incoming residents. Rezoning applications for around 2,500 units received initial approval in 2022, of which over 40 per cent will be rental units at market, below-market or Low End Market Rental rates.

Child care remained important to support young families and make Richmond an active, engaged and family-oriented community. The City and its partners provide almost 600 licensed childcare spaces throughout Richmond including Sprouts at Capstan Village and Seedlings in Brighthouse

Village, which both opened in 2022.

The overall foundation for success of our city is sound financial stewardship, and the long-term financial management strategy is a hallmark of our administration. It enabled us to continue to maintain effective and responsive service levels so Richmond remains a strong community that is committed to continued growth and success within a framework of diversity, sustainability and value for our taxpayers.

Since my appointment as Chief Administrative Officer in July 2022, I have been continually proud of the commitment of our staff and volunteers to improving the well-being of the community and thank everyone for their efforts and support of me in my new leadership role.



Serena Lusk
Chief Administrative Officer





SUNSET AT GARRY POINT PARK
PHOTO BY SHANNON UNRAU, LEGISLATIVE SERVICES ASSOCIATE, CITY CLERK'S OFFICE
CITY EMPLOYEE SINCE 2016

A scenic photograph of a sunset over a body of water. In the foreground, a couple is sitting on a large, dark rock. The woman is wearing a white shirt with blue and yellow stripes on the sleeves, and the man is wearing a light blue shirt. They are both looking out at the water. A piece of driftwood is leaning against the rock. In the background, there are several vertical posts in the water, and a small lighthouse is visible on the horizon. The sky is filled with clouds, and the sun is setting, creating a warm orange glow.

2022 Achievement highlights

The City of Richmond's objectives and success indicators are expressed through the Council Strategic Plan. When Council began its four-year term in October 2018, it undertook a strategic planning process to help fulfill its governance role and achieve a successful term of office. It adopted a revised set of eight Strategic Focus areas, which provided the framework for the City's programs and services. With a new Council term commencing in October 2022, it is anticipated that these strategies will be reviewed and modified if required for the 2022-2026 Council term.

1. A SAFE AND RESILIENT COMMUNITY

The deployment of 16 additional police resources supported significant enhancements to the Richmond RCMP's organizational structure and operational response capability. Residential break and enter offences decreased 13 per cent, theft from automobiles dropped 10 per cent, and the number of hate-related events was down 24 per cent from the previous year. Through communications in multiple languages, RCMP investigators were better able to target complex cyber fraud, reducing the number of cases by almost 10 per cent in 2022. Richmond Fire-Rescue continued development of a Fire Risk Prediction Model that uses fire incident, inspection and property data to develop predictive models of structure fire risks in the city. Safety also extended to the roads, as City snow and ice response crews pretreated or de-iced over 65,000 kilometres of roadways during winter, the equivalent of driving from Richmond to New York City and back seven times.

2. A SUSTAINABLE AND ENVIRONMENTALLY CONSCIOUS CITY

Richmond continued as a leader in sustainable practices and innovation. The City secured \$175 million in long-term funding from the Canada Infrastructure Bank for the expansion of its award-winning Lulu Island District Energy project. Richmond was the first municipality in Canada to receive an E3 Platinum Rating Certification in the national E3 Fleet program for excellence in fleet management and environmental performance. The City's commitment to water conservation through its water meter and water demand management programs continued to reduce waste. Total water consumption decreased by 3.5 per cent in 2022 despite a 1.5 per cent population increase. Overall, the City has realized savings of \$10 million in water purchase costs over the past decade.



COLOURFUL SKY ABOVE THE DIKE ON NO. 3 ROAD
PHOTO BY SUSAN STEEVES, RECORDS
COORDINATOR, CITY CLERK'S OFFICE
CITY EMPLOYEE SINCE 2002

3. ONE COMMUNITY TOGETHER

Easing of pandemic restrictions meant the return of many in-person festivals and events. The Steveston Salmon Festival saw thousands walk the streets to enjoy the festivities as it marked its 75th anniversary in July, while over 40,000 residents and visitors attended the Richmond Maritime Festival in August. The popular Culture Days celebration returned with an array of free, artist-led activities to promote arts, culture and creativity. Richmond is consistently recognized as among Canada's top 10 most engaged cultural cities. Its natural beauty and excellent location makes it attractive to the film industry with many popular series and movies filmed in and around the city. Approximately 75 film permits were issued in 2022, yielding over \$250,000 in service and location fees alone.

4. AN ACTIVE AND THRIVING RICHMOND

Richmond's rich maritime heritage, culinary delights and natural beauty makes it one of Canada's most culturally unique and diverse populations. Several new community parks opened in 2022 to provide recreational options, including Alexandra Park in east Cambie, phase two of Aberdeen Neighbourhood Park in the Capstan area and Tait Riverfront Community Park in Bridgeport. Recognizing its commitment to physical health and well-being, Richmond was named BC's Most Active Community in the 2022 ParticipACTION Community Better Challenge, while the Minoru Centre for Active Living received the Recreation Facilities Association of British Columbia's Outstanding Facility Award for its innovation, design and community-focus. In September, the City, in partnership with BC Housing and the Provincial Attorney General and Ministry Responsible for Housing, opened Aster Place, a 40-unit building providing housing and a stable home for residents experiencing or at risk of homelessness.

5. SOUND FINANCIAL MANAGEMENT

Council again supported a budget that enabled several key infrastructure projects to proceed while ensuring operating resources for key operations continued. Over \$1.7 million in one-time grants were approved to support immediate social and community operational and infrastructure needs. \$107.8 million was approved and allocated to key capital projects ranging from disaster and flood mitigation, to traffic intersection safety and transit accessibility. Council maintained a 1 per cent commitment to investment for future capital needs and, due to ongoing financial resiliency and strategic management, kept the overall impact to residential property owners to a tax change of around 19 cents per day.

6. STRATEGIC AND WELL-PLANNED GROWTH

Development interest continued to grow, reinforcing Richmond's importance as a desirable business and residential location. Building permits for over \$926 million in construction value were issued, an increase of over 25 per cent from the previous year and higher than the City's 10-year average. Rezoning applications for approximately 2,500 multi-family units received initial approval by Council in 2022. Of these, over 40 per cent are rental units at market, below market and Low End Market Rental rates. Over \$30 million in development cost charges were collected to help finance future infrastructure and amenities such as parks, utilities, roads and dikes. During the past year, Council officially opened the new animal shelter on No. 5 Road, as well as breaking ground on the 60,000 square foot, \$95 million replacement Steveston Community Centre and Library.

7. A SUPPORTED ECONOMIC SECTOR

The City's Resilient Economy Strategy continued to support business investment and growth post-pandemic, resulting in sustained job creation and one of the strongest job-to-worker ratios in the region. The number of new business licences rose almost 20 per cent, and the City implemented its MyBusiness online portal to enable new and existing business owners to conveniently apply for, update and renew their licences 24/7. In the first few weeks, over 20 per cent of businesses registered for the service. While Richmond has one of the largest industrial land inventories in the region with more than 45 million square feet of built industrial space, Council provided further support to the sector by approving a rezoning application for an additional 180,000 square feet of phased industrial space in East Richmond.

8. AN ENGAGED AND INFORMED COMMUNITY

Richmond is proud to be one of the most culturally diverse and unique populations in Canada. In November, the City launched a Newcomers Video Series as a resource for newly-arrived residents. The videos, available online, highlight different ways newcomers can experience our city and are captioned in Chinese, Punjabi, Ukrainian, Arabic and Farsi. Work began on redesigning the City's website to provide a more efficient and user-focused experience for the 3.4 million visits annually, while almost 25,000 users participated in 27 engagement initiatives on the City's LetsTalkRichmond.ca platform.

Richmond: vibrant, confident and connected

As communities across the country began to emerge from the challenges of the COVID-19 pandemic, the City of Richmond continued to move forward with confidence thanks to a strong history of sound infrastructure investment, planning and leadership.

As 2022 went on, the City was able to safely move away from many of the public health restrictions and return to in-person events and services that strengthened our already vibrant community.

The year began with the re-opening of the City's fitness centres in January, enabling people of all ages to return to the activities and social interactions they had missed since early-2020. A number of new City parks opened – Alexandra Park (June); Aberdeen Neighbourhood Park (July); Tait Riverfront Community Park

(August); and the Bark Park off-leash dog park (September). Work also began on the renewal of the popular Minoru Park lakes district in April, with an extensive revitalization expected by mid-2023. The Richmond Curling Club officially re-opened in September, while the Minoru Centre for Active Living received more accolades including the 2022 Outstanding Facility Award from the Recreation Facilities Association of BC.

Several festivals and events returned as in-person gatherings including the 75th annual Steveston Salmon Festival, Richmond Maritime Festival, Garlic Festival at Terra Nova and Culture Days.

With its long-standing commitment to creating accessible and engaging outdoor and indoor spaces, it was no surprise when Richmond was named British Columbia's

Most Active Community in the national ParticipACTION Community Better Challenge. Richmond boasts among the highest life expectancy in the world, and a 2022 BC Centre for Disease Control survey found Richmond residents actually used the pandemic to make positive changes to their health and well-being. It said 35 per cent of Richmond respondents were walking, running or cycling more than before the pandemic, while 28 per cent were eating more fruits and vegetables compared to 2020.

The City also supported residents to emerge from the pandemic in other ways. Active transportation remained a priority to support Council's Community Energy and Emissions Plan (CEEP) 2050 – adopted in February 2022 – to set Richmond on a path to achieving a 50 per cent reduction



TAIT RIVERFRONT COMMUNITY PARK

in community greenhouse gas emissions by 2030, and reaching net zero emissions by 2050.

Richmond became the first Metro Vancouver community to offer a shared e-scooter and e-bike service, with around 20,000 users making over 45,000 trips on the electric machines in the first few months. The popular Island City by Bike Tour returned in June, with hundreds of cyclists of all ages coming out to enjoy a free seven or 22 kilometre ride through Richmond. The City also became the first municipality in Canada to receive an E3 Platinum Rating Certification from the national E3 Fleet program for excellence in fleet management and environmental performance, further demonstrating its leadership in the use of green technologies.

While encouraging activity and connectedness was important to reinforce Richmond's sense of community, so too was the need to support businesses as they re-established themselves post-pandemic. City Hall reopened to in-person service in March, and the new online business licencing portal, MyBusiness, was launched in July to enable new and existing business owners to conveniently apply for, update and renew their licences 24/7. In partnership with Tourism Richmond, the free Richmond Discovery Shuttle and Bike Valet Service returned to Steveston Village to assist residents and visitors to enjoy this popular tourist destination and its many shopping, dining and sightseeing locations.

The year also saw a number of governance and leadership changes. The municipal election in October saw two

new members elected to Council after the retirement of two long-serving members. Serena Lusk moved from within to the role of Chief Administrative Officer following the retirement of her predecessor, while Richmond Fire-Rescue welcomed a new Chief, and the RCMP detachment a new Officer in Charge.

The City of Richmond has always been a leader through its development and implementation of bold, innovative programs and strategies that recognize and reflect our character, heritage and reputation as a safe, sustainable and culturally diverse community. The many accomplishments and achievements of the past year demonstrate why Richmond remains one of the most appealing, livable and well-managed communities in Canada.





FLOWERS AND SHRUBS ADORN THE WEST DIKE
PHOTO BY REENA CLARKSON, COMMUNICATIONS
PROJECT SUPPORT, CORPORATE
COMMUNICATIONS AND MARKETING
CITY EMPLOYEE SINCE 2004

A full-page background image showing a sunset over a vast field of wildflowers. The sun is low on the horizon, casting a warm glow across the sky and the field. The foreground is filled with various wildflowers, including some with purple and yellow blooms. The sky is filled with soft, white clouds.

2022 Awards

A measurement of the City's success in achieving its goals are the honours and recognition from our peers and others. In 2022, Richmond again received numerous international, national and provincial awards recognizing our commitment to excellence and innovation.

PROTECTING OUR ENVIRONMENT

The City received national recognition for its city-wide Pollinator Program from the Canadian Association of Municipal Administrators (CAMA). Presented with the 2022 CAMA Environmental Leadership and Sustainability Award in the 100,000+ population category, the award was given for excellence in conserving pollinators and developing and protecting their habitat. CAMA said Richmond exemplified how a land manager can be a leader through conscientious community programming and meaningful community engagement, and that "there is much that other municipalities can learn" from the City.

AWARDS CONTINUED . . .

HEALTHY LIVES, HEALTHY COMMUNITIES

Health and well-being is essential to creating healthy communities, and Richmond has long been recognized for its commitment to physical activity and programs aimed to engage and create a sense of community. The National ParticipACTION Community Better Challenge named Richmond British Columbia's Most Active Community in 2022. The award recognized the city's activity levels and the creative ways staff and community partners in Richmond motivated the community to get physically active throughout the national challenge.

GOING GREEN

Richmond's commitment to green energy was again recognized by being named as the only municipal recipient of a Platinum Rating by the national E3 Fleet, a program that assists trucking, utility, urban delivery, courier, government and other fleets to improve their fuel efficiency, reduce emissions, manage expenses and incorporate new technologies. Richmond was the only municipality in Canada to receive the Platinum rating with a performance score of 98 points out of 100. It was the second time the City has received coveted Platinum status.

LEADING EDGE DESIGN AND FUNCTIONALITY

The Minoru Centre for Active Living, the City of Richmond's state-of-the-art fitness and aquatic facility, continues to be recognized for its design, functionality and innovation. It received the Outstanding Facility Award from the Recreation Facilities Association of British Columbia for its innovative design, energy management, operations, revenue generation and service delivery. The facility was also recognized by Athletic Business as one of its 10 Facilities of Merit for 2022. It was selected for setting a new standard for wellness-oriented facilities that balances the needs of traditional aquatic uses while integrating a wide variety of other amenities that encourage healthy lifestyles, especially for an older-adult population.



FINANCIAL REPORTING

Once again, the Government Finance Officers Association of the US and Canada presented Richmond with the Canadian Award for Financial Reporting (the 20th year in a row) and the Outstanding Achievement in Popular Financial Reporting Award (the 13th successive year) for its 2021 Annual Reports. Richmond also received an 'A' grade—the highest amongst 32 major Canadian cities—in C.D. Howe's annual Report Card on municipal budgeting, financial reporting and fiscal transparency for 2021.

SUSTAINABILITY

The International City Management Association, a US-based group that advances professional local government through leadership, management, innovation and ethics, awarded Richmond its 2022 Community Sustainability Award (Population 50,000 and Greater) for its Recycled Asphalt Pavement Project. In partnership with Lafarge Canada and the National Zero Waste Council, the City pioneered the use of 40 per cent recycled asphalt in paving a major Richmond thoroughfare. The project received the award for setting new standards and demonstrating innovation, excellence and success in balancing the community's economic, environmental and social needs.



Government Finance Officers Association

Award for Outstanding Achievement in Popular Annual Financial Reporting

Presented to

**City of Richmond
British Columbia**

For its Annual Financial Report
For the Fiscal Year Ended

December 31, 2021

Christopher P. Morill

Executive Director/CEO

THE RECYCLED ASPHALT PAVING PROJECT

REPORT FROM THE GENERAL MANAGER, FINANCE AND CORPORATE SERVICES

I am pleased to submit the Consolidated Financial Statements and Auditors' Report for the fiscal year ended December 31, 2022 for the City of Richmond, pursuant to Section 98 and 167 of the Community Charter. The consolidated financial statements have been prepared in accordance with Canadian public sector accounting standards as prescribed by the Public Sector Accounting Board of the Chartered Professional Accountants of Canada. Preparation of the financial statements is management's responsibility.

KPMG LLP was appointed by City Council to independently audit the City's consolidated financial statements. They have expressed an opinion that the City's consolidated financial statements present fairly, in all material respects, the consolidated financial position of the City of Richmond as at December 31, 2022 and its consolidated results of operations, its changes in net consolidated financial assets and its consolidated cash flows for the year then ended in accordance with Canadian public sector accounting standards.

These financial statements combine the accounts of the City of Richmond, Richmond Olympic Oval, and Richmond Public Library (collectively referred to as the "City"), as well as the City's investment in Lulu Island Energy Company, which is accounted for as a Government Business Enterprise.

CONSOLIDATED STATEMENT OF FINANCIAL POSITION (IN \$000S)

	2022 Actual	2021 Actual	Change
Financial Assets	\$ 1,721,772	\$ 1,468,241	\$ 253,531
Liabilities	696,047	528,238	167,809
Net Financial Assets	1,025,725	940,003	85,722
Non-Financial Assets	2,603,444	2,547,884	55,560
Accumulated Surplus	\$ 3,629,169	\$ 3,487,887	\$ 141,282

The City's overall financial position improved by \$141.3 million, with accumulated surplus (similar to net worth of a corporation) totaling \$3.6 billion. A significant part of this increase is due to additions to capital assets and transfers to the statutory reserves for future capital improvements.

The City's cash and investments are \$1.6 billion while long-term debt increased by \$96.0 million with the addition of a new loan for the construction of Steveston Community Centre and Library in order to lock in favourable rates. Meanwhile, the City's tangible capital assets increased by \$54.9 million, which includes \$41.3 million of in-kind contributions from development as conditions of re-zoning.

CONSOLIDATED STATEMENT OF OPERATIONS (IN \$000S)

	2022 Budget	2022 Actual	2021 Actual
Revenue	\$604,730	\$644,348	\$575,444
Expenses	522,614	503,066	471,763
Annual Surplus	\$82,116	\$141,282	\$103,681

The City's consolidated revenue for the year totaled \$644.3 million, an increase of \$68.9 million from 2021 mainly due to increased investment income, property tax and utility fee rates and the continued easing of the impacts from the COVID-19 closures.

Expenses increased by \$31.3 million from prior year mainly due to additional firefighters authorized in 2021 working their first full year in 2022, increased Greater Vancouver Sewerage and Drainage District costs and the increased operational levels of service due to the easing of the impact of the pandemic.

The annual surplus for 2022 was \$141.3 million and represents the change in investment in tangible capital assets, reserves and other accumulated surplus.

FINANCIAL SUSTAINABILITY

The City's consolidated financial position improved in 2022 as operations and programs recover from pandemic levels in prior years. The guiding principles of Council's Long Term Financial Management Strategy was the main factor in supporting the City through the pandemic, while positioning the City in achieving long-term goals and maintaining ongoing financial sustainability to deliver on Council priorities.

Respectfully submitted,

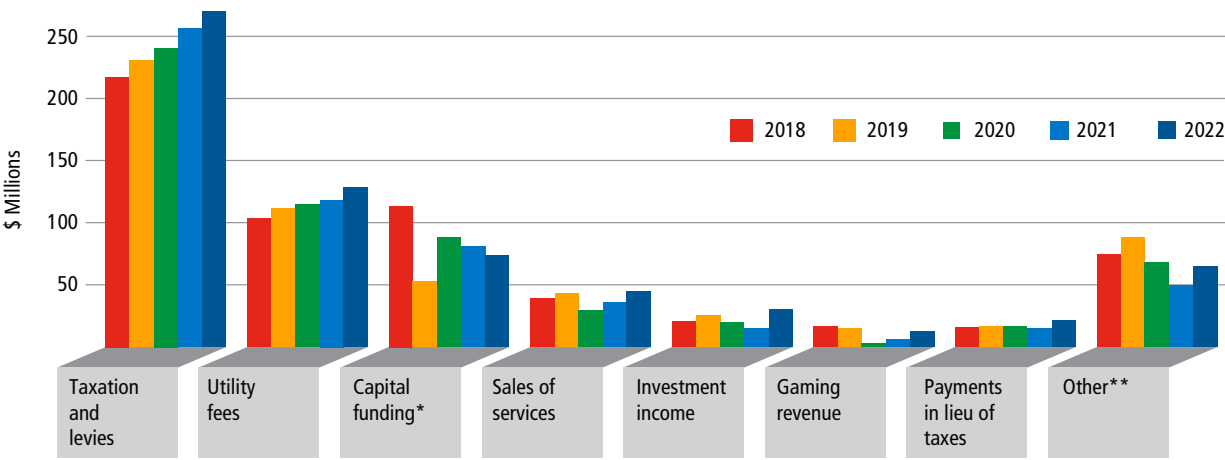


Jerry Chong, CPA, CA
General Manager, Finance and Corporate Services
May 8, 2023



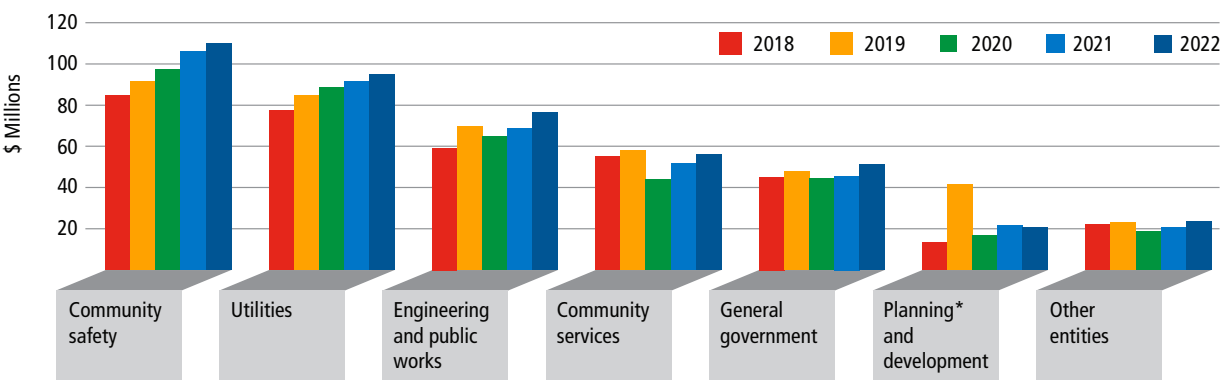
RICHMOND CENTRE REDEVELOPMENT
PHOTO BY JULIAN BORDERAS-OCHOA, SERVICE
DESK SPECIALIST, INFORMATION TECHNOLOGY
CITY EMPLOYEE SINCE SEPTEMBER 2021

REVENUE BY SOURCE 2018–2022



Source: City of Richmond Finance and Corporate Services
* Capital funding includes: Development Cost Charges and other capital funding sources.
** Other includes: provincial and federal grants, licences and permits and other sources.

EXPENSES BY FUNCTION 2018–2022



Source: City of Richmond Finance and Corporate Services
* Expenses for Planning and Development for 2019 include a one-time \$28.1M contribution towards the Canada Line Capstan Station.

Richmond at a glance

222,954

2022 POPULATION

November 10, 1879

INCORPORATED AS MUNICIPALITY

129.27

SIZE OF CITY IN
SQUARE KM

17

ISLANDS COMPRISING
THE CITY

December 3, 1990

DESIGNATED AS CITY OF RICHMOND

Fast facts

\$926 million

NEW CONSTRUCTION VALUE
IN 2022—HIGHER THAN THE
CITY'S 10-YEAR AVERAGE

39

PERCENTAGE OF THE CITY
WITHIN THE AGRICULTURAL
LAND RESERVE (ALR)

871

HECTARES THAT MAKE
UP THE CITY'S 140 PARKS

830

HECTARES OF CRANBERRY
FIELDS IN PRODUCTION

49

KILOMETRES OF DIKES FOR
FLOOD PROTECTION

136

KILOMETRES OF WALKING,
ROLLING AND CYCLING TRAILS

60.3

PERCENTAGE OF THE CITY'S
POPULATION BORN OUTSIDE
OF CANADA

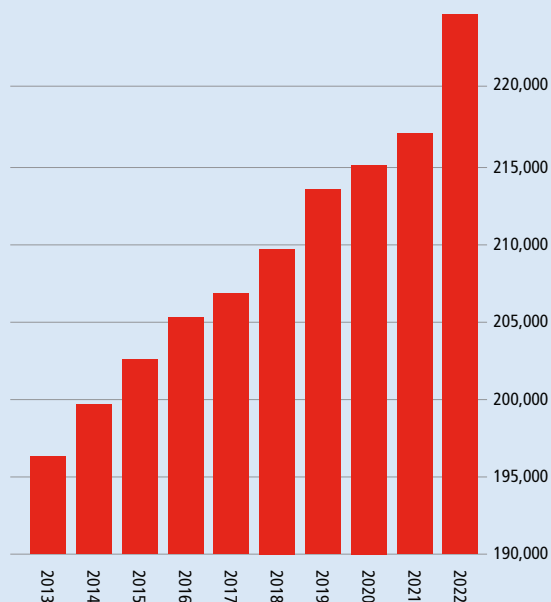
39

PUMP STATIONS THAT CAN
DISCHARGE 1.4 MILLION US
GALLONS OF WATER PER
MINUTE—THE EQUIVALENT
OF OVER TWO OLYMPIC
SWIMMING POOLS

80

IDENTIFIED HERITAGE
BUILDINGS OR SITES IN
RICHMOND

CITY OF RICHMOND POPULATION 2013–2022



MAJOR EMPLOYERS IN RICHMOND (IN ALPHABETICAL ORDER)

- Air Canada
- Allied Universal Security Services of Canada
- Amazon Canada
- Change Healthcare Canada
- City of Richmond
- Crown Packaging Ltd.
- Gate Gourmet Canada Inc.
- London Drugs Ltd.
- MDA Systems Ltd.
- Richmond Plywood Corporation Ltd.
- River Rock Casino Resort
- School District No.38
- T&T Supermarket
- The Real Canadian Superstore
- Vancouver Coastal Health, Richmond
- WorkSafeBC

OCCUPATIONS OF RICHMOND RESIDENTS



BRITANNIA SHIPYARD

PHOTO BY WILBERT TANYAG, ELECTRONICS TECHNICIAN, SEWERAGE AND DRAINAGE
CITY EMPLOYEE SINCE 2003

Sources: Statistics Canada, City of Richmond, Vancouver International Airport Authority, Steveston Harbour Authority, Metro Vancouver, Richmond School District.

MAJOR SERVICES PROVIDED BY THE CITY OF RICHMOND

ADMINISTRATION

Includes the office of the Chief Administrative Officer who oversees the overall administration of the City's operations. Also includes Human Resources, Intergovernmental Relations and Protocol, Corporate Communications and Marketing, Corporate Planning and Organizational Development and the Corporate Programs Management Group.

COMMUNITY SAFETY

Brings together the City's public safety providers including RCMP, Fire-Rescue, Emergency Programs, Community Bylaws and Business Licences.

COMMUNITY SERVICES

Coordinates, supports and develops Richmond's community services including Parks Services, Recreation and Sport Services and Arts, Culture and Heritage Services.

ENGINEERING AND PUBLIC WORKS

The Engineering and Public Works Departments deliver public works services and utilities, engineering planning, design, construction and maintenance services for all utility and City building infrastructure, as well as sustainability and environmental programs.

FINANCE AND CORPORATE SERVICES

Includes Customer Service, Information Technology, Finance, Economic Development, Real Estate Services and Business Services.

PLANNING AND DEVELOPMENT

Includes the Policy Planning, Transportation, Development Applications, Building Approvals and Community Social Development Departments. This division provides policy directions that guide growth and change in Richmond with emphasis on land use planning, development regulations, environmental protection, heritage and livability.

LAW AND LEGISLATIVE SERVICES

Includes the Law Department and the City Clerk's Office.



CITY OF RICHMOND CONTACTS

The City of Richmond offers many civic services to the community. Additional services are provided through the Richmond Olympic Oval, Richmond Public Library, Gateway Theatre and Lulu Island Energy Company. For more information on City services contact:

CITY OF RICHMOND

6911 No. 3 Road
Richmond, BC V6Y 2C1
Phone: 604-276-4000
Email: InfoCentre@Richmond.ca
www.richmond.ca
f @CityofRichmondBC
t @Richmond_BC
i @CityofRichmondBC
v /CityofRichmondBC

GATEWAY THEATRE

6500 Gilbert Road
Richmond, BC V7C 3V4
Phone: 604-270-6500
Box Office: 604-270-1812
www.GatewayTheatre.com
f @GatewayThtr
t @GatewayThtr
i @GatewayThtr

LULU ISLAND ENERGY COMPANY

6911 No. 3 Road
Richmond, BC V6Y 2C1
Phone: 604-276-4011
Email: Info@LuluIslandEnergy.ca
www.LuluIslandEnergy.ca

RICHMOND PUBLIC LIBRARY

100-7700 Minoru Gate (Brighthouse Branch)
Richmond, BC V6Y 1R8
Library Hours Line: 604-231-6401
www.YourLibrary.ca
f @YourLibraryRichmond
t @RPLBC
i @RPLBC
v /YourLibraryRichmond
Account: RPLYourlibrary1

RICHMOND OLYMPIC OVAL

6111 River Road
Richmond, BC V7C 0A2
Phone: 778-296-1400
Email: Info@RichmondOval.ca
www.RichmondOval.ca
f @RichmondOval
t @RichmondOval
i @RichmondOval



A COLOURFUL WELCOME TO THE CITY'S OPERATIONS YARD
PHOTO BY KATHY LEE, DEPARTMENTAL ASSOCIATE,
COMMUNITY SERVICES
CITY EMPLOYEE SINCE 2003



City of Richmond

6911 No. 3 Road, Richmond, BC V6Y 2C1

Telephone: 604-276-4000

www.richmond.ca

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City of Richmond

Report to Council

To: Richmond City Council
From: Jerry Chong
General Manager, Finance and
Corporate Services

Date: June 5, 2023
File: 03-1200-03/2023-Vol
01

Re: 2022 Council Remuneration and Expenses

Staff Recommendation

That the report titled 2022 Council Remuneration and Expenses be received for information.

Jerry Chong
General Manager, Finance and Corporate Services
(604-276-4064)

REPORT CONCURRENCE	
CONCURRENCE OF GENERAL MANAGER 	
SENIOR STAFF REPORT REVIEW	INITIALS:
APPROVED BY CAO 	

June 5, 2022

- 2 -

Staff Report

Origin

Pursuant to Section 168 (1) of the *Community Charter*, total remuneration, benefits and expenses incurred by each member of Council must be reported annually.

Analysis

Total salaries paid to Council members for 2022 were \$853,743 and total benefits were \$246,703. Total expenses incurred were \$20,390. The schedule below provides a summary by each member of Council.

	Base Salary	Benefits & Other ¹	Community Events	Seminars & Conferences	General Travel	Total Expenses
Mayor Brodie	\$186,596	\$30,883	\$986	\$4,391	\$286	\$5,663
Councillor Au	74,439	18,888	12	2,796	-	2,808
Councillor Day	84,606	21,308	258	-	-	258
Councillor Gillanders	9,306	2,552	170	-	-	170
Councillor Heed	9,306	2,326	-	-	-	-
Councillor Hobbs	84,606	21,505	551	396	-	947
Councillor Loo	84,606	23,021	541	7,345	-	7,886
Councillor McNulty	84,606	21,107	639	-	-	639
Councillor McPhail	75,533	14,134	-	-	-	-
Councillor Steves	75,533	68,945	-	-	-	-
Councillor Wolfe	84,606	22,034	-	2,019	-	2,019
Total	\$853,743	\$246,703	\$3,157	\$16,947	\$286	\$20,390

¹Consists of taxable and non-taxable benefits. The 2022 Statement of Financial Information issued under separate cover reports taxable benefits only.

Financial Impact

None.

Conclusion

The report on Council remuneration and expenses for the year ended December 31, 2022 has been prepared in accordance with the *Community Charter*.



Mike Ching
Director, Finance
(604-276-4137)



City of Richmond

Report to Council

To: Richmond City Council
From: Jerry Chong
General Manager, Finance and Corporate
Services
Re: 2022 Statement of Financial Information

Date: June 5, 2023
File: 03-1200-03/2023-Vol
01

Staff Recommendation

That the 2022 Statement of Financial Information be approved.

Jerry Chong
General Manager, Finance and Corporate Services
(604-276-4064)

REPORT CONCURRENCE	
CONCURRENCE OF GENERAL MANAGER 	
SENIOR STAFF REPORT REVIEW	INITIALS:
APPROVED BY CAO 	

Staff Report

Origin

Section 2(2) and (3) of the *Financial Information Act* states that a municipality must prepare the “Statement of Financial Information” within six months of the end of each fiscal year. Furthermore, Section 9(2) of the Financial Information Regulation requires that the statement be approved by its Council and by the officer assigned responsibility for financial administration under the *Local Government Act*. The following statements and schedules of financial information must be prepared:

- statement of assets and liabilities;
- an operational statement;
- a schedule of debts;
- a schedule of guarantee and indemnity agreements;
- a schedule showing remuneration and expenses paid to or on behalf of each employee as required by the Act;
- a schedule showing the payments for each supplier of goods and services;
- a schedule of grants and subsidies.

The current prescribed amounts for the purpose of reporting under the Financial Information Regulation for employee remuneration/expenses and payments to suppliers are \$75,000 and \$25,000 respectively.

Analysis

Sections 1 to 4 of the required schedules for the Statement of Financial Information are captured in the City’s 2022 audited consolidated financial statements. There were no guarantee and indemnity agreements provided under the Guarantees and Indemnities Regulation (BC Reg. 258/87) reported for Section 5.

A schedule which shows employee remuneration in excess of \$75,000 and related expenses for the 2022 fiscal year is attached in Section 6.

Remuneration consists of base salary, taxable benefits and lump sum payments. Taxable benefits may include employer paid benefits such as life insurance, accidental death and dismemberment and vehicle benefits. Lump sum payments may include leave balances owed to employees, payouts which are in compliance with collective agreements and policies, union gratuities and union overtime.

Expenses are reported in accordance with the *Financial Information Act*, and may include items such as individual professional memberships, employee tuition, and non-discretionary expenses incurred as part of the employee’s job function.

The remuneration and expenses being reported are within the Consolidated 5 Year Financial Plan Bylaw that was approved by Council. Management is responsible for the design, implementation, and maintenance of all internal controls. Additional internal controls with

respect to expenditures include bylaws, policies, administrative procedures, guidelines, and governance through reviews by Senior Management and Council.

A statement listing payments to suppliers for goods and services in excess of \$25,000 for the 2022 fiscal year is attached in Section 7.

A statement listing payments for the purposes of grants and subsidies is attached in Section 7.

Financial Impact

None.

Conclusion

The attached 2022 Statement of Financial Information has been prepared in accordance with the *Financial Information Act*.

A handwritten signature in blue ink, appearing to read 'mch', is positioned above the printed name.

Mike Ching, CPA, CMA
Director, Finance
(604) 276-4137

CITY OF RICHMOND
STATEMENT OF FINANCIAL INFORMATION
For the year ended December 31, 2022

INDEX

1) Consolidated Statements.....	See Financial Statements
2) Statement of Assets and Liabilities.....	See Financial Statements
3) Operational Statement.....	See Financial Statements
4) Schedule of Debts.....	See Financial Statements
5) Schedule of Guarantee and Indemnity Agreements	Section 5
6) Schedule of Remuneration and Expenses:	
Elected Officials.....	Section 6
Employees.....	Section 6
Statement of Severance Agreements.....	Section 6
7) Schedule of Payments to Suppliers for Goods and Services:	
Schedule of Payments for Goods and Service in excess of \$25,000 and total.....	Section 7
Schedule of Grants and Subsidies.....	Section 7

CITY OF RICHMOND

2022 STATEMENT OF FINANCIAL INFORMATION APPROVAL

The undersigned, as authorized by the Financial Information Regulation, Schedule 1, subsection 9(2) approves all the statements and schedules included in this Statement of Financial Information, produced under the *Financial Information Act*.

Jerry Chong
General Manager, Finance and
Corporate Services

Malcolm D. Brodie
Mayor

Prepared pursuant to the Financial Information Regulation, Schedule 1, Section 9

MANAGEMENT REPORT

The consolidated financial statements contained in this Statement of Financial Information under the *Financial Information Act* have been prepared by management in accordance with generally accepted accounting principles. The integrity and objectivity of the consolidated financial statements are management's responsibility. Management is responsible for all the schedules prepared for the Statement of Financial Information, and for ensuring that the schedules are consistent, where appropriate, with the information contained in the consolidated financial statements.

Management is also responsible for implementing and maintaining a system of internal controls to provide reasonable assurance that reliable financial information is produced.

Council is responsible for ensuring that management fulfils its responsibilities for financial reporting and internal control and for approving the financial information included in the Statement of Financial Information.

The external auditors, KPMG LLP, conducted an independent examination, in accordance with generally accepted auditing standards, and express their opinion on the consolidated Financial Statements. Their examination does not relate to the other schedules and statements required by the *Financial Information Act*. Their examination includes a review and evaluation of the City's system of internal controls and appropriate tests and procedures to provide reasonable assurance that the financial statements are presented fairly. The external auditors presented their findings to the City's Finance Committee.

Jerry Chong
General Manager, Finance and Corporate Services

Dated:

Consolidated Financial Statements of

CITY OF RICHMOND

And Independent Auditor's Report thereon

Year ended December 31, 2022

INDEPENDENT AUDITOR'S REPORT

To the Mayor and Council of the City of Richmond

Opinion

We have audited the consolidated financial statements of the City of Richmond (the "City"), which comprise:

- the consolidated statement of financial position as at December 31, 2022
- the consolidated statement of operations for the year then ended
- the consolidated statement of changes in net financial assets for the year then ended
- the consolidated statement of cash flows for the year then ended
- and notes to the consolidated financial statements, including a summary of significant accounting policies

(hereinafter referred to as the "financial statements").

In our opinion, the accompanying financial statements present fairly, in all material respects, the consolidated financial position of the City as at December 31, 2022, and its consolidated results of operations, its consolidated changes in net financial assets and its consolidated cash flows for the year then ended in accordance with Canadian public sector accounting standards.

Basis for Opinion

We conducted our audit in accordance with Canadian generally accepted auditing standards. Our responsibilities under those standards are further described in the "***Auditor's Responsibilities for the Audit of the Financial Statements***" section of our auditor's report.

We are independent of the City in accordance with the ethical requirements that are relevant to our audit of the financial statements in Canada and we have fulfilled our other ethical responsibilities in accordance with these requirements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Responsibilities of Management and Those Charged with Governance for the Financial Statements

Management is responsible for the preparation and fair presentation of the financial statements in accordance with Canadian public sector accounting standards, and for such internal control as management determines is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, management is responsible for assessing the City's ability to continue as a going concern, disclosing as applicable, matters related to going concern and using the going concern basis of accounting unless management either intends to liquidate the City or to cease operations, or has no realistic alternative but to do so.

Those charged with governance are responsible for overseeing the City's financial reporting process.

Auditor's Responsibilities for the Audit of the Financial Statements

Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion.

Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with Canadian generally accepted auditing standards will always detect a material misstatement when it exists.

Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of the financial statements.

As part of an audit in accordance with Canadian generally accepted auditing standards, we exercise professional judgment and maintain professional skepticism throughout the audit.

We also:

- Identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion.

The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.

- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the City's internal control.
- Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by management.

- Conclude on the appropriateness of management's use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the City's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditor's report to the related disclosures in the financial statements or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditor's report. However, future events or conditions may cause the City to cease to continue as a going concern.
- Evaluate the overall presentation, structure and content of the financial statements, including the disclosures, and whether the financial statements represent the underlying transactions and events in a manner that achieves fair presentation.
- Communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.
- Obtain sufficient appropriate audit evidence regarding the financial information of the entities or business activities within the group entity to express an opinion on the financial statements. We are responsible for the direction, supervision and performance of the group audit. We remain solely responsible for our audit opinion.

A handwritten signature in black ink that reads "KPMG LLP". The signature is written in a cursive, stylized font. Below the signature is a single horizontal line.

Chartered Professional Accountants

Vancouver, Canada

May 8, 2023

CITY OF RICHMOND

Consolidated Statement of Financial Position
(Expressed in thousands of dollars)

December 31, 2022, with comparative information for 2021

	2022	2021
Financial Assets		
Cash and cash equivalents	\$ 654,651	\$ 672,031
Investments (note 3)	921,493	696,886
Investment in Lulu Island Energy Company ("LIEC") (note 4)	35,028	33,647
Accrued interest receivable	14,676	8,932
Accounts receivable (note 5)	35,446	29,655
Taxes receivable	15,791	14,157
Development fees receivable	43,219	12,425
Debt reserve fund - deposits (note 6)	1,468	508
	1,721,772	1,468,241
Liabilities		
Accounts payable and accrued liabilities	104,482	86,575
Post-employment benefits (note 7)	37,628	37,395
Development cost charges (note 8)	237,051	224,655
Deposits and holdbacks (note 9)	150,007	106,041
Deferred revenue (note 10)	59,063	56,186
Debt, net of sinking fund deposits (note 11)	107,816	17,386
	696,047	528,238
Net financial assets	1,025,725	940,003
Non-Financial Assets		
Tangible capital assets (note 12)	2,594,212	2,539,267
Inventory of materials and supplies	5,405	4,696
Prepaid expenses	3,827	3,921
	2,603,444	2,547,884
Accumulated surplus (note 13)	\$ 3,629,169	\$ 3,487,887

Contingent demand notes (note 6)
Commitments and contingencies (note 17)

See accompanying notes to consolidated financial statements.

Approved on behalf of Council:



General Manager, Finance and Corporate Services

CITY OF RICHMOND

Consolidated Statement of Operations
(Expressed in thousands of dollars)

Year ended December 31, 2022, with comparative information for 2021

	2022 Budget (notes 2(p) and 23)	2022	2021
Revenue:			
Taxation and levies (note 19)	\$ 268,044	\$ 269,582	\$ 255,837
Utility fees	124,190	127,965	118,144
Sales of services	44,600	44,494	35,601
Payments-in-lieu of taxes	14,650	21,314	14,789
Provincial and federal contributions	10,683	12,893	12,704
Development cost charges (note 8)	17,749	22,434	16,223
Other capital funding sources	71,162	51,220	64,695
Other revenue:			
Investment income	13,165	30,250	14,968
Gaming revenue	14,500	12,562	5,700
Licenses and permits	11,358	15,047	13,995
Other (note 20)	13,683	35,206	21,877
Equity income in LIEC (note 4)	946	1,381	911
	604,730	644,348	575,444
Expenses:			
Community safety	135,999	127,727	123,232
Utilities:			
Water, sewer and sanitation	114,406	110,490	106,519
Engineering, public works and project development	81,335	89,103	80,083
Community services	71,522	64,955	59,873
General government	66,058	59,492	52,995
Planning and development	25,874	23,890	25,166
Richmond Olympic Oval	16,290	16,844	14,079
Richmond Public Library	11,130	10,565	9,816
	522,614	503,066	471,763
Annual surplus	82,116	141,282	103,681
Accumulated surplus, beginning of year	3,487,887	3,487,887	3,384,206
Accumulated surplus, end of year	\$ 3,570,003	\$ 3,629,169	\$ 3,487,887

See accompanying notes to consolidated financial statements.

CITY OF RICHMOND

Consolidated Statement of Changes in Net Financial Assets (Expressed in thousands of dollars)

Year ended December 31, 2022, with comparative information for 2021

	2022 Budget (notes 2(p) and 23)	2022	2021
Annual surplus for the year	\$ 82,116	\$ 141,282	\$ 103,681
Acquisition of tangible capital assets	(113,051)	(87,100)	(61,150)
Contributed tangible capital assets	(54,782)	(41,332)	(61,004)
Amortization of tangible capital assets	68,561	72,722	68,519
Net loss on disposal of tangible capital assets	-	222	1,714
Proceeds on sale of tangible capital assets	-	543	793
	(17,156)	86,337	52,553
Acquisition of inventory of materials and supplies	-	(5,405)	(4,696)
Acquisition of prepaid expenses	-	(3,827)	(3,921)
Consumption of inventory of materials and supplies	-	4,696	4,285
Use of prepaid expenses	-	3,921	2,797
Change in net financial assets	(17,156)	85,722	51,018
Net financial assets, beginning of year	940,003	940,003	888,985
Net financial assets, end of year	\$ 922,847	\$ 1,025,725	\$ 940,003

See accompanying notes to consolidated financial statements.

CITY OF RICHMOND

Consolidated Statement of Cash Flows
(Expressed in thousands of dollars)

Year ended December 31, 2022, with comparative information for 2021

	2022	2021
Cash provided by (used in):		
Operating activities:		
Annual surplus	\$ 141,282	\$ 103,681
Items not involving cash:		
Amortization of tangible capital assets	72,722	68,519
Net loss on disposal of tangible capital assets	222	1,714
Contributions of tangible capital assets	(41,332)	(61,004)
Equity income in LIEC	(1,381)	(911)
Changes in non-cash operating working capital:		
Accrued interest receivable	(5,744)	765
Accounts receivable	(5,791)	(8,134)
Taxes receivable	(1,634)	262
Development fees receivable	(30,794)	16,092
Debt reserve fund	(960)	-
Inventory of materials and supplies	(709)	(411)
Prepaid expenses	94	(1,124)
Accounts payable and accrued liabilities	17,907	(70,400)
Post-employment benefits	233	2,274
Development cost charges	12,396	3,504
Deposits and holdbacks	43,966	8,596
Deferred revenue	2,877	7,162
Net change in cash from operating activities	203,354	70,585
Capital activities:		
Cash used to acquire tangible capital assets	(87,100)	(61,150)
Proceeds on disposal of tangible capital assets	543	793
Net change in cash from capital activities	(86,557)	(60,357)
Financing activities:		
Proceeds from issuance of debt	96,000	-
Repayments of debt	(5,570)	(5,355)
Net change in cash from financing activities	90,430	(5,355)
Investing activities:		
Net sale (purchase) of investments	(224,607)	137,124
Increase (decrease) in cash and cash equivalents	(17,380)	141,997
Cash and cash equivalents, beginning of year	672,031	530,034
Cash and cash equivalents, end of year	\$ 654,651	\$ 672,031

See accompanying notes to consolidated financial statements.

1. Operations:

The City of Richmond (the "City") is incorporated under the Local Government Act of British Columbia. The City's principal activities include the provision of local government services to residents of the incorporated area. These include administrative, protective, transportation, infrastructure, environmental, recreational, water, sewer, and drainage.

2. Significant accounting policies:

These consolidated financial statements of the City have been prepared in accordance with Canadian public sector accounting standards as prescribed by the Public Sector Accounting Board ("PSAB") of the Chartered Professional Accountants of Canada.

(a) Basis of consolidation:

These consolidated financial statements reflect a combination of the City's General Revenue, General Capital and Loan, Waterworks and Sewerworks, and Reserve Funds consolidated with the Richmond Public Library (the "Library") and the Richmond Olympic Oval (the "Oval"). The Library is consolidated as the Library Board is appointed by the City. The Oval is consolidated as they are a wholly-owned municipal corporation of the City. Interfund and interentity transactions, fund balances and activities have been eliminated on consolidation. The City's investment in Lulu Island Energy Company ("LIEC"), a wholly-owned government business enterprise ("GBE"), is accounted for using the modified equity method.

(i) General Revenue Fund:

This fund is used to account for the current operations of the City as provided for in the Annual Budget, including collection of taxes, administering operations, policing, and servicing general debt.

(ii) General Capital and Loan Fund:

This fund is used to record the City's tangible capital assets and work-in-progress, including engineering structures such as roads and bridges, and the related debt.

(iii) Waterworks and Sewerworks Funds:

These funds have been established to cover the costs of operating these utilities, with related capital and loan funds to record the related tangible capital assets and debt.

(iv) Reserve Funds:

Certain funds are established by bylaws for specific purposes. They are funded primarily by budgeted contributions from the General Revenue Fund and developer contributions plus interest earned on fund balances.

2. Significant accounting policies (continued):

(b) Basis of accounting:

The City follows the accrual method of accounting for revenue and expenses. Revenue is recognized in the year in which it is earned and measurable. Expenses are recognized as they are incurred and measurable as a result of receipt of goods and services and/or the creation of a legal obligation to pay.

(c) Government transfers:

Restricted transfers from governments are deferred and recognized as revenue as the related expenditures are incurred or the stipulations in the related agreement are met. Unrestricted transfers are recognized as revenue when received or if the amount to be received can be reasonably estimated and collection is reasonably assured.

(d) Cash and cash equivalents:

Cash and cash equivalents consist of cash, highly liquid money market investments and short-term investments with maturities of less than 90-days from date of acquisition.

(e) Investments:

Investments are recorded at cost, adjusted for amortization of premiums or discounts. Provisions for losses are recorded when they are considered to be other than temporary.

(f) Investment in government business enterprises:

Government business enterprises are recorded using the modified equity method of accounting. The City's investment in the GBE is recorded as the value of the GBE's shareholder's equity. The investment's income or loss is recognized by the City when it is earned by the GBE. Inter-organizational transactions and balances are not eliminated, except for any gains or losses on assets remaining within the City.

(g) Accounts receivable:

Accounts receivable are net of an allowance for doubtful accounts and therefore represent amounts expected to be collected.

(h) Development cost charges:

Development cost charges are restricted by legislation to expenditures on capital infrastructure. These amounts are deferred upon receipt and recognized as revenue when the expenditures are incurred in accordance with the restrictions.

(i) Post-employment benefits:

The City and its employees make contributions to the Municipal Pension Plan. As this plan is a multi-employee plan, contributions are expensed as incurred.

2. Significant accounting policies (continued):

(i) Post-employment benefits (continued):

Post-employment benefits also accrue to the City's employees. The liabilities related to these benefits are actuarially determined based on service and best estimates of retirement ages and expected future salary and wage increases. The liabilities under these benefits plans are accrued based on projected benefits prorated as employees render services necessary to earn the future benefits.

(j) Non-financial assets:

Non-financial assets are not available to discharge existing liabilities and are held for use in the provision of services. They have useful lives extending beyond the current year and are not intended for sale in the ordinary course of operations.

(i) Tangible capital assets:

Tangible capital assets are initially recorded at cost, which includes amounts that are directly attributable to acquisition, construction, development, or betterment of the assets. The cost, less estimated residual value, of the tangible capital assets, excluding land, are amortized on a straight line basis over their estimated useful lives as follows:

Asset	Useful life - years
Buildings and building improvements	10 - 75
Infrastructure	5 - 100
Vehicles, machinery and equipment	3 - 40
Library's collections, furniture and equipment	4 - 20

Amortization is charged over the asset's useful life commencing when the asset is acquired. Assets under construction are not amortized until the asset is available for productive use.

(ii) Contributions of tangible capital assets:

Tangible capital assets received as contributions are recorded at their fair value at the date of receipt and also are recorded as revenue.

(iii) Natural resources, works of art, and cultural and historic assets:

Natural resources, works of art, and cultural and historic assets are not recorded as assets in the consolidated financial statements.

(iv) Interest capitalization:

The City does not capitalize interest costs associated with the construction of a tangible capital asset.

2. Significant accounting policies (continued):

(j) Non-financial assets (continued):

(v) Labour capitalization:

Internal labour directly attributable to the construction, development or implementation of a tangible capital asset is capitalized.

(vi) Leased tangible capital assets:

Leases which transfer substantially all of the benefits and risks incidental to ownership of property are accounted for as leased tangible capital assets. All other leases are accounted for as operating leases and the related payments are charged to expenses as incurred.

(vii) Impairment of tangible capital assets:

Tangible capital assets are written down when conditions indicate that they no longer contribute to the City's ability to provide goods and services, or when the value of future economic benefits associated with the tangible capital assets are less than their net book value. The net write-downs are accounted for as expenses in the consolidated statement of operations.

(viii) Inventory of materials and supplies:

Inventory is recorded at cost, net of an allowance for obsolete stock. Cost is determined on a weighted average basis.

(k) Revenue recognition:

Revenue is recognized in the period in which the transactions or events occurred that gave rise to the revenue. All revenue is recorded on an accrual basis, except when the accruals cannot be determined with a reasonable degree of certainty or when their estimation is impractical.

(l) Taxes:

The City establishes property tax rates based on assessed market values provided by the British Columbia Assessment Authority ("BCA"). Market values are determined as of July 1st of each year. The City records taxation revenue at the time the property tax bills are issued. The City is entitled to collect interest and penalties on overdue taxes.

The City is required to act as the agent for the collection of certain taxes and fees imposed by other authorities. Collections for other authorities are excluded from the City's taxation revenue.

Payments in Lieu of Taxes ("PILT") for federal properties are calculated on the basis of values and rates which would apply if these properties were taxable. The annual tax rates together with the assessed value on the Grant Roll are used to calculate the PILT levy. The PILT revenue is recorded when the payment is received.

2. Significant accounting policies (continued):

(m) Deferred revenue:

The City defers a portion of the revenue collected from permits, licenses and other fees and recognizes this revenue in the year in which related inspections are performed, other related expenses are incurred or services are provided.

Deferred revenue also represents funds received from external parties for specified purposes. This revenue is recognized in the period in which the related expenses are incurred.

(n) Deposits:

Receipts restricted by the legislation of senior governments or by agreement with external parties are deferred and reported as deposits and are refundable under certain circumstances. When qualifying expenses are incurred, deposits are recognized as revenue at amounts equal to the qualifying expenses.

(o) Debt:

Debt is recorded net of related sinking fund balances.

(p) Budget information:

Budget information, presented on a basis consistent with that used for actual results, was included in the City's Consolidated 5 Year Financial Plan (2022-2026) ("Consolidated Financial Plan") and was adopted through Bylaw No. 10327 on January 24, 2022.

(q) Contaminated sites:

Contaminated sites are a result of contamination being introduced into air, soil, water, or sediment of a chemical, organic or radioactive material of live organism that exceeds an environmental standard. Liabilities are recorded net of any expected recoveries.

A liability for remediation of contaminated sites is recognized when a site is not in productive use and the following criteria are met:

- (i)* An environmental standard exists;
- (ii)* Contamination exceeds the environmental standard;
- (iii)* The City is directly responsible or accepts responsibility;
- (iv)* It is expected that future economic benefits will be given up; and
- (v)* A reasonable estimate of the amount can be made.

The liability is recognized as management's estimate of the cost of post-remediation including operation, maintenance and monitoring that are an integral part of the remediation strategy for a contaminated site.

2. Significant accounting policies (continued):

(r) Use of accounting estimates:

The preparation of consolidated financial statements requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the consolidated financial statements and the reported amount of revenue and expenditures during the reporting period. Areas requiring the use of management estimates relate to performing the actuarial valuation of employee future benefits, the value of contributed tangible capital assets, value of developer contributions, useful lives for amortization, determination of provisions for accrued liabilities, performing the actuarial valuation of employee future benefits, allowance for doubtful accounts, and provision for contingencies. Actual results could differ from those estimates. Adjustments, if any, will be reflected in the consolidated financial statements in the period that the change in estimate is made, as well as in the period of settlement if the amount is different.

(s) Segment disclosures:

A segment is defined as a distinguishable activity or group of activities of a government for which it is appropriate to separately report financial information to achieve the objectives of the standard. The City has provided definitions of segments as well as presented financial information in segment format.

3. Investments:

	2022		2021	
	Cost	Market value	Cost	Market value
Short-term notes and deposits	\$ 379,378	\$ 379,378	\$ 257,701	\$ 257,701
Government and government guaranteed bonds	361,297	350,352	280,063	280,802
Other bonds	180,818	175,405	159,122	159,283
	\$ 921,493	\$ 905,135	\$ 696,886	\$ 697,786

4. Investment in Lulu Island Energy Company Ltd.:

The City owns 100% of the issued and outstanding shares of LIEC, which was incorporated under the British Columbia Business Corporations Act on August 19, 2013. LIEC develops, manages and operates district energy utilities in the City of Richmond, on the City's behalf, including but not limited to energy production, generation or exchange, transmission, distribution, maintenance, marketing and sales to customers, customer service, profit generation, financial management and advisory services for energy and infrastructure.

4. Investment in Lulu Island Energy Company Ltd. (continued):

Summarized financial information relating to LIEC is as follows:

	2022	2021
Cash, cash equivalents, and investments	\$ 15,516	\$ 15,755
Accounts receivable	2,241	1,676
Tangible capital assets	45,745	38,905
Total assets	63,502	56,336
Accounts payable and accrued liabilities	3,853	2,671
Government grants	241	-
Deferred contributions	13,018	7,754
Project agreement/concession liability	11,362	12,264
Total liabilities	28,474	22,689
Shareholder's equity	\$ 35,028	\$ 33,647
Total revenue	\$ 7,608	\$ 6,431
Total expenses	6,227	5,520
Net income	\$ 1,381	\$ 911

Included in accounts payable and accrued liabilities in the City's consolidated statement of financial position are payables to LIEC in the amount of \$152,937 (2021 - \$151,454).

On October 30, 2014, LIEC and Corix Utilities Inc. ("Corix") entered into a 30-year Concession agreement (the "Concession Agreement"), where Corix will design, construct, finance, operate and maintain the infrastructure for the district energy utility at the Oval Village community (the "OVDEU project"). On September 22, 2022, the LIEC terminated the Concession Agreement after the Company entered into a new project agreement (the "Project Agreement") with Project Contractor, a wholly-owned subsidiary of Corix to design, build, finance, operate and maintain City Centre District Energy Utility infrastructure providing heating and cooling services to new residential and mixed use commercial developments within the City Centre area (the "CCDEU project"). The existing OVDEU project has been transferred into the CCDEU project, and the OVDEU plant and equipment, financing and operations are now executed by the Project Contractor under the Project Agreement.

5. Accounts receivable:

	2022	2021
Water and sewer utilities	\$ 14,760	\$ 13,243
Casino revenue	3,363	2,701
Capital grants	9,536	6,873
Other trade receivables	7,787	6,838
	\$ 35,446	\$ 29,655

6. Debt reserve fund deposits and contingent demand notes:

The City issues its debt instruments through the Municipal Finance Authority (the "MFA"). As a condition of these borrowings, a portion of the debenture proceeds is withheld by the MFA in a Debt Reserve Fund. The City also executes demand notes in connection with each debenture whereby the City may be required to loan certain amounts to the MFA. These demand notes are contingent in nature and are not reflected in the City's accounts. The details of the cash deposits and contingent demand notes at December 31, 2022 are as follows:

	Cash deposits	Contingent demand notes
General Revenue Fund	\$ 1,468	\$ 5,147

7. Post-employment benefits:

The City provides certain post-employment benefits, non-vested sick leave, compensated absences, and termination benefits to its employees.

	2022	2021
Accrued benefit obligation, beginning of year	\$ 35,324	\$ 35,414
Current service cost	2,698	2,644
Interest cost	872	728
Past service cost	21	992
Benefits paid	(2,923)	(2,035)
Actuarial gain	(3,255)	(2,419)
Accrued benefit obligation, end of year	\$ 32,737	\$ 35,324

An actuarial valuation for these benefits was performed to determine the City's accrued benefit obligation as at December 31, 2022. This actuarial gain is being amortized over a period equal to the employees' expected average remaining service lifetime of 11-years.

7. Post-employment benefits (continued):

	2022	2021
Accrued benefit obligation, end of year	\$ 32,737	\$ 35,324
Unamortized net actuarial gain	4,891	2,071
Accrued benefit liability, end of year	\$ 37,628	\$ 37,395

Actuarial assumptions used to determine the City's accrued benefit obligation are as follows:

	2022	2021
Discount rate	4.40%	2.40%
Expected future inflation rate	2.50%	2.00%
Expected wage and salary range increases	2.50% to 3.00%	2.50% to 3.00%

8. Development cost charges:

	2022	2021
Balance, beginning of year	\$ 224,655	\$ 221,151
Contributions	30,053	16,873
Interest	4,777	2,854
Revenue recognized	(22,434)	(16,223)
Balance, end of year	\$ 237,051	\$ 224,655

9. Deposits and holdbacks:

	Balance December 31, 2021	Deposit contributions / interest earned	Refund/ expenditures	Balance December 31, 2022
Security deposits	\$ 84,096	\$ 47,514	\$ (5,329)	\$ 126,281
Developer contributions	7,912	17	(10)	7,919
Damage deposits	5,793	3,533	(2,183)	7,143
Contract holdbacks	3,860	4,778	(3,849)	4,789
Other	4,380	677	(1,182)	3,875
	\$ 106,041	\$ 56,519	\$ (12,553)	\$ 150,007

10. Deferred revenue:

	Balance December 31, 2021	Externally restricted inflows	Revenue earned	Balance December 31, 2022
Taxes and utilities	\$ 25,116	\$ 26,231	\$ (25,116)	\$ 26,231
Building permits/development	14,265	10,052	(7,198)	17,119
Oval	1,551	2,048	(478)	3,121
Capital grants	6,074	6,824	(9,887)	3,011
Business licenses	2,637	2,300	(2,256)	2,681
Parking easement/leased land	2,418	60	(50)	2,428
Other	4,125	4,587	(4,240)	4,472
	\$ 56,186	\$ 52,102	\$ (49,225)	\$ 59,063

11. Debt, net of MFA sinking fund deposits:

The City obtains debt instruments through the MFA pursuant to security issuing bylaws under authority of the Community Charter to finance certain capital expenditures.

Gross amount for the debt less principal payments and actuarial adjustments to date are as follows:

MFA issue	Loan authorization bylaw	Gross amount borrowed	Repayments and actuarial adjustments	Net debt 2022	Net debt 2021
127	9075	\$ 50,815	\$ 38,999	\$ 11,816	\$ 17,386
158	10334	96,000	-	96,000	-
		\$ 146,815	\$ 38,999	\$ 107,816	\$ 17,386

Current borrowing includes:

MFA issue	Issue date	Term (yrs.)	Maturity date	Interest rate	Refinancing date
127	April 7, 2014	10	April 7, 2024	3.30%	-
158	September 23, 2022	20	September 23, 2042	4.09%	September 23, 2032

11. Debt, net of MFA sinking fund deposits (continued):

Interest expense incurred for the year on the long-term debt was \$2,750,689 (2021 - \$1,676,895).
Repayments on net outstanding debt over the next five years and thereafter are as follows:

2023	\$ 9,187
2024	9,538
2025	3,636
2026	3,764
2027	3,895
Thereafter	77,796
	\$ 107,816

12. Tangible capital assets:

Cost	Balance December 31, 2021	Additions and transfers	Disposals	Balance December 31, 2022
Land	\$ 1,077,254	\$ 44,227	\$ -	\$ 1,121,481
Building and building improvements	576,752	22,907	(4,048)	595,611
Infrastructure	1,912,378	45,169	(6,370)	1,951,177
Vehicles, machinery and equipment	166,131	12,419	(1,602)	176,948
Library's collections, furniture and equipment	10,710	1,029	(613)	11,126
Assets under construction	60,690	2,681	-	63,371
	\$ 3,803,915	\$ 128,432	\$ (12,633)	\$ 3,919,714

Accumulated amortization	Balance December 31, 2021	Disposals	Amortization expense	Balance December 31, 2022
Building and building improvements	\$ 229,433	\$ (3,548)	\$ 20,340	\$ 246,225
Infrastructure	916,345	(6,233)	41,043	951,155
Vehicles, machinery and equipment	111,216	(1,474)	10,408	120,150
Library's collections, furniture and equipment	7,654	(613)	931	7,972
	\$ 1,264,648	\$ (11,868)	\$ 72,722	\$ 1,325,502

12. Tangible capital assets (continued):

Net book value	December 31, 2022	December 31, 2021
Land	\$ 1,121,481	\$ 1,077,254
Buildings and building improvements	349,386	347,319
Infrastructure	1,000,022	996,033
Vehicles, machinery and equipment	56,798	54,915
Library's collection, furniture and equipment	3,154	3,056
Assets under construction	63,371	60,690
Balance, end of year	\$ 2,594,212	\$ 2,539,267

(a) Assets under construction:

Assets under construction having a value of \$63,371,507 (2021 - \$60,690,017) have not been amortized. Amortization of these assets will commence when the asset is put into service.

(b) Contributed tangible capital assets:

Contributed tangible capital assets have been recognized at fair market value at the date of contribution and recorded in other capital funding revenue on the statement of operations. The value of contributed assets received during the year is \$41,331,921 (2021 - \$61,004,232) comprised of land in the amount of \$30,863,846 (2021 - \$17,281,008), infrastructure in the amount of \$5,123,075 (2021 - \$20,810,489), buildings in the amount of \$5,345,000 (2021 - \$22,682,598). There were no machinery and equipment contributed in 2022 (2021 - \$230,137).

(c) Tangible capital assets disclosed at nominal values:

Where an estimate of fair value could not be made, the tangible capital asset was recognized at a nominal value.

(d) Works of art and historical treasures:

The City manages and controls various works of art and non-operational historical cultural assets including building, artifacts, paintings, and sculptures located at City sites and public display areas. The assets are not recorded as tangible capital assets and are not amortized.

(e) Write-down of tangible capital assets:

There were no write-down of tangible capital assets in 2022 (2021 - nil).

13. Accumulated surplus:

	General and Reserve Fund	Waterworks Utility Fund	Sewerworks Utility Fund	Richmond Olympic Oval	Library	2022 Total	2021 Total
Investment in tangible capital assets	\$ 2,570,222	\$ -	\$ -	\$ 7,872	\$ 3,155	\$ 2,581,249	\$ 2,521,629
Reserves (note 14)	693,338	-	-	9,846	-	703,184	647,209
Appropriated surplus	245,113	19,157	11,775	1,166	3,351	280,562	256,020
Investment in LIEC	35,028	-	-	-	-	35,028	33,647
Surplus	14,954	885	6,621	610	830	23,900	24,826
Other equity	5,246	-	-	-	-	5,246	4,556
Balance, end of year	\$ 3,563,901	\$ 20,042	\$ 18,396	\$ 19,494	\$ 7,336	\$ 3,629,169	\$ 3,487,887

14. Reserves:

	Balance, December 31, 2021	Change during year	Balance, December 31, 2022
Affordable housing	\$ 14,293	\$ 1,134	\$ 15,427
Arts, culture and heritage	3,526	47	3,573
Capital building and infrastructure	122,720	6,905	129,625
Capital reserve	244,445	19,380	263,825
Capstan station	11,149	3,433	14,582
Child care development	10,078	91	10,169
Community legacy and land replacement	1,458	87	1,545
Drainage improvement	57,159	2,581	59,740
Equipment replacement	25,206	1,682	26,888
Hamilton area plan community amenity	3,007	598	3,605
Leisure facilities	18,970	8,798	27,768
Local improvements	7,571	189	7,760
Neighborhood improvement	8,037	551	8,588
Oval	8,100	1,746	9,846
Public art program	4,405	423	4,828
Sanitary sewer	49,611	3,907	53,518
Steveston off-street parking	336	3	339
Steveston road ends	155	(8)	147
Waterfront improvement	187	(6)	181
Watermain replacement	56,796	4,434	61,230
	\$ 647,209	\$ 55,975	\$ 703,184

15. Pension plan:

The City and its employees contribute to the Municipal Pension Plan (a jointly trustee pension plan). The board of trustees, representing plan members and employers, is responsible for administering the plan, including investment of assets and administration of benefits. The plan is a multi-employer defined benefit pension plan. Basic pension benefits are based on a formula. As at December 31, 2021, the plan has about 227,000 active members and approximately 118,000 retired members. Active members include approximately 42,000 contributors from local governments.

Every three years, an actuarial valuation is performed to assess the financial position of the plan and adequacy of plan funding. The actuary determines an appropriate combined employer and member contribution rate to fund the plan. The actuary's calculated contribution rate is based on the entry-age normal cost method, which produces the long-term rate of member and employer contributions sufficient to provide benefits for average future entrants to the plan. This rate may be adjusted for the amortization of any actuarial funding surplus and will be adjusted for the amortization of any unfunded actuarial liability.

The most recent valuation for the Municipal Pension Plan as at December 31, 2021, indicated a \$3,761 million funding surplus for basic pension benefits on a going concern basis.

The next valuation will be as at December 31, 2024, with results available in 2025.

Employers participating in the plan record their pension expense as the amount of employer contributions made during the fiscal year (defined contribution pension plan accounting). This is because the plan records accrued liabilities and accrued assets for the plan in aggregate, resulting in no consistent and reliable basis for allocating the obligation, assets and cost to individual employers participating in the plan.

The City paid \$13,914,367 (2021 - \$14,125,356) for employer contributions while employees contributed \$12,078,813 (2021 - \$11,777,413) to the plan in fiscal 2022.

16. Contingent assets and contractual rights:

(a) Contingent assets:

Contingent assets are possible assets arising from existing conditions or situations involving uncertainty. That uncertainty will ultimately be resolved when one or more future events not wholly within the City's control occurs or fails to occur.

The City has legal claims, service agreements, and land dedications that may qualify as contingent assets. Amounts cannot be estimated as of December 31, 2022. Contingent assets are not recorded in the consolidated financial statements.

16. Contingent assets and contractual rights (continued):**(b) Contractual rights:**

The City has entered into contracts or agreements in the normal course of operations that it expects will result in revenue and assets in future fiscal years. The City's contractual rights are comprised of leases, licenses, grants and various other agreements, including the provision of police services with the Vancouver Airport Authority. The following table summarizes the expected revenue from the City's contractual rights:

2023	\$ 37,876
2024	13,377
2025	2,947
2026	1,707
2027	1,729
Thereafter	5,778

The City is entitled to receive revenue from certain other agreements. The revenue from these agreements cannot be quantified and has not been included in the amounts noted above.

17. Commitments and contingencies:**(a) Joint and several liabilities:**

The City has a contingent liability with respect to debentures of the Greater Vancouver Water District, Greater Vancouver Sewerage and Drainage District and Metro Vancouver Regional District, to the extent provided for in their respective Enabling Acts, Acts of Incorporation and Amending Acts. Management does not consider payment under this contingency to be likely and therefore no amounts have been accrued.

(b) Lease payments:

The City is committed to operating lease payments for premises and equipment in the following approximate amounts:

2023	\$ 3,839
2024	3,545
2026	2,305
2026	2,173
2027 and thereafter	4,012

17. Commitments and contingencies (continued):

(c) Litigation:

As at December 31, 2022, there were a number of claims or risk exposures in various stages of resolution. The City has made no specific provision for those where the outcome is presently not determinable.

(d) Municipal Insurance Association of British Columbia ("Association"):

The City is a participant in the Association. Should the Association pay out claims in excess of premiums received, it is possible that the City, along with other participants, would be required to contribute towards the deficit. Management does not consider external payment under this contingency to be likely and therefore, no amounts have been accrued.

(e) Contractual obligation:

The City has entered into various contracts for services and construction with periods ranging beyond one year. These commitments are in accordance with budgets passed by Council.

(f) E-Comm Emergency Communications for Southwest British Columbia Incorporated ("E-Comm"):

The City is a shareholder of the E-Comm whose services provided include: regional 9-1-1 call centre for the Greater Vancouver Regional District; Wide Area Radio network; dispatch operations; and records management. The City has 2 Class A shares and 1 Class B share (of a total of 37 Class A and 18 Class B shares issued and outstanding as at December 31, 2022). As a Class A shareholder, the City shares in both funding the future operations and capital obligations of E-Comm (in accordance with a cost sharing formula), including any lease obligations committed to by E-Comm up to the shareholder's withdrawal date.

(g) Community associations:

The City has agreements with the various community associations which operate the community centers throughout the City. The City generally provides the buildings and grounds, pays the operating costs of the facilities, and provides certain staff and other services such as information technology. Typically the community associations are responsible for providing programming and services to the community. The community associations retain all revenue which they receive.

18. Trust funds:

Certain assets have been conveyed or assigned to the City to be administered as directed by agreement or statute. The City holds the assets for the benefit of and stands in fiduciary relationship to the beneficiary. The following trust fund is excluded from the City's consolidated financial statements.

	2022	2021
Richmond Community Associations	\$ 696	\$ 1,928

19. Taxation and levies:

	2022	2021
Taxes collected:		
Property taxes	\$ 524,934	\$ 496,172
Payment-in-lieu of taxes and grants	37,860	24,326
Local improvement levies	84	84
	562,878	520,582
Less transfers to other authorities:		
Province of British Columbia - School taxes	(210,071)	(192,631)
TransLink	(45,904)	(42,926)
Metro Vancouver	(9,116)	(8,029)
BC Assessment Authority	(6,741)	(6,297)
Sewer debt collect via payment in lieu of taxes	(114)	(43)
Other	(36)	(30)
	(271,982)	(249,956)
Less payment-in-lieu of taxes retained by the City	(21,314)	(14,789)
	\$ 269,582	\$ 255,837

20. Other revenue:

	2022	2021
Developer contributions	\$ 14,957	\$ 6,580
Tangible capital assets gain on sale of land	260	722
Penalties and fines	6,382	4,210
Parking program	1,781	1,343
Recycle BC	3,083	2,884
Other	8,743	6,138
	\$ 35,206	\$ 21,877

21. Government transfers:

Government transfers are received for operating and capital activities. The operating transfers consist of gaming revenue and provincial and federal contributions. Capital transfers are included in other capital funding sources revenue. The source of the government transfers are as follows:

	2022	2021
Operating		
Province of British Columbia	\$ 19,273	\$ 12,590
TransLink	3,891	3,815
Government of Canada	2,291	1,999
Capital		
Province of British Columbia	8,619	6,069
TransLink	885	2,947
Government of Canada	1,410	567
	\$ 36,369	\$ 27,987

22. Segmented reporting:

The City provides a wide variety of services to its residents. For segment disclosure, these services are grouped and reported under service areas/departments that are responsible for providing such services. They are as follows:

- (a) **Community Safety** brings together the City's public safety providers such as Police (RCMP), Fire-Rescue, Emergency Programs, and Community Bylaws. It is responsible for ensuring safe communities by providing protection services with a focus on law enforcement, crime prevention, emergency response, and protection of life and properties.
- (b) **Utilities** provide such services as planning, designing, constructing, operating, and maintaining the City's infrastructure of water, sewer, drainage and diking networks and sanitation and recycling.
- (c) **Engineering, Public Works and Project Development** comprises of General Public Works, Roads and Construction, Storm Drainage, Fleet Operations, Engineering, Project Development, Sustainability and Facility Management. The services provided are construction and maintenance of the City's infrastructure and all City owned buildings, maintenance of the City's road networks, managing and operating a mixed fleet of vehicles, heavy equipment and an assortment of specialized work units for the City operations, development of current and long-range engineering planning and construction of major projects.

22. Segmented reporting (continued):

- (d) **Community Services** comprises of Parks, Recreation, Arts, and Culture and Heritage Services. These departments ensure recreation opportunities in Richmond by maintaining a variety of facilities such as arenas, community centres, pools, etc. It designs, constructs and maintains parks and sports fields to ensure there is adequate open green space and sports fields available for Richmond residents. It also addresses the economic, arts, culture, and community issues that the City encounters.
- (e) **General Government** comprises of Mayor and Council, Corporate Administration, and Finance and Corporate Services. It is responsible for adopting bylaws, effectively administering city operations, levying taxes, legal services, providing sound management of human resources, information technology, finance, and ensuring high quality services to Richmond residents.
- (f) **Planning and Development** is responsible for land use plans, developing bylaws and policies for sustainable development in the City including the City's transportation systems, and community social development.
- (g) **Richmond Olympic Oval Corporation** is formed as a wholly owned subsidiary of the City. The City uses the Richmond Olympic Oval facility as a venue for a wide range of sports, business and community activities.
- (h) **Richmond Public Library** provides public access to information by maintaining 5 branches throughout the City.

	Community safety	Utilities	Engineering public works and project development	Community services	General government	Planning and development	Total city subtotal
Revenue:							
Taxation and levies	\$ -	\$ -	\$ -	\$ -	\$ 269,582	\$ -	\$ 269,582
User fees	-	113,417	14,548	-	-	-	127,965
Sales of services	9,062	2,269	2,439	10,996	10,280	1,778	36,824
Payments-in-lieu of taxes	-	-	-	-	21,314	-	21,314
Provincial and federal grants	219	15	4,061	220	3,724	65	8,304
Development cost charges	-	415	2,392	12,527	2,202	4,898	22,434
Other capital funding sources	350	1,275	10,086	501	30,864	8,144	51,220
Other revenue:							
Investment income	-	272	-	-	29,959	-	30,231
Gaming revenue	753	-	-	-	11,809	-	12,562
Licenses and permits	4,681	41	295	-	15	10,015	15,047
Other	2,037	4,092	1,137	673	11,268	240	19,447
Equity income	-	-	-	-	1,381	-	1,381
	17,102	121,796	34,958	24,917	392,398	25,140	616,311
Expenses:							
Wages and salaries	53,029	15,694	28,210	34,955	31,909	13,634	177,431
Public works maintenance	21	6,793	6,230	2,324	(1,483)	479	14,364
Contract services	68,317	10,010	5,367	2,971	4,331	2,058	93,054
Supplies and materials	2,965	37,634	1,686	11,644	12,548	933	67,410
Interest and finance	103	28,707	9	146	2,370	1	31,336
Transfer from (to) capital for tangible capital assets	(68)	2,654	12,910	2,364	483	3,207	21,550
Amortization of tangible capital assets	3,294	8,947	34,792	10,318	9,100	3,558	70,009
Loss (gain) on disposal of tangible capital assets	66	51	(101)	233	234	20	503
	127,727	110,490	89,103	64,955	59,492	23,890	475,657
Annual surplus (deficit)	\$ (110,625)	\$ 11,306	\$ (54,145)	\$ (40,038)	\$ 332,906	\$ 1,250	\$ 140,654

22. Segmented reporting (continued):

	Total City subtotal	Richmond Public Library	Richmond Olympic Oval	2022 Consolidated	2021 Consolidated
Revenue:					
Taxation and levies	\$ 269,582	\$ -	\$ -	\$ 269,582	\$ 255,837
User fees	127,965	-	-	127,965	118,144
Sales of services	36,824	57	7,613	44,494	35,601
Payments-in-lieu of taxes	21,314	-	-	21,314	14,789
Provincial and federal grants	8,304	377	4,212	12,893	12,704
Development cost charges	22,434	-	-	22,434	16,223
Other capital funding sources	51,220	-	-	51,220	64,695
Other revenue:					
Investment income	30,231	19	-	30,250	14,968
Gaming revenue	12,562	-	-	12,562	5,700
Licenses and permits	15,047	-	-	15,047	13,995
Other	19,447	10,448	5,311	35,206	21,877
Equity income	1,381	-	-	1,381	911
	616,311	10,901	17,136	644,348	575,444
Expenses:					
Wages and salaries	177,431	7,789	10,396	195,616	179,260
Public works maintenance	14,364	26	-	14,390	13,011
Contract services	93,054	409	-	93,463	89,086
Supplies and materials	67,410	1,771	4,666	73,847	68,056
Interest and finance	31,336	4	-	31,340	30,301
Transfer from (to) capital for tangible capital assets	21,550	(344)	-	21,206	21,094
Amortization of tangible capital assets	70,009	931	1,782	72,722	68,519
Loss (gain) on disposal of tangible capital assets	503	(21)	-	482	2,436
	475,657	10,565	16,844	503,066	471,763
Annual surplus (deficit)	\$ 140,654	\$ 336	\$ 292	\$ 141,282	\$ 103,681

23. Budget data:

The budget data presented in these consolidated financial statements is based on the Consolidated 5 Year Financial Plan adopted by Council on January 24, 2022. The table below reconciles the adopted Consolidated Financial Plan to the budget amounts reported in these consolidated financial statements.

	Financial plan Bylaw No. 10327	Financial statement budget
Consolidated financial plan:		
Revenue	\$ 604,730	\$ 604,730
Expenses	522,614	522,614
Annual surplus	82,116	82,116
Less:		
Acquisition of tangible capital assets	(255,375)	-
Contributed tangible capital assets	(54,782)	-
Transfer to reserves	(78,319)	-
Debt principal	(5,570)	-
Add:		
Capital funding	303,542	-
Transfer from surplus	8,388	-
Annual surplus	\$ -	\$ 82,116

24. Comparative information:

Certain comparative information has been reclassified to conform to the consolidated financial statement presentation adopted for the current year.

25. Subsequent events:

In March 2023, the City received \$20,354,000 from the Province of B.C. relating to the Growing Communities Fund grant. The Growing Communities Fund grant is a one-time grant that can be used to address the City's infrastructure and amenity needs. This amount will be recognized as revenue in 2023.

CITY OF RICHMOND
Schedule of Guarantee and Indemnity Agreements for 2022

Section 5

A Schedule of Guarantees and Indemnity payments has not been prepared as the City of Richmond has not given any guarantees or indemnities under the Guarantees and Indemnities Regulation.

Prepared under the Financial Information Regulation, Schedule 1, Section 5

CITY OF RICHMOND
Schedule of Remuneration and Expenses

Section 6

Elected Officials for 2022

Name	Title	Base Salary	Benefits & Other ¹	Expenses
Brodie, Malcolm	Mayor	\$ 186,596	\$ 24,931	\$ 5,663
Au, Chak	Councillor	74,439	12,936	2,808
Day, Carol	Councillor	84,606	15,356	258
Gillanders, Laura	Councillor	9,306	1,501	170
Heed, Kash	Councillor	9,306	1,433	-
Hobbs, Andrew	Councillor	84,606	15,553	948
Loo, Alexa	Councillor	84,606	16,014	7,886
McNulty, William	Councillor	84,606	15,155	639
McPhail, Linda	Councillor	75,533	14,134	-
Steves, Harold	Councillor	75,533	63,869	-
Wolfe, Michael	Councillor	84,606	15,027	2,019
Total		\$ 853,743	\$ 195,909	\$ 20,390

1. Consists of taxable benefits (i.e. life insurance, accidental death and dismemberment, critical illness, vehicle allowance and retiring allowance)

CITY OF RICHMOND
Schedule of Remuneration and Expenses

Section 6

Employee Earnings in Excess of \$75,000 and Related Expenses for 2022

Name	Base Salary	Benefits & Other ¹	Expenses
Aarons, David	\$ 149,359	\$ 13,703	\$ 44
Achiam, Cecilia	270,003	65,230	3,990
Ackerman, Laurie	87,224	4,229	2,150
Adair, Darrin	70,551	17,906	-
Adams, Clay	174,899	20,694	366
Adamson, Claire	136,252	13,344	-
Agawin, Rustico	65,653	10,843	-
Allas, Benjamin	70,098	13,620	-
Allen, Michael	139,992	16,600	804
Alves, Luis	130,103	18,104	-
Alyasin, Khaled	65,195	9,995	-
Alyasin, Zakarya	65,587	9,941	-
Anderson, Adam	106,639	16,505	-
Anderson, Christopher	65,475	22,209	-
Anderson, Lorraine	79,630	6,281	-
Anderson, Mark	67,400	65,636	-
Anderson, Matthew	65,758	20,433	-
Andersson, Bengt	78,548	1,635	692
Andres, Randall	77,712	6,898	-
Andrews, Nathaniel	75,208	3,103	408
Angman, Shelley	74,242	5,429	-
Anselmo, David	87,118	7,265	199
Araki, Stephen	67,400	18,711	199
Arcand, Daniel	90,215	47,463	199
Armstrong, Warren	73,656	19,290	-
Arneson, Christina	82,653	4,186	31
Arrigo, Stephen	95,665	19,756	199
Askwith, Stephanie	103,530	914	-
Assadian, Poroshat	121,806	17,709	718
Atwal, Bhupinder	90,427	4,602	-
Au, Micah	91,042	13,530	-
Au, Victor	67,101	9,796	-
Aujla, Jag	96,581	13,030	-
Ayers, Elizabeth	187,923	44,232	6,877
Babalos, Alexander	103,530	14,952	-
Bachynski, Laurie	211,682	49,673	251
Badesha, Geetanjali	72,208	13,646	-
Badra, Marcos	121,859	5,850	1,677

¹ Consists of taxable benefits (i.e. group life, accidental death and dismemberment and vehicle) and lump sum payments such as leave balances owed to employees, union gratuities and union overtime.

CITY OF RICHMOND
Schedule of Remuneration and Expenses

Section 6

Employee Earnings in Excess of \$75,000 and Related Expenses for 2022

Name	Base Salary	Benefits & Other¹	Expenses
Badyal, Sara	118,448	2,531	584
Bailes, Christopher	66,949	10,943	199
Bailey, Casey	101,605	8,848	-
Bains, Hardeep	149,040	13,113	652
Bains, Mandeep	147,665	21,541	2,516
Bains, Rajinder	94,276	16,629	-
Bajwa, Akhtar	71,495	15,642	-
Baker, Danny	106,639	2,260	-
Baker, Gillian	98,085	12,349	36
Baker, Lia	77,633	3,619	-
Baker, Steven	98,951	6,307	722
Baluyot, Hilario	73,656	14,032	199
Banzet, Calvin	91,042	21,120	-
Bardock, Jason	77,392	6,295	303
Barkley, Matthew	103,530	16,801	-
Barlow, Kenneth	138,926	8,831	-
Barlow, Paul	106,639	16,673	-
Barn, Rav	73,896	4,064	-
Barnett, Mitchell	77,802	8,231	-
Barstow, Murray	100,923	14,489	199
Bartley-Smith, Brenda	121,806	5,710	1,380
Barwin, Simon	103,530	19,325	-
Basford, Adam	65,758	24,150	-
Basraon, Avtar	67,270	40,786	199
Bath, Paul	95,665	34,928	-
Batra, Amritpal	90,565	2,168	692
Bauder, Kristine	98,951	12,822	-
Baumeister, Richard	87,205	16,439	-
Baumgardner, Sherry	92,515	1,479	253
Bavis, Nathan	106,639	36,451	-
Baxter, Jennifer	75,404	13,451	59
Beare, Adam	106,639	10,143	-
Bedi, Govind	91,042	11,349	-
Beeby, James	121,282	12,687	-
Beeksma, Jordan	77,816	9,233	-
Begg, Pam	80,314	30,202	-
Behnia, Babak	84,059	3,279	-
Bennett, Shayne	106,639	18,553	-

¹. Consists of taxable benefits (i.e. group life, accidental death and dismemberment and vehicle) and lump sum payments such as leave balances owed to employees, union gratuities and union overtime.

CITY OF RICHMOND
Schedule of Remuneration and Expenses

Section 6

Employee Earnings in Excess of \$75,000 and Related Expenses for 2022

Name	Base Salary	Benefits & Other¹	Expenses
Benning, Dal	121,381	19,133	-
Bentley, Sharon	73,515	2,843	331
Berezay, Tyler	76,277	1,821	692
Bergsma, Nolan	90,471	19,155	199
Bergsma, Peter	31,676	60,167	-
Bhangu, Gurinder	64,952	20,429	-
Bhathal, Mandip	67,400	12,769	99
Biason, Evangel	107,741	12,638	699
Bie, Lloyd	174,899	28,951	594
Billings, Alan	124,769	12,072	-
Bishay, Soraya	80,314	2,315	-
Bleidistel, Michael	103,061	10,900	-
Bloomfield, Derrick	82,576	4,112	90
Boden, Christopher	67,400	9,491	-
Bogner, Christopher	90,427	41,412	199
Bola, Kulwinder	106,639	16,082	-
Bolina, Sunjeev	65,758	9,977	-
Bonato, Steven	115,007	5,623	-
Borges dos Santos, Adam	95,165	8,907	-
Bosley, Janine	88,079	2,158	-
Bowley-Cowan, Laura	112,336	8,190	706
Bowman, Joshua	95,471	10,886	-
Boyal, Amarjit	70,517	8,828	-
Brace, Michael	75,031	5,605	-
Bramhill, Geoffrey	93,274	19,614	-
Brannen, Andrew	106,639	18,532	1,181
Bredeson, Lance	181,145	14,028	3,343
Brisson, Montgomery	173,494	11,545	2,685
Broughton, Skyler	88,913	31,860	-
Brow, Devlin	65,307	12,401	901
Bruce, Ian	65,436	18,876	-
Brunskill, Jason	130,103	6,592	-
Buchannon, William	130,103	47,406	-
Buemann, Tricia	112,290	6,445	581
Buie, Dovelie	104,901	3,307	1,468
Bulick, John	106,639	10,258	-
Burbidge, Scott	87,829	1,152	303
Burgess, Tyson	84,296	13,596	84

¹ Consists of taxable benefits (i.e. group life, accidental death and dismemberment and vehicle) and lump sum payments such as leave balances owed to employees, union gratuities and union overtime.

CITY OF RICHMOND
Schedule of Remuneration and Expenses

Section 6

Employee Earnings in Excess of \$75,000 and Related Expenses for 2022

Name	Base Salary	Benefits & Other¹	Expenses
Buric, Tony	113,918	5,999	692
Burner, Melanie	106,091	5,998	699
Burns, Brendan	181,842	16,383	2,973
Burse, Bradley	19,184	56,155	-
Burt, Christopher	91,778	16,754	-
Bustillo, Juanito	67,400	15,164	-
Bustillo, Michael	65,758	15,293	478
Butler, Jason	87,829	19,316	199
Buttar, Onkar	90,933	3,549	-
Bycraft, Suzanne	179,202	18,467	2,213
Byrne, Daisy	95,813	10,535	5,324
Cabatic, Allan	106,639	12,776	-
Camacho, Alexander	83,714	25,166	2,441
Cameron, David	95,165	11,421	-
Campbell, Robert	91,042	2,464	-
Candusso, Giorgio	95,665	5,253	-
Canlas, Nicholas	64,914	26,809	841
Cantarella, Lorraine	107,852	26,208	59
Capogna, Nan	29,115	82,523	-
Capuccinello, Anthony	269,895	115,649	3,206
Caravan, Joan	55,450	55,641	-
Carey, Alisa	101,752	6,097	2,706
Carlile, Tanner	103,530	19,165	-
Carron, Kimberley	94,824	2,440	-
Carter, Chris	106,639	1,674	-
Carter-Huffman, Suzanne	122,116	6,533	-
Celones, Christopher	64,224	21,437	-
Cerantola, Davin	93,563	11,931	-
Chahal, Kashmiro	76,187	9,540	-
Chai, Sandra	139,206	13,364	1,020
Chaichian, Camyar	110,008	9,429	28
Chan, Chi-Huen	61,345	14,830	-
Chan, Donna	35,744	110,687	-
Chan, Donna L	-	83,284	-
Chan, Ka Hing	149,290	13,891	1,483
Chan, Kavid	103,032	33,276	-
Chan, Milton	211,341	54,446	6,324
Chand, Amit	84,296	44,127	4,747

¹ Consists of taxable benefits (i.e. group life, accidental death and dismemberment and vehicle) and lump sum payments such as leave balances owed to employees, union gratuities and union overtime.

CITY OF RICHMOND
Schedule of Remuneration and Expenses

Section 6

Employee Earnings in Excess of \$75,000 and Related Expenses for 2022

Name	Base Salary	Benefits & Other ¹	Expenses
Chang, Yvonne	98,475	9,020	1,020
Chase, Michele	122,589	8,831	270
Cheah, Xin Ning	79,804	3,831	2,484
Cheema, Felicia	73,942	9,981	-
Chen, Christine	80,448	14,360	-
Chen, Nicholas	64,360	35,412	841
Chen, Qi	76,689	6,137	-
Cheng, Reinaldo	112,171	10,513	1,020
Cheuk, Chun Yu	90,101	17,222	-
Chiang, Paul	103,061	9,157	1,104
Chien, Johnny	104,792	6,934	-
Chima, Jaspal	87,224	10,896	-
Chin, Donald	80,063	17,567	-
Ching, Ka Wai	83,878	8,002	-
Ching, Mike	144,399	20,204	1,045
Choi, Gary	75,877	2,426	-
Choiselat, Sasha	84,765	8,647	1,425
Chong, Jerry	269,771	109,049	1,344
Chou, Yu-Hsuan	87,224	4,790	-
Christopherson, Tracy	91,953	2,564	-
Chu, Anthony	71,639	15,863	-
Chu, Ka Wing	86,753	6,680	857
Chu, Vincent	143,130	13,695	-
Chung, Leon	103,530	10,674	-
Cindric, Brendan	136,331	10,914	-
Cinquemani, Leonardo	73,656	13,345	-
Ciprut, Samuel	74,266	1,736	138
Cirillo, Nicola	95,165	4,764	-
Clark, Alison	106,639	11,708	-
Clarke, Rebecca	127,209	13,392	775
Clarke, Tristan	84,064	3,776	292
Clarkson, Neil	86,135	2,269	-
Clarkson, Reena	78,662	12,540	59
Clayton, Abbas	93,836	7,058	638
Close, Kirsten	146,261	15,835	1,690
Colby, Traci	69,165	6,569	-
Collinge, Chris	82,718	4,767	2,215
Combs, Aric	77,802	5,772	-

¹ Consists of taxable benefits (i.e. group life, accidental death and dismemberment and vehicle) and lump sum payments such as leave balances owed to employees, union gratuities and union overtime.

CITY OF RICHMOND
Schedule of Remuneration and Expenses

Section 6

Employee Earnings in Excess of \$75,000 and Related Expenses for 2022

Name	Base Salary	Benefits & Other¹	Expenses
Connolly, Norm	139,206	7,934	80
Cooper, Bradley	130,103	13,509	-
Cooper, James	185,610	23,811	1,083
Cooper, Simone	76,914	1,565	-
Cornelssen, Kelvin	124,769	12,035	-
Corrado, Mark	155,777	16,776	2,125
Cox, Taylor	65,758	14,603	-
Craddock, Jeffrey	90,933	2,525	2,848
Craig, Wayne	211,811	37,861	1,169
Craney, Jodi	67,400	12,178	200
Cravino, Claudia	67,746	8,645	1,343
Creighton, Gregg	100,153	642	-
Crocker, Colleen	87,224	3,010	-
Cromie, Kevin	87,224	3,847	-
Cruz, Louella	76,696	9,497	-
Csepany, Andras	95,665	5,773	-
Culshaw, Steven	65,413	29,002	2,495
Curry, Anthony	106,639	18,061	-
Cuthbert, Cameron	63,727	33,864	841
Dacey, Shaun	103,061	4,022	5
Dadwal, Kam	97,943	38,793	225
Dalla, Rajneesh	90,005	5,903	692
Dalla, Ridhi	104,093	9,824	588
Dalziel, Jeffrey	130,103	11,923	-
Davidson, Frank	100,120	9,325	1,505
Davies, Dean	65,758	25,892	1,626
Davies, Sean	65,861	31,101	199
Davies, Sean	94,303	5,008	-
Davis, Egan	105,427	12,269	422
Day, Koral	65,366	14,600	-
De Arcangelis, Lloyd	120,538	2,491	2,299
de Crom, Theodore	-	127,489	-
De Sousa, Steven	98,807	3,681	576
De Visser, Chee	109,950	10,701	1,020
Dean, Roy	67,209	15,912	199
Decker, Kim	122,556	9,624	280
Deer, Angela	111,472	9,553	520
DeGianni, Rod	130,103	11,043	-

¹ Consists of taxable benefits (i.e. group life, accidental death and dismemberment and vehicle) and lump sum payments such as leave balances owed to employees, union gratuities and union overtime.

CITY OF RICHMOND
Schedule of Remuneration and Expenses

Section 6

Employee Earnings in Excess of \$75,000 and Related Expenses for 2022

Name	Base Salary	Benefits & Other¹	Expenses
Del Rosario, Susan	82,375	3,076	-
DeMatos, Steve	77,085	4,705	-
Demers, Michel	84,296	6,486	-
Dennis, Alison	119,959	5,551	282
Devi, Kavita	65,811	13,586	-
Dezordo, Peter	73,505	7,526	-
Dhaliwal, Jordan	65,758	34,011	-
Dhaliwal, Kamaljit	98,951	16,086	-
Dhaliwal, Manjinder	87,031	21,177	199
Dhanowa, Dalvinder	87,829	13,524	199
Dharampal, Jasjit	85,868	3,938	1,768
Dhillon, Darshan	67,400	11,648	-
Dhillon, Kearnbir	100,096	7,900	-
Dhillon, Navtej	103,530	13,630	-
Dias, Ben	149,358	29,302	1,397
Dickson, James	124,769	2,648	-
Dietz, Richard	83,838	1,773	3,443
Dineen, Scott	99,901	6,549	-
Discusso, Matthew	91,000	3,250	-
Discusso, Peter	121,905	30,476	1,496
Dixon, Scott	127,231	11,090	-
Dobie, Adam	91,042	9,166	-
Donald, Brian	65,758	18,716	181
Donald, Gary	77,247	18,394	785
Dos Santos, Francisco	67,400	8,355	-
Douglas, Justin	77,617	6,451	-
Douglas, Stewart	106,639	10,742	-
Draper, Jason	130,103	23,167	-
Duarte, Victor	98,951	33,363	-
Dube, Danielle	106,639	2,687	-
Dubnov, Shawn	99,978	6,782	303
Duddles, Kevin	90,258	1,880	-
Duggan, Christine	120,032	9,969	615
Duncan, George	209,404	275,788	1,078
Duncan, Nathaniel	93,344	3,095	2,463
Dunn, David	106,639	20,417	-
Duran, Rogelio	75,061	3,852	-
Duranleau, Sonia	106,639	23,331	-

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CITY OF RICHMOND
Schedule of Remuneration and Expenses

Section 6

Employee Earnings in Excess of \$75,000 and Related Expenses for 2022

Name	Base Salary	Benefits & Other¹	Expenses
Dusanj, Sukhjeevan	80,460	21,489	-
Ebert, Marcus	70,632	16,697	-
Edwards, Heather	75,622	3,977	-
Edwards, Sara	101,952	8,672	-
Ellis, Joshua	65,631	25,780	2,342
Elshof, Eric	130,103	22,445	-
Enefer, John	115,210	24,322	-
Eng, Kevin	118,448	6,626	64
Epp, Dylan	62,316	16,625	99
Erceg, Joe	270,106	174,877	738
Ernst, Rachelle	83,323	6,717	294
Estabrook, Russell	91,226	15,597	14
Evanger, Todd	80,472	4,677	573
Faccone, Steven	64,257	18,261	99
Falcon, Cindy	100,079	4,034	19
Falkenham, Gregory	67,400	13,312	-
Farrell, Daniel	90,933	5,980	30
Fasciani, Mary Ann	90,933	1,842	-
Fatiaki, Kamoe	72,596	26,694	-
Fedoruk, Lisa	103,555	9,349	18
Fengstad, Grant	211,204	28,045	85
Fenwick, Marie	166,758	18,847	296
Ferland, Khadija	161,719	17,516	423
Fernandes, Carlos	87,829	5,840	-
Ferraro, Domenic	100,152	21,173	199
Fisher, Taylor	65,758	12,220	841
Fitton, Russell	124,769	8,781	-
Fitzmaurice, Dianne	68,004	9,908	-
Fitzpatrick, Brendan	61,666	13,582	199
Fitzpatrick, Tanya	80,208	3,093	-
Fleming, Andrew	65,631	24,978	-
Fletcher, Mark	65,097	15,015	199
Fleury, Shane	60,132	19,527	-
Fok, Kai Sang	70,932	6,824	-
Fong, Mindy	70,255	22,701	-
Fong, Patrick	107,607	12,021	-
Ford, Larry	149,358	16,660	769
Frampton, Michael	106,639	7,545	-

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CITY OF RICHMOND
Schedule of Remuneration and Expenses

Section 6

Employee Earnings in Excess of \$75,000 and Related Expenses for 2022

Name	Base Salary	Benefits & Other¹	Expenses
Fraser, Kevin	103,096	2,799	1,250
Galano-Tan, John	94,824	10,339	1,020
Galbraith, Adam	118,095	16,810	-
Gallant, Roger	67,400	23,113	-
Galloway, Shane	87,872	29,163	-
Gardner, Derek	73,780	5,807	99
Gauley, Steve	139,103	13,053	576
Gauvin, Darnell	67,400	15,743	199
Gee, Peter	90,427	7,940	363
Gellard, Noah	67,400	21,995	-
Gelz, Earl	100,153	2,506	-
George, Andrew	90,427	333	296
Gerlach, Daniel	71,639	4,339	-
Gewargis, Martin	65,758	43,816	-
Ghose, Tarun	76,465	9,479	-
Giammarco, Leanne	76,914	2,262	8
Gibson, Christina	87,221	11,276	-
Gibson, Matthew	81,069	1,934	692
Gilbert, Daniel	65,758	36,411	199
Gilfillan, Cindy	139,206	9,886	1,020
Gilfillan, Kris	99,917	13,561	-
Gill, Ajay	77,726	5,155	-
Gill, Manraj	120,856	14,004	277
Gill, Raminder	118,194	8,389	-
Giroux, Daniel	80,576	726	303
Gondos, Nicholas	64,146	19,945	-
Gould, Joshua	95,165	14,458	-
Gounder, Krishna	87,224	2,748	-
Grauer, Craig	78,382	3,766	199
Gray, Kevin	174,862	26,280	985
Greenlees, Matthew	93,429	30,256	-
Griffin, Kevin	130,103	7,686	-
Griffin, Michael	102,928	13,679	-
Griffith, Michael	85,482	12,381	1,740
Gronlund, Todd	125,575	7,838	-
Gross, Todd	174,899	24,695	4,004
Grunlund, Darin	73,613	2,435	-
Gushel, Brad	100,153	39,796	3

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CITY OF RICHMOND
Schedule of Remuneration and Expenses

Section 6

Employee Earnings in Excess of \$75,000 and Related Expenses for 2022

Name	Base Salary	Benefits & Other¹	Expenses
Guthro, Michael	70,517	12,158	199
Hadfield, Mandy	67,525	8,349	714
Haer, Corrine	74,897	39,659	44
Haer, Sunny	91,300	9,942	-
Hahn, Ruth	107,607	3,391	280
Hamaguchi, Trevor	103,530	12,552	-
Hamalainen, Juha	90,368	4,250	-
Hamilton, Jameson	90,427	7,912	-
Hamilton, Richard	102,951	12,685	-
Hamley, Carolyn	79,542	462	-
Hanna, Fadi	90,427	22,343	-
Hansen, Terry	70,055	12,086	-
Harada, Gordon	67,432	12,088	-
Harris, David	106,639	14,820	-
Hassan, Hala	84,800	4,359	-
Hatzistamatis, Stamatis	79,727	2,918	-
Hawley, Jason	87,699	10,894	-
Hayes, Jennifer	181,145	12,322	2,973
Heap, Nicholas	121,789	7,238	-
Heathe, Gerina	82,653	3,976	699
Heidrich, George	90,427	16,118	1,872
Heinrich, Aida	65,758	10,057	407
Heinrich, George	100,153	21,144	199
Henderson, Derek	88,073	7,709	1,189
Henrickson, Matthew	77,640	14,941	2,530
Herbert, Nicholas	74,710	15,685	1,382
Hertha, Deborah	83,892	19,185	99
Hickey, Paula	83,018	1,998	-
Hicks, Christopher	79,846	3,010	331
Higgs-Lockie, Lucy	66,976	12,547	-
Hill, James	103,530	4,363	-
Hill, Sheila	87,224	2,421	153
Hilton, Vanessa	103,530	12,659	-
Hingorani, Sonali	125,433	12,037	1,170
Hinman, Gregory	81,191	2,205	-
Hirayama, Nathan	77,816	7,463	-
Hirayama, Ryan	91,042	14,840	-
Ho, Japhie	75,758	6,270	31

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CITY OF RICHMOND
Schedule of Remuneration and Expenses

Section 6

Employee Earnings in Excess of \$75,000 and Related Expenses for 2022

Name	Base Salary	Benefits & Other¹	Expenses
Ho, Jason	149,358	10,144	954
Ho, Mei Ping	136,091	12,206	1,020
Ho, Michael	65,758	47,317	-
Ho, William	68,004	15,470	-
Ho, Wing Chun	83,714	2,009	-
Hobman, Lisa	181,145	14,926	4,691
Hodgson, Evan	77,712	2,622	-
Hoff, Paul	130,103	14,477	-
Hoff, Tresse	100,126	525	2,134
Hogan, Angela	87,224	1,765	-
Homeniuk, Alexander	87,224	2,223	30
Hopkins, John	185,074	20,820	771
Horita, Miwako	75,912	1,797	-
Horstmann, Michelle	83,131	5,460	289
Hosseinihrad, Mohammad	105,933	22,977	769
Houston, Cristina	76,616	4,554	1,304
Howe, Shawn	90,427	5,428	-
Hui, Albert	82,670	2,308	2,514
Hui, Gerry	94,824	6,891	1,020
Hui, Ka Yi	102,974	7,969	-
Huk, Matthew	80,314	2,247	774
Humhej, Jerry	100,089	20,159	-
Humphreys, Joseph	77,726	8,250	-
Hung, Edward	124,050	25,948	-
Hunn, Sarah	74,134	10,832	752
Hunt, Evan	65,417	25,356	-
Hunter, Derek	100,149	47,521	199
Hutchison, Colin	70,005	11,551	199
Huynh, Linh	87,199	3,946	1,541
Insley, Joyce	63,335	28,148	-
Irvine, Katherine	90,933	11,116	-
Irving, John	269,885	83,132	8,792
Isaac, Darryl	106,639	13,728	-
Ison, Marvin	106,639	12,123	-
Jacobo, Erwin	90,427	7,058	-
Jacobsen, Carl	90,427	683	-
Jacobson, Jaclyn	126,060	8,772	769
Jaggs, Gordon	121,806	12,410	-

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CITY OF RICHMOND
Schedule of Remuneration and Expenses

Section 6

Employee Earnings in Excess of \$75,000 and Related Expenses for 2022

Name	Base Salary	Benefits & Other¹	Expenses
Jamal, Riyaz	70,828	9,723	-
James, Craig	89,532	5,120	918
Jauk, Liesl	126,155	10,980	237
Javadi-Doodran, Yashar	83,714	3,397	1,234
Jeffcoatt, Steven	130,103	4,122	-
Jesson, Claudia	183,939	57,995	-
Jessop, Kyle	65,758	17,341	1,040
Jesty, Brian	64,682	29,644	-
Jewell, Joshua	77,712	4,724	-
Jo, Dorothy	111,405	7,406	11
Jochimski, Colin	88,079	10,842	-
Joel, Marissa	111,735	5,909	1,471
Johal, Bill	103,061	17,668	-
Johal, Jatinder	139,206	17,838	1,696
Johnston, David	47,895	131,686	-
Jones, Alan	138,918	31,420	1,590
Jones, Debra	87,224	5,957	717
Jones, Glen	87,186	7,607	30
Jones, Michele	76,914	3,615	-
Jones, Riley	76,398	3,134	-
Jut, Jeffrey	65,758	20,089	-
Kallianpur, Virendra	134,158	6,241	1,323
Kam, Richard	106,639	10,901	-
Kaminsky, Serguei	91,042	13,772	-
Kaplun, Shannon	70,058	13,537	497
Karpun, Alexander	65,367	11,888	-
Karpun, Mark	130,103	3,769	-
Kaufman, Julie	82,787	3,099	1,096
Keating, Roger	121,806	6,905	-
Keenan, Bernadette	84,750	13,926	2,443
Kelly, Michael	130,103	23,246	752
Kelly, Patrick	103,530	24,071	-
Kenny, Richard	83,714	3,158	48
Khatkar, Parmveer	95,165	23,414	-
Khudhur, Omar	83,982	7,217	331
King, Eileen	78,314	29,750	1,820
Kinney, Derrian	65,044	27,908	-
Kinney, Gary	100,111	20,169	43

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CITY OF RICHMOND
Schedule of Remuneration and Expenses

Section 6

Employee Earnings in Excess of \$75,000 and Related Expenses for 2022

Name	Base Salary	Benefits & Other¹	Expenses
Kirichuk, Iryna	103,018	11,431	-
Kirk, Wes	70,517	17,311	-
Kita, Jason	166,758	37,149	6,442
Klomp, Frederik	106,639	10,829	-
Ko, Charmaine	78,376	10,223	-
Kopp, Brent	130,103	7,515	-
Kornerup, John	102,254	9,872	-
Koster, Kristine	90,235	2,922	-
Kostromine, Max	136,550	9,370	8
Kovacs, James	67,400	9,864	199
Kovich, John	86,734	2,710	-
Kruk, Robert	72,226	3,676	-
Krumenacker, Kurtis	65,167	35,526	-
Krungtanmueng, Bunruen	67,400	15,463	181
Kube-Njenga, Jennifer	121,761	5,701	1,406
Kucher, Leanne	80,311	6,681	430
Kump, Will	87,224	5,118	-
Kurnicki, Alexander	121,495	12,418	1,302
Kurta, Stanley	100,850	11,005	-
Kuzik, Jared	111,570	8,877	901
Kuznik, Gregory	65,758	28,604	-
Kwan, Ashley Yee Teng	88,572	1,793	334
La Rocque, Gail	80,314	2,293	-
LaBoucane, Kenneth	73,656	17,649	199
LaBoucane, Sherry	66,591	11,049	-
Lafortune, Deryck	77,737	6,018	-
Lai, Emy	45,136	30,368	291
Lai, Patrick	101,195	10,909	499
Laird, Scott	67,400	26,756	1,518
Lam, Gordon	91,042	6,624	-
Lambert, Sarah	77,730	6,482	-
Lannard, Kevin	94,407	3,636	692
Larson, Harold	91,042	9,788	-
Lau, Arnold	80,570	1,962	-
Lau, Cheung Wai	86,687	6,704	1,820
Lauridsen, Cole	77,816	6,690	-
Lawless, Ann	90,427	2,413	1,220
Lazar, Doru	139,408	12,332	4,830

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CITY OF RICHMOND
Schedule of Remuneration and Expenses

Section 6

Employee Earnings in Excess of \$75,000 and Related Expenses for 2022

Name	Base Salary	Benefits & Other¹	Expenses
Lazar-Schuler, Christina	87,224	2,341	-
Ledezma, Gonzalo	106,639	22,178	-
Lee, Andrea	84,416	4,246	-
Lee, Donna	102,046	2,491	-
Lee, Edwin	107,452	3,869	576
Lee, James	85,073	12,082	-
Lee, Jeff	148,647	16,418	3,636
Lee, Matthew	56,702	20,197	-
Lee, Tsz Hin	68,542	12,737	-
Lee, Wun Fung	90,933	12,994	-
Legear, Loryn	86,957	3,023	90
Lehbauer, Jordan	118,146	4,831	-
Leiva, Anastacio	103,530	17,132	-
Lemaire, Joel	129,487	9,258	-
Leney, Kyle	122,120	20,694	-
Leung, Alan	83,714	14,752	-
Leung, Kwan Pui	76,914	2,471	-
Leung, Michael	84,296	14,467	6
Leung, Simon	83,714	16,201	-
Li, Xiaoxue	80,314	2,850	1,020
Lian, George	80,314	2,228	1,020
Liao, Yihong	92,919	1,700	1,380
Lima, Trevor	65,255	19,456	-
Lin, Fred	108,211	81,211	702
Lin, I-Fang	103,059	5,341	-
Lin, Pei Shi	87,224	22,519	4,202
Lincoln, Dawn	29,463	49,139	-
Lindenbach, Greg	105,083	5,976	-
Lindsay, Colton	65,758	18,203	-
Liu, Douglas	138,058	12,242	-
Liu, Marcus	107,607	10,901	-
Lloyd, Adrian	89,585	7,799	-
Lloyd, Susan	112,382	7,641	33
Lo, Judy	80,314	4,623	197
Lo, Kin Ming	121,806	9,025	1,263
Lo, Man Yi	79,458	2,698	-
Lochbaum, Kim	80,314	13,442	70
Long, Wayne	66,817	16,114	199

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CITY OF RICHMOND
Schedule of Remuneration and Expenses

Section 6

Employee Earnings in Excess of \$75,000 and Related Expenses for 2022

Name	Base Salary	Benefits & Other¹	Expenses
Lou, Faythe	86,987	2,796	-
Lovett, Andrew	112,568	10,392	1,175
Lowe, Aaron	65,758	22,302	-
Luk, Becky	110,181	6,528	-
Luk, Yun	90,933	32,452	30
Lukacs, Laura	62,731	15,783	-
Lusk, Serena	315,991	97,258	3,613
Lussier, Cynthia	103,555	8,984	-
Ma, Cliff	115,123	8,211	-
Ma, Ming Yi	107,858	7,165	638
Ma, Nicole	87,602	9,742	-
Maan, Amildeep	82,047	9,548	30
MacArthur, Gordon	78,501	1,460	-
MacDonald, Kylie	119,435	21,657	-
MacDonald, Lisa	83,714	2,637	533
MacDonald, Ryan	95,165	21,331	-
Mack, Rodney	81,000	39,875	199
MacKinnon, Cameron	94,629	3,934	3,133
MacKinnon, Deb	-	125,917	-
MacKowski, Igor	65,758	11,720	296
MacLachlan, Brennan	111,275	7,558	1,132
MacLeod, Brian	122,597	29,193	19
MacNeill, Skye	65,192	18,283	-
Mah, Cheryl	75,404	8,721	-
Mahdiar, Zohreh	134,463	7,704	1,711
Mahon, Steve	98,951	3,703	-
Malawiya, Sophia	83,714	1,694	-
Maldonado, Tanya	80,314	4,873	-
Mand, Paul	90,427	512	150
Mander, Daljit	87,196	26,362	499
Mann, Amraj	87,829	7,712	199
Marchal, Luke	102,932	16,396	-
Marcotte, Ford	64,506	40,456	-
Markham, Monique	96,087	25,733	2,704
Marquez, Christopher	87,224	6,025	412
Marsh, Andrew	67,024	9,382	-
Martin, Melissa	75,767	1,730	-
Martin, Paul	113,529	20,109	-

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CITY OF RICHMOND
Schedule of Remuneration and Expenses

Section 6

Employee Earnings in Excess of \$75,000 and Related Expenses for 2022

Name	Base Salary	Benefits & Other¹	Expenses
Matsuzaki, Spencer	64,702	11,833	199
Maxwell, Kyle	86,126	4,439	277
Maxwell, Mark	83,316	2,491	-
Maxwell, Michael	122,430	30,607	-
Maxwell, Randy	88,453	831	-
McCaffrey, John	70,055	29,966	-
McCall, Robert	106,639	15,779	-
McCluskey, Ryan	106,639	7,558	-
McConkey, Patrick	103,530	16,107	-
McCullough, Cameron	106,639	2,614	-
McDonald, Julia	95,165	5,635	-
McDonald, Michael	103,530	19,331	-
McDougall, Mitch	77,085	16,050	-
McGee, David	87,224	1,765	-
McGrath, Alan	175,535	21,463	2,546
McKenzie-Cook, Christopher	113,811	23,818	380
McLoughlin, Kris	91,042	10,119	-
McMillan, Richard	70,055	40,689	-
McPhedrian, Matthew	65,413	23,481	-
McQuistin, Dylan	65,758	19,068	199
McQuistin, Scott	71,658	6,996	673
McQuistin, Shawn	67,241	17,763	1,270
McVea, Aidan	47,895	53,684	-
Mearns, Jonathan	124,769	11,128	694
Medhurst, Colin	119,273	20,042	752
Melnychuk, John	94,824	10,179	836
Melnyk, Andre	65,758	12,463	513
Memon, Wasim	103,061	47,868	208
Menta, Ariel	66,640	16,694	-
Mercer, Barry	97,936	53,139	50
Mercer, Noel	67,400	28,658	-
Metzak, Brian	106,639	13,141	-
Miele, Michael	67,400	12,156	-
Miletich, Lori	127,011	8,565	-
Milford, Wendy	83,714	2,363	-
Millar, Alexander	95,165	6,340	-
Miller, Chad	100,153	16,805	3
Miller, Jesse	65,758	13,721	-

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CITY OF RICHMOND
Schedule of Remuneration and Expenses

Section 6

Employee Earnings in Excess of \$75,000 and Related Expenses for 2022

Name	Base Salary	Benefits & Other¹	Expenses
Miller, Shawn	65,758	20,349	-
Mills, Warren	92,260	5,645	517
Minshall, Travis	89,937	5,618	-
Mladin, Luka	75,374	2,457	2,626
Modhwadia, Samir	91,441	4,690	-
Mohan, Colin	130,103	18,663	-
Mohan, Dharam	65,758	23,924	-
Mol, Brandie	70,065	11,373	30
Molema, Kenneth	130,103	16,563	-
Molle, Sean	77,726	6,362	-
Montague, Eli	93,442	441	199
Moore-Dempsey, Erin	106,639	9,297	-
Mora, Jamie	106,639	9,926	-
Morin, Michel	86,974	3,511	884
Morison, Douglas	111,295	3,830	-
Moritz, Bradley	65,758	12,458	-
Morris, Aila	86,203	4,991	-
Morris, Allen	109,815	6,422	573
Morrison, Amber	80,271	5,200	-
Morrison, Taylor	65,758	33,264	-
Moss, Kelly	128,139	23,931	-
Mossman, Cody	65,758	40,449	499
Moxin, Greg	95,665	21,362	199
Mozin, Stella	80,602	2,827	-
Muir, Morgan	103,061	2,238	2,034
Mulgrew, Stephen	67,400	25,557	-
Mulhall, Laoise	73,656	19,535	499
Muller, Shane	80,576	25,412	-
Mullock, Kevin	151,425	9,717	-
Mumblo, Ian	103,530	3,474	-
Murao, Dustin	103,530	10,691	-
Murphy, Liam	74,881	23,842	881
Murray, Ken	130,103	4,723	-
Nagata, Darren	100,131	32,233	-
Naidu, Denis	62,731	15,905	1,291
Nanka, Eric	93,376	14,483	-
Naraina, Jagdish	80,130	12,628	968
Naso, Marcela	80,432	4,064	-

¹ Consists of taxable benefits (i.e. group life, accidental death and dismemberment and vehicle) and lump sum payments such as leave balances owed to employees, union gratuities and union overtime.

CITY OF RICHMOND
Schedule of Remuneration and Expenses

Section 6

Employee Earnings in Excess of \$75,000 and Related Expenses for 2022

Name	Base Salary	Benefits & Other¹	Expenses
Nathorst, Dave	95,665	10,476	-
Nenno, Pierre	65,758	17,968	-
Neufeld, Tammy	90,427	2,950	199
Newell, Allan	106,639	941	-
Newstead, Blair	87,224	2,489	-
Ngan, Venus	146,373	12,881	1,916
Nguyen, Lisa	78,353	2,302	331
Nickel, Christel	103,530	14,875	-
Nickel, Sarah	87,218	11,946	3,439
Nikolic, Diana	136,289	13,871	576
Nishi, Casey	87,454	7,009	199
Nishi, Grant	98,951	4,272	24
Nishi, Kristina	93,789	10,557	5,025
Nivens, Michael	87,224	5,706	-
Nixon, John	80,576	423	199
Nolan, Mark	87,656	11,202	-
Nomellini, Samuel	65,758	10,783	296
Northrup, Trevor	130,524	8,855	779
Oborne, Renata	90,933	7,158	-
Ogis, Peter	106,639	7,478	-
O'Halloran, Matthew	105,309	31,553	-
Oliver, Ian	81,930	2,099	-
Olson, Brandon	109,099	27,831	900
Olson, Mike	75,426	4,469	692
Ooi, Emily	87,224	3,571	792
Ordman, Jonas	99,113	8,337	-
Ouellet, Justin	90,342	16,341	-
Oviedo, Frankie	62,915	12,131	-
Oviedo, Jose	88,798	8,873	199
Paller, Elena	121,806	9,917	1,058
Palliser, Howard	87,224	1,786	-
Pang, Serene	87,224	3,193	-
Panni, Daianna	76,914	1,608	-
Parhar, Gurdawar	106,639	17,517	-
Park, Minhee	110,145	2,353	576
Parker, Cory	154,199	9,319	1,199
Parker, Lorilyn	61,092	20,990	-
Parminter, Kelsey	102,932	2,773	-

¹ Consists of taxable benefits (i.e. group life, accidental death and dismemberment and vehicle) and lump sum payments such as leave balances owed to employees, union gratuities and union overtime.

CITY OF RICHMOND
Schedule of Remuneration and Expenses

Section 6

Employee Earnings in Excess of \$75,000 and Related Expenses for 2022

Name	Base Salary	Benefits & Other¹	Expenses
Paterson, Kenneth	90,427	29,502	-
Patkau, Brad	129,507	13,127	-
Pattullo, Chris	87,224	26,262	833
Paulin, Chad	139,202	29,509	855
Payne, Alston	59,516	36,202	-
Pedersen, Brian	65,758	18,597	150
Penney, Daniel	106,639	2,455	-
Penrose, Trevor	93,618	7,071	1,104
Percival Smith, Beverly	76,914	2,812	-
Perkins, Michael	118,211	24,855	-
Persick, Christy	95,165	6,282	-
Phaysith, Matthew	73,926	2,577	19
Philipson, Neil	65,600	9,771	99
Pighin, Darren	130,103	4,105	-
Piluso, Riccardo	87,829	22,871	303
Pinkney, Jason	85,892	22,570	-
Plomp, Deborah	60,258	19,095	-
Pockett, Kyle	79,057	6,177	-
Poole, Jeremy	65,758	23,030	-
Poole, Travis	67,302	22,378	199
Poon, Debra	78,173	3,390	-
Porlier, Sheila	107,306	11,192	-
Powell, Jo	82,651	7,642	366
Poxon, Gerald	127,231	4,136	-
Protz, Gregory	130,103	11,037	-
Puddicombe, Alan	77,085	10,253	199
Qaddoumi, Hikmat	48,220	69,854	-
Quan, Stanley	71,091	8,173	-
Quiambao, James	101,138	3,638	-
Quon, Howard	60,025	33,196	30
Racic, Mile	136,004	8,247	3,342
Raman, Dinesh	65,758	13,187	-
Ramirez, Antonio	83,688	4,343	33
Ramos, Dinos	95,665	2,642	-
Recavarren, Mario	69,819	7,313	380
Redlinski, Jacek	94,824	6,971	1,538
Redzic, Vesna	103,061	2,917	-
Reel, Ravinder	74,076	4,096	-

¹ Consists of taxable benefits (i.e. group life, accidental death and dismemberment and vehicle) and lump sum payments such as leave balances owed to employees, union gratuities and union overtime.

CITY OF RICHMOND
Schedule of Remuneration and Expenses

Section 6

Employee Earnings in Excess of \$75,000 and Related Expenses for 2022

Name	Base Salary	Benefits & Other¹	Expenses
Reis, Joshua	139,206	18,132	1,160
Rempel, Graeme	95,165	18,139	-
Rempel, Timothy	91,123	14,015	-
Rende, Michael	128,984	16,157	-
Renwick, Rick	54,185	31,908	-
Revell, Michael	89,845	14,033	1,505
Reyes, Maurice	67,400	16,632	826
Richards, David	53,011	79,425	100
Richards, Tom	80,576	467	146
Richardson, April	77,712	3,611	-
Ricketts, Terry	88,369	4,110	-
Roberts, Angela	82,238	1,240	239
Roberts, Kevin	123,975	12,643	1,444
Roberts, Lance	100,250	6,450	199
Roberts, Merrick	62,196	17,094	-
Robertson, Cameron	82,787	3,621	-
Robie, Colin	99,294	7,388	1,520
Robles, Miguel	90,427	929	-
Robson, Mark	115,189	16,972	-
Rocha, Carlos	98,285	1,994	412
Rodriguez, Edgar	130,103	9,846	431
Romas, Mike	139,206	11,932	2,709
Ronquillo, Danny	71,490	3,532	-
Roorda, Stephanie	77,770	5,395	-
Roper, Ryan	68,353	19,846	-
Rosa, Alexander	77,712	4,687	-
Rose, Elizabeth	77,570	2,202	-
Rosenberg, Suzanne	87,223	2,523	90
Roszkowski, Ailie	87,829	1,078	199
Rowley, Darren	118,211	22,059	-
Ruiz, Garret	55,570	21,818	-
Ruscitti, Antonia	126,679	10,479	-
Rushton, Wade	77,085	18,914	839
Russell, Paul	106,639	21,875	-
Russell, Peter	173,067	38,976	3,962
Ryan, Bhavani	102,202	13,201	1,167
Safar, Yousif	77,807	5,950	-
Saggers, Paul	107,613	6,770	753

¹ Consists of taxable benefits (i.e. group life, accidental death and dismemberment and vehicle) and lump sum payments such as leave balances owed to employees, union gratuities and union overtime.

CITY OF RICHMOND
Schedule of Remuneration and Expenses

Section 6

Employee Earnings in Excess of \$75,000 and Related Expenses for 2022

Name	Base Salary	Benefits & Other¹	Expenses
Saito, Aaron	130,103	13,219	-
Sakai, Ross	87,224	7,601	24
Sakurai, Hanae	80,314	2,294	-
Salameh, Alexander	106,639	8,595	-
Salmasi, Kamran	94,824	11,077	-
Samson, Brent	107,071	6,934	-
Sander, Amarjit	90,179	3,453	180
Sandhu, Amritpal	111,228	10,661	412
Sandhu, Parmel	94,824	3,631	-
Sandhu, Pulvinder	73,656	25,996	-
Sangha, Rajvinder	106,639	16,517	-
Santos, Manuel	84,858	6,817	-
Santos, Victor	88,218	4,159	303
Sarai, Lovepreet	65,631	12,328	-
Saretsky, Ryan	65,758	19,658	-
Savoie, Gilbert	90,933	3,110	-
Sawada, Stephen	103,530	27,745	-
Sayson, Jared	68,004	10,158	-
Schiedel, Tyler	103,530	16,937	1,451
Schlossarek, Teresa	90,933	2,183	-
Schmidt, Michael	65,758	11,607	99
Schouten, Geoff	65,758	16,176	1,470
Schouten, Stacey	101,952	12,445	-
Schroeder, Scott	98,951	3,431	155
Schuler, Terry	76,914	2,134	-
Schultz, Jeremy	106,639	18,153	-
Schultz, Susan	86,000	21,500	-
Scott, Jason	87,821	1,163	199
Scott, Sean	103,530	15,610	-
Segal, Brandon	77,802	3,414	-
Selinger, Edward	151,425	13,920	117
Shariff, Aliya	92,514	6,783	969
Sharkey, Christopher	65,511	16,195	839
Sharma, Amen	84,106	6,964	-
Sharma, Shyreen	76,914	4,679	-
Sharp, Gabrielle	83,714	2,509	529
Shaw, Geoffrey	66,163	10,586	-
Shaw, Trevor	93,416	5,086	5

¹. Consists of taxable benefits (i.e. group life, accidental death and dismemberment and vehicle) and lump sum payments such as leave balances owed to employees, union gratuities and union overtime.

CITY OF RICHMOND
Schedule of Remuneration and Expenses

Section 6

Employee Earnings in Excess of \$75,000 and Related Expenses for 2022

Name	Base Salary	Benefits & Other¹	Expenses
Shay, Horace	75,998	7,992	4,441
Shepherd, Bryan	149,338	27,453	1,076
Shepherd, Lisa	67,400	18,837	-
Shiau, Melissa	95,182	8,918	1,828
Shigeoka, Shannon	84,296	14,869	2,714
Shimonek, Todd	84,296	4,100	-
Shirey, Jill	90,959	9,712	145
Sholdra, Brian	103,530	2,893	-
Shum, Chi Ting	103,061	14,846	-
Sidhu, Baldev	65,758	34,301	-
Siemens, Gregory	130,103	16,230	57
Sikora, Rose	107,306	5,067	619
Simas, Antonio	103,331	3,530	443
Simkin, Eric	106,639	10,164	-
Simmons, Norman	90,427	4,077	366
Simonson, Brock	79,821	30,616	-
Sinclair, Magnus	86,054	11,895	146
Sinclair, Owen	84,941	26,619	769
Siu, Nicholas	78,093	3,743	-
Slater, Tanya	106,639	3,871	1,543
Smail, Jamie	65,853	26,747	199
Smail, Robert	67,111	17,160	199
Smith, Carly	68,999	9,376	199
Smith, Mark	127,641	30,482	-
Smith, Michael	106,639	32,750	-
Smith, Suzanne	139,206	13,661	576
Smithers, Todd	73,918	61,671	199
Smrekar, Winnie	73,895	1,693	-
Snowball, Joanne	75,404	3,910	-
Sodi, Sunjeev	124,769	8,558	1,784
Somerville, Kim	174,899	46,635	1,095
Sparolin, Eric	150,536	30,454	32
Specht, Darren	76,938	12,738	-
Squarci, Leigh	80,095	1,948	199
Standerwick, Jeffrey	149,497	23,746	-
Staples, Kaitlynn	82,653	8,098	41
Steel, Tyler	95,165	4,914	-
Steeves, Susan	76,787	2,400	-

¹ Consists of taxable benefits (i.e. group life, accidental death and dismemberment and vehicle) and lump sum payments such as leave balances owed to employees, union gratuities and union overtime.

CITY OF RICHMOND
Schedule of Remuneration and Expenses

Section 6

Employee Earnings in Excess of \$75,000 and Related Expenses for 2022

Name	Base Salary	Benefits & Other¹	Expenses
Stene, Ryan	130,103	13,360	-
Stewardson, Kevin	127,231	6,444	-
Stewart, Aaron	65,758	21,810	-
Stewart, James	87,792	13,300	-
Stewart, Kathleen	94,824	3,458	692
Stockdale, Todd	83,202	19,832	-
Stocking, Nicole	132,408	12,000	736
Stockley, Ivan Scott	65,758	19,194	1,505
Stokes, Ryan	95,165	10,550	-
Stone, Brett	65,477	25,916	-
Stradecke, Danica	89,966	4,231	371
Streit, Hans-Peter	76,914	6,502	-
Sturrock, Mark	91,408	965	199
Svail, Stefanie	94,497	2,151	-
Swanson, Brad	90,933	2,183	-
Tack, Troy	102,343	24,414	-
Tahir, Edwin	90,684	3,271	-
Tait, Kyle	97,264	5,844	-
Tait, Peter	98,951	3,119	-
Takagawa, Michael	67,400	16,358	-
Takiya, James	77,712	4,190	-
Talmey, Patrick Jr	85,046	45,796	199
Tanyag, Wilbert	84,296	2,395	-
Tarr, Christopher	106,639	13,500	-
Tatchen, Elisabeth	103,530	23,153	-
Tate, Bryce	65,477	19,583	-
Taylor, Andrew	67,301	12,641	-
Taylor, Kirk	174,899	16,794	848
Taylor, Mervyn	130,103	18,469	-
Teichrieb, Craig	98,979	14,799	-
Tellis, Peter	128,769	3,969	2,267
Teo, James	110,674	12,349	-
Tewfik, Frederic	156,827	12,749	1,391
Thandi, Neera	94,824	2,950	1,020
Thibodeau, Jon	62,922	28,300	-
Thomas, Bradley	67,964	8,153	-
Thomas, Bryan	90,427	3,612	1,505
Thomas, Cindy	-	78,946	-

¹ Consists of taxable benefits (i.e. group life, accidental death and dismemberment and vehicle) and lump sum payments such as leave balances owed to employees, union gratuities and union overtime.

CITY OF RICHMOND
Schedule of Remuneration and Expenses

Section 6

Employee Earnings in Excess of \$75,000 and Related Expenses for 2022

Name	Base Salary	Benefits & Other¹	Expenses
Thome, John	73,993	1,512	-
Thrasher, Don	67,400	9,716	-
Tikanmaki, Anna	102,019	28,414	82
Tillyer, Curtis	90,222	3,830	-
Tinney, Lucas	91,089	15,786	-
Tjepkema, Nicole	87,224	3,403	-
To, Tik Hang	82,653	7,207	1,550
Tobin, Sean	103,530	17,269	-
Toda-Sinclair, Julie-Anne	48,830	29,990	138
Tom, Ian	76,769	13,423	3,747
Tong, Dominic	68,004	11,315	-
Tong, Vanessa	82,037	4,808	-
Tongohan, Darwin	87,224	14,126	1,443
Tooth, Gregory	90,933	1,842	-
Torabi, Niloufar	149,338	10,804	467
Towers, Brett	77,802	4,804	-
Toyoda, Lianne	82,653	8,015	-
Tran, Ton	80,531	4,292	-
Tran, Vu	87,224	2,093	692
Tremayne, Brent	99,927	7,551	-
Tremblay, Alex	65,758	24,012	-
Tremblay, Gail	73,514	9,350	303
Trim, Victoria	77,797	6,541	-
Trott, Eric	65,948	13,459	199
Trott, Ryan	64,313	14,424	-
Trotter, Nicole	90,427	4,238	41
Truscott, Loic	103,530	16,344	-
Tsang, Jonathan	103,530	5,542	-
Tso, Eunice	73,896	1,648	96
Turick, Julia	92,641	3,585	196
Turick, Renata	100,854	6,910	-
Turner, Jeffrey	123,689	3,965	-
Tycholis, Kathy	87,224	2,748	-
Underwood, Brandon	71,701	23,704	-
Vallance, Scott	87,224	2,748	-
Van Neck, Caitlyn	106,639	2,388	-
Van Niekerk, Stuart	90,956	17,359	-
Vanderwel, Christopher	103,530	16,321	-

¹ Consists of taxable benefits (i.e. group life, accidental death and dismemberment and vehicle) and lump sum payments such as leave balances owed to employees, union gratuities and union overtime.

CITY OF RICHMOND
Schedule of Remuneration and Expenses

Section 6

Employee Earnings in Excess of \$75,000 and Related Expenses for 2022

Name	Base Salary	Benefits & Other¹	Expenses
Varallo, Nadia	86,995	1,633	-
Varley, Sue	98,951	2,492	158
Vaughn, Jerret	126,648	3,753	-
Velkova, Biliانا	103,712	2,477	177
Velo, Vanessa	77,816	6,423	-
Venturas, Byron	70,530	18,083	-
Villaluz, Jaime	94,824	9,631	499
Virk, Manjit	76,914	1,641	-
Vo, Tuan	65,758	23,762	-
Vodchenko, Ivan	84,296	858	-
Volkering, Linea	80,858	1,602	-
Vrba, Karol	105,955	19,846	137
Vrooman, Rowan	130,103	29,213	-
Vuletin, Johana	74,034	30,770	590
Waddell, Matthew	77,788	8,722	-
Waddington, Nathaniel	95,165	9,631	-
Wahl, Kevin	130,103	5,947	-
Wakefield, Richard	70,075	7,398	-
Wakelin, Frank	103,061	16,613	-
Wall, Anthony	124,823	5,573	-
Walrond, Randall	76,734	12,278	-
Walters, Bryan	130,103	6,539	-
Wan, King-Lun	87,224	21,372	30
Warren, Darren	94,824	2,987	280
Warzel, Edward	149,359	16,459	32
Watson, Kenneth	85,621	2,566	573
Watson, Valerie	102,738	4,852	-
Wei, Daniel	95,165	25,074	-
Weissler, Forrest	151,426	16,014	-
Welsh, Michael	127,270	11,881	-
Weststrate, Jason	87,829	19,995	854
Wheeler, Gregg	121,689	19,901	197
Whitaker, Lauren	90,427	1,155	-
White, Jason	76,914	1,404	-
Whitmarsh, Kevin	86,221	10,449	28
Whittam, Jonathan	80,426	24,320	203
Whitty, Robert	55,186	26,587	-
Whyman, Max	67,270	36,501	-

¹ Consists of taxable benefits (i.e. group life, accidental death and dismemberment and vehicle) and lump sum payments such as leave balances owed to employees, union gratuities and union overtime.

CITY OF RICHMOND
Schedule of Remuneration and Expenses

Section 6

Employee Earnings in Excess of \$75,000 and Related Expenses for 2022

Name	Base Salary	Benefits & Other¹	Expenses
Wild, Danyon	130,103	12,482	-
Wilke, Steve	95,440	20,445	-
Wilkinson, Timothy	75,932	192,910	799
Willett, Ryan	65,758	14,209	-
Wilson, Dennis	72,479	11,793	-
Wilson, Jordyn	65,505	13,898	-
Windsor, Ryan	104,049	21,064	727
Wishlove, James	193,582	27,637	5,710
Wong, Desmond	103,024	7,365	-
Wong, Ivy	200,248	49,920	1,020
Wong, John	66,567	8,890	-
Wong, Kai Chun	103,510	7,822	409
Wong, Stephenie	91,359	9,077	-
Wong, William	92,180	43,920	19
Woolgar, John	149,359	29,978	1,598
Wringe, Iain	95,165	11,418	-
Wyatt, Sail	90,427	12,554	556
Wyenberg, Grant	130,568	20,842	-
Xavier, Victor	67,400	14,817	-
Xie, Xichen	80,314	7,076	1,020
Xu, Dajiang	87,224	11,811	-
Yee, David	65,259	25,662	199
Yee, Edmond	80,314	8,503	1,020
Yee, Stephen	96,489	15,305	850
Yeung, Lap Man	100,825	6,891	-
Yeung, Yuen	82,751	2,718	692
Yon, Elisa	83,647	1,940	-
Yoo, John	106,639	13,661	-
Young, Jim	181,969	36,591	6,752
Younis, Munkith	156,827	15,801	973
Zanardo, Wilma	120,184	8,221	25
Zellweger, Joey	72,332	2,813	-
Zhang, Feng	80,314	11,572	1,021
Zhang, Ling Yi	83,714	14,837	-
Zhu, Michael	117,989	9,668	-
Zukowsky, Doug	78,520	35,892	199
Total	94,052,670	14,653,635	401,693

¹. Consists of taxable benefits (i.e. group life, accidental death and dismemberment and vehicle) and lump sum payments such as leave balances owed to employees, union gratuities and union overtime.

CITY OF RICHMOND
Schedule of Remuneration and Expenses

Section 6

Grand Total for 2022

Name	Remuneration¹		Expenses
Employees Over \$75,000	\$	108,706,305	\$ 401,693
Employees Under \$75,000		43,386,654	60,640
Total	\$	152,092,959	\$ 462,333

¹. Combines salary, taxable benefits and other lump sum payouts

The variance between the Schedule of Remuneration and the salaries and benefit expenses reported in the consolidated financial statements of the City are due to various factors including:

- The remuneration schedule is based on actual cash payments made during the fiscal year (including payouts of vacation, union gratuities and union overtime banks) whereas the consolidated financial statement is on an accrual basis;

CITY OF RICHMOND
Statement of Severance Agreements for 2022

Section 6

There were two severance agreements made between the City of Richmond and its employees during fiscal year 2022.

The agreements represent a range of 3 to 14 months of salary and benefits.

Statement of Payments to Suppliers for Goods and Services
in Excess of \$25,000 for 2022

Section 7

Supplier Name	Payment Amount
0798750 BC Ltd	\$ 28,482
678595 BC Inc	28,956
A J Forsyth - A Division of Russel Metals Inc	26,916
A R Mower & Supply Ltd	78,398
Absolute Industrial Mechanical Ltd	62,536
Acceo Solutions Inc	65,054
Access Information Management of Canada	39,506
Ace Link Fence Ltd	29,130
Acklands Grainger Inc	65,232
Action Car And Truck Accessories	25,540
Active Earth Engineering Ltd	27,660
Adcentives	46,850
AE Concrete Products Inc	64,242
AES Engineering Ltd	30,193
Airon Heating & Air Conditioning Ltd	533,527
Alexander Holburn Beaudin & Lang LLP	62,452
All Roads Construction Ltd	865,507
Allmar Inc	37,606
Amazon	132,523
Ampco Manufacturers Inc	106,128
Andrew Sheret Ltd	717,890
Anigraph Productions Limited	247,666
Annacis Commercial Paint	39,071
Ansan Industries Ltd	237,236
Aplin & Martin Consultants Ltd	304,945
A-Power Computer Ltd	72,630
Apple Canada Inc	174,608
Ashton Mechanical Ltd	2,587,594
ASSA ABLOY Entrance Systems	65,103
Associated Engineering (BC) Ltd	86,781
Associated Fire and Safety	232,241
Astro Turf West Distributors Ltd	706,466
Astrographic Industries Ltd	197,089
Atlas Power Sweeping Ltd	125,394
Attain Solutions Inc	26,441
Ausenco Sustainability Inc	37,289
Avolve Software Corporation	50,334
BARR Plastics Inc	44,156
Barry Hamel Equipment Ltd	64,222

*Payment includes tax transfers and third party remittances

Statement of Payments to Suppliers for Goods and Services
in Excess of \$25,000 for 2022

Section 7

Supplier Name	Payment Amount
Baumeister Homes Inc	62,460
BC Assessment*	6,569,414
BC Employer Health Tax	2,895,432
BC Hardwood Floor Co Ltd	28,966
BC Housing Management Commission	325,000
BC Hydro	5,126,221
BC Legal Management Association	78,183
BC Life & Casualty*	1,656,759
Benchmark Site Services Inc	82,774
Best Buy	44,507
Blackmamba Tree Service Inc	78,031
Blue Pine Enterprises	83,070
Boileau Electric And Pole Line Ltd	26,175
Boston Construction Corporation	2,065,320
Bowden, Tony	35,934
Bridge Electric Corp	33,294
Brighthouse Civil Contracting Ltd	86,812
British Columbia Society for the Prevention of Cruelty to Animals	1,061,816
Bulldog Bag Ltd	26,238
Bunzl Cleaning & Hygiene	437,383
Busch Systems International Inc	64,112
Butler Marketing Ltd	65,431
Cactus Club	36,929
Calytera Software Inc	142,000
Canada Post Corporation	353,199
Canada Revenue Agency*	43,236,500
Canadian Equality Consulting Inc	44,100
Canadian Mattress Recycling Inc	324,092
Canadian National Railway Company	294,808
Canadian Red Cross*	50,054
Canadian Stainless Fasteners Inc	44,521
Canex Building Supplies Ltd	139,049
Cansel Survey Equipment	112,416
Cascade Wear BC Ltd	34,256
Cascades Recovery +	39,217
Cascadia Strategy Consulting	107,168
CDW Canada	211,964
Centralsquare Canada Software Inc	51,766
Chase Paymentech	716,998

*Payment includes tax transfers and third party remittances

Statement of Payments to Suppliers for Goods and Services
in Excess of \$25,000 for 2022

Section 7

Supplier Name	Payment Amount
Chernoff Thompson Architects	76,645
Chinese Informedia Consulting Group Inc	31,594
Cimco Refrigeration	128,147
Cintas Canada Ltd	160,408
Citizencentric Consulting Inc	30,525
City Electric Supply	172,644
City of Nanaimo	102,094
City of New Westminster	480,000
City of Vancouver	1,371,753
Cleantech Service Group Limited	31,533
Cleartech Industries Inc	220,581
Cloverdale Paint Inc	89,221
Coast Ropes And Rescue Inc	25,813
Cobra Electric Services Ltd	2,041,237
Coencorp Consultant Corporation Inc	31,658
Cold Fire Canada Ltd	75,839
Columbia Chrysler	41,773
Commercial Lighting Products Ltd	50,431
Commercial Truck Equipment	2,673,077
CommunityLogiq Software Inc	25,000
Comprint Systems Inc	89,238
Compugen Inc	462,498
Connect Landscape Architecture Inc	41,694
Container West Sales Ltd	36,185
Contemporary Office Interiors	29,430
Corix Utilities Inc	58,188
Creative Door Services Ltd	120,580
Cullen Diesel Power Ltd	73,349
CUPE 394*	773,550
CUPE 718*	1,037,087
CWPK Art Practice	116,237
Dafco Filtration Group	76,953
Davidson Bros Mechanical Contractors Ltd	451,907
DB Perks & Associates	397,884
Dell Canada Inc	94,204
Dentons Canada LLP	157,878
Dependable Door Maintenance Ltd	43,150
Dexterra Group Inc	159,940
DHI Water & Environment Inc	33,495

*Payment includes tax transfers and third party remittances

Statement of Payments to Suppliers for Goods and Services
in Excess of \$25,000 for 2022

Section 7

Supplier Name	Payment Amount
Dialog BC Architecture Engineering	127,920
Diamond Head Consulting Ltd	32,847
Dillon Consulting	51,787
Division Mechanical Ltd	30,848
DLA Piper (Canada) LLP	88,158
DLA Piper (Canada) LLP, In Trust	13,076,153
DMD & Associates Ltd	25,374
Dobney Foundry Ltd	39,714
Dominion Blueprint & Reprographics Ltd	55,142
Dominion Voting Systems Corporation	152,739
Dorset Realty Group	558,852
Double R Rentals	157,086
Douglas Lake Equipment Ltd	36,095
DS Tactical Ltd	44,454
Dueck Chevrolet Buick Cadillac GMC Ltd	26,819
Dynamic Facility Services Ltd	27,982
E B Horsman & Son Ltd	55,094
East Richmond Nurseries	104,354
EBB Environmental Consulting Inc	75,732
Eclipsys Solutions Inc	121,565
E-Comm, Emergency Communications for BC	4,544,176
Econolite Canada Inc	479,311
Ecotainer Sales Inc	152,893
Ecowaste Industries Ltd	585,691
ECS Electrical Cable Supply Ltd	67,444
Edifice Construction Inc	2,588,287
Elemental Architecture and Interiors Inc	188,578
Elia Kirby Productions Ltd	47,476
Elite Fire Protection Ltd	199,148
EMCO Corporation	45,044
Emelle's Catering Ltd	47,650
Entity Mechanical Ltd	871,282
Envyrozone Inc	51,211
EPI Ecoplan International Inc	85,286
Equiparc	26,749
ESC Automation Inc	630,885
ESI Acquisition Inc	36,443
Esri Canada Ltd	212,203
Eurovia British Columbia Inc	116,190

*Payment includes tax transfers and third party remittances

Statement of Payments to Suppliers for Goods and Services
in Excess of \$25,000 for 2022

Section 7

Supplier Name	Payment Amount
Everbridge Inc	62,114
EXP Services Inc	34,436
Extreme Glass Ltd	72,915
Falcon Equipment Ltd	150,197
Family Services Employee Assistance Program	139,984
Faulknerbrowns Architecture Inc	30,612
Finning (Canada)	430,622
Fireball Excavating & Transport Inc	210,258
First Light Energy Solutions Ltd	34,800
Fitness Town	54,121
Flir Unmanned Aerial Systems ULC	53,504
Flocor Inc	816,361
Foreseeson Technology Inc	882,378
Forgerock US, Inc	170,457
Fort Modular Inc	59,408
FortisBC - Natural Gas	918,129
FortisBC Energy Inc	201,807
Fountain Tire (Delta) Truck Centre Ltd	105,769
Fraser River Pile and Dredge Ltd	103,674
Fraser Valley Equipment Ltd	49,508
Fred Surridge Ltd	1,759,358
G B Bobcat Service	212,063
G. P. Rollo & Associates Ltd	43,000
Power Vac	60,559
Gardaworld Cash Services Canada Corp	229,630
GCL Contracting Inc	4,345,174
George Faulkner Productions Inc	33,751
GFL Environmental Inc	3,605,648
GHD Digital (Canada) Ltd	31,030
Gibson Waterworks Supply Inc	62,420
Glacier Media Group	89,644
Gladiuk Contracting Ltd	326,417
Glasshouse Systems Inc	61,372
Global Industrial Canada Inc	52,276
Golder Associates Ltd	31,860
Goodyear Canada Inc	92,005
GPM Civil Contracting Inc	578,577
Granicus Canada Holdings ULC	124,149
Greater Vancouver Regional District*	41,535,008

*Payment includes tax transfers and third party remittances

Statement of Payments to Suppliers for Goods and Services
in Excess of \$25,000 for 2022

Section 7

Supplier Name	Payment Amount
Greater Vancouver Water District	26,306,200
Green Admiral Nature Restoration	48,510
Gregg Distributors Ltd	295,932
Guillevin International Inc	84,824
Habitat Systems Inc	92,706
Haddon	25,752
Hallmark Painting & Constructions Ltd	29,125
Hanscomb Ltd	47,415
Harris & Company LLP	307,443
HDR Architecture Associates Inc	801,067
Heatherbrae Builders Co. Ltd	2,659,864
Hemmera Envirochem	46,342
Heritage Office Furnishings Ltd	241,681
Hi-Cube Storage Products	52,386
High Road Excavating Ltd	144,738
Holaco Construction Ltd	371,854
Homelessness Services Association of BC	42,158
Hooker Craig Lum Group Ltd	34,050
Horizon Landscape Contractors Inc	59,501
Horseshoe Star Holdings Ltd	31,512
HUB Fire Engines & Equipment Ltd	44,110
HUB Surface Systems West Inc	31,991
Humphries Construction Group Ltd	42,656
Hunter McCorquodale	51,531
iA Private Wealth Inc	72,200
ICONIX Waterworks LP	352,216
Ideaspace Consulting Inc	67,208
IDRS	143,893
Image Sign & Lighting Ltd	119,672
Imperial Parking Canada Corporation	113,105
Industrial Machine Inc	28,749
Infor Canada Ltd	190,451
Inland Kenworth	63,849
Insights Learning And Development	28,558
Integral Group	33,004
Intercontinental Truck Body (BC) Ltd	38,665
Interprovincial Traffic Service Ltd	265,321
iON United Inc	108,627
Iridia Medical Inc	46,550

*Payment includes tax transfers and third party remittances

Statement of Payments to Suppliers for Goods and Services
in Excess of \$25,000 for 2022

Section 7

Supplier Name	Payment Amount
Iron Mountain Canada Corp	41,374
ISCO Canada Inc	42,490
ISL Engineering and Land Services Ltd	334,595
Island Key Computer Ltd	92,255
J & T Sports	28,784
JJM Construction Ltd	248,995
Jack Cewe Construction Ltd	2,145,237
Jarislowsky Fraser Ltd	120,000
Jensen Hughes Consulting Canada Ltd	27,462
Johnston Ross & Cheng Ltd	72,841
JSP Enterprises	90,246
Justice Institute of BC	28,342
Kal Tire	29,098
Kaleidoscope Training and Consulting	51,750
Keg Restaurants Ltd	36,652
Kennedy Landscaping Ltd	29,700
Kerr Wood Leidal Associates Ltd	834,464
Kinsol Timber Systems Ltd	32,346
KMS Tools Web	33,019
Konecranes Canada Inc	52,556
KPMG LLP	117,102
Kronos Canadian Systems Inc	36,211
KSB Pumps Inc	33,554
Kutny's Richmond Soils	84,672
Lafarge Canada Inc	3,209,196
Lafrentz Road Marking	45,164
Lamar Companies	31,753
Lanesafe Traffic Control Ltd	137,172
Langley Concrete Group	36,011
Lantern Films Inc	30,905
Latoplast Ltd	33,300
Lawson Lundell LLP	80,098
Layfield Canada Ltd	188,334
LEC Group	33,863
Linde Canada Inc	102,939
LIT Aquatics Ltd	403,663
Lordco Parts Ltd	140,482
LTS Pro Sound & Lighting	28,199
Lucidea Technologies Corp	28,376

*Payment includes tax transfers and third party remittances

Statement of Payments to Suppliers for Goods and Services
in Excess of \$25,000 for 2022

Section 7

Supplier Name	Payment Amount
Luma Tech Solutions Canada	27,860
Luxton Construction Marine Inc	68,600
M. Van Noort & Sons Bulb Co. Ltd	37,698
M2K Construction Ltd	1,320,983
Macaulay Trucking Ltd	294,732
Mainland Construction Materials ULC	494,713
Mainland Ford Ltd	427,307
Mainroad Maintenance Products	216,233
Maple Leaf Disposal Ltd	90,890
Maple Leaf Tree Movers	27,605
Marathon Surfaces Inc	25,823
Marine Roofing Repair & Maintenance	146,706
Mar-Tech Underground Services Ltd	129,162
Maven Consulting Limited	115,333
Maydanyk Trucking Ltd	120,829
Mazdis Innovation Inc	32,830
McElhanney Consulting Services Ltd	895,244
Mcgregor Hardware Distribution	27,088
McRae's Environmental Services Ltd	2,410,870
Medteq Solutions CA Ltd	51,973
Megasecur Securite Environnementale Inc	393,979
Meltwater News Canada Inc	25,400
Merletti Construction (1999) Ltd	159,449
Metro Motors Ltd	205,767
Metro Vancouver Regional District	5,957,309
Metrosystems	35,526
MG Collision Repairs Ltd	47,170
Mickelson Consulting Inc	95,341
Mills Office Productivity	285,691
Min, Ines	48,260
Minister of Finance*	170,520,774
Minoru Seniors Society	67,188
Miza Architects Inc	32,522
MKW Engineering Services	91,926
Modern Niagara Vancouver Inc	189,215
Morrison Hershfield Ltd	149,178
MPT Engineering Co Ltd	67,670
Multivista Construction Documentation ULC	54,249
Mundie Trucking	141,358

*Payment includes tax transfers and third party remittances

Statement of Payments to Suppliers for Goods and Services
in Excess of \$25,000 for 2022

Section 7

Supplier Name	Payment Amount
Municipal Finance Authority of BC*	34,912
Municipal Insurance Association of BC	1,130,669
Municipal Pension Plan*	24,878,562
Musco Sports Lighting Canada Co	33,849
Myhsa Ltd	480,000
NAPA Auto Parts	60,334
Nedco	142,187
Neptune Technologie Group	170,955
Network Consulting Services Inc	60,526
West Consulting Services	112,048
Noble Langley	25,843
Norton Rose Fulbright Canada LLP	1,098,483
Nova Pole International Inc	56,026
Nutech Facility Services Ltd	453,220
Nutrien Ag Solution	192,776
O4 Architecture Ltd	217,912
Oasis Bags	31,561
Ocean Pipe	148,234
Olthuis van Ert	330,298
Onix Networking Canada	66,697
Ono Work & Safety Ltd	26,456
Open Text Corporation	225,908
Opta Information Intelligence	55,000
Oracle Canada ULC	464,272
Organized Crime Agency of BC	103,040
Oris Development (Cambie) Corp	576,318
P D Trucking	144,565
Pace Solutions Corporation	32,087
Pacific Blue Cross*	5,992,743
Pacific Cutting & Coring Ltd	262,838
Pacific Ropes Contracting Ltd	370,369
Parsons Inc	118,013
Paul Sahota Trucking	185,914
PCL Constructors Westcoast Inc	4,913,210
Peel's Nurseries Ltd	63,922
Perfectmind Inc	283,830
Performance Objects Inc	40,125
Peterbilt Pacific Inc	454,584
Petro-Canada	30,126

*Payment includes tax transfers and third party remittances

Statement of Payments to Suppliers for Goods and Services
in Excess of \$25,000 for 2022

Section 7

Supplier Name	Payment Amount
Pickering Safety	92,211
Pinchin Ltd	27,452
Pinton Forrest & Madden Group Inc	68,250
Pit Stop Portable Toilet Services Ltd	68,883
PitneyWorks	90,000
PJB Mechanical Plumbing & Heating	389,956
PJS Systems	28,361
Plan Group	117,897
Polymetis Projects	250,000
Powerland Computers Ltd	32,767
PrairieCoast Equipment	51,035
Premier Security Inc	55,177
Profire Emergency Equipment Inc	27,729
PS Traffic Pro Services (2012) Inc	118,412
Purtech Service Group Inc	26,324
PW Trenchless Construction Inc	429,226
Qualichem Industrial Products	332,583
R. F. Binnie & Associates Ltd	457,470
Radical I/O Technology Inc	329,410
Ramez Faizan Enterprises Ltd	40,250
Read Jones Christoffersen Ltd	60,202
Receiver General For Canada*	50,442
Receiver General for Canada (RCMP)	64,153,585
Redwood Plastics And Rubber	36,349
Renov8t.com Construction Inc	301,801
Reshape Infrastructure Strategies Ltd	33,613
RGC Trucking & Excavating Ltd	47,101
Richardson, Jaynellen	32,516
Richelieu Hardware Ltd	28,811
Richmond Air Sweep Enterprises 1986 Inc	29,281
Richmond Building Supply	56,826
Richmond Firefighter Assn RFFA Local 1286*	748,825
Richmond Fitness & Wellness Association	113,161
Richmond Hotel Association*	642,799
Richmond Potters' Club	30,015
Ricoh Canada Inc	26,871
River White Homes Ltd	2,127,417
Rivera, Laura	29,269
Roadway Traffic Products	100,736

*Payment includes tax transfers and third party remittances

Statement of Payments to Suppliers for Goods and Services
in Excess of \$25,000 for 2022

Section 7

Supplier Name	Payment Amount
Rocksolid Landsculpting Corporation	30,099
Rollins Machinery Ltd	104,668
RONA	33,813
Royal Bank of Canada*	58,968
Royal Roads University	150,650
RTR Terra Contracting Ltd	3,603,198
Rusty's Auto Towing	26,191
S.I. Systems Partnership	109,700
Safe & Sound Security Systems Ltd	518,026
Safe Software Inc	26,750
Samaritan Technologies	29,894
Sandhu, Dalip	174,512
School District 38 Richmond*	1,150,767
Scott Construction Management Ltd	149,429
Scott Special Projects Ltd	551,110
Seasons Contracting Ltd	27,540
Secure Energy	88,549
Seeclixfix	28,077
Seismic 2000 Construction Ltd	123,823
Shaw Cablesystems GP	25,771
Sherine Industries Ltd	58,466
Sierra Waste Services Ltd	10,237,510
Slip Tube Enterprises Ltd	93,611
Smartcity ITS	48,462
Softchoice LP	52,652
Solid Caddgroup Inc.	44,508
Solid General Contractors Inc	206,291
South Arm Excavating	379,914
South Coast British Columbia	3,960,869
Special T Cleaning (2012) Ltd	46,650
Specimen Trees Wholesale Nurseries Ltd	111,548
SSQ Insurance Company Inc*	48,441
Stantec Consulting Ltd	268,697
Staples	26,494
Steer Davies Gleave North America	78,668
Stonhard	50,000
Stormtec Filtration Inc	87,133
Strata Plan E3676Rea - Cadence Rea	29,856
Studio Hub Architects Ltd	50,264

*Payment includes tax transfers and third party remittances

Statement of Payments to Suppliers for Goods and Services
in Excess of \$25,000 for 2022

Section 7

Supplier Name	Payment Amount
Summit Valve And Controls	26,217
Sunbelt Rentals	50,877
Suncor Energy Products Partnership	2,366,359
Sunrise Washroom Rentals	30,173
Super Save Disposal Inc	245,482
Superior Propane Inc	103,230
Sutton Road Marking Ltd	25,000
Tangerine Traffic Control Ltd	35,934
Target Products Ltd	31,316
Tec Floor Coverings Ltd	46,405
Technical Safety BC	45,049
Telus Communications Inc	1,311,585
Telus Mobility	487,884
Terminix Canada	27,423
Textile Artcraft Inc	54,585
The AME Consulting Group Ltd	43,279
The Blumarble Management Group Inc	29,000
The Corker Collective Inc	31,500
The Driving Force Inc	135,008
The F. A. Bartlett Tree Expert Company	34,370
The Gordian Group, Inc	29,060
The Home Depot	158,418
The Salvation Army Richmond	95,310
Thibault Gates And Access Control Ltd	48,365
Thinkspace Architecture Planning	125,808
Thomas Trucking	236,468
Tibco Software Ireland Ltd	783,611
Tinbox Energy Software	37,253
Titan Sport Systems Ltd	165,375
TK Graphics	37,762
TLD Computers Inc	25,888
TMC IT and Telecom Consulting Inc	37,000
Tourism Richmond*	4,364,754
Trane Canada	271,208
Trans Canada Traffic Inc	44,831
TransLink*	44,788,547

*Payment includes tax transfers and third party remittances

Statement of Payments to Suppliers for Goods and Services
in Excess of \$25,000 for 2022

Section 7

Supplier Name	Payment Amount
Tricom Building Maintenance Ltd	30,228
Tritech Group Ltd	542,152
Turning Point Recovery Society	347,262
Turning Point Technology Services Inc	700,128
Twining, Short & Haakonson, Barristers	42,233
UBS Industries	32,675
Uline Canada Corporation	139,733
Ulmer Contracting Ltd	1,050,996
Ultima Medical Services Inc	43,427
Unified Alloys	32,443
Union of BC Municipalities*	25,404
United Rentals	87,066
Uno Digital Screen Press	36,460
Upanup	119,698
Urban Systems Ltd	43,118
V Distribution Sport	28,000
Vancouver Coastal Health Authority	118,839
Vancouver Sign Group	25,698
Vanport Enterprises Ltd	297,199
VDZ+A Consulting Inc	71,412
Ventana Construction Corporation	30,060
VFA Canada Corporation	54,896
Victoria Mobile Radio Ltd	43,711
Vimar Equipment Ltd	420,473
Walker, Aubrey	27,304
Walker's Gradall Services Ltd	350,248
Walsh Plastics Ltd	31,632
Wasp Manufacturing Ltd	58,813
Wedler Engineering	32,472
West Coast Elevator Ltd	152,529
Westcoast Drainage & Contracting	140,644
Western Weed Control Ltd	151,783
Westerra Equipment LP	34,357
Westpac Solutions Ltd	60,459
Westview Sales Ltd	270,706
WFR Wholesale Fire & Rescue Ltd	32,441
White Cap Supply Canada Inc	111,922
Wilco Civil Inc	7,053,153
Willis Canada Inc	3,005,246

*Payment includes tax transfers and third party remittances

Statement of Payments to Suppliers for Goods and Services
in Excess of \$25,000 for 2022

Section 7

Supplier Name	Payment Amount
Winvan Paving Ltd	77,925
Wong's Greenhouse & Nursery	36,500
Work Truck West	94,582
WorkSafe BC	4,887,024
WSP Canada Inc	227,155
Wurth Canada	76,704
Xerox Canada Ltd	142,073
Xylem Canada LP	665,538
Young Anderson Barristers & Solicitors	122,067
Zeemac Vehicle Lease Ltd	472,710
Zimny, Roman	26,100
Payments Over \$25,000	617,106,824
Payment Under \$25,000	8,942,212
Total Payments	\$ 626,049,036

The City prepares the Schedule of Payments to Suppliers For Goods and Services based on actual cash disbursements processed through its financial system.

The total figure will vary from the expenditures shown in the consolidated financial statements which use

- Timing differences between the cash basis and accrual method;
- There are disbursements that are not considered expenditures for other taxing authorities and
- The Schedule of Payments excludes the payments made by the Richmond Public Library,
- There are payments that are externally recovered, these recoveries are recorded against

*Payment includes tax transfers and third party remittances

CITY OF RICHMOND
Statement of Grants and Subsidies for 2022

Section 7

Organization	Payment Amount
Alfred B. Dixon Elementary School	\$ 1,244
Amyotrophic Lateral Sclerosis Society	4,092
Arison Yue Opera Society	3,800
Atira Women's Resource Society	14,376
BC Kitefliers' Association	900
BC Muslim School Richmond	1,738
BC Philharmonic Society	4,550
Be The Change Earth Alliance	1,750
Bevan, Wesley	1,157
Big Brothers of Greater Vancouver	6,000
Big Sisters of BC Lower Mainland	4,000
Birds Canada	2,300
Boys & Girls Clubs of South Coast BC	6,650
Bradley-Tse, Macaela	500
British Columbia Chinese Soccer	912
Canada Chinese Performing Arts Society	4,550
Canadian International Dragon Boat	3,250
Canadian Mental Health Association	10,000
Canadian YC Chinese Orchestra	6,587
Chabad Richmond	1,536
Chimo Community Services	50,000
Chiu, Fei Fei	1,422
Chiu, Wilson	1,363
Chow, Chee Vui	392
Church on Five	1,541
Cinevolution Media Arts Society	9,100
City Centre Community Association	46,730
Coastal Partners in Conservation Society	2,500
Community Arts Council of Richmond	10,663
Community Mental Wellness Association	12,000
Connections Community Services Society	14,650
Dao, Tu	1,374
Daum, Aniela	1,090
Diefenbaker Elementary School PAC	1,225
Dolotallas, Amy	1,217
East Richmond Community Association	3,348
Family Services of Greater Vancouver	25,956
Freedman, Deborah	954
Garden City Conservation Society	3,962

CITY OF RICHMOND
Statement of Grants and Subsidies for 2022

Section 7

Organization	Payment Amount
General Currie Elementary School PAC	1,580
Glen, Sarah	1,048
Goan Overseas Association	854
Greater Vancouver Law Students' Legal Advice Society	2,500
Green Seeds Music Society	2,500
Green Teams Of Canada	2,500
Haer, Corrine	1,383
Hamilton Community Association	12,104
Heart of Richmond Aids Society	13,033
Howard Debeck Elementary School PAC	1,323
HUB Cycling	75,810
James Gilmore Elementary School	810
Kavanagh, Patricia	1,541
Kidsport - Richmond Chapter	19,000
Kwantlen Farmers Market Society	7,140
Lai, Ian	2,500
Lieu, Justin	616
Little Wings Day Care Centre Society	13,186
London Heritage Farm Society	1,650
Lu, Hui	813
Ma, Guang	909
Matheson, Donna	1,384
Matuguina, Venus	516
Minoru Seniors Society	5,000
Multicultural Helping House Society	5,000
Nathorst, David	488
Open Green Building Society	12,500
Our Saviour Lutheran Church	1,422
Parish of St. Alban's (Richmond)	22,000
Pathways Clubhouse	35,027
Plea Community Services Society of BC	5,000
Rabbitats Rescue Society	2,500
Ramsey, Kaayla	1,338
Richmond Addiction Services Society	226,860
Richmond Agricultural & Industrial	20,000
Richmond Allotment Gardens Association	768
Richmond Art Gallery Association	53,848
Richmond Arts Coalition	9,100
Richmond Cares Richmond Gives	44,581

CITY OF RICHMOND
Statement of Grants and Subsidies for 2022

Section 7

Organization	Payment Amount
Richmond Centre For Disability	187,474
Richmond Chamber of Commerce	1,750
Richmond City Centre Community	1,000
Richmond Community Band Society	2,052
Richmond Community Orchestra & Chorus	7,600
Richmond Cosom Floor Hockey Association	1,304
Richmond Delta Youth Orchestra	9,100
Richmond Family Place Society	40,592
Richmond Fitness & Wellness Association	16,023
Richmond Food Security Society	13,501
Richmond Garden Club	3,050
Richmond Gateway Theatre Society	1,398,442
Richmond Jewish Day School	1,055
Richmond Kiwanis Senior Citizens Housing	1,718
Richmond Mental Health Consumer and Friends Society	6,500
Richmond Multicultural Community	18,086
Richmond Museum Society	22,000
Richmond Music School Society	10,000
Richmond Potters' Club	7,000
Richmond Poverty Reduction Coalition	5,000
Richmond School District No. 38	66,589
Richmond Secondary Green Team	2,500
Richmond Singers	9,182
Richmond Society for Community Living	35,757
Richmond Therapeutic Riding Association	63,457
Richmond Women's Resource Centre	29,000
Richmond Youth Choral Society	7,600
Rogers, Erica	545
Sagert, Alexander	1,580
Sea Island Community Association	4,558
Sharing Farm Society	30,066
Somali Women's Empowerment Society	1,000
South Arm Community Association	1,442
Spul'u'Kwuks Elementary School PAC	1,343
St. Alban's Anglican Church	1,600
St. Joseph The Worker Parish	1,659
Steveston Community Society	38,674
Steveston Farmers & Artisans Market	6,670
Steveston Historical Society	40,617

CITY OF RICHMOND
Statement of Grants and Subsidies for 2022

Section 7

Organization	Payment Amount
Steveston Society of Children's Centres	1,088
Stroud, Lica	569
Summer Grant Committee	4,764
Terra Nova Nature School	2,500
Textile Arts Guild of Richmond	1,867
The BC Muslim Association	1,560
The Governing Council of the Salvation Army in Canada	6,138
The Kehila Society of Richmond	5,000
Thompson Community Association	1,402
Tickle Me Pickle Theatre Sports	4,550
Tom, Ian	734
Tomsett Elementary School PAC	1,560
Touchstone Family Association	105,700
Truong, Patrick	1,304
Turning Point Recovery Society	15,000
Urban Bounty	11,856
Vancouver Cantonese Opera	4,550
Walter Lee Parents Advisory Council	1,356
West Richmond Community Association	6,045
William Bridge Elementary School	967
Zhong, Rosanna	727
Total Payments	\$ 3,155,827



**Richmond Zoning Bylaw 8500
Amendment Bylaw 9586 (RZ 2014-667707)
8100 No. 5 Road**

The Council of the City of Richmond, in open meeting assembled, enacts as follows:

1. The Zoning Map of the City of Richmond, which accompanies and forms part of Richmond Zoning Bylaw 8500, is amended by repealing the existing zoning designation for the westerly 110 m from No. 5 Road of the following area and by designating it **"ASSEMBLY (ASY)"**:

P.I.D. 003-413-110

Lot 2 Except: The South 115 Feet; Block "A" of Section 19, Block 4 North, Range 5 West, New Westminster District Plan 4090.

2. This Bylaw may be cited as **"Richmond Zoning Bylaw 8500, Amendment Bylaw 9586"**.

FIRST READING

OCT 11 2016

A PUBLIC HEARING WAS HELD ON

NOV 21 2016

SECOND READING

NOV 21 2016

THIRD READING

NOV 21 2016

OTHER CONDITIONS SATISFIED

JUN 14 2023

ADOPTED

MAYOR

CORPORATE OFFICER





City of Richmond

Bylaw 10432

Richmond Zoning Bylaw 8500 Amendment Bylaw (RZ 22-014680) 11431 Williams Road

The Council of the City of Richmond, in open meeting assembled, enacts as follows:

1. The Zoning Map of the City of Richmond, which accompanies and forms part of Richmond Zoning Bylaw 8500, is amended by repealing the existing zoning designation of the following area and by designating it **“COMPACT SINGLE DETACHED (RC2)”**.

P.I.D 004-009-126

Lot 14 Block 1 Section 25 Block 4 North Range 6 West New Westminster Plan 18935

2. This Bylaw may be cited as **“Richmond Zoning Bylaw 8500, Amendment Bylaw 10432”**.

FIRST READING

A PUBLIC HEARING WAS HELD ON

SECOND READING

THIRD READING

OTHER CONDITIONS SATISFIED

ADOPTED

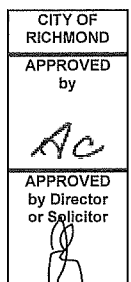
DEC 12 2022

JAN 23 2023

JAN 23 2023

JAN 23 2023

JUN 14 2023

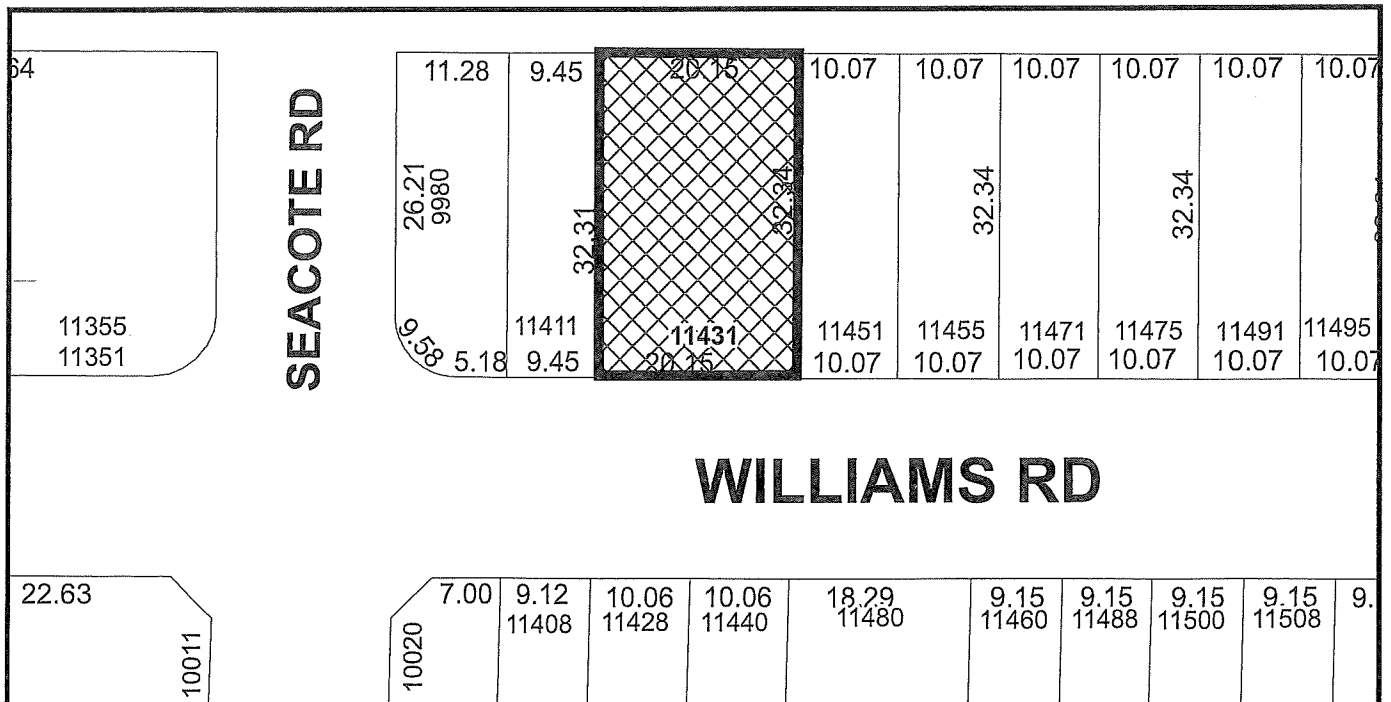
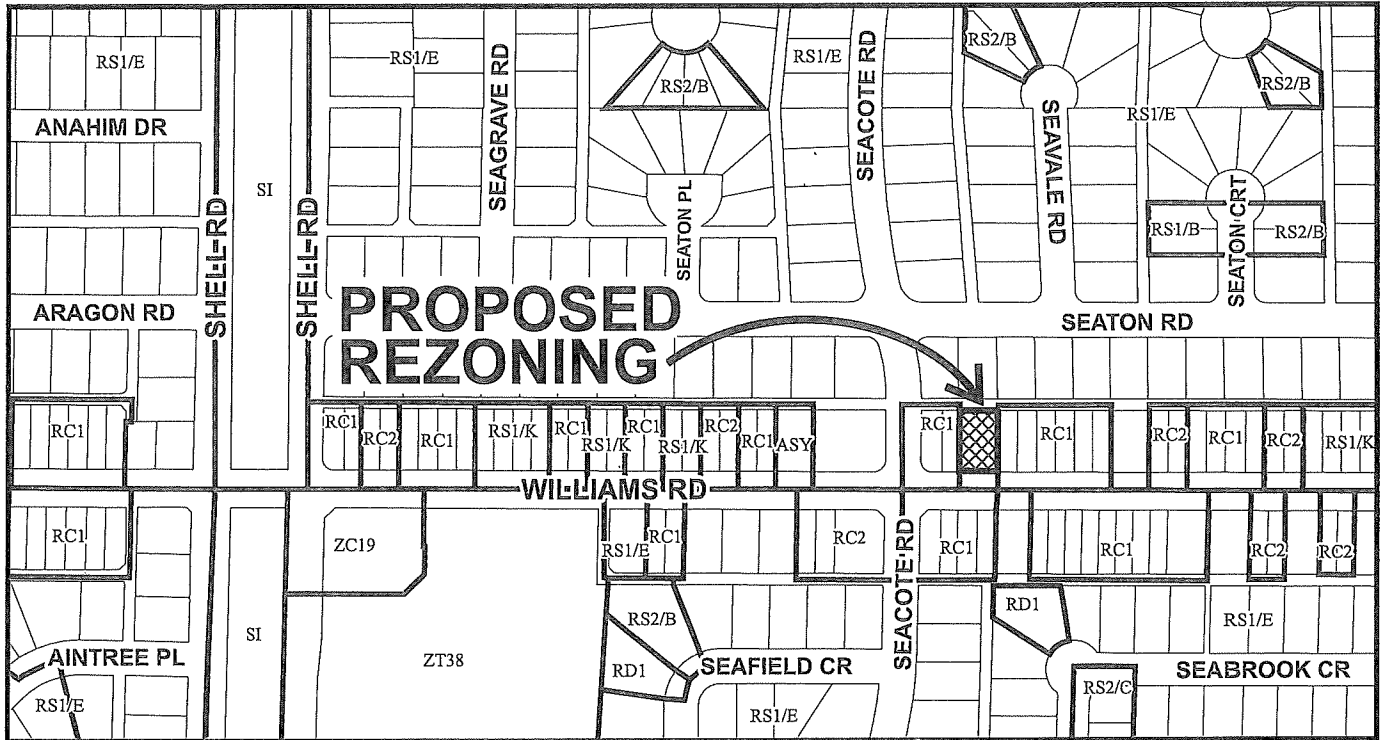


MAYOR

CORPORATE OFFICER



City of Richmond



RZ 22-014680

Original Date: 06/16/22

Revision Date: 11/02/22

Note: Dimensions are in METRES

GNCL-705



City of Richmond

Bylaw 10444

Business Regulation Bylaw No. 7538, Amendment Bylaw No. 10444

The Council of the City of Richmond enacts as follows:

1. That Business Regulation Bylaw No. 7538, as amended, is further amended by adding the following address in Schedule A item 17:

Civic Address	Civic Number	Original Bylaw Reference
16. No 3 Road	4411 Unit 111	10444

And renumbering the rest of the remaining items in Schedule A in numerical order, and;

2. Remove "***6631 Sidaway Road – exempted from Zoning Bylaw" from Schedule A.
3. This Bylaw is cited as "**Business Regulation Bylaw No. 7538, Amendment Bylaw No. 10444**".

FIRST READING

MAY 23 2023

SECOND READING

MAY 23 2023

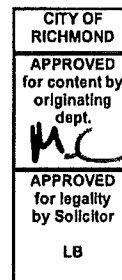
THIRD READING

MAY 23 2023

LEGAL REQUIREMENTS SATISFIED

JUN 24 2023

ADOPTED



MAYOR

CORPORATE OFFICER



**Growing Communities Reserve
Fund Establishment Bylaw No. 10466**

WHEREAS:

A. Section 188(1) of the *Community Charter* authorizes Council to establish a reserve fund for a specified purpose and direct that money be placed to the credit of the reserve fund;

B. Council wishes to establish a reserve fund for the purposes described in this bylaw;

The Council of the City of Richmond enacts as follows:

1. The Growing Communities Reserve Fund is hereby established.
2. Any and all amounts in the Growing Communities Reserve Fund, including any interest earned and accrued, may be used and expended solely for eligible costs in accordance with the terms of the provincial Growing Communities Fund.
3. If any section, subsection, paragraph, clause or phrase of this bylaw is for any reason held to be invalid by the decision of a court of competent jurisdiction, such decision does not affect the validity of the remaining portions of this bylaw.

This Bylaw is cited as “**Growing Communities Reserve Fund Establishment Bylaw No. 10466**”.

FIRST READING

JUN 12 2023


SECOND READING

JUN 12 2023

THIRD READING

JUN 12 2023

ADOPTED

CITY OF RICHMOND
APPROVED for content by originating dept.

APPROVED for legality by Solicitor
BRB

MAYOR

CORPORATE OFFICER



**Development Permit Panel
Wednesday, June 14, 2023**

Time: 3:30 p.m.

Place: Remote (Zoom) Meeting

Present: Cecilia Achiam, General Manager, Community Safety, Acting Chair
John Hopkins, Acting General Manager, Planning and Development
James Cooper, Director, Building Approvals

The meeting was called to order at 3:30 p.m.

MINUTES

It was moved and seconded

That the minutes of the meeting of the Development Permit Panel held on Wednesday, May 10, 2023, be adopted.

CARRIED

1. DEVELOPMENT PERMIT 21-935984
(REDMS No. 7106166)

APPLICANT: Gordon Chan

PROPERTY LOCATION: 12551 No. 1 Road

INTENT OF PERMIT:

1. Permit the replacement of all the existing single-glazed windows with new double-glazed windows, the replacement of two doors on the front (north) elevation and the removal of the overhead garage door on the rear (south) elevation at 12551 No. 1 Road; and
2. Vary the provision of Richmond Zoning Bylaw 8500 to reduce the minimum front yard setback to the garbage and recycling enclosure from 3.0 m to 0 m.

Development Permit Panel

Wednesday, June 14, 2023

Applicant's Comments

Gordon Chan, McCuaig and Associates Engineering, with the aid of a visual presentation (attached to and forming part of these minutes as Schedule 1), provided background information on the proposal, including its site context and site layout, proposed changes to the existing Fisheries and Oceans Canada office building, proposed accessory structure, and proposed materials and colours, highlighting the following:

- the existing single-glazed windows will be replaced with new aluminum windows with double-glazed security glazing;
- the two existing single-pane glass doors will be replaced with double-pane glass doors;
- the overhead door at the south elevation will be removed and infilled with vinyl siding that matches the existing siding;
- a new garbage and recycling enclosure will be installed at the northwest corner of the property; and
- the materials and colours for the proposed changes are consistent with the character of the existing building.

Staff Comments

Wayne Craig, Director, Development, noted that (i) the proposed replacement of doors and windows would improve the overall appearance and energy efficiency of the building, (ii) the proposal was reviewed and endorsed by the Richmond Heritage Commission, and (iii) staff support the proposed front yard setback variance as the new garbage and recycling enclosure would enhance the appearance of the streetscape.

Panel Discussion

In reply to a query from the Panel, Mr. Craig confirmed that (i) the encroachment of the existing parking area of the subject property onto City land will be dealt with separately, and (ii) there is no issue with the height of the proposed garbage and recycling enclosure.

Correspondence

Sigrid Stobie, 139-4280 Moncton Street (Schedule 2)

Mr. Craig noted that Ms. Stobie sought more information regarding the proposal but did not express any concerns. Also, he stated that staff contacted Ms. Stobie and was provided background information on the proposal.

Gallery Comments

None.

Development Permit Panel

Wednesday, June 14, 2023

Panel Discussion

The Panel expressed support for the project, noting that the proposed changes to the existing office building and the proposed garbage and recycling enclosure would enhance the overall appearance of the building and the streetscape.

Panel Decision

It was moved and seconded

That a Development Permit be issued which would:

- 1. permit the replacement of all the existing single-glazed windows with new double-glazed windows, the replacement of two doors on the front (north) elevation and the removal of the overhead garage door on the rear (south) elevation at 12551 No. 1 Road; and*
- 2. vary the provision of Richmond Zoning Bylaw 8500 to reduce the minimum front yard setback to the garbage and recycling enclosure from 3.0 m to 0 m.*

CARRIED

2. DEVELOPMENT PERMIT 21-936149

(REDMS No. 7049603)

APPLICANT: Gradual Architecture Inc.

PROPERTY LOCATION: 6520 Williams Road

INTENT OF PERMIT:

1. Permit the construction of eight townhouse units at 6520 Williams Road on a site zoned "Low Density Townhouses (RTL4)"; and
2. Vary the provision of Richmond Zoning Bylaw 8500 to reduce the minimum required lot width from 40.0 m to 36.6 m.

Applicant's Comments

Ian Guan, Gradual Architecture, Inc., with the aid of a visual presentation (attached to and forming part of these minutes as Schedule 3), provided background information on the proposed development including its site context, site layout, architectural design, building elevations, floor plan, and proposed exterior cladding materials, highlighting the following:

- the proposed development consists of eight three-storey townhouse units in two buildings;
- the proposed shared driveway on the subject site will provide vehicular access to and from the subject site and the adjacent future development to the east through a statutory right-of-way secured at rezoning;

3.

Development Permit Panel

Wednesday, June 14, 2023

- each unit will be provided with two parking spaces in the unit's garage, with a side-by-side arrangement for the end units and tandem arrangement for the middle units;
- a rooftop deck is proposed for each of the four end units; and
- large windows are proposed to allow maximum sun exposure to the units, enhance cross ventilation and maximize views to the neighbouring school park.

Denitsa Dimitrova, PMG Landscape Architects, with the aid of the same visual presentation, briefed the Panel on the main landscaping features of the project, noting that (i) landscaping for the project has been designed to incorporate existing trees identified for retention, (ii) the Magnolia tree in the proposed outdoor amenity area will be retained and protected, (iii) all construction works within the tree protection zone will be done under arborist supervision, (iv) the proposed installation of low aluminum transparent fence along the frontage would improve the streetscape, (v) fencing will be installed to provide privacy between units in the proposed development and between the proposed development and adjacent developments, (vi) two pieces of play equipment are proposed for the children's play area for younger children in different age groups providing multiple play opportunities, and (vii) permeable paving treatment is proposed at the site entry and on visitor parking stalls.

Staff Comments

Mr. Craig noted that (i) there is Servicing Agreement associated with the project for frontage works along Williams Road and site servicing connections, (ii) the proposed technical variance associated with the project and related to the site assembly was noted at rezoning and no concerns were expressed, (iii) the project has been designed to achieve the BC Energy Step Code 3, which includes the installation of heat pumps for heating and cooling, and (iv) the heat pump units will comply with the City's Noise Bylaw requirements.

Panel Discussion

In reply to queries from the Panel, the applicant acknowledged that (i) the services of energy consultants will be engaged at the Building Permit stage to confirm the project's compliance with the BC Energy Step Code 3, (ii) appropriate type of heat pumps will be installed to meet with the City's Noise Bylaw requirements, (iii) access to the rooftop decks has been designed to avoid protruding structures on the rooftop, (iv) rooftop decks will only be provided for the end units and are integrated within the roof, (v) all townhouse units are three-bedrooms units with sizes ranging from approximately 1,200 and 1,500 square feet, (vi) the existing grade within the tree protection zone will be maintained to protect the retained trees, and (vii) proposed exterior lighting on building walls will not spill over onto the adjacent school park.

Development Permit Panel

Wednesday, June 14, 2023

In reply to queries from the Panel, Mr. Craig noted that (i) the proposed shared driveway will also provide vehicular access to and from the future development to the east, (ii) the proposed truck turn-around area on the subject site has been designed so that it can be converted to additional outdoor amenity space when it is no longer required should the adjacent property to the east be redeveloped in the future, and (iii) the proposed development will not include secondary suites; however, the applicant is providing a cash-in-lieu contribution to the Affordable Housing Reserve Fund in keeping with the City's Affordable Housing Strategy.

Correspondence

None.

Gallery Comments

None.

Panel Discussion

The Panel expressed support for the project, noting that (i) it provides different sizes of units, and (ii) the proposed design of the project accommodates the future redevelopment of the adjacent property to the east.

Panel Decision

It was moved and seconded

That a Development Permit be issued which would:

1. *permit the construction of eight townhouse units at 6520 Williams Road on a site zoned "Low Density Townhouses (RTL4)"; and*
2. *vary the provision of Richmond Zoning Bylaw 8500 to reduce the minimum required lot width from 40.0 m to 36.6 m.*

CARRIED

3. New Business

None.

4. Date of Next Meeting: June 28, 2023

5.

Development Permit Panel
Wednesday, June 14, 2023

ADJOURNMENT

It was moved and seconded
That the meeting adjourn (4:05 p.m.).

CARRIED

Certified a true and correct copy of the
Minutes of the meeting of the
Development Permit Panel of the Council
of the City of Richmond held on
Wednesday, June 14, 2023.

Cecilia Achiam
Acting Chair

Rustico Agawin
Committee Clerk

**STEVESTON GOCB
12551 NO.1 ROAD**

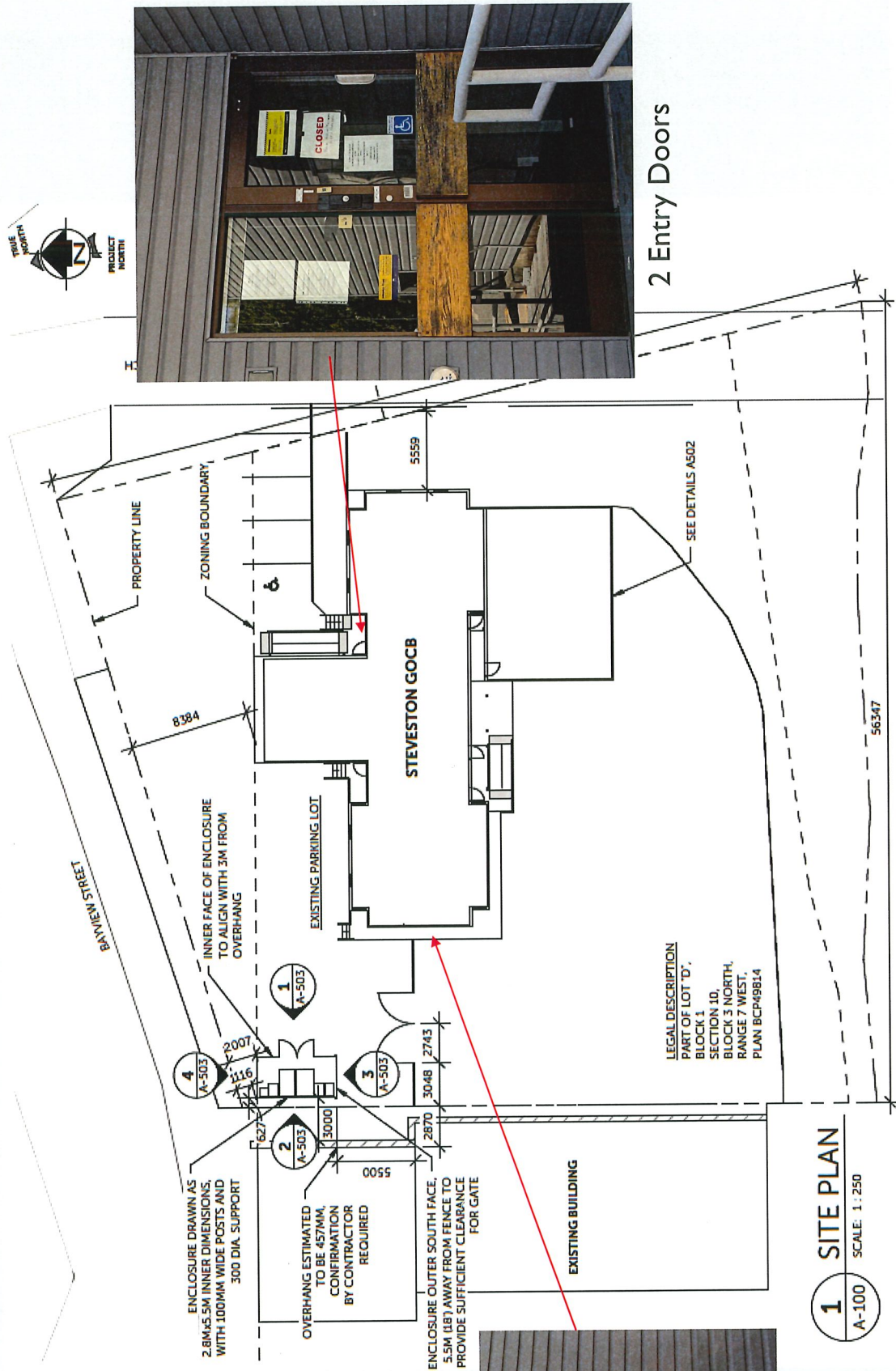
DP21-935984

Replacement of windows, overhead door, infill and garbage
enclosure.

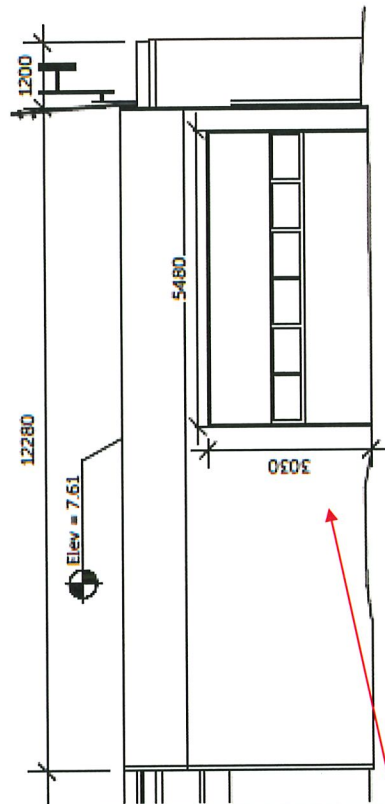
EXISTING CONDITIONS

- Building Area: 407 sq.m site.
- Wood-framed building constructed 1976.
- Existing ramps, steps and stairs are aluminum.
- Guards and handrails are aluminum.
- Exterior cladding is vinyl.



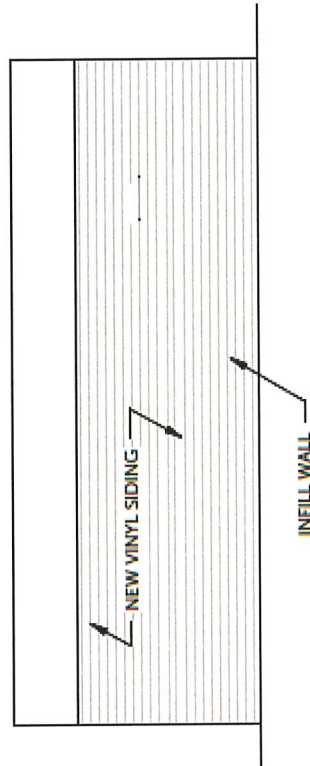


CNCL - 716



EXISTING SOUTH ELEVATION

• NEW VINYL SIDING TO MATCH EXISTING

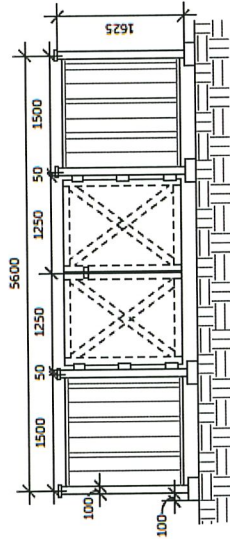


PROPOSED SOUTH ELEVATION

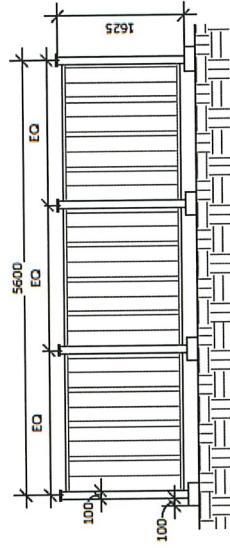


CNCL - 718

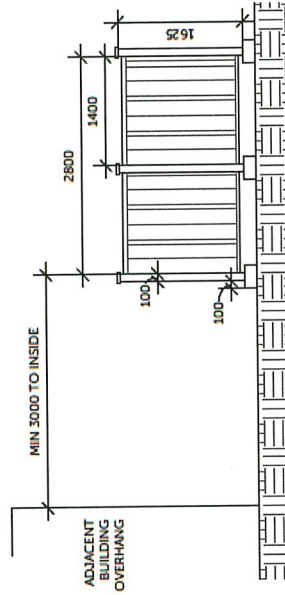
NOTE: NEW ENCLOSURE COLOUR TO BE HARRIS GREY FROM VANCOUVER HERITAGE FOUNDATION HISTORICAL TRUE COLOURS PAINT PALETTE.



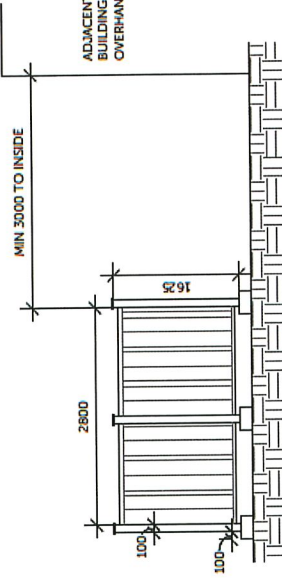
1 EAST ELEVATION
A-503 SCALE: 1:50



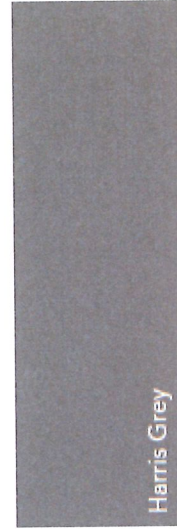
2 WEST ELEVATION
A-503 SCALE: 1:50



3 SOUTH ELEVATION
A-503 SCALE: 1:50



4 NORTH ELEVATION
A-503 SCALE: 1:50



Harris Grey



PROPOSED

- Supply and install new aluminum windows with security glazing
- Remove existing overhead door at south elevation and infill area. Wall to match existing vinyl siding at building.
- New garbage enclosure at northwest corner of property. New enclosure to be metal with colour to be Harris Grey from Vancouver Heritage Foundation Historical True Colours Paint palette.

From: Sigrid Stobie <sigi.stobie@gmail.com>
Sent: June 7, 2023 11:04 AM
To: CityClerk
Subject: Development permit for 12551 No 1 Road

City of Richmond Security Warning: This email was sent from an external source outside the City. Please do not click or open attachments unless you recognize the source of this email and the content is safe.

Helo City Council:

I am completely buffelled by your notice of development of the above address. Is there going to be a new building erected in the area marked on your Notice? I see no garage anywhere in the near vicinity. Are you talking about the existing building re double glazed windows? I am afraid I cannot vote on the information provided.

Yours truly
Sigrid Stobie
#139 - 4280 Moncton St.

PROPOSED 3-STOREY TOWNHOUSE DEVELOPMENT (DP 21-936149)

CNCL - 721

An architectural rendering of a modern multi-story building. The building features a white facade with dark horizontal bands and large windows. A prominent dark horizontal band runs across the middle of the building. The building is surrounded by green landscaping, including trees and a lawn, and a paved area in the foreground.

WILLIAMS RD

DRIVEWAY

BUILDING A

BUILDING B

PROPOSED DEVELOPMENT AT 6580 WILLIAMS ROAD

LONDON PARK

SITE PLAN

GEOMETRIC ELEVATIONS - BLDG 1

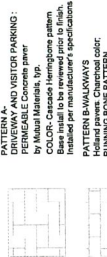
BLDG 1 TO E. ELEV.	15.2 m
BLDG 1 TO S. ELEV.	15.2 m
BLDG 1 TO W. ELEV.	15.2 m
BLDG 1 TO N. ELEV.	15.2 m
BLDG 1 TO E. ELEV.	15.2 m
BLDG 1 TO S. ELEV.	15.2 m
BLDG 1 TO W. ELEV.	15.2 m
BLDG 1 TO N. ELEV.	15.2 m

GEOMETRIC ELEVATIONS - BLDG 2

BLDG 2 TO E. ELEV.	15.2 m
BLDG 2 TO S. ELEV.	15.2 m
BLDG 2 TO W. ELEV.	15.2 m
BLDG 2 TO N. ELEV.	15.2 m
BLDG 2 TO E. ELEV.	15.2 m
BLDG 2 TO S. ELEV.	15.2 m
BLDG 2 TO W. ELEV.	15.2 m
BLDG 2 TO N. ELEV.	15.2 m

SCALE: 1/8" = 1'-0"

PAVING MATERIAL KEY



MAGLIN BENCH - MLEB10M Metal
POWDER COATED
NOTE: ALL FURNITURE TO BE MOUNTED AS PER MANUFACTURER SPECIFICATIONS
Firm equipment by Jambert



LA-100SL (Epoxy-coated, air resistant) L-100SL (Glossy, opaque 31)
NOTE: PLAY EQUIPMENT TO BE INSTALLED OVER EXISTING GRADE.

FENCE KEY



PLANT SCHEDULE

KEY	QTY	BOTANICAL NAME	COMMON NAME	TYPE AND LOCATION BY CITY	PMG PROJECT NUMBER: 17-236
1	2	STREET TREE		TOP GALVAN STEEL BAR	
2	2	STREET TREE		PLANTED SIZE: REMAINS	

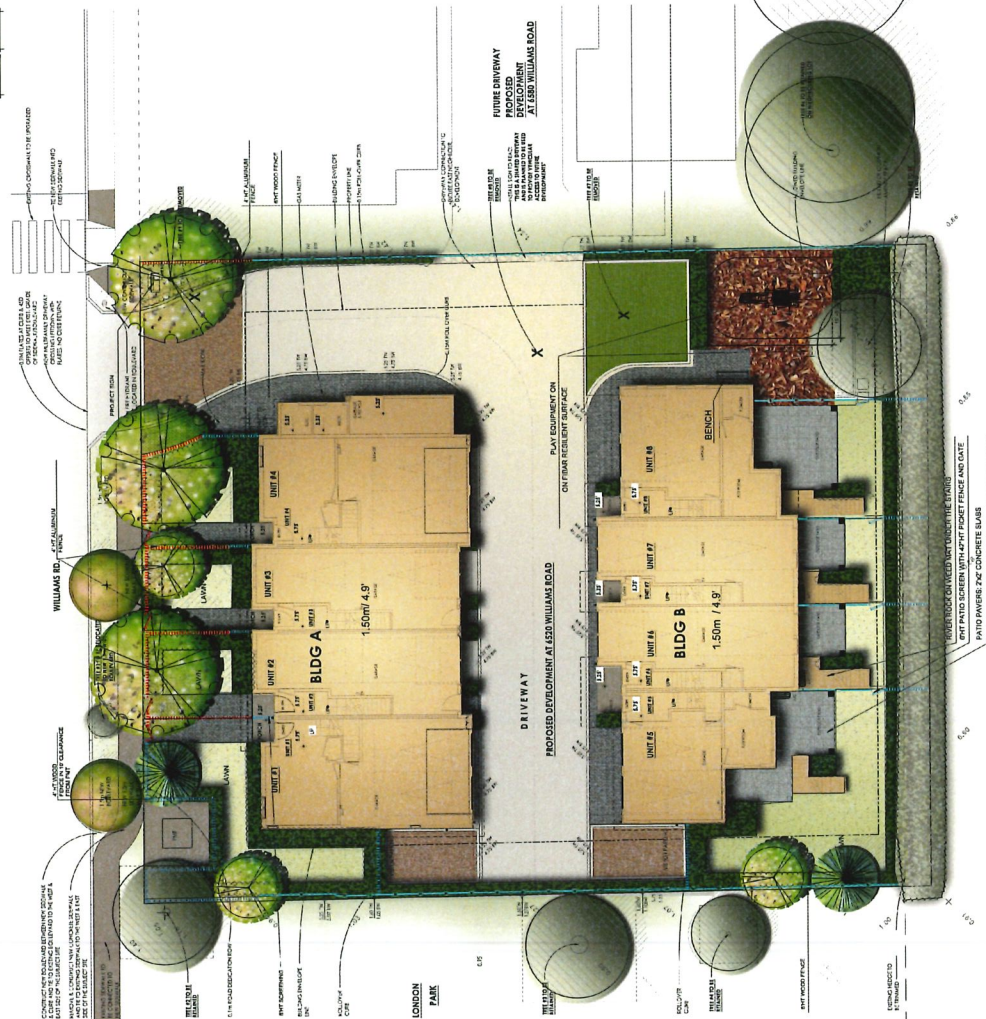
NOTES: "PLANT SIZES IN THIS LIST ARE SPECIFIED ACCORDING TO THE CANADIAN LANDSCAPE STANDARDS LATEST EDITION. CONTAINER SIZES SPECIFIED AS PER CANADA STANDARDS. BOTH PLANT SIZE AND CONTAINER SIZE ARE THE MINIMUM ACCEPTABLE SIZES. REFER TO SPECIFICATIONS FOR DEFINED REVIEW BY LANDSCAPE ARCHITECT AT SOURCE OF SUPPLY. AREA OF SEARCH TO INCLUDE LOWER MAINLAND AND PRASER VALLEY. "SUBSTITUTIONS WILL BE SELECTED. ALLOW A MINIMUM OF FIVE DAYS PRIOR TO DELIVERY FOR REQUEST TO SUBSTITUTE. SUBSTITUTIONS ARE SUBJECT TO APPROVAL BY LANDSCAPE ARCHITECT. ALL PLANT MATERIAL MUST BE PROVIDED FROM CERTIFIED DISEASE FREE NURSERY.

PLANT SCHEDULE

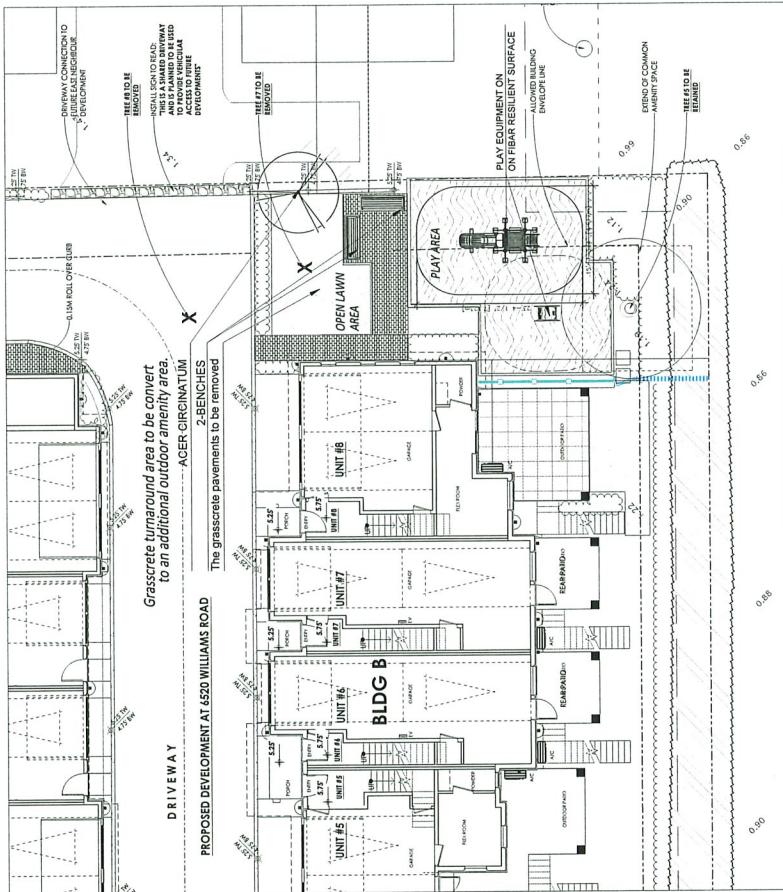
KEY	QTY	BOTANICAL NAME	COMMON NAME	PLANTED SIZE: REMAINS	PMG PROJECT NUMBER: 17-236
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3	2	STREET TREE		PLANTED SIZE: REMAINS	
4	2	STREET TREE		PLANTED SIZE: REMAINS	
5	2	STREET TREE		PLANTED SIZE: REMAINS	
6	2	STREET TREE		PLANTED SIZE: REMAINS	
7	2	STREET TREE		PLANTED SIZE: REMAINS	
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89	2	STREET TREE		PLANTED SIZE: REMAINS	
90	2	STREET TREE		PLANTED SIZE: REMAINS	
91	2	STREET TREE		PLANTED SIZE: REMAINS	
92	2	STREET TREE		PLANTED SIZE: REMAINS	
93	2	STREET TREE		PLANTED SIZE: REMAINS	
94	2	STREET TREE		PLANTED SIZE: REMAINS	
95	2	STREET TREE		PLANTED SIZE: REMAINS	
96	2	STREET TREE		PLANTED SIZE: REMAINS	
97	2	STREET TREE		PLANTED SIZE: REMAINS	
98	2	STREET TREE		PLANTED SIZE: REMAINS	
99	2	STREET TREE		PLANTED SIZE: REMAINS	
100	2	STREET TREE		PLANTED SIZE: REMAINS	

NOTES: "PLANT SIZES IN THIS LIST ARE SPECIFIED ACCORDING TO THE CANADIAN LANDSCAPE STANDARDS LATEST EDITION. CONTAINER SIZES SPECIFIED AS PER CANADA STANDARDS. BOTH PLANT SIZE AND CONTAINER SIZE ARE THE MINIMUM ACCEPTABLE SIZES. REFER TO SPECIFICATIONS FOR DEFINED REVIEW BY LANDSCAPE ARCHITECT AT SOURCE OF SUPPLY. AREA OF SEARCH TO INCLUDE LOWER MAINLAND AND PRASER VALLEY. "SUBSTITUTIONS WILL BE SELECTED. ALLOW A MINIMUM OF FIVE DAYS PRIOR TO DELIVERY FOR REQUEST TO SUBSTITUTE. SUBSTITUTIONS ARE SUBJECT TO APPROVAL BY LANDSCAPE ARCHITECT. ALL PLANT MATERIAL MUST BE PROVIDED FROM CERTIFIED DISEASE FREE NURSERY.

NOTE: PROVIDE DESIGNED BUILD HIGH EFFICIENCY AUTOMATIC IRRIGATION SYSTEM TO I.A.S.C. STANDARDS TO ALL SOFT LANDSCAPE AREAS. SHOP DRAWINGS TO BE REVIEWED AND APPROVED BY LANDSCAPE ARCHITECT PRIOR TO INSTALLATION.



SEAL:



FURNITURE:



MAGLIN BENCH - MERTISUM M801
BLACK COLOR-MATTE FINISH,
POWDER COATED

NOTE: ALL FURNITURE TO BE MOUNTED AS PER MANUFACTURER SPECIFICATIONS
Play equipment by Jamboree



MAGLIN BIKE RACK - MERTISUM M801
BLACK COLOR-MATTE FINISH,
POWDER COATED

NOTE: ALL FURNITURE TO BE MOUNTED AS PER MANUFACTURER SPECIFICATIONS
Play equipment by Jamboree

L-10000 (See schedule for assembly)
NOTE: PLAY EQUIPMENT TO BE INSTALLED OVER EXISTING GRADE

L-10000 (See schedule for assembly)
NOTE: PLAY EQUIPMENT TO BE INSTALLED OVER EXISTING GRADE

PROJECT:
**8 UNIT TOWNHOUSE
DEVELOPMENT**
6520 WILLIAMS ROAD
RICHMOND

DRAWING TITLE:
**FUTURE ADDITIONAL
AMENITY SPACE**

DATE: November 22, 2017
SCALE: 1/8" = 1'-0"
DRAWN: DD
DESIGN: DD
CHKD: PCM

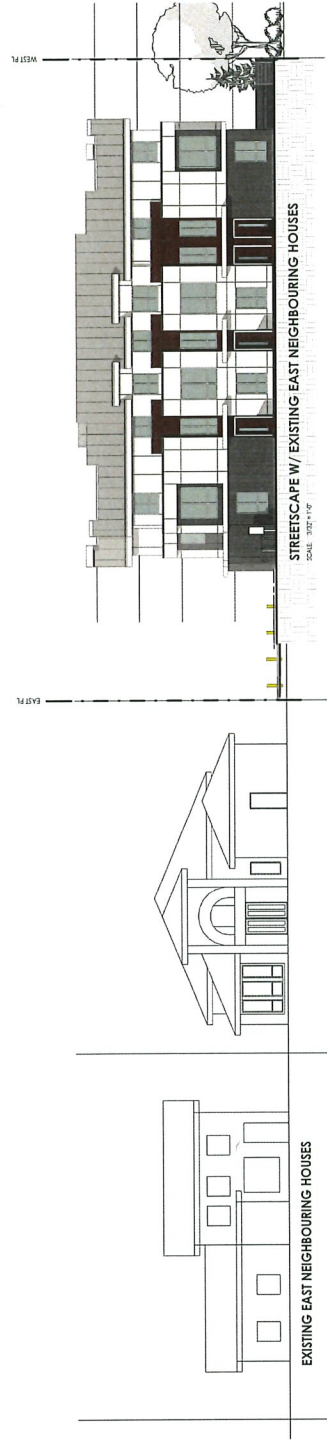
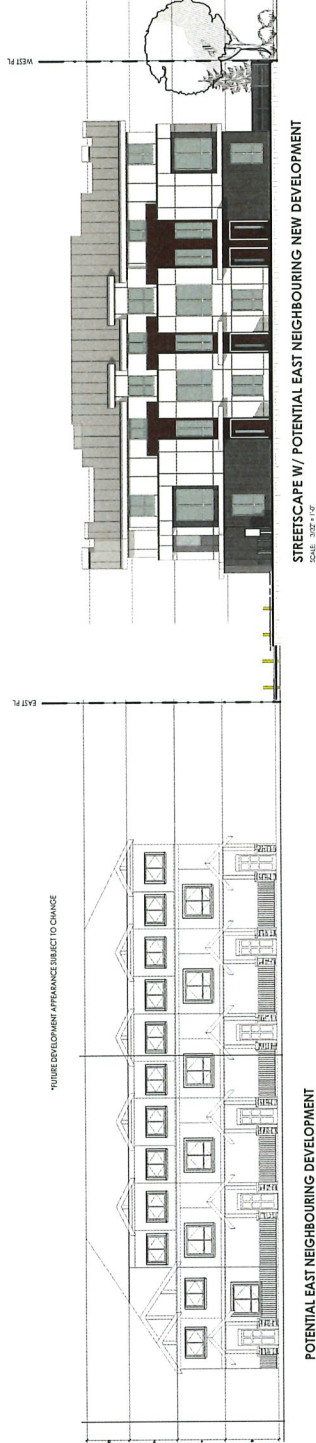
PMG PROJECT NUMBER:
17-236

DEVELOPMENT PERMIT PANEL MEETING

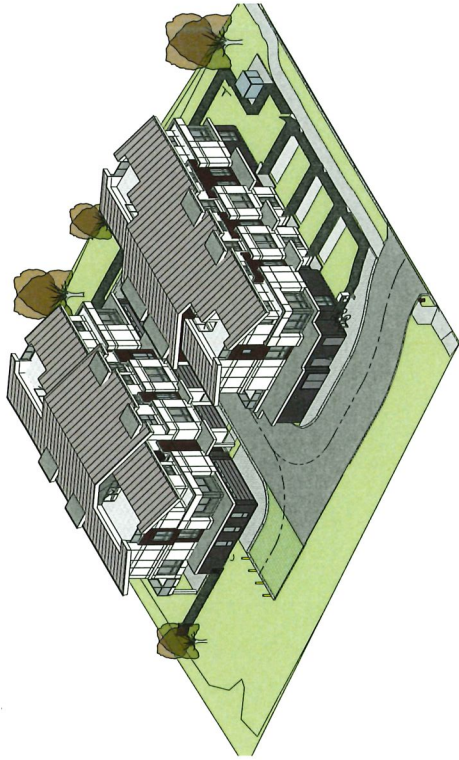


EXISTING STREETSCAPE PHOTOS
SCALE: 1/8"

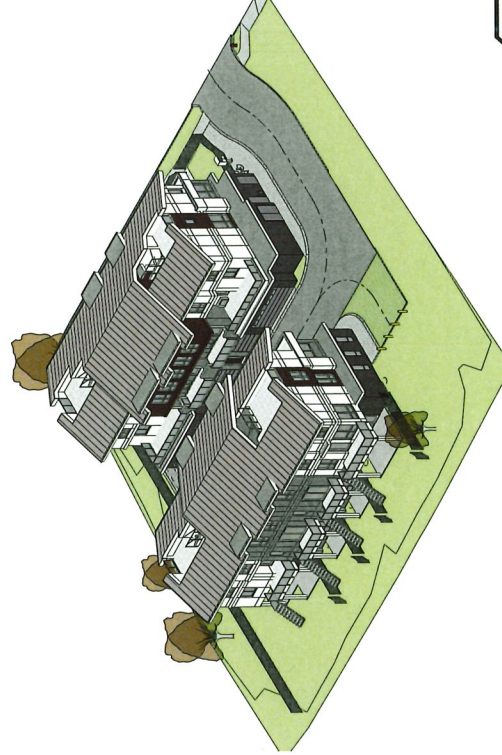
CNCL - 725



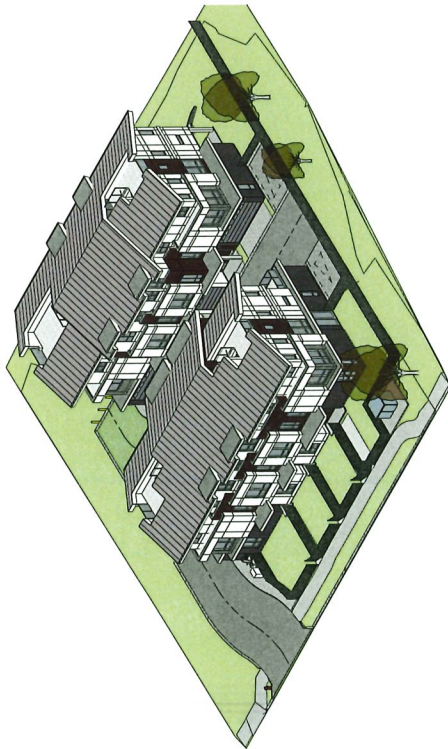
DEVELOPMENT PERMIT PANEL MEETING



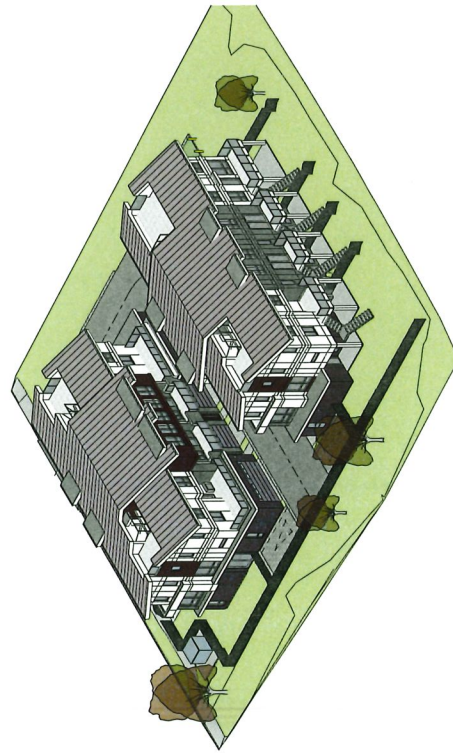
ORTHO VIEW - NORTHEAST



ORTHO VIEW - SOUTHEAST



ORTHO VIEW - NORTHWEST

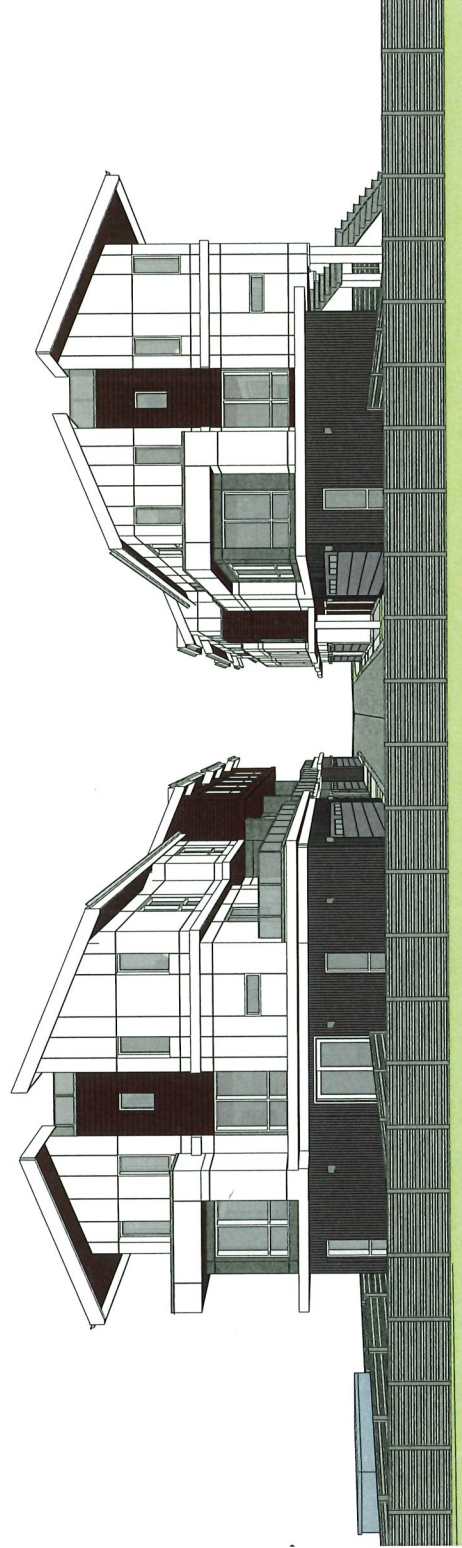


ORTHO VIEW - SOUTHWEST

DEVELOPMENT PERMIT PANEL MEETING

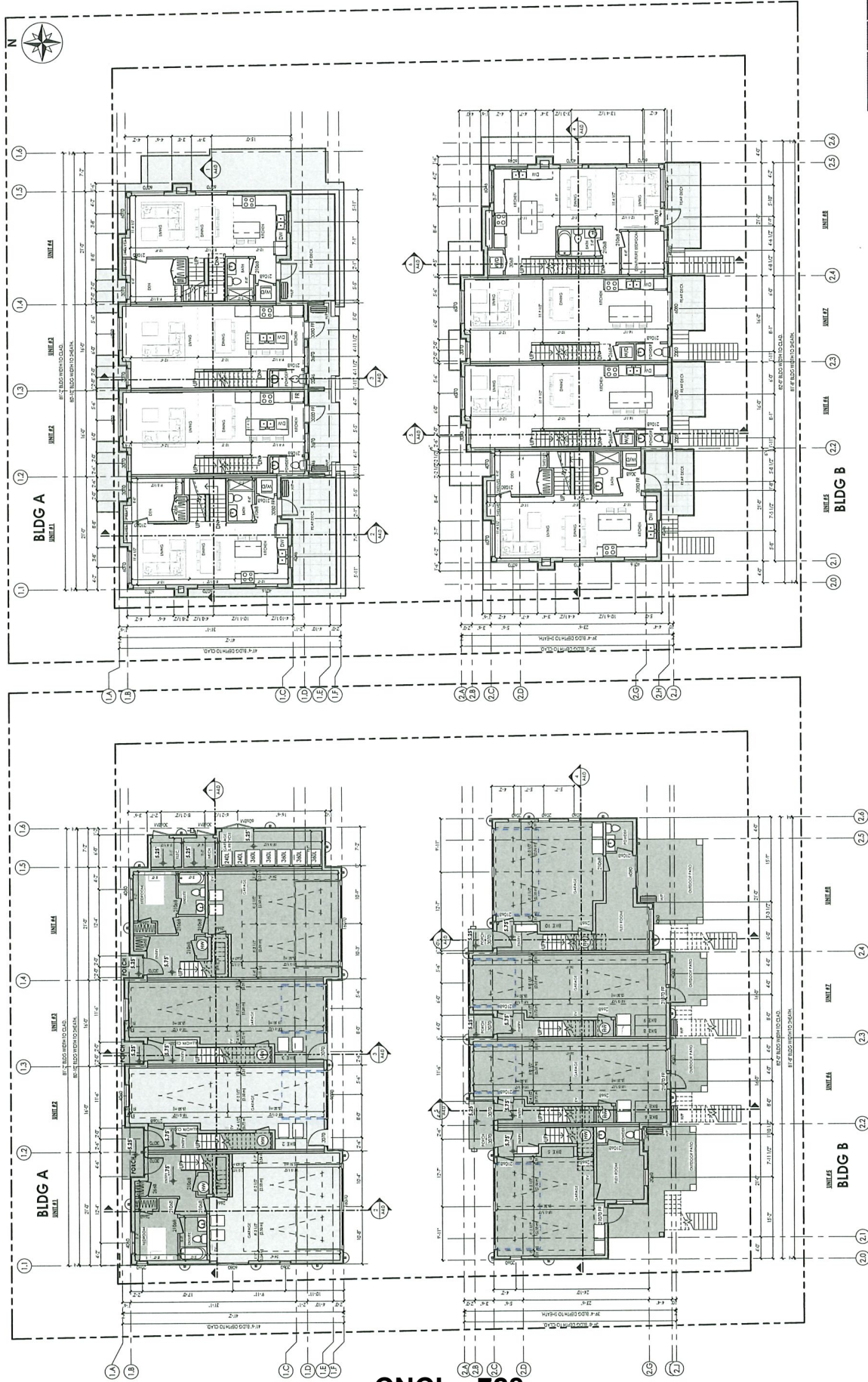


PERSPECTIVE VIEW - EAST (BOTH BLDGS)



PERSPECTIVE VIEW - WEST (BOTH BLDGS)

DEVELOPMENT PERMIT PANEL MEETING



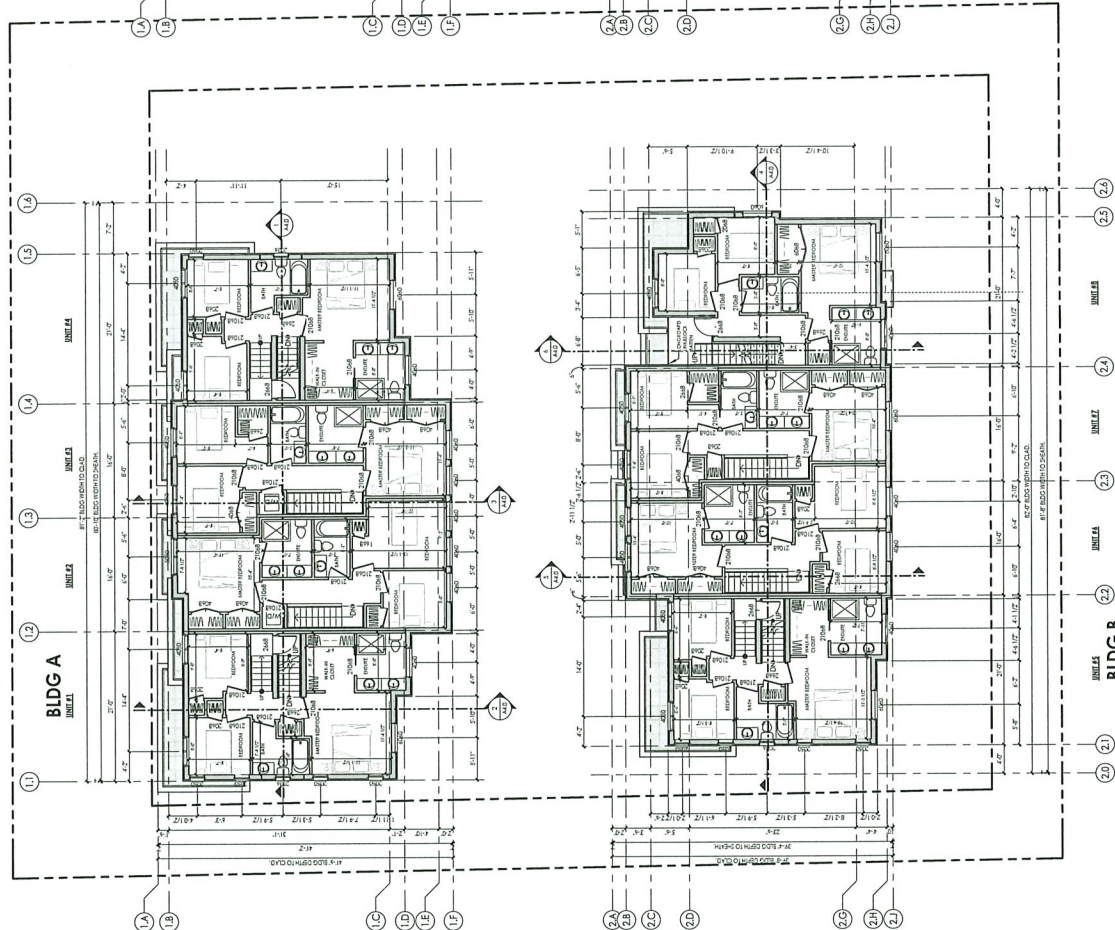
CNCL - 728



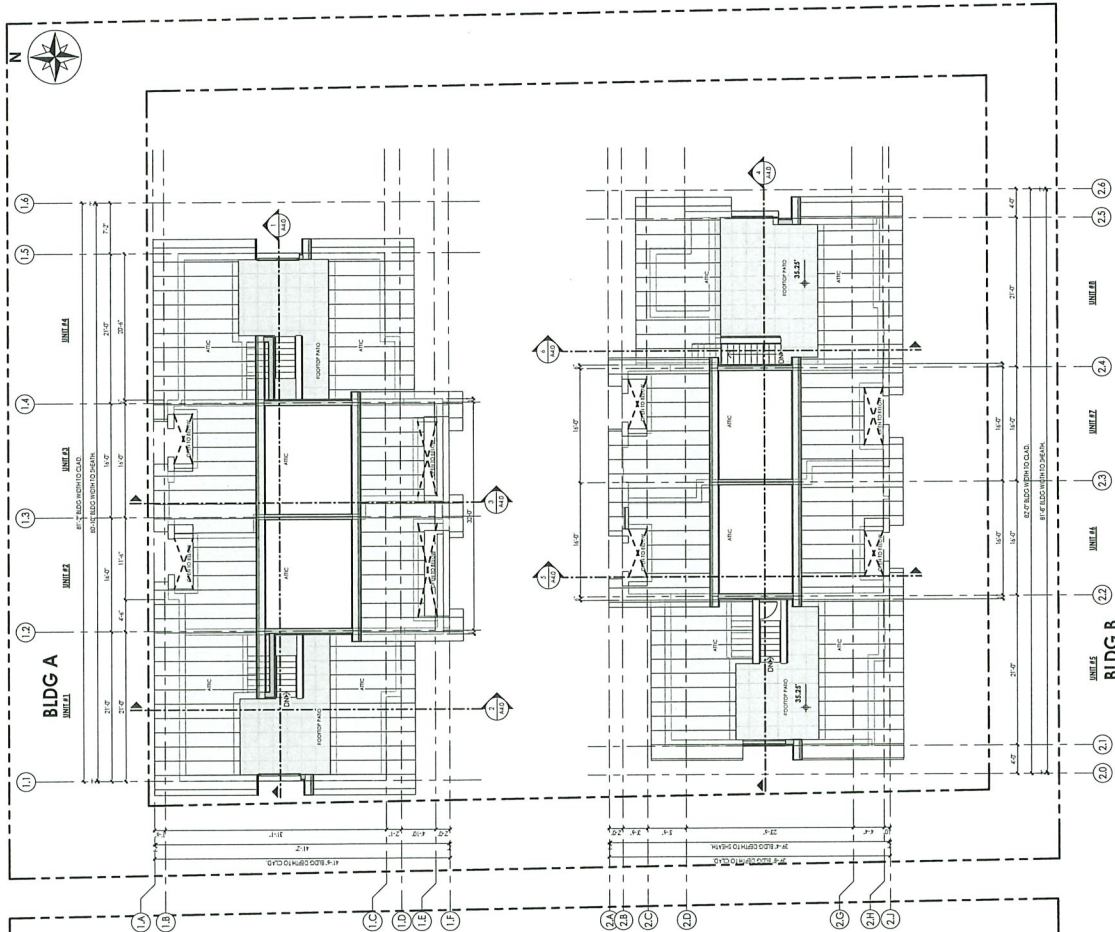
2 2ND FLOOR PLAN
1/8" = 1'-0"

1 1ST FLOOR PLAN
1/8" = 1'-0"

DEVELOPMENT PERMIT PANEL MEETING



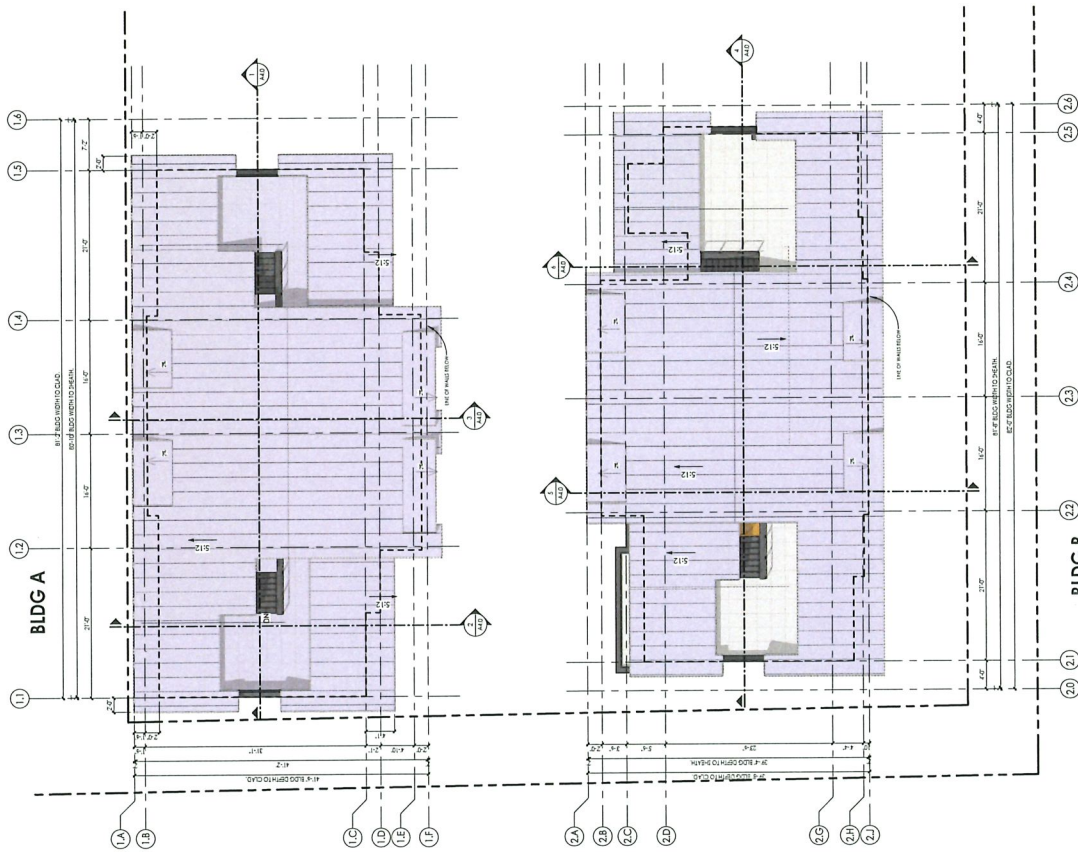
1
3RD FLOOR PLAN
1/8" = 1'-0"



2
4TH FLOOR PLAN
1/8" = 1'-0"

CNCL - 729

DEVELOPMENT PERMIT PANEL MEETING



1 ROOF PLAN
1/8" = 1'-0"

5. DOORS & DOORWAYS
A. WALL BLOCKING FOR FUTURE GRAB BAR INSTALLATION AT TOILET TUB AND SHOWER REINFORCED WITH 2" X 12" SOLID
B. WALL BLOCKING FOR FUTURE GRAB BAR INSTALLATION AT TOILET TUB AND SHOWER REINFORCED WITH 2" X 12" SOLID
C. WALL BLOCKING FOR FUTURE GRAB BAR INSTALLATION AT TOILET TUB AND SHOWER REINFORCED WITH 2" X 12" SOLID

6. BATHROOMS
A. WALL BLOCKING FOR FUTURE GRAB BAR INSTALLATION AT TOILET TUB AND SHOWER REINFORCED WITH 2" X 12" SOLID
B. WALL BLOCKING FOR FUTURE GRAB BAR INSTALLATION AT TOILET TUB AND SHOWER REINFORCED WITH 2" X 12" SOLID
C. WALL BLOCKING FOR FUTURE GRAB BAR INSTALLATION AT TOILET TUB AND SHOWER REINFORCED WITH 2" X 12" SOLID

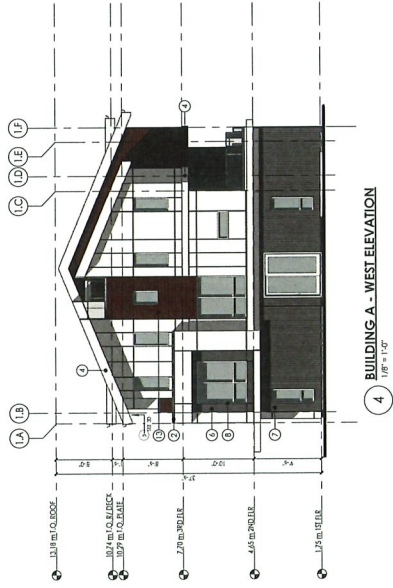
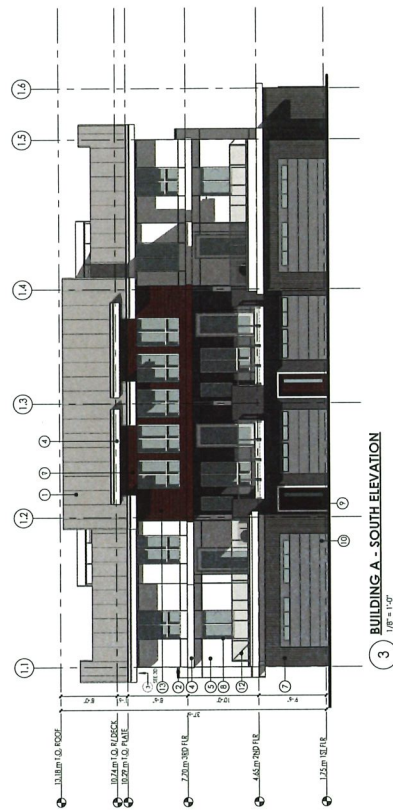
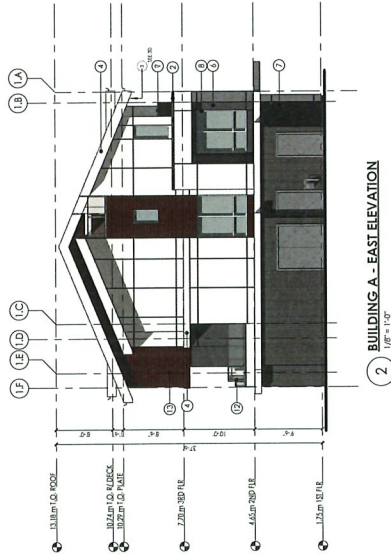
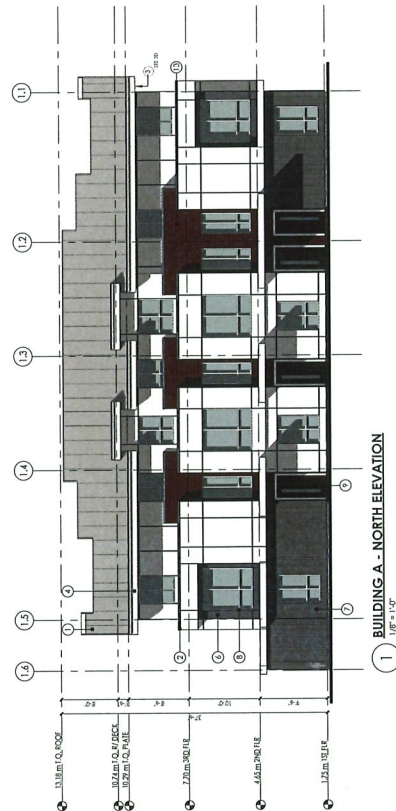
7. KITCHEN
A. WALL BLOCKING FOR FUTURE GRAB BAR INSTALLATION AT TOILET TUB AND SHOWER REINFORCED WITH 2" X 12" SOLID
B. WALL BLOCKING FOR FUTURE GRAB BAR INSTALLATION AT TOILET TUB AND SHOWER REINFORCED WITH 2" X 12" SOLID
C. WALL BLOCKING FOR FUTURE GRAB BAR INSTALLATION AT TOILET TUB AND SHOWER REINFORCED WITH 2" X 12" SOLID

8. CLEAR AREA NEEDED UNDER FUTURE WORKSPACE, PLUMBING AND GAS PIPES IN WALL AND FLOOR LOCATED CLEAR
A. WALL BLOCKING FOR FUTURE GRAB BAR INSTALLATION AT TOILET TUB AND SHOWER REINFORCED WITH 2" X 12" SOLID
B. WALL BLOCKING FOR FUTURE GRAB BAR INSTALLATION AT TOILET TUB AND SHOWER REINFORCED WITH 2" X 12" SOLID
C. WALL BLOCKING FOR FUTURE GRAB BAR INSTALLATION AT TOILET TUB AND SHOWER REINFORCED WITH 2" X 12" SOLID

9. CLEAR AREA NEEDED UNDER FUTURE WORKSPACE, PLUMBING AND GAS PIPES IN WALL AND FLOOR LOCATED CLEAR
A. WALL BLOCKING FOR FUTURE GRAB BAR INSTALLATION AT TOILET TUB AND SHOWER REINFORCED WITH 2" X 12" SOLID
B. WALL BLOCKING FOR FUTURE GRAB BAR INSTALLATION AT TOILET TUB AND SHOWER REINFORCED WITH 2" X 12" SOLID
C. WALL BLOCKING FOR FUTURE GRAB BAR INSTALLATION AT TOILET TUB AND SHOWER REINFORCED WITH 2" X 12" SOLID

10. CLEAR AREA NEEDED UNDER FUTURE WORKSPACE, PLUMBING AND GAS PIPES IN WALL AND FLOOR LOCATED CLEAR
A. WALL BLOCKING FOR FUTURE GRAB BAR INSTALLATION AT TOILET TUB AND SHOWER REINFORCED WITH 2" X 12" SOLID
B. WALL BLOCKING FOR FUTURE GRAB BAR INSTALLATION AT TOILET TUB AND SHOWER REINFORCED WITH 2" X 12" SOLID
C. WALL BLOCKING FOR FUTURE GRAB BAR INSTALLATION AT TOILET TUB AND SHOWER REINFORCED WITH 2" X 12" SOLID

DEVELOPMENT PERMIT PANEL MEETING

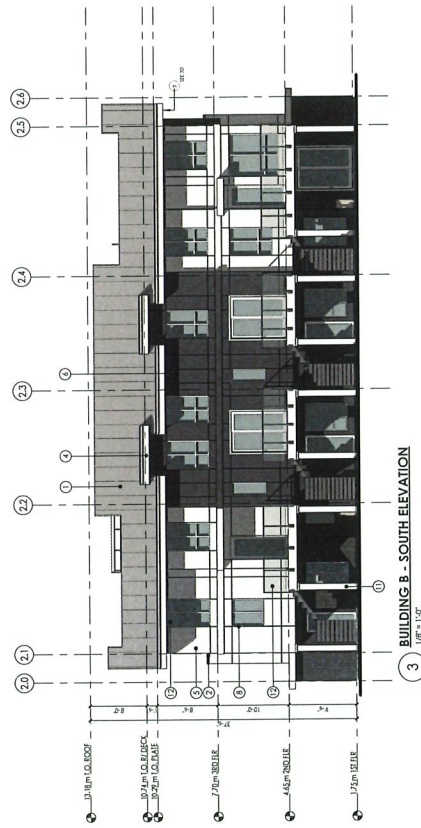
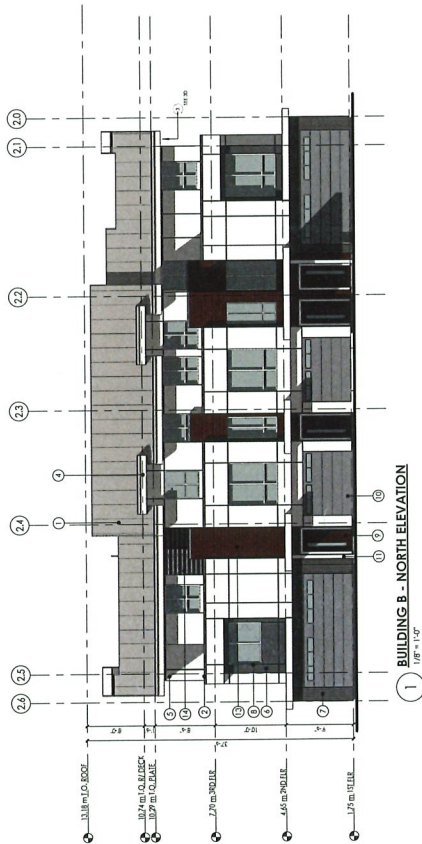
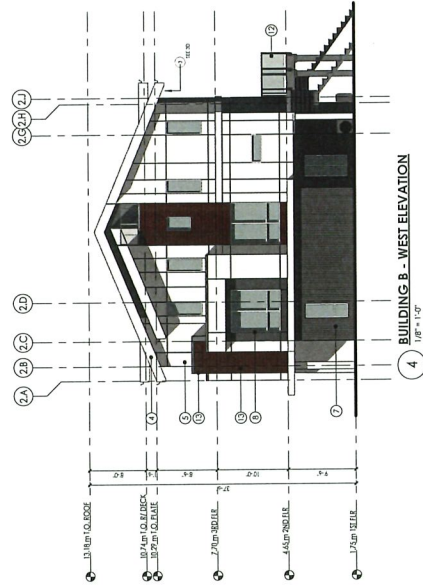
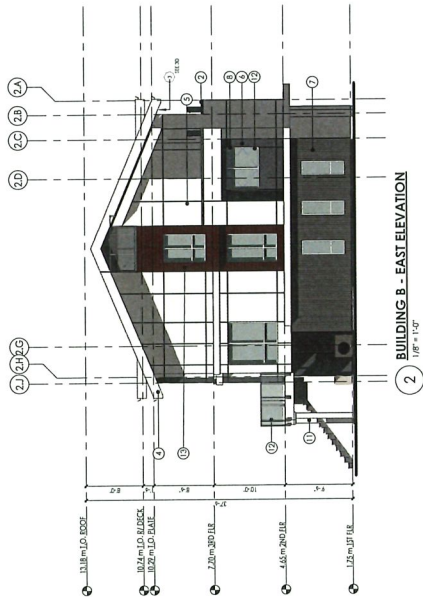


MATERIAL LIST

1. STANDING SEAM METAL ROOF
GRAY
2. ALUMINUM FLASHING
CHARCOAL
3. CEDAR SHUTTLE - DOUBLE & GROOVE
DARK NATURAL VAINET
4. FASCIA BOARD - 1" x 6" x 12"
PAINTED, BM - CAVALRY CC-22
5. HANDED PANELS (H/P) - LIGHT
PAINTED, BM - CAVALRY CC-22
6. HANDED PANELS (H/P) - DARK
PAINTED, BM - HENDAL CHARCOAL HC-146
7. CERAMIC GLASS COATED SLIDING PANELS
BROWN GLASS COATED
8. WINDOW FRAME - WHITE
PAINTED, BM - CAVALRY CC-22
9. SLOPE WOOD DOOR
NATURAL WOOD - DARK NATURAL VAINET
10. METAL GARAGE DOOR & MAIN DOOR
BM - HENDAL CHARCOAL HC-146
11. WOOD GLASS POST & RAIL
NATURAL WOOD - DARK NATURAL VAINET
12. GLASS GLAZED WITH METAL FINISH
GLASS COATED - EMERALD TRANSLUCENT
METAL FINISH - PAINTED CHARCOAL
13. LONGBOARD - WOODGRAIN FINISH
DARK NATURAL VAINET
14. LONGBOARD LINK & LOCK LATHEN - WOODGRAIN FINISH
DARK NATURAL VAINET



DEVELOPMENT PERMIT PANEL MEETING



MATERIAL LIST

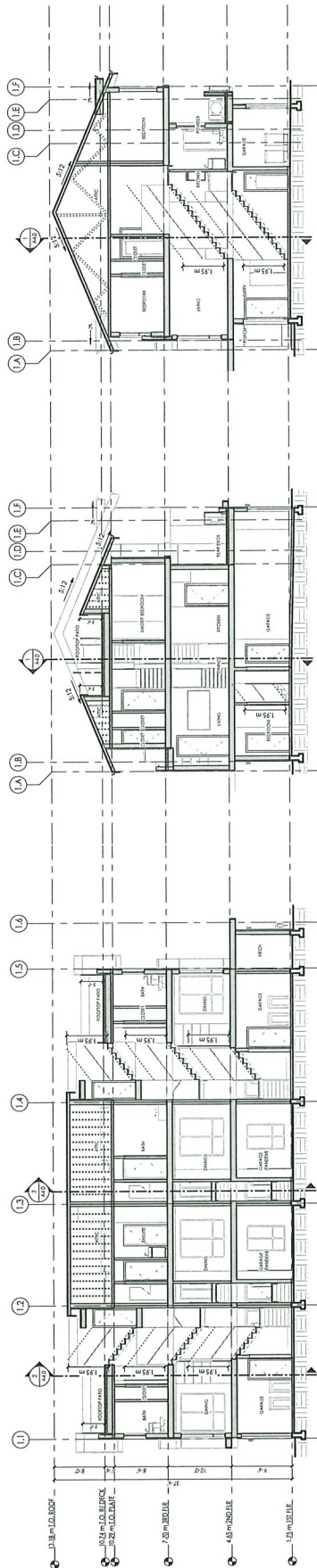
1. STANDING SEAM METAL ROOF
GRAY
2. ALUMINUM FLASHING
CHIMNEAL
3. CEDAR SHIPITE-TONGUE & GROOVE
PAINTED, BM - CAUM OC-22
4. 2x4x10 CEDAR SHIPITE-TONGUE & GROOVE
PAINTED, BM - CAUM OC-22
5. HARDIE PANELS (FIBERGLASS)
PAINTED, BM - CAUM OC-22
6. HARDIE PANELS (FIBERGLASS)
PAINTED, BM - CAUM OC-22
7. CERAMIC TILE COATED DOING PANELS
PAINTED, BM - CAUM OC-22
8. 4x8x12 CEDAR SHIPITE-TONGUE & GROOVE
PAINTED, BM - CAUM OC-22
9. SOLID WOOD DOOR
PAINTED, BM - CAUM OC-22
10. METAL GARAGE DOOR & WINDOW
PAINTED, BM - CAUM OC-22
11. WOOD GARAGE DOOR & WINDOW
PAINTED, BM - CAUM OC-22
12. GLASS GARAGE DOOR & WINDOW
PAINTED, BM - CAUM OC-22
13. LONGBOARD - WOODGRAIN FINISH
PAINTED, BM - CAUM OC-22
14. LONGBOARD - WOODGRAIN FINISH
PAINTED, BM - CAUM OC-22



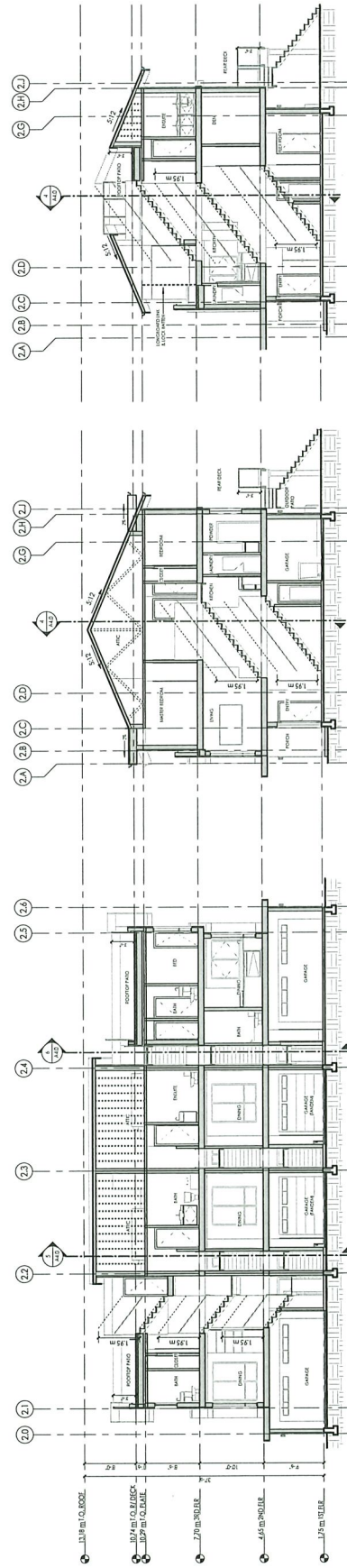
DEVELOPMENT PERMIT PANEL MEETING



DEVELOPMENT PERMIT PANEL MEETING



CNCL - 734



6 BLDG B - CROSS-SECTION 2
1/8" = 1'-0"





To: Richmond City Council

Date: June 13, 2023

From: Joe Erceg
Chair, Development Permit Panel

File: DP 17-766824

Re: **Development Permit Panel Meeting Held on March 11, 2020**

Staff Recommendation

That the recommendation of the Panel to authorize the issuance of Development Permit (DP 17-766824) for the property at 8100 No. 5 Road, be endorsed and the Permit so issued.

Peter Russell
Panel Member, Development Permit Panel

For
Joe Erceg
Chair, Development Permit Panel

Panel Report

The Development Permit Panel considered the following item at its meeting held on March 11, 2020.

DP 17-766824 – MATTHEW CHENG ARCHITECTS INC. – 8100 NO. 5 ROAD
(March 11, 2020)

The Panel considered a Development Permit (DP) application to permit the development of a temple at 8100 No. 5 Road on a site zoned “Assembly (ASY)” and that is partially designated as an Environmentally Sensitive Area (ESA). A variance is included in the proposal to increase the maximum height for buildings from 12 m to 13.75 m to allow for two roof-top sculpture elements.

The applicant, Matthew Cheng, Matthew Cheng Architect Inc., provided a brief visual presentation on the project, noting the following:

- the subject property is located in the Agricultural Land Reserve Area (ALR) and zoned “Assembly (ASY)” and “Agriculture (AG1)”, with portions designated as Environmentally Sensitive Area (ESA);
- the agricultural product grown on the subject property is intended for the use of the congregation or for donation;
- the existing ESA in the “Assembly (ASY)” zoned portion of the property has been found to be historically disturbed and will be removed and compensated in the form of an agricultural buffer area between the proposed development and the agricultural area;
- a four-meter wide driveway will be provided along a portion of the north property line to provide access to the site’s agricultural area;
- a drainage system will be installed on the south and west sides of the site;
- a generous setback is proposed from the front property line along No. 5 Road for the proposed religious assembly building;
- the originally proposed vehicle entrance to the site has been relocated to the northwest corner to improve vehicular traffic and enhance pedestrian safety as recommended by the City’s Advisory Design Panel;
- the proposed number of surface parking stalls to be provided around the proposed building complies with the City’s Zoning Bylaw requirement;
- a pedestrian walkway is proposed around the building to separate pedestrian and vehicular traffic;
- bicycle racks and lockers will be provided in the proposed development;
- the main floor of the proposed building will be elevated to comply with the City’s Flood Plain Designation and Protection Bylaw;
- a wheelchair lift will be installed in the middle of the proposed building opposite the accessible parking stalls to enhance accessibility of disabled persons;
- the building has been designed to reflect the traditional South Indian Hindu Temple;
- the main building components include a dining area and a worship hall;
- a building height variance is proposed to accommodate a small portion of the gate tower which is an important religious symbol;

- the highest point of the proposed building is significantly lower than the height of adjacent religious buildings;
- a parapet will be installed to screen the building's rooftop mechanical equipment; and
- appropriate safety, security and sustainability features will be incorporated into the proposed development.

The landscape architect, Caelan Griffiths, PMG Landscape Architects, provided a brief overview on the projects landscaping features, noting the following:

- different surface paving treatments on the site are proposed according to their specific uses;
- the proposed ESA planting for the agricultural landscape buffer includes native plant species which provide habitat for pollinators;
- flowering trees and bright perennials are proposed for the "Assembly (ASY)" zoned portion of the site; and
- bollard lighting is proposed to avoid light pollution and enhance pedestrian safety and wayfinding on the site.

In reply to queries from the Panel, Mr. Cheng acknowledged that (i) the applicant will consider installing on-site electric vehicle and bicycle charging stations although these are not required for the project, (ii) the proposed rooftop mechanical equipment will be screened and hidden from adjacent religious buildings, and (iii) the main floor of the building will be elevated by 1.4 meters above the road.

Subsequent to the panel meeting, the applicant revised development plans to provide on-site electric vehicle consistent with DPP guidelines (5% of parking stalls equipped with conduit for electrical vehicle outlets and 5% of parking stalls equipped with 240-volt electrical outlets) and bicycle charging for all Class 1 bicycle parking spaces.

Staff noted that (i) the project complies with the required flood construction level for the area, (ii) there is a Servicing Agreement for frontage works and service connections as a condition for approval, (iii) the proposed height variance for the project is less than the height variances approved by the City for similar religious buildings along the No. 5 Road corridor, (iv) there are no habitable spaces associated with the proposed height variance, which is centrally located to minimize shadowing impacts on adjacent developments, and (v) the approximately 640-square meter on-site landscaping for the "Assembly (ASY)" zoned portion of the site has a similar planting palette with the ESA compensation planting on the proposed agricultural landscape buffer and also performs an ecological function.

The Panel expressed support for the project, noting that it is well thought out and the proposed building height variance is minimal.

The Panel recommends the Permit be issued.



To: Richmond City Council

Date: June 19, 2023

From: Cecilia Achiam
Chair, Development Permit Panel

File: DP 21-935984

Re: Development Permit Panel Meeting Held on June 14, 2023

Staff Recommendation

That the recommendation of the Panel to authorize the issuance of Development Permit (DP 21-935984) for the property at 12551 No. 1 Road, be endorsed and the Permit so issued.

Cecilia Achiam
Chair, Development Permit Panel
(604-276-4122)

Panel Report

The Development Permit Panel considered the following item at its meeting held on June 14, 2023.

DP 21-935984 – GORDON CHAN – 12551 NO. 1 ROAD (June 14, 2023)

The Panel considered a Development Permit (DP) application to permit the replacement of all the existing single-glazed windows with new double-glazed windows, the replacement of two doors on the front (north) elevation and the removal of the overhead garage door on the rear (south) elevation at 12551 No. 1 Road. A variance is included in the proposal to reduce the minimum front yard setback to the garbage and recycling enclosure from 3.0 m to 0 m.

The applicant, Gordon Chan, McCuaig and Associates Engineering, provided a brief visual presentation on the project, noting the following:

- the existing single-glazed windows will be replaced with new aluminium windows with double-glazed security glazing;
- the two existing single-pane glass doors will be replaced with double-pane glass doors;
- the overhead door at the south elevation will be removed and infilled with vinyl siding that matches the existing siding;
- a new garbage and recycling enclosure will be installed at the northwest corner of the property; and
- the materials and colours for the proposed changes are consistent with the character of the existing building.

Staff noted that (i) the proposed replacement of doors and windows would improve the overall appearance and energy efficiency of the building, (ii) the proposal was reviewed and endorsed by the Richmond Heritage Commission, and (iii) staff support the proposed front yard setback variance as the new garbage and recycling enclosure would enhance the appearance of the streetscape.

In reply to a query from the Panel, Staff confirmed that (i) the encroachment of the existing parking area of the subject property onto City land will be dealt with separately, and (ii) there is no issue with the height of the proposed garbage and recycling enclosure.

Correspondence was submitted to the Panel regarding the application by Sigrid Stobie at 139-4280 Moncton Street. Staff noted that Ms. Stobie sought more information regarding the proposal and that staff contacted Ms. Stobie and provided her with the information on the proposal.

The Panel expressed support for the project, noting that the proposed changes to the existing office building and the proposed garbage and recycling enclosure would enhance the overall appearance of the building and the streetscape.

The Panel recommends the Permit be issued.