



**Public Works and Transportation Committee**

**Anderson Room, City Hall  
6911 No. 3 Road**

**Wednesday, March 22, 2017  
4:00 p.m.**

Pg. #      ITEM

MINUTES

**PWT-7**      *Motion to adopt the **minutes** of the meeting of the Public Works and Transportation Committee held on February 22, 2017.*



NEXT COMMITTEE MEETING DATE

April 20, 2017, (tentative date) at 4:00 p.m. in the Anderson Room

PLANNING AND DEVELOPMENT DIVISION

- 1. TRANSLINK 2017 CAPITAL PROGRAM COST-SHARE  
SUPPLEMENTAL SUBMISSIONS**  
(File Ref. No. 01-0154-04) (REDMS No. 5298006 v. 2)

**PWT-11**

**See Page PWT-11 for full report**

*Designated Speaker: Victor Wei*

STAFF RECOMMENDATION

- (1) *That the supplemental submission of pedestrian and bicycle improvement projects for cost-sharing as part of the TransLink 2017 Major Road Network and Bicycle Program as described in the report titled, “TransLink 2017 Capital Program Cost-Share Supplemental Submissions” dated February 22, 2017 from the Director, Transportation, be endorsed; and*
- (2) *That, should the above submissions be successful, the Chief Administrative Officer and General Manager, Planning and Development be authorized to execute the funding agreements and the 2017 Capital Plan and the 5-Year Financial Plan (2017-2021) be updated accordingly.*



2. **ICBC – CITY OF RICHMOND ROAD IMPROVEMENT PROGRAM – PROPOSED PROJECTS FOR 2017**

(File Ref. No. 01-0150-20-ICBC1-01) (REDMS No. 5297022)

PWT-19

See Page PWT-19 for full report

*Designated Speaker: Victor Wei*

STAFF RECOMMENDATION

- (1) *That the list of proposed road safety improvement projects, as described in Attachment 2 of the staff report titled “ICBC-City of Richmond Road Improvement Program – Proposed Projects for 2017,” dated February 15, 2017 from the Director, Transportation be endorsed for submission to the ICBC 2017 Road Improvement Program for consideration of cost sharing funding; and*
- (2) *That should the above applications be successful, the Chief Administrative Officer and General Manager, Planning and Development be authorized to negotiate and execute the cost-share agreements, and that the 5-Year Financial Plan (2017-2021) be amended accordingly.*



ENGINEERING AND PUBLIC WORKS DIVISION

3. **CLIMATE ACTION – BUILDING ENERGY BENCHMARKING POLICY ADVOCACY**

(File Ref. No. 10-6125-07-02) (REDMS No. 4859414 v.8)

PWT-24

See Page PWT-24 for full report

*Designated Speaker: Peter Russell*

STAFF RECOMMENDATION

*That, as described in the staff report titled “Climate Action – Building Energy Benchmarking Policy” from Director, Engineering, dated February 23, 2017:*

- (1) a resolution be forwarded to the Lower Mainland Local Government Association and the Union of BC Municipalities calling for the province to establish requirements for energy benchmarking of large buildings;*
- (2) a letter be sent to the Chair of Metro Vancouver’s Climate Action Committee calling on Metro Vancouver to lead the development of a regional benchmarking program;*
- (3) the Chief Administrative Officer and the General Manager, Engineering and Public Works be authorized to execute funding and partnership agreements with the Real Estate Foundation of BC and BC Hydro to develop benchmarking policy analysis and automated utility data exchange capabilities, and that amendments to the 5 Year Financial Plan (2017-2021) Bylaw be brought forward for up to \$155,000 in expenditures, subject to successful grant applications up to \$140,000 to be covered by grant funding and a \$15,000 City contribution from the Carbon Tax Provision; and*
- (4) staff be directed to report back to Council options to establish building energy benchmarking policy for larger buildings in Richmond as a pilot measure.*



Pg. #      ITEM

4.      **LOWER MAINLAND FLOOD MANAGEMENT STRATEGY UPDATE**  
(File Ref. No. 10-6060-01) (REDMS No. 5329704)

**PWT-34**

**See Page PWT-34 for full report**

*Designated Speaker: Lloyd Bie*

**STAFF RECOMMENDATION**

*That the City of Richmond commits to continue participation in the Lower Mainland Flood Management Strategy for a further two years.*



5.      **2017 LIQUID WASTE MANAGEMENT PLAN BIENNIAL REPORT**  
(File Ref. No. 10-6060-03-01) (REDMS No. 5303404)

**PWT-41**

**See Page PWT-41 for full report**

*Designated Speaker: Lloyd Bie*

**STAFF RECOMMENDATION**

*That the staff report titled “2017 Liquid Waste Management Plan Biennial Report,” dated February 24, 2017, from the Director, Engineering be submitted to Metro Vancouver.*



6.      **2017 CLOTHES WASHER REBATE PROGRAM**  
(File Ref. No. 10-6060-01) (REDMS No. 5285107)

**PWT-82**

**See Page PWT-82 for full report**

*Designated Speaker: Lloyd Bie*

STAFF RECOMMENDATION

- (1) *That the City of Richmond partner with BC Hydro to the end of 2017 to offer rebates of up to \$200, equally cost shared between BC Hydro and the City, for the replacement of inefficient clothes washers with new high efficiency clothes washers;*
- (2) *That the scope of the existing Toilet Rebate Program funding be expanded to include clothes washer rebates; and*
- (3) *That the Chief Administrative Officer and General Manager, Engineering and Public Works, be authorized to execute an agreement with BC Hydro to implement the Clothes Washer Rebate Program.*



7. **SERVICING AGREEMENT WITH YYH DEVELOPMENT LTD. FOR 6340 NO. 3 ROAD**

(File Ref. No. 10-6060-01) (REDMS No. 5323478)

PWT-85

See Page PWT-85 for full report

*Designated Speaker: Lloyd Bie*

STAFF RECOMMENDATION

- (1) *That the City enter into a servicing agreement with YYH Development Ltd. to remove and replace an ageing City sanitary sewer main located on their property at 6340 No. 3 Road;*
- (2) *That the existing statutory rights-of-way (SRW), Registration No. A18319, 288432C, 288922C, and 52405, registered to 6340 No. 3 Road (Lot 169 Section 9 Block 4N Range 6W New Westminster Plan 41547) be discharged in its entirety; and*
- (3) *That the Chief Administrative Officer and the General Manager, Engineering and Public Works, be authorized to execute the above recommendations.*



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8.      **COMMUNITY ENERGY AND EMISSIONS PLAN – 2017 UPDATE**  
(File Ref. No. 10-6125-07-02) (REDMS No. 5322039)

**PWT-89**

[See Page PWT-89 for full report](#)

*Designated Speaker: Peter Russell*

STAFF RECOMMENDATION

*That the staff report titled "Community Energy and Emissions Plan – 2017 Update," dated February 20, 2017, from the Director, Engineering, be received for information.*

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9.      **MANAGER'S REPORT**

ADJOURNMENT

☐



## Public Works and Transportation Committee

Date: Wednesday, February 22, 2017

Place: Anderson Room  
Richmond City Hall

Present: Councillor Chak Au, Chair  
Councillor Harold Steves  
Councillor Carol Day  
Councillor Alexa Loo (entered at 4:05 p.m.)

Absent: Councillor Derek Dang

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 Public Works and Transportation Committee held on January 18, 2017, be adopted as circulated.*

**CARRIED**

### NEXT COMMITTEE MEETING DATE

March 22, 2017, (tentative date) at 4:00 p.m. in the Anderson Room

### PLANNING AND DEVELOPMENT DIVISION

1. **TRANSLINK SOUTHWEST AREA TRANSPORT PLAN –  
INITIATION OF PHASE 2**

(File Ref. No. 01-0154-04) (REDMS No. 5299472 v. 2)

In reply to a query from Committee, Donna Chan, Manager, Transportation Planning, noted that the map titled “Draft Issues and Opportunities: East Richmond” is a TransLink document.

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*Councillor Loo entered the meeting (4:05 p.m.).*

Victor Wei, Director, Transportation, advised that staff can clarify in the staff report that the map titled "Draft Issues and Opportunities: East Richmond" is supportive of TransLink's plans; also, he noted that staff would further clarify Council's position on the George Massey Tunnel Replacement Project, which is that the Tunnel be improved as oppose to replaced with a new bridge.

Also, Mr. Wei commented on discussions with TransLink with regard to the potential to add light rail transit to the new bridge, and advised that staff would seek further clarification on this matter with TransLink.

It was moved and seconded

*That the staff report titled "TransLink Southwest Area Transport Plan – Initiation of Phase 2" dated January 25, 2017 from the Director, Transportation, be received for information.*

**CARRIED**

**2. TRANSLINK TRANSIT FARE REVIEW – INITIATION OF PHASE 2**

(File Ref. No. 01-0154-04) (REDMS No. 5298084 v. 2)

Hans Havas, Chair, Transportation sub-committee of the Richmond Seniors Advisory Committee, provided background information regarding TransLink's transit fare review, noting that the review is examining 'zone' fares in an effort to have fares correlate with distance travelled as oppose to the number of zones travelled.

It was moved and seconded

*That Richmond's comments as provided at the elected officials forum held on January 24, 2017 as outlined in the staff report titled "TransLink Transit Fare Review – Initiation of Phase 2," dated February 6, 2017, from the Director, Transportation, be endorsed.*

**CARRIED**

**3. 2017 SUBMISSION TO THE NEW BUILDING CANADA FUND – RIVER PARKWAY (GILBERT ROAD-CAMBIE ROAD)**

(File Ref. No. 01-0140-01) (REDMS No. 5302490)

In reply to a query from the Chair, Denise Tambellini, Manager, Intergovernmental Relations and Protocol Unit, spoke on the new Building Canada Fund submission process.

It was moved and seconded

*(1) That the submission to Provincial and Federal Government funding programs including the New Building Canada Fund to request up to 66 percent of the \$11,300,000 design and construction cost for River Parkway (Gilbert Road-Cambie Road) be endorsed;*



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- (2) *That the Chief Administrative Officer and the General Manager, Engineering and Public Works be authorized to enter into funding agreements with the Government of Canada and/or the Province of BC for the above mentioned projects should they be approved for funding; and*
- (3) *That, should the above mentioned projects be approved for funding by the Government of Canada or Province of British Columbia, the 2017 Capital Plan and the 5-Year Financial Plan (2017-2021) be amended accordingly.*

**CARRIED**

**ENGINEERING AND PUBLIC WORKS DIVISION**

**4. DRAINAGE BOX CULVERT REHABILITATION NO. 2 ROAD FROM STEVESTON HIGHWAY TO LONDON ROAD**

(File Ref. No. 10-6340-20-P.16201) (REDMS No. 5305149 v. 4)

In reply to a query from Committee, Milton Chan, Manager, Engineering Design and Construction, advised that through a separate Capital project submission, staff are examining the potential relocation of the south No. 2 Road drainage pump station.

It was moved and seconded

*That funding of \$3,700,000 from the Drainage Improvement Reserve be included as an amendment to the 5 Year Financial Plan (2017-2021) to complete rehabilitation of the drainage box culvert on No. 2 Road from Steveston Highway to London Road.*

**CARRIED**

**5. AWARD OF CONTRACT 5807Q - SUPPLY AND DELIVERY OF TWO TANDEM AXLE CAB AND CHASSIS WITH DUMP BOX AND FRONT PLOUGHS**

(File Ref. No. 02-0735-01) (REDMS No. 5280032 v. 3)

It was moved and seconded

*That Contract 5807Q, for the Supply and Delivery of Two Tandem Axle Cab and Chassis with Dump Box and Front Ploughs, be awarded to Peterbilt Pacific Inc. at a total cost of \$538,680, plus applicable taxes and levies, within existing capital budgets.*

**CARRIED**

**Public Works & Transportation Committee**  
**Wednesday, February 22, 2017**

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6. **MANAGER'S REPORT**

Mr. Chan provided an update on the interim Lansdowne Road extension project, noting that it is near completion.

**ADJOURNMENT**

It was moved and seconded  
*That the meeting adjourn (4:19 p.m.).*

**CARRIED**

Certified a true and correct copy of the Minutes of the meeting of the Public Works and Transportation Committee of the Council of the City of Richmond held on Wednesday, February 22, 2017.

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Councillor Chak Au  
Chair

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Evangel Biason  
Legislative Services Coordinator




# City of Richmond

## Report to Committee



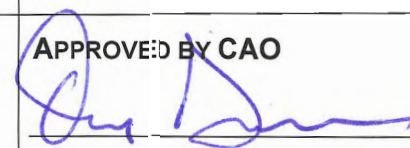
**To:** Public Works and Transportation Committee    **Date:** February 22, 2017  
**From:** Victor Wei, P. Eng.  
Director, Transportation    **File:** 01-0154-04/2017-Vol 01  
**Re:** TransLink 2017 Capital Program Cost-Share Supplemental Submissions

### Staff Recommendation

1. That the supplemental submission of pedestrian and bicycle improvement projects for cost-sharing as part of the TransLink 2017 Major Road Network and Bicycle Program as described in the report titled, "TransLink 2017 Capital Program Cost-Share Supplemental Submissions" dated February 22, 2017 from the Director, Transportation, be endorsed; and
2. That, should the above submissions be successful, the Chief Administrative Officer and General Manager, Planning and Development be authorized to execute the funding agreements and the 2017 Capital Plan and the 5-Year Financial Plan (2017-2021) be updated accordingly.

  
Victor Wei, P. Eng.  
Director, Transportation  
604-276-4131

Att. 1

REPORT CONCURRENCE		
<b>ROUTED TO:</b>	<b>CONCURRENCE</b>	<b>CONCURRENCE OF GENERAL MANAGER</b>
Finance Parks Engineering Law	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	 FOR JPF FLECH
<b>REVIEWED BY STAFF REPORT / AGENDA REVIEW SUBCOMMITTEE</b>	<b>INITIALS:</b> 	<b>APPROVED BY CAO</b> 

## Staff Report

### Origin

Each year, municipalities may submit road, bicycle and transit-related improvement projects for 50-50 funding consideration from TransLink's capital cost-share funding programs. At its September 26, 2016 meeting, Council endorsed the submission of the following projects for the 2017 funding cycle:

- Bicycle Infrastructure Capital Cost-Sharing (BICCS) Regional Needs Program: Year 2 of two-year accrual for the River Drive (No. 4 Road-Van Horne Way) multi-use pathway; and
- Transit-Related Road Infrastructure Program: retrofits to existing bus stops to provide for universal accessibility.

Subsequently, the Mayors' Council and the TransLink Board of Directors approved the Phase One Plan of the 10-Year Vision in November 2016. A component of the Phase One Plan is new funding beginning in 2017 for municipalities to cost-share on capital improvements on the Major Road Network, for cycling projects and for pedestrian facilities around transit.

This staff report presents the proposed supplemental submissions from the City to TransLink's 2017 capital cost-share programs, which support the goals of the City's *Official Community Plan*.

This report supports Council's 2014-2018 Term Goal #3 A Well-Planned Community:

*3.3. Effective transportation and mobility networks.*

This report supports Council's 2014-2018 Term Goal #5 Partnerships and Collaboration:

*5.2. Strengthened strategic partnerships that help advance City priorities.*

### Analysis

#### Major Road Network and Bike (MRNB) Upgrade Program

The MRNB Program provides allocated funding for capital improvements to the major roads across the region that comprise the MRN and the construction of bicycle facilities both on and off the MRN. For the 2013 through 2016 period, there was no allocated funding available to municipalities from TransLink for the annual MRNB Upgrade Program due to financial constraints. The approval of the Phase One Plan of the 10-Year Vision has restored funding to the program beginning in 2017.

For 2017, totals of \$10 million and \$5 million are available for MRN upgrades and bicycle projects respectively. The funding for MRN upgrades is allocated to municipalities based on population and employment growth forecasts from the Regional Growth Strategy while that for cycling projects is allocated based on 2011 Census population data. Richmond's allocations for 2017 are \$794,000 and \$405,000 for MRN upgrades and bicycle projects respectively for a combined total of \$1,199,000.

The City proposes to submit the following additional projects for consideration to be included in the 2017 MRNB Program (Attachment 1):

- River Drive Multi-Use Pathway (\$1,344,000): construction of a two-way off-street paved 3.0 m wide asphalt pathway for pedestrians and cyclists on the south side of River Drive between No. 4 Road and Van Horne Way including pedestrian lighting. As noted above, the City previously submitted the River Drive multi-use pathway to the 2017 BICCS Regional Needs Program, which provides funding on a competitive basis (i.e., not allocated) for bicycle infrastructure projects of regional significance and, at the time, had a maximum funding cap of \$250,000. With the new MRNB funding available, TransLink requires that municipalities first fully use their allocated funding before applying for any competitive-based funding. Accordingly, the City's funding request for the River Drive multi-use pathway would be shifted to the 2017 MRNB program and the funding request increased such that the two-year (2016 and 2017) accumulation of external grant funding is equal to 50 per cent of the estimated total cost.

An application to the Province of BC's 2017-2018 BikeBC program was also made seeking 50-50 cost-sharing. Should the BikeBC application be successful, the TransLink funding amount for 2017 would be reduced accordingly as TransLink cost-share funding guidelines require the deduction of any senior government funding with the balance then cost-shared between the City and TransLink on a 50-50 basis.

- No. 2 Road Walkway (\$400,000): construction of a 1.5 m wide concrete sidewalk for pedestrians on the east side of No. 2 Road between Granville Avenue and Westminster Highway. No. 2 Road in this section is part of the Major Road Network and thus the proposed improvement to fill in an existing gap in pedestrian facilities is eligible for cost-share funding.
- Westminster Highway Multi-Use Pathway (\$400,000): conversion of the existing directional shoulder bike lanes on Westminster Highway between No. 8 Road and Nelson Road to a protected two-way paved 3.0 m wide asphalt pathway for pedestrians and cyclists on the south side. The new pathway would enable a fully continuous off-street two-way pathway on the south side of Westminster Highway between No. 6 Road and McMillan Way.
- Great Canadian Way Multi-Use Pathway (\$300,000): upgrade of an existing sidewalk and pathway to a two-way off-street paved 3.0 m wide asphalt pathway for pedestrians and cyclists on the west side of Great Canadian Way between Van Horne Way and Bridgeport Road including pedestrian lighting. The pathway would connect to existing off-street pathways at either end and a planned off-street pathway south of Sea Island Way that has been secured through the development application process. The off-street pathway would provide greater protection from vehicle traffic for cyclists travelling through the Sea Island Way and Bridgeport Road intersections and provide northbound cyclists with an option to avoid significant motorist right-turn movements at the Costco driveway.
- No. 2 Road Multi-Use Pathway (\$1,240,000): construction of a two-way off-street paved 3.0 m wide asphalt pathway for pedestrians and cyclists on No. 2 Road between Steveston Highway and Dyke Road as part of a roadway upgrade in this section. The shared cycling/walking/rolling pathway is to be located along the east side from Steveston Highway

to the existing crosswalk located approximately 260 m south of Andrews Road, after which it shifts to the west side to Dyke Road.

Recognizing that this second round of cost-share applications is occurring relatively late in municipalities' capital budget cycles, TransLink will allow, for 2017 only, any unused 2017 allocated funding to be rolled over and added to the municipality's 2018 allocation (i.e., any unused allocated funding will not be forfeited).

#### Bicycle Infrastructure Capital Cost-Sharing (BICCS) Regional Needs Program

For 2017, a total of \$2.55 million is available on a competitive basis for bicycle infrastructure and parking projects of regional significance through the BICCS Regional Needs Program with municipalities permitted to submit only one project each for TransLink 50-50 cost-share funding up to a maximum of \$400,000.

The City proposes to submit the No. 2 Road (Steveston Highway-Dyke Road) multi-use pathway project for consideration to be included in the 2017 BICCS Regional Needs Program as well as the 2017 MRNB Program as noted above in order to maximize the potential for securing external funding by first fully using the balance of the City's allocated MRNB Program funding, which then allows the City to apply for the competitive-based BICCS Regional Needs Program.

The No. 2 Road multi-use pathway is part of the larger No. 2 Road (Steveston Highway-Dyke Road) widening project, for which the City is receiving external funding (\$3.5 million towards the total cost of \$7.3 million) from the federal government via the Asia-Pacific Gateway and Corridor Transportation Infrastructure Fund.

#### Walking Infrastructure to Transit (WITT) Program

The Phase One Plan of the 10-Year Vision has established a new capital cost-share program for pedestrian facility upgrades within walking distance of frequent transit stops, stations and exchanges to promote the seamless integration of walking and cycling with transit. For 2017, the WITT Program has a total of \$2.5 million available on a competitive basis to enhance and expand pedestrian access to transit through investments to improve safety, connectivity and accessibility, and provide amenities (e.g., pedestrian lighting, street furniture). Municipalities are permitted to submit only one project each for TransLink 50-50 cost-share funding up to a maximum of \$250,000.

The City proposes to submit the following project for consideration to be included in the 2017 WITT Program (Attachment 1):

- Sexsmith Road Multi-Use Pathway: construction of a paved asphalt pathway for pedestrians (2.0 m wide) and cyclists (2.5 m wide) on the east side of Sexsmith Road between Beckwith Road and River Road including pedestrian lighting, benches, and bollards to separate the pathway from the portion of the road right-of-way that is currently and informally being used for parking, and a new marked crosswalk at the northern end to connect to the Bridgeport Canada Line Station and Bridgeport Exchange.

### Requested Funding and Estimated Project Costs

The total requested funding for the above supplemental 2017 submissions to TransLink's capital cost-sharing programs is \$1,846,500 as summarized in Table 1, which will support projects with a total estimated cost of \$4,179,000.

**Table 1: Supplemental Projects to be Submitted to 2017 TransLink Cost-Share Programs**

TransLink Funding Program	Project Name/Scope	Proposed City's Portion & Funding Source for 2017	Proposed TransLink 2017 Funding <sup>(1)</sup>	Est. Total Project Cost
MRNB	River Drive (No. 4 Road-Van Horne Way): multi-use pathway	2017 Capital Program: \$672,000	\$500,500	\$1,344,000
	No. 2 Road (Granville Avenue-Westminster Highway): walkway	2016 Arterial Roadway Improvement Program: \$200,000	\$200,000	\$400,000
	Westminster Highway (No. 8 Road-Nelson Road): multi-use pathway	2015 Active Transportation Improvement Program: \$200,000	\$200,000	\$400,000
	Great Canadian Way (Van Horne Way-Bridgeport Road): multi-use pathway	2016 Active Transportation Improvement Program: \$150,000	\$150,000	\$300,000
	No. 2 Road (Steveston Highway-Dyke Road): multi-use pathway	2016 Capital Program (No. 2 Road Widening): \$74,250	\$148,500	\$1,240,000
BICCS Regional Needs Program	No. 2 Road (Steveston Highway-Dyke Road): multi-use pathway	2016 Capital Program (No. 2 Road Widening): \$200,000	\$400,000	
WITT	Sexsmith Road (Beckwith Road-River Road): multi-use pathway	2017 Capital Program (Transit Oriented Development Fund): \$247,500	\$247,500	\$495,000
<b>Total</b>			<b>\$1,846,500</b>	<b>\$4,179,000</b>

(1) The amounts shown represent the maximum funding contribution to be requested from TransLink based on the City's cost estimate for the project. The actual amount invoiced to TransLink follows project completion and is based on incurred costs.

Should the submissions be successful, the City would enter into funding agreements with TransLink. The agreements are standard form agreements provided by TransLink and include an indemnity and release in favour of TransLink. Staff recommend that the Chief Administrative Officer and General Manager, Planning and Development be authorized to execute the agreements. The 2017 Capital Plan and the 5-Year Financial Plan (2017-2021) would be updated to reflect the receipt of the external grants where required dependant on the timing of the budget process.

### **Financial Impact**

As indicated in Table 1, the City's portions of the costs of the projects are fully funded with the funding sources having been previously approved by Council. The proposed City's cost for the multi-use pathway on River Drive is anticipated to be \$672,000 based on successful cost-share applications to TransLink – that is, \$1,344,000 total cost less a two-year accumulation of \$672,000 (\$171,500 in 2016 and \$500,500 in 2017) from TransLink. The City's cost would be reduced should the 2017-2018 BikeBC application be successful. All projects have operating budget impacts that have been incorporated and approved as part of the past annual budget process.



## Conclusion

A number of additional pedestrian and bicycle route improvement projects are proposed for submission to TransLink's various cost-sharing programs for 2017 that would support the Council Term Goal with respect to "A Well Planned Community" as well as the goals of the Official Community Plan. In addition to maximizing external funding in implementing local transportation improvements, significant benefits for those using sustainable travel modes in terms of new infrastructure that provides safety and accessibility enhancements would also be achieved should these projects be approved by TransLink and Council.



Joan Caravan  
Transportation Planner  
(604-276-4035)

JC:jc

Att. 1: Locations of Proposed Supplemental Cost-Share Pedestrian and Cycling Infrastructure Projects



Proposed Supplemental 2017 MRNB, BICCS Regional Needs and WITT Projects



Proposed Projects shown in Yellow Outlined Boxes





Proposed Supplemental 2017 MRNB, BICCS Regional Needs and WITT Projects



Proposed Projects shown in Yellow Outlined Boxes



# City of Richmond

## Report to Committee

**To:** Public Works and Transportation Committee

**Date:** February 15, 2017


**From:** Victor Wei, P. Eng.  
Director, Transportation

**File:** 01-0150-20-ICBC1-  
01/2017-Vol 01



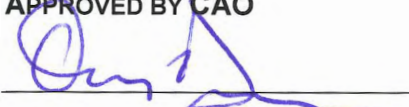
**Re:** ICBC-City of Richmond *Road Improvement Program – Proposed Projects for 2017*

### Staff Recommendation

1. That the list of proposed road safety improvement projects, as described in Attachment 2 of the staff report titled "ICBC-City of Richmond *Road Improvement Program – Proposed Projects for 2017*," dated February 15, 2017 from the Director, Transportation be endorsed for submission to the ICBC 2017 *Road Improvement Program* for consideration of cost sharing funding; and
2. That should the above applications be successful, the Chief Administrative Officer and General Manager, Planning and Development be authorized to negotiate and execute the cost-share agreements, and that the 5-Year Financial Plan (2017-2021) be amended accordingly.

  
Victor Wei, P. Eng.  
Director, Transportation  
(604-276-4131)

Att. 2

REPORT CONCURRENCE		
<b>ROUTED TO:</b>	<b>CONCURRENCE</b>	<b>CONCURRENCE OF GENERAL MANAGER</b>
Finance	<input checked="" type="checkbox"/>	 FOR JOE FREELY
Engineering	<input checked="" type="checkbox"/>	
Law	<input checked="" type="checkbox"/>	
RCMP	<input checked="" type="checkbox"/>	
<b>REVIEWED BY STAFF REPORT / AGENDA REVIEW SUBCOMMITTEE</b>	<b>INITIALS:</b> 	<b>APPROVED BY CAO</b> 

## Staff Report

### Origin

At the March 29, 2016 Council meeting, Council endorsed a number of proposed joint ICBC-City of Richmond road safety improvement projects for 2016. This report summarizes the projects implemented in 2016 with funding from ICBC and presents a list of projects proposed to be implemented with funding contributions from ICBC as part of the 2017 ICBC-City of Richmond *Road Improvement Program* partnership.

### Analysis

The City has been in partnership with ICBC in the *Road Improvement Program* since 1994. This partnership is a vital component of the City's traffic safety program as it enables the City not only to undertake more traffic safety enhancements than it could alone, but also to expedite some of these road safety improvement projects. Each year, a list of potential eligible capital projects is developed for inclusion in the *Road Improvement Program* based on community requests and input from the Traffic Safety Advisory Committee and other stakeholders.

#### Completed 2016 ICBC-City of Richmond Road Improvement Projects

As shown in Attachment 1, a number of City projects fully or substantially completed in 2016 will receive a total of \$287,000 in funding from ICBC's 2016 *Road Improvement Program*.

#### Proposed 2017 ICBC-City of Richmond Road Improvement Projects

Attachment 2 identifies a range of projects proposed for submission to the 2017 *Road Improvement Program* for funding contribution from ICBC that would provide benefits for all road users (i.e., motorists, cyclists, pedestrians, transit users).

ICBC's potential funding contribution to these projects will be determined by historical traffic crash rates at these locations and the estimated reduction in ICBC claim costs resulting from the proposed traffic safety improvements as well as eligibility of the project vis-à-vis the funding guidelines. The outcome of ICBC's review of the projects will be reported back as part of the 2018 ICBC *Road Improvement Program*.

Upon approval of a project by ICBC, the City would be required to enter into a funding agreement with ICBC. The agreement is provided by ICBC and generally includes an indemnity in favour of ICBC. Staff recommend that the Chief Administrative Officer and General Manager, Planning and Development be authorized to execute the funding agreements for the approved projects and that the 2017 Capital Plan and 5-Year Financial Plan (2017-2021) be amended accordingly to reflect the receipt of external grants.

### Financial Impact

The total estimated cost of all the projects identified in Attachment 2 is \$3,364,000.

As indicated in Attachment 2, the City's portion of the costs of the projects are fully funded with the funding sources having been either previously approved by Council or approved as part of

the 2017 Capital Budget. Several of the identified projects have additional external grants either approved or pending approval from other agencies such as TransLink. Should any submitted projects receive funding from ICBC, the City's portion of the total capital cost would be reduced accordingly.

### **Conclusion**

ICBC is a significant long-time partner working with the City to promote traffic safety in Richmond. The traffic safety initiatives jointly implemented by ICBC and the City, including various road and traffic management enhancements, educational efforts and enforcement measures, have resulted in safer streets for all road users in Richmond. Therefore, staff recommend that Council endorse the various local road safety improvement projects for submission to the 2017 joint ICBC-City of Richmond *Road Improvement Program*.



Joan Caravan  
Transportation Planner  
(604-276-4035)

Att. 1: 2016 Road Improvement Projects receiving ICBC Funding  
Att. 2: Proposed 2017 City-ICBC Road Improvement Projects



## 2016 Road Improvement Projects receiving ICBC Funding

Location	Project Description	ICBC Contribution
Gilbert Road (Lansdowne Road-River Road)	Road Widening	\$17,000
• No. 4 Road-Blundell Road	Installation of northbound and southbound left-turn arrows	\$15,000
• No. 4 Road-Westminster Highway		\$15,000
• No. 5 Road-Westminster Highway		\$15,000
• Sweden Way-Bridgeport Road	Installation of UPS (Uninterrupted Power Supply) for traffic signals	\$2,500
• No. 2 Road-Westminster Highway		\$2,500
• Garden City Road-Granville Avenue		\$2,500
• Westminster Highway-Jacombs Road		\$2,500
• St. Albans Road-Jones Road	Installation of Special Crosswalk	\$4,000
• Garden City Road-Jones Road		\$7,000
• No. 4 Road-Dayton Avenue		\$10,000
• No. 2 Road-Colville Road	Upgrade of Marked Crosswalk to Pedestrian Signal	\$14,000
• No. 1 Road-Regent Street		\$4,000
• Gilbert Road-Lucas Road		\$5,000
• Westminster Highway-McCallan Road		\$5,000
• Blundell Road-Ash Street		\$5,000
• No. 2 Road-Maple Road	Upgrade of Pedestrian Signal to Full Traffic Signal	\$14,000
• No. 2 Road-Blundell Centre Entrance		\$21,000
• Great Canadian Way/Garden City Road (Bridgeport Road-Cambie Road)	Intersection Traffic Video Detection Camera System	\$52,000
• Westminster Highway (Jacombs Road-No. 6 Road)		\$68,000
• 7 <sup>th</sup> Avenue (Pleasant St-Regent St)	Pedestrian Walkway/Sidewalk	\$3,000
• Bridgeport Road (Viking Way-No. 6 Rd)		\$3,000
<b>Total</b>		<b>\$287,000</b>

## Proposed 2017 City-ICBC Road Improvement Projects

Proposed 2017 ICBC-City of Richmond Road Improvement Program Projects	Estimated Total Cost	Source & Amount of City Funds <sup>(1)</sup>		Other External Agency Funding <sup>(2)</sup>
Traffic calming measures in various locations pending results of traffic studies <sup>(3)</sup>	\$95,000	2017 Traffic Calming Program	\$95,000	-
Installation of pedestrian zone markers pending results of traffic studies <sup>(3)</sup> : • Locations to be determined <sup>(4)</sup>	\$5,000	2017 Traffic Calming Program	\$5,000	-
Installation of pedestrian signals: • No. 4 Road-Albion Road • Granville Ave-Minoru Complex Entrance • Other locations to be determined <sup>(4)</sup>	\$120,000 \$150,000	2014 Traffic Signal Program 2017 Traffic Signal Program	\$120,000 \$150,000	-
Installation of full traffic signal: • Granville Ave-Minoru Gate • Other locations to be determined <sup>(4)</sup>	\$350,000	2017 Traffic Signal Program	\$350,000	-
Multi-use pathway: Westminster Hwy (No. 8 Road-Nelson Road)	\$400,000	2015 Active Transportation Program	\$400,000	-
Multi-use pathway: River Drive (No. 4 Road-Van Horne Way)	\$1,344,000	2017 Roads DCC Program	\$688,500	\$171,500 (Confirmed) \$484,000 (Pending)
Garden City Road-Odlin Road: southbound to eastbound left-turn lane	\$200,000	2016 Arterial Roadway Improvement Program	\$200,000	-
Construction of pedestrian path/sidewalk: • No. 2 Road (Granville Ave-Westminster Hwy) • Seacote Road (Williams Road-150 m north) • River Road (Oval Way-Brighouse Way) • Other locations to be determined <sup>(4)</sup>	\$400,000 \$200,000 \$100,000	2017 Arterial Roadway Improvement Program 2016 & 2017 Neighbourhood Walkway Programs 2016 Arterial Roadway Improvement Program	\$200,000 \$200,000 \$100,000	\$200,000 (Pending) - -

- (1) Should the submitted project receive funding from ICBC, the City's portion of the total cost would be reduced accordingly.
- (2) The amount shown represents the maximum funding contribution to be received from the external agency based on the City's cost estimate for the project. The actual approved amount may be lower than requested. The actual invoiced amount follows project completion and is based on incurred costs. Should the project receive funding from an external agency, the City's portion of the total cost would be reduced accordingly.
- (3) Implementation is subject to consultation with and support from affected residents.
- (4) Additional locations may be identified for submission to ICBC prior to its annual program deadline.



# City of Richmond

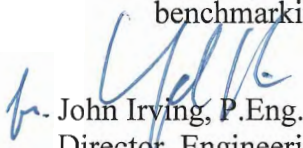
## Report to Committee

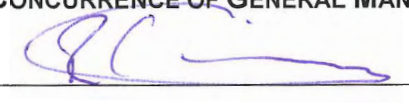

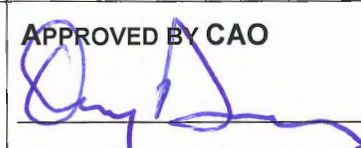
**To:** Public Works and Transportation Committee **Date:** February 23, 2017  
**From:** John Irving, P.Eng. MPA **File:** 10-6125-07-02/2015-Vol 01  
Director, Engineering  
**Re:** **Climate Action – Building Energy Benchmarking Policy Advocacy**

### Staff Recommendation

That, as described in the staff report titled “Climate Action – Building Energy Benchmarking Policy” from the Director, Engineering, dated February 23, 2017:

1. A resolution be forwarded to the Lower Mainland Local Government Association and the Union of BC Municipalities calling for the province to establish requirements for energy benchmarking of large buildings;
2. A letter be sent to the Chair of Metro Vancouver’s Climate Action Committee calling on Metro Vancouver to lead the development of a regional benchmarking program;
3. The Chief Administrative Officer and the General Manager, Engineering and Public Works be authorized to execute funding and partnership agreements with the Real Estate Foundation of BC and BC Hydro to develop benchmarking policy analysis and automated utility data exchange capabilities, and that amendments to the 5 Year Financial Plan (2017-2021) Bylaw be brought forward for up to \$155,000 in expenditures, subject to successful grant applications up to \$140,000 to be covered by grant funding and a \$15,000 City contribution from the Carbon Tax Provision.
4. Staff be directed to report back to Council options to establish building energy benchmarking policy for larger buildings in Richmond as a pilot measure.

  
John Irving, P.Eng. MPA  
Director, Engineering  
(604-276-4140)

REPORT CONCURRENCE		
<b>ROUTED TO:</b>	<b>CONCURRENCE</b>	<b>CONCURRENCE OF GENERAL MANAGER</b>
Finance Department Policy Planning	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	
<b>REVIEWED BY STAFF REPORT / AGENDA REVIEW SUBCOMMITTEE</b>	<b>INITIALS:</b> 	<b>APPROVED BY CAO</b> 
<b>PWT - 24</b>		



## Staff Report

### Origin

In 2014, Council adopted the Community Energy and Emissions Plan (CEEP), which includes Strategy #3 “Improve the Performance of the Existing Building Stock.” The 2015 CEEP Update identified mandatory energy benchmarking as a key initiative to support this strategy.

This report supports Council’s 2014-2018 Term Goal #4 Leadership in Sustainability:

*Continue advancement of the City’s sustainability framework and initiatives to improve the short and long term livability of our City, and that maintain Richmond’s position as a leader in sustainable programs, practices and innovations.*

- 4.1. *Continued implementation of the sustainability framework.*
- 4.2. *Innovative projects and initiatives to advance sustainability.*

### Background

In 2010, Council adopted targets in Richmond’s Official Community Plan (OCP) to reduce community greenhouse gas (GHG) emissions 33% below 2007 levels by 2020, and 80% below 2007 levels by 2050. The OCP also includes a target to reduce energy use 10% by 2020 below 2007 levels. Buildings account for about 45% of Richmond’s GHG emissions and 65% of energy consumption. The 2014 Community Energy and Emissions Plan (CEEP) identifies that in order to meet Richmond’s GHG reduction goals, new developments will need to achieve zero carbon emissions by 2025 and that deep emissions from Richmond’s existing building stock must also occur.

The City has an array of initiatives to reduce GHG emissions and energy consumption from buildings. These include:

- **District energy systems.** The city-owned Lulu Island Energy Company operates the Oval Village District Energy Utility and the multiple award winning Alexandra District Energy Utility. Other district energy opportunities in the City Centre are being evaluated. New mixed use and residential developments located in areas of the City Centre where district energy systems may be established are expected to be developed with mechanical system that can connect into these systems.
- **Energy performance secured during development approvals** – The 2009 City Centre Area Plan includes a policy that new developments over 2000m<sup>2</sup> undergoing rezoning achieve a minimum of LEED™ Silver performance. In 2014, Council adopted a policy in the Official Community Plan that new townhome developments undergoing rezoning achieve Energuide 82, and in 2015 adherence to the Energy Star for Homes rating system was added as an additional compliance option. Options for updating policies for new construction are being presented for Council consideration as part of reports to Planning Committee regarding the Energy Step Code.

- **The EnergySAVE Richmond suite of programs** ([www.energy.richmond.ca](http://www.energy.richmond.ca)) – The City offers a variety of programs to reduce emissions and energy consumption in the community. Many of these programs are delivered with funding support from utilities and other partners. Programs include:
  - The Building Energy Challenge, a friendly competition to benchmark energy use and reduce consumption over the course of a year.
  - The Richmond Carbon Marketplace.
  - The Business Energy and Water Saving Program.

As directed in the CEEP and the 2041 Official Community Plan, the City will continue to develop and implement initiatives to reduce community energy consumption and emissions. Access to buildings' energy consumption data represents a key opportunity to encourage energy and emissions reductions, as well as better evaluate and improve the initiatives noted above.

## **Analysis**

### Energy Benchmarking Overview

Energy benchmarking is the process of regularly tracking buildings' energy use, and comparing energy consumption against historic consumption, other similar buildings, and future targets. Benchmarking is considered a core energy management best practice. Building owners and managers can use energy benchmarking to understand their building's relative performance; assist in identifying opportunities to reduce energy consumption and costs; and evaluate the impact of capital investments and operating decisions.

The most common platform for building energy benchmarking is the free online ENERGY STAR Portfolio Manager (Portfolio Manager) tool developed by the United States Environmental Protection Agency. In 2013, Natural Resources Canada began hosting the Canadian adaptation of Portfolio Manager. Over 20% of the commercial floor space in Canada is already benchmarked using Portfolio Manager, and over 40% in the USA.

### The City's Experience with Benchmarking

The City uses Portfolio Manager to measure performance in its own larger buildings. Benchmarking with Portfolio Manager is also a core component of participating in the Richmond Building Energy Challenge, a friendly competition to reduce energy use and GHG emissions in larger buildings in Richmond that the City established in 2014. In the first year of the Challenge, participants' energy use reduced by 8% and GHG reduced by 13%, highlighting the value of benchmarking and related efforts to improve energy management.

### The Benefits of Benchmarking

Access to building energy benchmarking information allows building owners, governments, and the public to better understand how their buildings use energy. With this knowledge, they can make smarter and more cost-effective improvements. Benchmarking provides:

- **Improved information for the real estate industry** – When building owners and managers benchmark their buildings, they understand how they perform relative to comparable buildings. This allows owners to better prioritize energy management projects in their portfolio. Likewise, energy service providers benefit from the statistics developed from benchmarking data sets. And when prospective tenants or owners have access to benchmarking information, they can make more informed decisions about the performance of a building.
- **Energy and cost savings** – Energy waste costs residents and businesses in Richmond tens of millions of dollars every year. Studies by the US Environmental Protection Agency, Urban Land Institute and MIT suggest that building portfolios benchmarked with Portfolio Manager achieve savings of 7% to 14% within four years. A review of a similar benchmarking system used in Australia found savings in base building<sup>1</sup> energy consumption of 35% after 10 years.
- **Improved government and utility programs** – Transparency and good information are key components of functioning markets. Benchmarking data provides important insight into how buildings perform. Access to this data can allow the City, Metro Vancouver, the province and utilities to offer more customized, targeted incentives and programs to buildings to better assist them in reducing energy costs and emissions. It can also help the City plan for investments in district energy and other initiatives. Lastly, benchmarking data is necessary to evaluate how effective building codes and energy policies (such as the City's energy performance standards for projects undergoing rezoning) are at realizing lower energy use and carbon emissions.

### Mandatory Benchmarking Policy

22 North American cities, two states, and the province of Ontario now require that buildings above a certain size threshold (often 50,000 square feet) annually report benchmarking information to the regulating jurisdiction. Energy benchmarking requirements are considered a potent market-based policy mechanism to drive reductions in GHG emissions and energy costs, and greater innovation. These policies comprise of the following components:

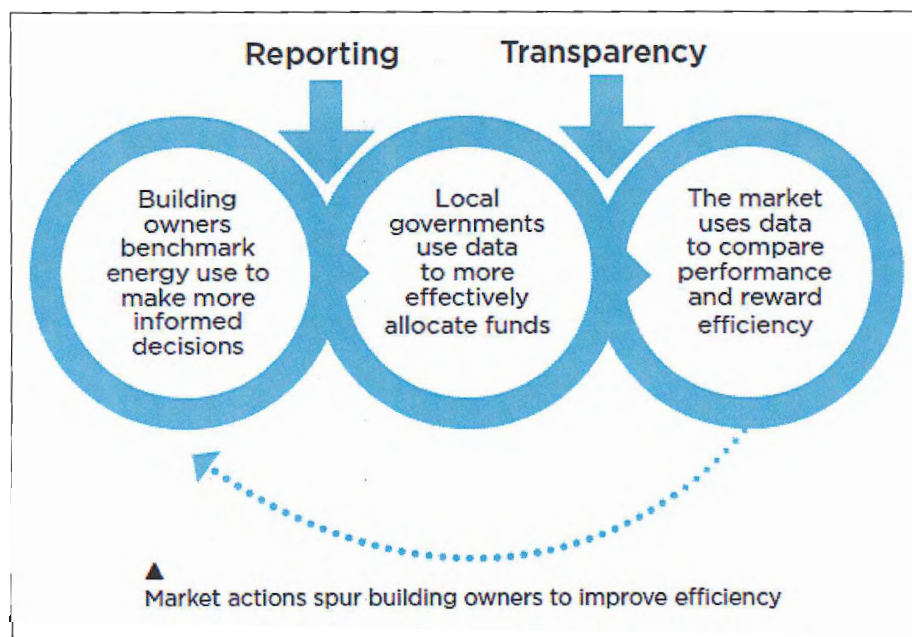
1. **Benchmarking** – Buildings are required to track their performance in the Energy Star Portfolio Manager tool on an annual basis. This requirement ensures that this good energy management practice is adopted by all buildings within the community, and allows owners and property managers to compare their buildings' performance against average values in the region.

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<sup>1</sup> "Base building energy consumption" refers to energy consumed by non-tenant occupied or common property. This typically is about half the energy used in office buildings.

2. **Reporting** – On an annual basis, buildings are required to report their energy consumption information to the local government and/or province/state. Electronic reporting platforms are established that make this process simple for property owners. Sharing benchmarking data with a local government and/or province allows policymakers to analyze whether programs are achieving their intended results; more effectively provide incentives and assistance with making energy improvements; and gain a better understanding of a region's building stock for infrastructure planning. Individual buildings' information is not shared publicly at this stage.
3. **Transparency (optional)** – Some jurisdictions go further, making data sets with individual buildings' annual energy consumption publicly accessible. Providing this information helps the real estate sector make more informed decisions, and is a way to drive greater attention to energy performance amongst the real estate sector. Typically, energy data transparency only occurs after a few years of energy reporting, giving industry an opportunity to respond through energy management projects and ensuring data quality.

These components are summarized in Figure 1 below.



**Figure 1:** How building energy benchmarking policies encourage building efficiency.  
Source: Pacific Coast Collaborative & Institute for Market Transformation.

### Benchmarking Policy Activity in BC

The 2014 Union of BC Municipalities Convention endorsed Resolution B94 “Benchmarking Tools for Building Energy Use”, which requested that the provincial government empower local governments to enact benchmarking requirements. In its response in February 2015, the province noted that “while legislative amendments are not under consideration at this time, the Province is exploring approaches and policy options in relation to enabling potential benchmarking activities, in particular for commercial and large multi-unit residential buildings in BC.”

In September 2015, the City requested that the Province develop mandatory benchmarking policy in its written submission to the BC Ministry of Environment as part of the Climate Leadership Plan development process.

In December 2016, BC signed the Pan-Canadian Climate Plan, which calls for building energy benchmarking and disclosure as early as 2019. Moreover, the province, through its participation in the Pacific Coast Collaborative (an agreement between the province of BC, and the states of California, Oregon, Washington and Alaska to coordinate on matters of economic and environmental policy) agreed to the Pacific Coast Climate Leadership Plan, committing to “collaborate with West Coast cities, to further expand large building energy benchmarking and disclosure throughout the region and leverage data to drive reductions in energy use.” This Plan set a target of 75% of eligible large building square footage on the Pacific Coast reporting energy data through provincial and/or local government requirements.

The City of Vancouver is actively pursuing establishing a benchmarking requirement, which is a centrepiece of Vancouver’s Building Retrofit Strategy. However, Vancouver staff report that the Vancouver Charter likely needs to be revised to establish benchmarking policy. Vancouver is pursuing this Charter change with the province. It is important to note that other BC local governments may not need revisions to their enabling legislation to establish benchmarking requirements. Indeed, BC Ministry of Energy and Mines staff have noted their belief that local governments may enact benchmarking requirements, given that the Community Charter specifies “a council may, by bylaw, regulate, prohibit and impose requirements in relation to... buildings” (Section 8(3)(1)).

### Perspectives on Establishing Mandatory Benchmarking Requirements

The Canada Green Building Council released a common framework for establishing benchmarking, reporting and transparency policies in Canada. This guide complements similar guidance documents published by the US Department of Energy, the Institute for Market Transformation and other similar institutions.

Research that informed the guide suggests that the Building Owners and Managers Association of BC (BOMA BC), the Real Property Association of Canada (REALpac), and the International Council of Shopping Centres (ICSC) and other property ownership stakeholders recognize the value of benchmarking, and have even supported their membership in their own benchmarking efforts. These organizations are not opposed to governments requiring reporting of energy data to local governments or provinces; however, they do have concerns about the public disclosure of energy data, especially in the early years of requirements’ implementation.



### The Need for “Automated Data Exchange”

“Automated data exchange” is the automatic uploading of utility consumption information into the ENERGY STAR Portfolio Manager benchmarking tool. After a building owner chooses to use automated data exchange, their Portfolio Manager account will be automatically regularly populated with utility data into the future. This simplifies the benchmarking process and reduces errors.

FortisBC is developing these capabilities through a provincial grant. BC Hydro has developed this capability for commercial buildings in 2016. In 2017, BC Hydro aims to provide “aggregated electronic data exchange services,” which will sum all residential electricity consumption in a building into one number and automatically report it into Portfolio Manager. This functionality ensures individual households’ anonymity and privacy, as well as avoiding needing to request energy data from each electric utility bill payer in a building. For these reasons, automated aggregated data exchange is important to implementing benchmarking reporting requirements encompassing the multifamily and mixed-use sector, which comprise the majority of the floor space potentially impacted by benchmarking requirements. However, further resources would be required in order for BC Hydro to establish aggregated electronic data exchange capabilities for residential buildings. BC Hydro has committed \$80,000 to this effort, with the City of Vancouver contributing an additional \$30,000; additional funds are required. As recommended below, there is an opportunity for the City to support this initiative through Real Estate Foundation of BC grant funds.

### Recommendations

In order to take leadership on benchmarking policy in BC, it is recommended that:

1. **A resolution be forwarded to the Lower Mainland Local Government Association and the Union of BC Municipalities calling for the province to establish requirements for energy benchmarking of large buildings.** The proposed resolution is included in Attachment 2. A provincial requirement would be most impactful in terms of the total building floor space covered. It would also likely be simpler to administer than multiple local government requirements, which would necessitate shared data management and compliance infrastructure.
2. **A letter be sent to the Chair of Metro Vancouver’s Climate Action Committee calling on Metro Vancouver to lead the development of a regional benchmarking program.** In the event that the province does not establish benchmarking policy in a timely manner, regional governments may be an appropriate entity to manage benchmarking programs and/or establish benchmarking requirements. Were Metro Vancouver to implement such programs, a sizeable proportion of the applicable buildings in the province would be encompassed.

3. **The City partner with other organizations to develop benchmarking communication tools and data exchange infrastructure through a funding agreements with the BC Real Estate Foundation and BC Hydro.** In order for benchmarking policy to be implemented, analysis and communications infrastructure must be developed. Notably, it will be necessary for utilities to establish electronic data exchange capabilities. Additionally, data visualizations and customized reports to building owners can provide powerful means of communicating opportunities to reduce energy use and emissions. Lastly, legal analysis of local governments' authority to implement benchmarking requirements can inform local and provincial policy. The City can lead in the development of these efforts.

There is an opportunity for the City of Richmond to leverage grants of up to \$105,000 from the Real Estate Foundation of BC and \$35,000 from the BC Hydro Community Energy and Emissions Plan Implementation Offer, to support efforts to implement BC Hydro automated data exchange, benchmarking information communications and visualization tools, and legal analysis of local governments' ability to implement benchmarking requirements. It is recommended that staff be authorized to execute funding and partnership agreements with the Real Estate Foundation of BC and BC Hydro, to implement this work.

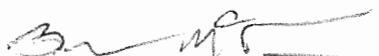
4. **Explore options for the City to establish benchmarking policy.** Finally, staff will explore options to establish building energy benchmarking policy for larger buildings in Richmond as a pilot measure. Staff will report back with analysis of options within a year, following engagement with other levels of government.


### Financial Impact

Should the City be successful in its applications to the Real Estate Foundation of BC and BC Hydro for benchmarking capacity development work, an amendment will be brought forward to the 5 Year Financial Plan for up to \$155,000 in staff and specialized expertise. The City will enter into funding and partnership agreements with these organizations. Up to \$140,000 will be sourced through grant funds. A maximum of \$15,000 of City funds will be spent on salaries for project management sourced from the City's Carbon Tax Provision fund, which is dedicated to community energy and emissions projects.

### Conclusion

Continuing to encourage energy upgrades in local buildings is essential to reaching Richmond's energy goals and reducing emissions. Energy benchmarking helps buildings better manage energy, and thereby reduce energy costs and pollution. The City can take a variety of leadership actions to help ensure that benchmarking requirements are established in BC.

  
Brendan McEwen  
Sustainability Manager  
(604-247-4676)

  
Peter Russell  
Sr. Manager, Sustainability & District Energy  
(604-276-4130)

- Att. 1: Jurisdictions adopting benchmarking and disclosure policy.  
Att. 2: Draft Resolution – Lower Mainland Local Government Association and the Union of BC Municipalities

Attachment 1: Jurisdictions adopting benchmarking and disclosure policy.





**Attachment 2: Draft Resolution Lower Mainland Local Government Association and the  
Union of BC Municipalities**

PROVINCIAL ACTION ON BUILDING ENERGY BENCHMARKING      City of Richmond

WHEREAS as described in the Canada Green Building Council's "Energy Benchmarking, Reporting & Disclosure in Canada: A Guide to a Common Framework" mandatory energy benchmarking and reporting is a low cost, market-based means to enable buildings to reduce energy costs and GHG emissions;

AND WHEREAS the province of BC is a signatory to both the Pan-Canadian Framework on Climate Change and Clean Growth and the Pacific Coast Climate Leadership Plan, both of which commit the province to implement benchmarking requirements for larger buildings;

AND WHEREAS a provincially administered benchmarking requirement similar to that adopted by the province of Ontario would be most impactful and administratively simple;

AND WHEREAS climate change threatens BC communities, and action in the built environment is necessary to mitigate climate change and realize economic opportunity;

THEREFORE BE IT RESOLVED that the province be requested to develop a requirement that buildings above a size threshold benchmark their energy performance and report this information to the province annually, and that the resulting data be available to local governments to inform their climate policy and programs.



# City of Richmond

## Report to Committee

**To:** Public Works and Transportation Committee **Date:** February 28, 2017  
**From:** John Irving, P.Eng. MPA **File:** 10-6060-01/2017-Vol  
Director, Engineering 01  
**Re:** Lower Mainland Flood Management Strategy Update

### Staff Recommendation

That the City of Richmond continue to participate in the Lower Mainland Flood Management Strategy for a further two years.

*for* *Udd.*  
John Irving, P.Eng. MPA  
Director, Engineering  
(604-276-4140)

Att. 2

REPORT CONCURRENCE		
<b>ROUTED TO:</b>	<b>CONCURRENCE</b>	<b>CONCURRENCE OF GENERAL MANAGER</b>
Roads & Construction	<input checked="" type="checkbox"/>	<i>[Signature]</i>
<b>REVIEWED BY STAFF REPORT / AGENDA REVIEW SUBCOMMITTEE</b>	<b>INITIALS:</b> <i>GI</i>	<b>APPROVED BY CAO</b> <i>[Signature]</i>

## Staff Report

### Origin

Over the past five years the Fraser Basin Council (FBC) has been promoting a regional approach to flood management. Most lower mainland local governments and key agencies (i.e. YVR, SFU, BC Ministry of Environment) are participating and providing funding to support this initiative. City staff have been engaged in this process since it began and the City has provided \$5,000 per year for two years to support Phase 1 of the Lower Mainland Flood Management Strategy. Phase 1 was completed in May 2016 and the FBC is now seeking further participation and financial support for Phase 2 of the Lower Mainland Flood Management Strategy.

This report supports Council's 2014-2018 Term Goal #6 Quality Infrastructure Networks:

#### *6.1. Safe and sustainable infrastructure.*

### Findings of Fact

The Lower Mainland Flood Management Strategy is intended to provide a better understanding of regional flood hazards, flood vulnerabilities and the state of flood protection infrastructure, policies and practices in the region. The Fraser Basin Council serves as the facilitator and coordinator of the collaborative process to develop the Strategy.

Partners in developing the Lower Mainland Flood Management Strategy include 23 lower mainland municipalities (including Richmond), two regional districts, four provincial ministries, and ten other entities (SFU, YVR, CNR, CPR, Translink, etc.)

The City's primary rationale for participating in this initiative has been to remain engaged and conversant on this issue at the regional level. While staff do not anticipate significant technical value as the strategic and modelling work has been completed by Richmond in several iterations over many decades, with the most recent strategic centre piece being the City's 2006-2031 Flood Protection Management Strategy adopted by Council in 2006, the initiative does facilitate regional and provincial focus on the issue.

### Phase 1

Phase 1 of the Lower Mainland Flood Strategy consisted of three projects:

- Project 1 - Analysis of Future Flood Scenarios
- Project 2 - Regional Assessment of Flood Vulnerabilities
- Project 3 - Assessment of Flood Infrastructure, Policies & Practices

As reported to the Public Works and Transportation Committee at the June 27, 2016, meeting in a report titled "Fraser River Freshet and Flood Protection Update 2016", dated May 31, 2016, the City has completed similar projects to a higher level of accuracy under the 2008 – 2031 Richmond Flood Protection Strategy in 2008.

Project 3 reporting indicated that few lower mainland dikes met current provincial standards and none fully met or exceeded the standards. As identified in the May 31, 2016 staff report, this is untrue with respect to Richmond and Richmond dikes exceed current provincial standards. It was also noted that Project 3 was a desktop study with no field verification and included disclaimers that further work must be done to determine actual dike conditions. Staff have identified the errors in Project 3 to the Fraser Basin Council and have prompted them to update the project to include the actual condition of Richmond dikes. While there is no commitment at this time to revisit the Project 3 results, the Fraser Basin Council recognizes the issue and dialogue in this regard is ongoing with staff.

## Phase 2

The Fraser Basin Council is in the opening stages of defining Phase 2 of the Lower Mainland Flood Management Strategy and have requested ongoing participation from the City of Richmond, which includes a request for funding. In a letter dated October 24, 2016 (Attachment 1), the Fraser Basin Council requested that the City contribute \$10,000 per year for two years. The Fraser Basin Council has had significant funding success that includes a \$1,000,000 commitment from the province.

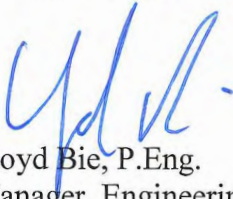
Staff identified concerns with Phase 1 results and the communication issues that contributed to inaccuracies, particularly in Project 3, that needed to be addressed prior to Richmond's continued financial participation in the Lower Mainland Flood Management Strategy. The Fraser Basin Council has responded with a letter dated February 24, 2016 (Attachment 2) reassuring the City that the Fraser Basin Council is committed to engaging with all partners and including their interests, knowledge and perspectives in subsequent work. It also commits to coordinating effective communications with advanced notification of report releases and media relations. With these commitments in place, staff recommends participating in Phase 2.

## **Financial Impact**

Financial participation in Phase 2 of the Lower Mainland Flood Management Strategy is \$10,000 per year for two years for a total cost of \$20,000. This amount will be funded from existing Diking Utility budgets.

## Conclusion

The City of Richmond has concerns with Phase 1 of the Lower Mainland Flood Management Strategy. The errors in Phase 1 projects with respect to Richmond dikes could have been avoided with improved partner engagement, but the Fraser Basin Council has committed to improving partner engagement for Phase 2 of the Strategy. As such, Staff recommend continuing participation in the Lower Mainland Flood Management Strategy, including a \$20,000 financial commitment over two years.



Lloyd Bie, P.Eng.  
Manager, Engineering Planning  
(604-276-4075)

LB:lb

- Att. 1: Letter dated October 24, 2016, RE: Financial Support for Phase 2 – Lower Mainland Flood Management Strategy  
2: Letter dated February 24, 2017, RE: Lower Mainland Flood Management Strategy



**Fraser Basin Council**

*Social well-being supported by a vibrant  
economy and sustained by a healthy environment*

October 24, 2016

Attn: George Duncan  
CAO  
City of Richmond  
6911 No.3 Road  
Richmond BC V6Y 2C1

**RE: Financial Support for Phase 2 – Lower Mainland Flood Management Strategy**

Dear George Duncan,

I am writing to thank the City of Richmond for previously supporting Phase 1 of the Lower Mainland Flood Management Strategy (LMFMS) and to confirm renewed financial support and participation to complete Phase 2. Phase 2 focuses on developing an Action Agenda with priorities, recommended flood mitigation options, and a recommended funding and decision-making model to implement the Action Agenda.

The Fraser Basin Council (FBC) serves as the facilitator and coordinator of the development of the LMFMS. As a non-government organization with four orders of government, the private sector and civil society represented on the FBC Board of Directors, we are well positioned to serve as the impartial body to facilitate dialogue and consensus through this initiative. Decision-making for implementation remains with existing jurisdictions.

FBC has undertaken significant work over the past 18 years to strengthen an integrated approach to flood hazard management in BC with a focus in the Lower Mainland. This work has been advanced primarily through the Joint Program Committee for Flood Hazard Management (JPC). The JPC was established in 1998 and now includes more than fifty agencies and organizations with flood management roles and responsibilities.

Since 2014, the FBC has coordinated Phase 1 of the LMFMS to strengthen flood mitigation in British Columbia's Lower Mainland to protect communities, critical infrastructure and the economy. Forty-three public and private sector partners generously provided financial support for Phase 1, which is now complete.

In collaboration with, and on behalf of, all partners and the wider Lower Mainland region, FBC is now finalizing plans and securing the necessary funds to complete Phase 2 – the development of an Action Agenda with priorities, recommended flood mitigation options, and a recommended funding and decision-making model for implementation. As you can appreciate from the attached work plan for Phase 2, we expect a considerable amount of



work to be done over the next 2-2 1/2 years to develop and 'flesh out' the Action Agenda as well as reach 'regional' consensus on the extent and nature of the Action Agenda. As such, it is understood that this work will require financial contributions from all potentially affected interests in the Lower Mainland to protect the dozens of communities, millions of residents and billions of dollars of infrastructure that could be impacted from river and coastal flooding.

Thus, we are now ready to continue and enhance the collaborative, cost-shared approach that proved to be so successful in Phase 1 to now complete Phase 2. We also look forward to broadening the partnership as we engage with additional funding partners. On behalf of all of the LMFMS partners and the communities and sectors you represent, the Fraser Basin Council respectfully requests a contribution of \$20,000 from the City of Richmond to support completion of Phase 2 over the next two years. We have attached an invoice for year one of your contribution, however, if you would prefer to make the full contribution in year one, please contact us and we will send you a revised invoice.

Additional information is attached for your reference including the Phase 1 Summary Report, which includes an overview of key steps for the Phase 2 Action Agenda, as well as a summary of proposed actions, deliverables and cost-sharing in Phase 2.

Your continued support and collaboration will help solidify and leverage the participation of other key funding partners in the LMFMS. This is vital to complete a comprehensive regional action plan and to recommend a dedicated funding program for effective flood mitigation measures that serve our shared national, provincial, regional and local interests.

If you have any questions or would like further details about the Lower Mainland Flood Management Strategy, please contact Steve Litke, Senior Program Manager (604-488-5358). See also [www.floodstrategy.ca](http://www.floodstrategy.ca).

Yours truly,



David Marshall  
Executive Director  
Fraser Basin Council

Cc: Lloyd Bie



Fraser Basin Council

*Social well-being supported by a vibrant  
economy and sustained by a healthy environment*

February 24, 2017

John Irving  
Director, Engineering  
City of Richmond  
[jiirving@richmond.ca](mailto:jiirving@richmond.ca)

**RE: Lower Mainland Flood Management Strategy**

Dear Mr. Irving;

Thank you for our meeting on February 8, 2017 to discuss the Lower Mainland Flood Management Strategy. As discussed, the Fraser Basin Council serves as the impartial facilitator and coordinator of the collaborative process to develop the Strategy. The strengths of this multi-interest process are the broad partnership and the leadership and experience demonstrated by the numerous partners such as the City of Richmond. The Fraser Basin Council is committed to engaging with all partners to shape the scope and approach of the Strategy; to include the interests, knowledge and perspectives of partners within the Strategy; to provide regular progress reports; and to coordinate effective communications with advanced notification of report releases and media relations.

We are facilitating a variety of opportunities for the partners to engage on this initiative, both in terms of keeping them informed and providing their input. These opportunities include the Joint Program Committee, various Advisory Committees being established to support specific projects and components of the Strategy, and a Leadership Committee to oversee the process.

We look forward to continuing to work with the City of Richmond along with all Lower Mainland local governments, federal and provincial government agencies, First Nations, and other organizations to develop and implement a broad-based strategy to strengthen flood management for the benefit of the entire Lower Mainland Region.

Sincerely,

David Marshall, Executive Director  
Fraser Basin Council





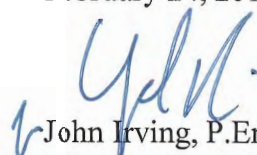
# City of Richmond

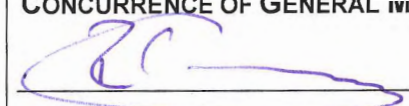

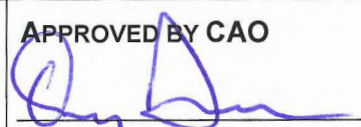
## Report to Committee

**To:** Public Works and Transportation Committee  
**From:** John Irving, P.Eng. MPA  
Director, Engineering  
**Date:** February 24, 2017  
**File:** 10-6060-03-01/2017-  
Vol 01  
**Re:** 2017 Liquid Waste Management Plan Biennial Report

### Staff Recommendation

That the the staff report titled "2017 Liquid Waste Management Plan Biennial Report," dated February 24, 2017, from the Director, Engineering be submitted to Metro Vancouver.

  
John Irving, P.Eng. MPA  
Director, Engineering  
(604-276-4140)

REPORT CONCURRENCE		
<b>ROUTED TO:</b>	<b>CONCURRENCE</b>	<b>CONCURRENCE OF GENERAL MANAGER</b>
Sewerage & Drainage	<input checked="" type="checkbox"/>	
<b>REVIEWED BY STAFF REPORT / AGENDA REVIEW SUBCOMMITTEE</b>	<b>INITIALS:</b> 	<b>APPROVED BY CAO</b> 

## Staff Report

### Origin

The Greater Vancouver Sewerage and Drainage District (GVS&DD) Board adopted the Integrated Liquid Waste and Resource Management Plan (ILWRMP) in May 2010. Subsequently, at the September 27, 2010 City of Richmond Regular Council Meeting, Council adopted the following motion:

*“That the municipal commitments in the Metro Vancouver 2010 Integrated Liquid Waste and Resource Management Plan be endorsed.”*

The Minister of Environment approved the ILWRMP, subject to conditions identified in his letter, dated May 30, 2011.

The ILWRMP requires member municipalities to report progress on 27 municipal commitments on a biennial basis. The ILWRMP Biennial Report will be compiled by Metro Vancouver and submitted to the Minister of Environment once it is approved by the GVS&DD Board.

This staff report reviews the City’s progress on the ILWRMP municipal actions and presents the 2017 Liquid Waste Management Plan Biennial Report (2017 Biennial Report) (Attachment 1) to Council for information and consideration.

### Analysis

The ILWRMP includes a municipal commitment to report progress on a biennial basis. The 2017 Biennial Report covers the 2015 to 2016 reporting period. Richmond has previously submitted six biennial reports over the last 14 years based on reporting requirements in the current and previous Liquid Waste Management Plans.

The 2017 Biennial Report includes 27 narratives, several tables and graphics attachments that report on the 27 municipal commitments included in the ILWRMP. The City is meeting or exceeding all of the requirements of the ILWRMP. The following are highlights of Richmond’s 2017 Biennial Report:

#### Inflow and Infiltration (I&I)

ILWRMP action 1.1.18 requires municipalities to develop and implement I&I management plans that ensure I&I levels are within Metro Vancouver allowances, as measured at Metro Vancouver’s flow metering stations.

The City’s maximum I&I rate for the 2015-2016 period was 6,600 L/ha/day as measured at the Lulu Island Wastewater Treatment Plant. This level of I&I is significantly below the Metro Vancouver allowance of 11,200 L/ha/day. This is a result of the City’s continued efforts in eliminating storm tie-ins to the City’s sanitary system to minimize inflows, and a successful sanitary sewer assessment and rehabilitation program to manage infiltration. Metro Vancouver targets to inspect regional sanitary sewers on a twenty year cycle. Richmond began CCTV inspections of its gravity sanitary sewers in 2002. As of 2015, CCTV inspections have been

completed for 100% of Richmond's gravity sewers, seven years ahead of Metro Vancouver's target. 98.3% of mains surveyed in this reporting period were found to be in good condition. Rehabilitation of damaged mains identified is incorporated into the City's five-year capital program.

Staff continue to monitor I&I levels at the City's sanitary pump stations, identifying any catchments that may have higher I&I rates for subsequent study and remediation if required.

#### Asset Management Plan

ILWRMP action 3.1.8 requires municipalities to develop and implement asset management plans and to provide copies of those plans to Metro Vancouver by 2014. Richmond has both an Ageing Infrastructure Management Plan and a Growth Related Infrastructure Management Plan. Both of these have been in place for a number of years and were submitted ahead of Metro Vancouver's target date.

#### Sanitary Sewer Overflows

ILWRMP action 3.3.7 requires municipalities to report on the frequency and location of sewerage overflows from municipal sanitary sewers. The City does not have chronic sanitary sewer overflow issues and there were zero overflows for the reporting period. This is largely due to Richmond's successful capital and maintenance programs, separated sewer systems and low I&I rates.

#### Stormwater Management Plan

ILWRMP action 3.4.7 requires municipalities to develop and implement stormwater management plans that integrate with land use. Richmond has developed an Integrated Rainwater Resource Management Strategy, a strategic approach to manage stormwater within the City's floodplain ecosystem. It identifies strategies to detain stormwater, improve water quality, control sediments, harvest and re-use rainwater, and protect and enhance green infrastructure. In addition, Richmond's Ecological Network Management Strategy was adopted in 2014 and contains extensive actions and initiatives on the integration of rainwater management Best Management Practices tailored to various land uses within the City.

#### Water Metering

Ministerial Condition 2 for approval of the ILWRMP strongly encourages municipalities to business case and/or implement residential water metering programs and to consider municipal rebate programs for water efficient fixtures and appliances to reduce water use.

The City has comprehensive water meter programs for both residential and commercial properties. All industrial, commercial, institutional and farm properties in Richmond are metered. The City is universally metering all single-family properties, with a target completion in 2017, and multi-family complexes can volunteer for water meters through a subsidized program. By the end of 2016, 93% of single-family properties and 40% of multi-family properties are metered in Richmond.

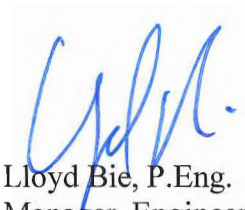
To further promote reduced water use, the City provides metered customers with water conservation kits, which include low flow showerheads, faucet aerators, toilet fill cycle diverters, toilet leak detection tablets, and educational water conservation tools. In addition, the City has successful programs for toilet rebates, rain barrels, and clothes washer rebates. At the end of 2016, 6,422 toilet rebates, 1307 rain barrels, and 474 clothes washer rebates have been issued to Richmond residents.

### **Financial Impact**

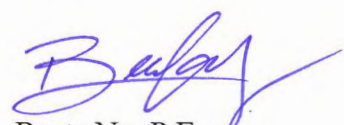
None.

### **Conclusion**

The 2010 ILWRMP includes a municipal commitment to report progress on ILWRMP actions on a biennial basis. The attached 2017 Biennial Report summarizes Richmond's progress on municipal actions for the 2015 to 2016 reporting period. The City of Richmond is meeting or exceeding all of the requirements of the ILWRMP and staff will continue work on municipal actions identified in the ILWRMP.



Lloyd Bie, P.Eng.  
Manager, Engineering Planning  
(4075)



Beata Ng, P.Eng.  
Project Engineer  
(4257)

LB:bn

Att. 1: City of Richmond 2017 Liquid Waste Management Plan Biennial Report

# 2017 Liquid Waste Management Plan Biennial Report

Reporting Period: 2015 – 2016

## Municipal Submission Section

To be completed by: March 3, 2017

Municipal Contact Information			
Name	Email	Phone	Responsible For ILWMP Action #'s
Lloyd Bie	<a href="mailto:LBie@Richmond.ca">LBie@Richmond.ca</a>	604-276-4075	
Beata Ng	<a href="mailto:BNg@Richmond.ca">BNg@Richmond.ca</a>	604-276-4257	
Kimberley Armour	<a href="mailto:KArmour@Richmond.ca">KArmour@Richmond.ca</a>	604-276-4230	1.1.16, 1.1.17, 3.4.7, Ministerial Condition 9

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# List of Content

- 1. Submission Checklist:
  - a. Narratives .....i
  - b. Tables.....iv
  - c. Attachments.....v
  
- 2. Municipal Reporting Submission .....1

## Submission Checklist

### Narratives:

- ☒ Narrative 1: *Summarize ongoing permitting & inspection programs*
- ☒ Narrative 2: *Summarize approach to regulating pesticides and lawn care products*
- ☒ Narrative 3: *Summarize updates to outreach plans for supporting liquid waste source control programs (e.g. stormwater, sewer use, sewer maintenance, I&I management, cross connections etc.) during the reporting period*
- ☒ Narrative 4: *Summarize I&I management plans & list key actions resulting from plans*
- ☒ Narrative 5: *Summarize enforcement enhancements and process efforts during reporting period*
- ☒ Narrative 6: *Highlight and summarize bylaw changes relating to stormwater management*
- ☒ Narrative 7: *Highlight and summarize changes to utility design standards and neighbourhood design guidelines in relation to on-site rainwater management*
- ☒ Narrative 8: *Summarize development of municipal sanitary overflow management plans. Highlight specific examples.*
- ☒ Narrative 9: *Highlight & summarize progress on the prevention of CSOs and the separation of combined sewers*
- ☒ Narrative 10: *List approaches and strategies that address risks (ie: regular maintenance, SCADA, monitoring, protocols, identified redundancies/contingencies)*
- ☒ Narrative 11: *Describe regulations and status of applications*
- ☒ Narrative 12: *Summarize existing municipal odour control programs and the implementation of new programs for targeted municipal sewer facilities*
- ☒ Narrative 13: *Summarize air emissions management programs for standby power generators at municipal sewer pump stations*



- ☒ Narrative 14: *Summarize greenhouse gas emissions reduction initiatives for municipal liquid waste services.*
- ☒ Narrative 15: *Summarize key progress on the assessment and condition of municipal sewerage system*
- ☒ Narrative 16: *Summarize key progress or accomplishments on the development of asset management plans for municipal sewerage infrastructure*
- ☒ Narrative 17: *Summarize key findings from the tri-annual internal audit (first due in 2015)*
- ☒ Narrative 18: *Summarize the estimate of greenhouse gas emissions and odours associated with the operation of municipal and regional liquid waste management systems*
- ☒ Narrative 19: *Summarize and highlight any important details and action plans relating to wet weather SSOs & probable causes of CSOs*
- ☒ Narrative 20: *Summarize and highlight any changes to the existing municipal sewer flow & sewer level monitoring network*
- ☒ Narrative 21: *Summarize progress on the development of emergency management strategies and response plans for municipal & regional wastewater collection and treatment systems*
- ☒ Narrative 22: *Summarize key initiatives that support the adaptation of infrastructure & operations to address risks and long term needs*
- ☒ Narrative 23: *Summarize and highlight key initiatives relating to the development and implementation of the integrated management plans*
- ☒ Narrative 24: *Discuss water metering & rebate programs relating to water fixtures and appliances*
- ☒ Narrative 25: *Summarize whether any new municipal water metering policies or programs were introduced in 2015-2016 that address this action. If no changes, then indicate, "Same as the 2013-2014 reporting period: no changes".*
- ☒ Narrative 26: *Quote relevant OCP sections addressing stormwater, stream health and their consideration of ISMPs*

**Tables:**

- ☒ Table 1: *List core sewer use bylaws and summarize any changes*
- ☒ Table 2: *Summarize Status of Bylaws Related to Controlling Sediment Transport & Erosion*
- ☒ Table 3: *Types and Number of Liquid Waste Related Permits Issued 2015-2016*
- ☒ Table 4: *Products Regulated to Protect Stormwater Runoff Quality*
- ☒ Table 5: *Bylaws Regulating Discharges of Groundwater and Rainwater to Sanitary Sewers*
- ☒ Table 6: *List standards and guidelines and where applied*
- ☒ Table 7: *List references*
- ☒ Table 8: *Bylaws and Regulations Requiring Pleasure Craft Pump-out Facilities at Marinas*
- ☒ Table 9: *Summary of LWMP Implementation Budgets and Forecasts*
- ☒ Table 10: *Summary of Municipal Progress 2015-2016*

### Graphics & GIS Data:

☒ Attachment 1:

- I&I Mapping showing I&I rates for neighbourhoods where studies have been completed with before and after I&I (L/ha-d). Objectives to Illustrates catchment areas covered by I&I studies.
- Transmit an electronic copy of GIS shape files for study catchment boundaries to Metro Vancouver

☒ Attachment 2:

- Mapping showing where sewer separation work occurred in 2015-2016
- GIS shape files of the locations where sewer separation occurred in 2015-2016 for composite mapping
- GIS shape files of catchments of remaining combined sewer catchments as of December 31, 2016 (if separated catchments discharge to combined sewers, code the separated catchments as "separated").

☒ Attachment 3:

- Map and GIS data showing location of emergency municipal overflows (this information should have already been provided through a separate request through the REAC LWSC as well as the 2013-2014 reporting). If already provided, please indicated so.

☒ Attachment 4:

- 2015-2016 map showing odour control facilities & locations of complaints (different than facility)
- GIS shape files for the odour facility and complaint mapping to allow for development of composite mapping

☒ Attachment 5:

- A map showing sewerage system CCTV inspection for 2015-2016 and the other areas of CCTV inspection work in a different colour over the previous 18 years (1996-2014).
- A map showing any sewer replacement /rehabilitation work for 2015-2016 as part of either asset management or capacity upgrades. Indicate whether the work is for upgrades or maintenance.

☒ Attachment 6:

- Titles of any completed asset [replacement] management plans (author, date, title, and publisher) for 2015-2016.
- Completed annual PSAP 3150 reporting on asset values for 2015-2016.
- Colour coded map showing age of the sewerage system (i.e.: <1900, 1901-1925, 1926-1950, 1951-1975, 1976-2000, >2001) updated to show any changes made in 2013-2014. If no changes, please indicate so and the mapping prepared for the 2010-2013 reporting period will be used.

☒ Attachment 7:

- Provide (if not already provided) GIS shape files which have the locations of the CSO outfalls for purposes of summary mapping (should already be reported under WSER).
- Provide GIS shape files or coordinates for the locations of wet & dry weather SSOs for each year (indicate which is dry/wet and year). Include SSO dates and estimated volume

☒ Attachment 8:

- Map and GIS coordinates showing locations of active municipal sewer flow/level monitors for the reporting period 2015-2016 (indicate whether permanent or temporary)

☒ Attachment 9:

- If not already provided, provide updated GIS shape files of the municipal sanitary sewer network, including manholes, pump stations, pipe diameters for the municipal sewer system as of the end of 2016. Please indicate what changes have been made for 2015-2016.

☒ Attachment 10:

- GIS shape files showing the ISMP boundaries and their status: Development Phase= Yellow; Implementation Phase = Light Green; Completed Phase = Dark Green. Add ISMPs still to start development as outlined only).

☒ Attachment 11:

- If initiated, results per watershed (as per ISMP Adaptive Management Framework)
- If undertaken, a map plus GIS shape files/coordinates showing location of monitoring.

☒ Attachment 12:

- Map showing any 2015-2016 changes to protected riparian areas & possible stream classifications. If no changes, then this figure is not required.

# City of Richmond

**Action 1.1.14** – Review and enhance sewer use bylaws to reduce liquid waste at source, including contaminants identified by the *Canadian Environmental Protection Act (2012)*.

**Table 1 Core Sewer Use Bylaws**

Sewer Use Bylaws*	2015-2016 Changes**
Drainage, Dyke and Sanitary Sewer System Bylaw No. 7551	Updated best management practices regarding the control of fats, oils, and grease discharge from food sector establishments.
Public Health Protection Bylaw No. 6989	No changes
Pollution Prevention and Clean-Up Bylaw No. 8475	No changes

\*Re-list existing core sewer use bylaws and list all new bylaws

\*\*Summarize any changes (if no changes, enter "No changes")

**Table 2 Summarize Status of Bylaws Related to Controlling Sediment Transport & Erosion**

Name of Bylaw* (related to controlling sediment release from land clearing and construction phase of development)	
<p><b>Drainage, Dyke and Sanitary Sewer System Bylaw No. 7551</b> – requires that connections to the City's drainage system are disconnected and capped prior to demolition of buildings to prevent sediment entering the drainage system.</p> <p><b>Pollution Prevention and Clean-Up Bylaw No. 8475</b> – limits the release of polluting substance into the receiving environment, and requires that no discharge from dewatering may enter the City's drainage system or watercourse without an agreement with the City. Such agreements require a Qualified Environmental Professional (QEP) to design a treatment system to satisfy water quality guidelines or approval requirements for discharge from a Provincial or Federal Authority.</p> <p><b>Boulevard and Roadway Protection and Regulation Bylaw No. 6366</b> – requires that anyone using a boulevard for construction to ensure that the roadway is cleared of sediment producing material during the activity.</p> <p><b>Boulevard Maintenance Bylaw No. 7174</b> – Requires that a property owner not discard any materials fronting their property.</p> <p><b>Watercourse Protection and Crossing Bylaw No. 8441</b> – limits the obstruction of watercourse flow, and requires that watercourse crossing design, construction and maintenance are approved by the City so as to protect water quality and the functioning of the City's drainage system or any City land.</p> <p><b>City of Richmond Engineering Design Specifications</b> – requires that catch basins and inspection chambers be installed on all drainage service pipes to prevent sediment discharging into the City's drainage system. It also requires that a Sediment Control Plan be submitted to the City to identify the type and location of sediment control best management practices that will be used during construction.</p>	
Bylaw Details	2015-2016 Changes*
Summarize monitoring requirements	No changes
How data is assessed under the bylaw?	No changes
How is assessment used to initiate corrective actions?	No changes
Summarize approaches used to maintain compliance	Info Bulletin 23 – Riparian Management Areas has been

with the bylaw (e.g. annual resources dedicated to maintaining compliance).	updated for Riparian Area Regulation (RAR) subject sites to guide development pertaining to works in and about a stream.
Discuss effectiveness of bylaw/bylaws and current approach to prevent inputs of sediment to the storm system and receiving environment.	No changes

*\*For bylaws unchanged since 2013-2014, summarize any changes 2015-2016 (if no changes, enter "No changes"). Otherwise, describe the new bylaw.*

**Action 1.1.15\*** – Continue existing programs of permitting and inspection to support and enforce sewer use bylaws (*Ongoing, \*City of Vancouver Only*).

*Narrative 1: Summarize ongoing permitting & inspection programs*

N/A

**Table 3 Types and Number of Liquid Waste Related Permits Issued 2015-2016**

Permit Type/Name*	Number of Permits*	Referenced Bylaw*

*\*City of Vancouver Only*

**Action 1.1.16** – Identify and regulate pesticides and lawn care products which negatively affect rainwater runoff quality and urban stream health (*2014*).

*Narrative 2: Summarize approach to regulating pesticides & lawn care products for 2015-2016.*

Adopted in 2009, Richmond's Enhanced Pesticide Management Program (EPMP) reduces the exposure of Richmond residents to unnecessary pesticide use. This program includes a regulation restricting the use of pesticides for cosmetic purpose, as well as resources to empower community members to make the switch to pesticide-free practices. In December of 2015, the City adopted the Invasive Species Action Plan (ISAP), intended to build upon the accomplishments of the EPMP. ISAP includes strategies to reduce the economic and environmental risks of invasive species management by implementing monitoring and control procedures and increasing awareness of invasive species within the community. ISAP delivers the City's early detection and rapid response program for public and private lands in order to ensure that pesticides and lawn-care products are deployed minimally and in a highly controlled fashion.

The City's Pesticide Use Control Bylaw No. 8514 restricts the cosmetic use of pesticides on residential and municipally-owned lands, allowing only low-toxicity products listed under the BC Integrated Pest



Management (IPM) Regulation Schedule 2 and Schedule 5. In addition to bylaw enforcement, the City provides an expanded Education and Community Partnerships Program to inform the community about pesticide restrictions and to promote natural gardening and pest solutions. This includes a series of natural gardening workshops, a phone line to help residents learn proper plant care and sustainable pest solutions, and information sheets available through the City's website. In 2016, the list of permitted pesticides that serve as safer alternatives to conventional pesticides were reviewed and updated within Bylaw No. 8514.

**Table 4 Products Regulated to Protect Stormwater Runoff Quality**

<b>Regulated Products</b>	<b>Type of Regulation</b> (Sales Ban, Use Ban, Permit, Limited Users, etc.)	<b>Additional Information</b> (Referenced Bylaw & Policy Numbers)
Pesticide	Limited users	Pesticide Use Control Bylaw No. 8514 – Amendment Bylaw 9574.

**Action 1.1.17** – Continue outreach plans to support liquid waste source control programs (*Ongoing*).

*Narrative 3: Summarize 2015-2016 updates to outreach plans for supporting liquid waste source control programs (e.g. stormwater, sewer use, sewer maintenance, I&I management, cross connections etc.).*

#### **Green Cart Program**

The Green Cart Program started in 2013, and in 2015, was expanded to residents in multi-family buildings. The added food scraps recycling service was provided to 489 sites, reaching 26,295 residential units. Through this expansion, the City hosted over 400 information sessions to talk about food scraps recycling, providing an alternative to garburator use. Through the Green Cart program, 18,495 tonnes of food scraps and yard trimmings were collected in 2015 and 21,477 tonnes were collected in 2016. This program reduces the amount of waste that would otherwise be discharged to the sanitary sewer through garburators. To facilitate grease reduction in the sanitary system, Richmond conducts the following activities:

- Provide Green Cart Program literature, which includes information on the impact of grease on the sewer system as well as proper grease disposal techniques, noting that small amounts of grease and oil that can be absorbed by newspaper or paper towel should be recycled in the Green Cart.
- Cooking oil and animal fat continue to be accepted at the City's Recycling Depot.
- Promote proper disposal of cooking oil and grease through the annual collection calendar/recycling guide, Green Cart brochure, annual report and community outreach which



includes recycling workshops , booths at community events and recycling information sessions in multi-family buildings.

- Discourage the use of garburators as part of the Green Cart Program.
- Carry out the Green Cart and Recycling Depot programs, which allow residents to recycle food scraps and solid grease. New signage at the depot for oil and grease recycling simplifies the drop off process for residents.

### **Metro Vancouver Waste Water Discharge Permit Process**

The City continues to participate in the Metro Vancouver sanitary sewer source control program by supporting the Metro Vancouver Waste Water Discharge Permit process.

### **Fat, Oil and Grease Reduction Programs**

Richmond Community Bylaws staff continued to work with representatives from Metro Vancouver, stakeholder groups, industry associations, pumping operators and grease trap vendors to mitigate the impact of fats, oils and grease on the region's sanitary sewer system.

The City maintains a Grease Management Program, which included active inspection and enforcement of food sector establishments. In 2015 and 2016, assertive enforcement efforts involved 1129 Grease Inspections and 82 violations resulting in \$24,400 in revenue.

Grease education and communication is delivered to residents through utility bill inserts, information pamphlets in English and Chinese, social media, and public events such as the City's Public Works Open House and Metro Vancouver's Lulu Island Wastewater Treatment Plant Halloween event.

In 2016, the City supported Metro Vancouver's "Wipe it, Green Bin it" pilot campaign, an eight-week campaign program in Richmond focused on reducing grease entering the sanitary system from residents and businesses through various outreach activities and the distribution of creative material. The City is measuring grease-build up in four pump stations to assess and monitor the impacts of the campaign. The results of this pilot campaign are intended to assist Metro Vancouver in facilitating a regional campaign to be launched in 2017.

### **Rainwater Best Management Practices**

Richmond's Official Community Plan Bylaw No. 9000 – Schedule 1, Section 14.2.10, Development Permit Guidelines – Green Buildings and Sustainable Infrastructure, provides general direction in regards to the voluntary undertaking, where feasible, of green building and sustainable infrastructure to support City of Richmond sustainability objectives and help reduce the demand for energy and resources.

Developers are encouraged to incorporate green roofs, bio-swales, infiltration and other best management practices throughout the building site to store rainwater, mitigate urban heat island effect, reduce heating and cooling loads and reduce the impact on City drainage systems.

Richmond's Integrated Rainwater Resource Management Strategy contains initiatives to strategically implement stormwater detention and rainwater re-use measures and encourage stormwater detention

on private properties in order to reduce stormwater runoff. In addition, the strategy works to strengthen erosion and sediment control and encourage water quality improvements.

Richmond's Ecological Network Management Strategy (ENMS) was adopted in 2014 and provides the ecological blueprint for the City to protect, connect and enhance the natural and green spaces throughout Richmond and beyond. It is an opportunistic approach for managing and guiding decisions regarding the city-wide system of natural areas and the ecosystem services they provide. It is designed to complement existing development processes and regulations in order to integrate ecological connectivity and health into all neighbourhoods and land-uses. The ENMS contains extensive actions and initiatives on the integration of rainwater management Best Management Practices tailored to various land uses within the city. These include green infrastructure (e.g. rain gardens, swales, harvesting) development in parks and through planning processes, riparian corridor enhancements, and the review and update of bylaws.

#### **Rain Barrel Program**

The City offers rain barrels to Richmond residents at subsidized prices.

#### **Low-Flow Toilet Rebate Program**

The City offers a \$100 rebate to residents for replacing old toilets with new low-flush toilets to reduce waste volume through water conservation.

#### **High-Efficiency Clothes Washer Rebate Program**

The City partnered with BC Hydro to offer a maximum \$200 rebate to residents for replacing old clothes washers with new energy- and water- efficient models, in order to reduce GHGs through energy conservation as well as waste volume through water conservation.

#### **Water Meter Programs**

The City meters all commercial and industrial properties. Single-family dwellings will be universally metered by 2017, and multi-family complexes are eligible to volunteer for meters. Water metering encourages water conservation which, in turn, reduces waste volume.

**Action 1.1.18** – Develop and implement inflow and infiltration management plans, using the Metro Vancouver template as a guide, to ensure wet weather inflow and infiltration volumes are within Metro Vancouver's allowances as measured at Metro Vancouver's flow metering stations (2012).

*Narrative 4: Summarize I&I management plans & list key actions resulting from plans in 2015-2016. If no work was initiated or undertaken for 2015-2016, then indicate "Same as the 2013-2014 reporting period: no changes".*

Richmond's overall maximum I&I rate for the reporting period is 6,600 L/ha/d, attributed to a two-year 24 hour duration event based on flows recorded at the Lulu Island Wastewater Treatment Plant. This rate is of I&I is significantly below the regional allocation of 11,200L/ha/d.

Richmond monitors I&I at the catchment level through pump runtimes at sanitary pump stations. Detailed pump runtimes are captured in data loggers that are manually downloaded to spreadsheets and subsequently converted to sanitary flow rates.

Richmond has installed pressure sensors at sanitary pump stations in order to improve the accuracy of pump runtime analysis. Utilizing pressure information and pump curves will improve the accuracy of the flow information generated by the City's monitoring program. In addition, the City continues to install magnetic flow meters at new sanitary pump stations. Automated pump runtime data collection has also been set up through the SCADA network, and the City is moving towards utilizing FlowWorks to further analyze the data collected.

Catchment level data is being utilized to identify catchments with excessive I&I for further study. This study will include a review of sanitary system response to rainfall events in order to determine the relative levels of I&I. This information will be subsequently utilized to identify appropriate inspection techniques for further catchment review.

Richmond began CCTV inspections of its gravity sanitary sewers in 2002. As of 2015, CCTV inspections have been completed for 100% of Richmond's gravity sewers. In the 2015-2016 reporting period, Richmond completed CCTV inspection and condition assessment for the final 22.2 km of sanitary sewer mains within the City's sanitary network. 98.3% of mains surveyed were found in good condition, with only one section of main was found to be fractured and three mains exhibiting signs of infiltration. Rehabilitation of these mains is incorporated into the City's five-year capital program.

**Attachment 1:**

*a) I&I Mapping showing I&I rates for neighbourhoods where studies have been completed with before and after I&I (L/ha-d). Objectives to Illustrates catchment areas covered by I&I studies.*

*b) Transmit an electronic copy of GIS shape files for study catchment boundaries to Metro Vancouver.*

**Action 1.1.19** – Enhance enforcement of sewer use bylaw prohibition against the unauthorized discharge of rainwater and groundwater to sanitary sewers (2010).

*Narrative 5: Summarize enforcement enhancements and process effort changes during 2015-2016. If no changes, then enter "Same as the 2013-2014 reporting period: no changes".*

Same as the 2013-2014 reporting period: no changes.

**Table 5 Bylaws Regulating Discharges of Groundwater and Rainwater to Sanitary Sewers**

Regulation or Bylaw No.	Date	Summary of Any Changes 2015-2016*
Drainage, Dyke and Sanitary Sewer System Bylaw No. 7551	Effective Date – January 1, 2003	No changes with respect to unauthorized discharge of rainwater and groundwater to sanitary sewers.

*\*if no changes, enter “no changes” in table.*

**Action 1.1.20** – Update municipal bylaws to require on-site rainwater management sufficient to meet criteria established in municipal integrated stormwater plans or baseline region-wide criteria (2014).

*Narrative 6: Highlight and summarize any bylaw changes or development effort relating to stormwater management for 2015-2016. If no changes, indicate “Same as the 2013-2014 reporting period: no changes”.*

Same as the 2013-2014 reporting period: no changes.

**Table 6 Bylaws Related to On-site Stormwater Management**

Related Stormwater Bylaws	Changes to On-Site Stormwater Management Target/Objectives (2015-2016)*
Green Roofs & Other Options Involving Industrial & Office Buildings Outside the City Centre Bylaw No. 8385	No changes
Official Community Plan Bylaw No. 9000	No changes regarding on-site stormwater management
Pollution Prevention and Clean-Up Bylaw No. 8475	No changes

*\*if no changes, enter “no changes” in table.*

**Action 1.1.21** – Update municipal utility design standards and neighbourhood design guidelines to enable and encourage on-site rainwater management (2014).

*Narrative 7: Highlight and summarize changes for 2015-2016 to utility design standards and neighbourhood design guidelines in relation to on-site rainwater management. If no changes were made or processes initiated, then indicate “Same as the 2013-2014 reporting period: no changes”.*

The City's Integrated Rainwater Resource Management Strategy includes initiatives to enable and encourage on-site rainwater management, including the strategic detention of stormwater, rainwater harvesting and re-use and improved water quality treatment and sediment control.



**Table 7 Municipal Standards, Guidelines and Policy Changes Related to On-site Stormwater Management**

Name of Standard, Guideline or Policy	Changes for 2015-2016
City of Richmond Engineering Design Specifications	No changes with respect to rainwater management.
City of Richmond Integrated Rainwater Resource Management Strategy	Endorsed by Council for public engagement.
City of Richmond Ecological Network Management Strategy	Adopted by Council (2015)

*\*If identified unchanged since 2013-2014, briefly summarize any changes 2013-2014 (if no changes, enter "No changes"). Otherwise, briefly summarize if a new bylaw.*

**Action 1.2.5** – Work with Metro Vancouver to develop and implement municipal-regional sanitary overflow management plans as set out in 1.2.4 (2013).

*Narrative 8: Summarize development of any municipal sanitary overflow management plans for 2015-2016. Highlight any specific examples. If no new plans developed, then indicate "Same as the 2013-2014 reporting period: no changes".*

Same as the 2013-2014 reporting period: no changes.

**Action 1.2.6** – Burnaby, New Westminster and Vancouver will work with Metro Vancouver to give effect to 1.2.2 and, specifically, implement plans to prevent combined sewer overflows by 2050 for the Vancouver Sewerage Area and 2075 for the Fraser Sewerage Area and separate combined sewers at an average rate of 1% and 1.5% of the system per year in the Vancouver Sewerage Area and Fraser Sewerage Area respectively (Ongoing).

*Narrative 9: Highlight and summarize progress on the prevention of CSOs and the separation of combined sewers for 2015-2016.*

Not applicable as there are no combined sewers in Richmond.

**Attachment 2:**

- a) Mapping showing where sewer separation work occurred in 2015-2016
- b) GIS shape files of the locations where sewer separation occurred in 2015-2016 for composite mapping
- c) GIS shape files of catchments of remaining combined sewer catchments as of December 31, 2015 (if separated catchments discharge to combined sewers, code the separated catchments as "separated").

N/A

**Action 1.3.11** – Develop and implement operational plans for municipal sewerage facilities to ensure infrastructure reliability and optimal performance (*Ongoing*).

*Narrative 10: Discuss approaches and strategies applied in 2015-2016 that address risks (i.e. regular maintenance, SCADA, monitoring, protocols, identified redundancies/contingencies). If these are the same as the previous reporting period 2013-2014, then indicate “Same as the 2013-2014 reporting period: no changes”, or if only minor changes, enter appropriate text similar to “Same as the 2013-2014 reporting period except for...”*

In addition to the approaches and strategies outlined for the 2013-2014 reporting period, Richmond has installed temperature sensors at select pump stations and flow meters at all new pump stations better monitor infrastructure performance. Redundancy equipment including backup power generators have been added to inventory, and replacement mobile generators have been acquired.

Furthermore, in 2016, the City introduced a Sanitary Forcemain Valve Installation program aimed at installing line valves on sanitary forcemains to allow isolation and control of forcemains in the event of a break or a need for tie-ins. This allows for a smaller catchment to be impacted by the necessary shut-downs when such work is required, thereby reducing impacts to residential and commercial customers.

**Action 1.3.12** – Work with Metro Vancouver to develop and implement emergency sanitary sewer overflow plans including contingency plans to minimize impacts of unavoidable sanitary sewer overflows resulting from extreme weather, system failures or unusual events (*Ongoing*).

*Narrative 8: Identify any emergency procedures & protocols developed for 2015-2016. If these are the same as the previous reporting period 2013-2014, then indicate “Same as the 2013-2014 reporting period: no changes”, or if only minor changes, enter appropriate text similar to “Same as the 2013-2014 reporting period except for...”*

Richmond’s municipal sanitary system did not experience any sanitary sewer overflows during the reporting period. Richmond does not have any combined sewer systems, and maintains an overall I&I rate below the regional design allowance. As such, Richmond does not have chronic sanitary sewer overflow issues due to weather or rainfall. There have been no changes to the emergency management plan, procedures, and protocols outlined for the 2013-2014 reporting period.

**Attachment 3:**

*Map and GIS data showing location of emergency municipal overflows (this information should have already been provided through a separate request through the REAC LWSC as well as the 2013-2014 reporting). If already provided, please indicated so.*

N/A



**Action 1.3.13** – Work with private marina operators, Ministry of Environment and Environment Canada to develop and implement regulations to ensure all new marinas and marinas where planned renovations exceed 50% of the assessed existing improvements value have pleasure craft pump-out facilities (*Ongoing*).

**Table 8 Bylaws and Regulations Requiring Pleasure Craft Pump-out Facilities at Marinas**

Regulation Process or Bylaw*	Date*
Public Health Protection Bylaw No. 6989, Subdivision Two – Marina Health and Safety Regulation	Effective Date – March 13, 2000

\* This may be repeated from the 2013-2014 reporting period

**Action 1.3.14** – Require all pleasure craft pump-out facilities to connect to a municipal sanitary sewerage system or a provincially permitted on-site treatment and disposal system or have established enforceable protocols for transporting liquid waste for disposal at a permitted liquid waste management facility (*Ongoing*).

*Narrative 11: Describe any additional regulations and the number of on-site treatment systems required/installed during the reporting period 2015-2016. If these are the same as the previous reporting period 2013-2014, then indicate "Same as the 2013-2014 reporting period: no changes".*

Same as the 2013-2014 reporting period: no changes.

**Action 1.3.15** – Continue existing municipal odour control programs and implement new programs for targeted municipal sewer facilities (*Ongoing, see Action 3.3.4*).

*Narrative 12: Summarize existing municipal odour control programs and the implementation of new programs for targeted municipal sewer facilities for the reporting period 2015-2016. If these are the same as the previous reporting period 2013-2014, then indicate "Same as the 2013-2014 reporting period: no changes", or if only minor changes, enter appropriate text similar to "Same as the 2013-2014 reporting period except for..."*

Same as the 2013-2014 reporting period: no changes – odour complaints have been investigated by City operation crews to confirm that sources of odour are not attributed to malfunctioning sewer systems. Odour complaints have been identified to be caused by Harvest Power, agriculture, and rotting vegetation near dikes and tidal areas and are typically unrelated to the sanitary system.

**Attachment 4:**

- a) 2015-2016 map showing odour control facilities & locations of complaints (different than facility)
- b) GIS shape files for the odour facility and complaint mapping to allow for development of composite mapping

**Action 1.3.16** – Develop and implement air emissions management programs for standby power generators at municipal sewer pump stations (2016).

*Narrative 13: Summarize air emissions management programs for standby power generators at municipal sewer pump stations. If these are the same as the previous reporting period 2013-2014, then indicate “Same as the 2013-2014 reporting period: no changes”, or if only minor changes, enter appropriate text similar to “Same as the 2013-2014 reporting period except for...” This action is not due until 2016.*

**Notes:** Metro Vancouver has developed “Specifications for New Diesel Powered Vehicles & Equipment” as part of its green procurement process (details were shared with the REAC-LWS at an earlier meeting and are available from MV).

In addition to items described in previous reporting periods, the City is purchasing new portable diesel standby generators with more stringent air emissions management to fully replace existing inventory.

**Action 1.3.17** – Develop and implement programs to reduce greenhouse gas emissions from municipal liquid waste management systems to help achieve federal, provincial and municipal greenhouse gas targets (Ongoing, see Action 3.1.5).

*Narrative 14: Summarize greenhouse gas emissions reduction initiatives for municipal liquid waste services. If these are the same as the previous reporting period 2010-2012, then indicate “Same as the 2013-2014 reporting period: no changes”, or if only minor changes, enter appropriate text similar to “Same as the 2013-2014 reporting period except for...”*

Richmond’s 2041 OCP includes targets to reduce the community’s energy use by 10 per cent by 2020, and to reduce community greenhouse gas (GHG) emissions by 33 per cent by 2020 and 80 per cent by 2050. In January 2014, City Council approved Richmond’s Community Energy and Emissions Plan (CEEP). The CEEP includes:

- Strategy 9: Continue Advancement of Neighbourhood District Energy Systems;
- Strategy 10: Utilize Local Energy Sources; and
- Strategy 11: Maximize Use of Waste, including liquid waste.

Richmond is continuing to work with Metro Vancouver to implement a sewer heat recovery system on the Gilbert Trunk Sewer as part of the Oval Village District Energy Utility (formerly the River Green District Energy Utility). During the reporting period, Lulu Island Energy Company Inc. (LIEC), a City-owned corporation that manages district energy initiatives, in partnership with Corix Utilities Inc. continue to provide thermal energy services to developments with the Oval Village service area. To date, 1,413,107 ft<sup>2</sup> (131,282 m<sup>2</sup>) of residential floor space is connected to the system, with an estimated 5,522,702 ft<sup>2</sup> (513,075 m<sup>2</sup>) at full build out. The implementation of the sewer heat recovery energy source for this project is targeted for 2024. At full build-out, there will be an estimated 2600 tonnes CO<sub>2</sub>e GHG emissions reduction.

The City has also begun a project to identify potential locations within the municipality's own sanitary sewer system for the cost-effective implementation of smaller-scale energy recovery facilities. Such "micro" sewer heat recovery plants would provide heating and/or cooling for a smaller-scale stand-alone development, or act as an ancillary heating input to the City's large District Energy networks.

Richmond continues to secure commitments from new developments in the City Centre Area to be "District Energy Ready" as part of rezoning and development permitting. This is part of a medium- to long-term strategy to develop district energy utilities in the City Centre.

**Action 3.1.6 –** Assess the performance and condition of municipal sewerage systems by: (a) inspecting municipal sanitary sewers on a twenty year cycle, (b) maintaining current maps of sewerage inspection, condition and repairs, and (c) using the Metro Vancouver "Sewer Condition Report, November 2002" as a guide to ensure a consistent approach to sewer system evaluation and reporting (*Ongoing*).

*Narrative 15: Summarize key progress on the assessment and condition of municipal sewerage system for 2015-2016. If these are no changes since the previous reporting period 2013-2014, then indicate "Same as the 2013-2014 reporting period: no changes".*

The City completed CCTV inspections for the remaining 10% of its sanitary sewer gravity system in 2015, with CCTV assessment for the City's sanitary system now 100% complete.

**Attachment 5:**

- a) A map showing sewerage system CCTV inspection for 2015-2016 and the other areas of CCTV inspection work in a different colour over the previous 18 years (1994-2012).*
- b) A map showing any sewer replacement /rehabilitation work for 2015-2016 as part of either asset management or capacity upgrades. Indicate whether the work is for upgrades or maintenance.*



**Action 3.1.8 –** Develop and implement asset management plans targeting a 100 year replacement of rehabilitation cycle for municipal sewerage infrastructure and provide copies of such plans to Metro Vancouver (2014).

*Narrative 16: Summarize key progress or accomplishments on the development of asset management plans for municipal sewerage infrastructure for 2015-2016.*

Richmond has an ongoing Ageing Infrastructure Replacement Program with dedicated funding from the Sanitary Sewer Utility that maintains the sanitary system in an appropriate operating condition. Staff report to City Council bi-annually on the status of the program, including current infrastructure status, long-term funding requirements and funding gaps if they exist. The 2015 program update identified a long-term, sustainable capital requirement of \$6.8M and a current annual budget of \$5.3M. City Council and staff have made significant progress in closing the funding gap and will continue to close the gap in subsequent utility rate setting cycles. The sanitary system is relatively young and the bulk of replacement funding is predicted to be required between 2041 and 2061. As such, the incremental approach to closing the funding gap is appropriate for the City of Richmond.

*Attachment 6:*

*a) Titles of any completed asset [replacement] management plans (author, date, title, and publisher) for 2015-2016.*

Ageing Infrastructure Planning 2015 Update (John Irving, P.Eng., MPA, June 26, 2015, Ageing Infrastructure Planning, REDMS 4582509)

Engineering & Public Works – Monthly Construction Update to Mayor and Council, (Eric Sparolin, P.Eng., REDMS 5042679)

5-Year Capital Program – Sanitary and Water Capital Program (Jason Ho, P.Eng., REDMS 3247757)

*b) Completed annual PSAP 3150 reporting on asset values for 2015-2016.*

2015 Annual Report: <http://www.richmond.ca/cityhall/finance/reporting/reports.htm>

More information on Richmond's non-financial assets is available at:

[http://www.cscd.gov.bc.ca/lgd/infra/municipal\\_stats/municipal\\_stats2015.htm](http://www.cscd.gov.bc.ca/lgd/infra/municipal_stats/municipal_stats2015.htm)

*c) Colour coded map showing age of the sewerage system (i.e.: <1900, 1901-1925, 1926-1950, 1951-1975, 1976-2000, >2001) updated to show any changes made in 2015-2016. If no changes, please indicate so and the mapping prepared for the 2010-2015 reporting period will be used.*

**Action 3.2.4 –** Undertake a tri-annual internal audit of best practices of one municipal liquid waste management sub-program in each municipality to identify opportunities for innovation and improvements (*Triennially*).

*Narrative 17: Summarize key findings from the tri-annual internal audit (first due for 2013, the next in 2016).*

### **Ageing Infrastructure Planning Program**

In 2015, Richmond conducted a review of the Ageing Infrastructure Planning Program, which included reconciling current inventory, reviewing the evolving theory on infrastructure service life, and updating infrastructure replacement pricing.

This audit identified the following key findings:

- Infrastructure replacement costs continue to increase due to inflation, environmental requirements and sanitary pump station complexity.
- Development facilitates significant infrastructure replacement, having a positive impact on the City's overall ageing infrastructure picture. However, development is subject to external factors, such as the economy, and does not always coincide with infrastructure that is beyond its useful life. Therefore, development is not considered a sustainable resource for ageing infrastructure replacement.
- The long-term, sustainable capital requirement is \$6.8M for the sanitary utility. The current budget is \$5.3M. Closing the funding gap is achievable within the next decade or sooner through the annual budgeting process.

**Action 3.3.6 –** In collaboration with Metro Vancouver, estimate and document the greenhouse gas emissions and odours associated with the operation of the municipal and regional liquid waste management systems (*2014*).

*Narrative 18: Summarize the estimate of greenhouse gas emissions associated with the operation of municipal and regional liquid waste management systems. Odour control and mapping are being reported under Action 1.3.15.*

The estimated total emission in 2015 due to electricity use at sanitary pump stations and sanitary fleet fuel use for operational tasks is 151.1 tonnes of tCO<sub>2</sub>e.

**Action 3.3.7** – Estimate and report on the frequency, location and volume of sewerage overflows from municipal combined and sanitary sewers, and where feasible identify and address the probable causes (*Ongoing*).

*Narrative 19: Summarize and highlight any important details and/or action plans relating to managing wet weather SSOs, CSOs and dry & wet weather SSOs during the period 2015-2016. If no changes since 2013-2014, then indicate “Same as the 2013-2014 reporting period: no changes”.*

*For each CSO location, in a table indicated estimated volumes & number of occurrences (this will have been prepared for EC WSER reporting but is also required by the LWMP).*

Richmond did not have any dry or wet weather SSOs during 2015 and 2016. There are no combined sewers in Richmond.

**Attachment 7:**

- a) *Provide (if not already provided) GIS shape files which have the locations of the CSO outfalls for purposes of summary mapping (should already be reported under WSER).*

N/A

- b) *Provide GIS shape files or coordinates for the locations of wet & dry weather SSOs for each year (indicate which is dry/wet and year). Include SSO dates and estimated volume.*

N/A

**Action 3.3.8** – Maintain and, if necessary, expand the existing municipal sewer flow and sewer level monitoring network (*Ongoing*).

*Narrative 20: Summarize and highlight any changes to the existing municipal sewer flow & sewer level monitoring network for 2015-2016 (if no changes, then indicate “Same as the 2013-2014 reporting period: no changes”).*

Richmond maintains wet-well level monitoring sensors and pressure sensors installed at all 153 sanitary pump stations. The City monitors flows through the utilization of pump run times at sanitary pump stations using data loggers as well as pump discharge monitors that provide discharge information. Flow meters are installed at all new pump stations.

In the 2015-2016 reporting period, the City has dedicated \$435,000 in capital funding to the improvement of its SCADA system, including the rehabilitation and upgrade of computers, instruments and electrical installations throughout the SCADA network. The program aims to improve system functionality and data processing to improve sanitary system operations. Additional flow monitors and temperature sensors have been added to the sewer level monitoring network.



**Attachment 8:**

- a) *Map and GIS coordinates showing locations of active municipal sewer flow/level monitors for the reporting period 2015-2016 (indicate whether permanent or temporary)*

**Action 3.4.4 –** In collaboration with Metro Vancouver and the Integrated Partnership for Regional Emergency Management (IPREM), develop emergency management strategies and response plans for municipal and regional wastewater collection and treatment systems (2015).

*Narrative 21: Summarize any progress on the development of emergency management strategies and response plans for municipal & regional wastewater collection and treatment systems.*

***Note:** This action is being addressed through direction by REAC to REAC LWSC and REAC WSC to undertake in 2015.*

In addition to the initiatives described in the 2013-2014 reporting period, the City is also maintaining an inventory of portable diesel standby power generators on trailers. These generators are intended to provide back-up power for sanitary and drainage pump stations in the event of emergency power failures and is the primary response plan for stations that do not have built-in generators. Built-in backup generators are incorporated into new or upgraded stations constructed within City Centre where possible.

**Action 3.4.5 –** Adapt infrastructure and operations to address risks and long-term needs (*Ongoing*).

*Narrative 22: Summarize any key initiatives that support the adaptation of infrastructure & operations to address risks and long term needs (e.g. climate change, sea level rise, seismic risk, demographic growth, etc...). If no change from 2013-2014, then indicate, "Same as the 2013-2014 reporting period: no changes".*

Richmond has an ongoing Ageing Infrastructure Replacement Program with dedicated funding from the Sanitary Sewer Utility that maintains the sanitary system in an appropriate operating condition. Staff report to Council bi-annually on the status of the program which includes current infrastructure status, long term funding requirements and funding gaps if they exist. The 2015 program identified a long-term sustainable capital requirement of \$6.8M and a budget of \$5.3M. Richmond has an on-going 5-year sanitary replacement capital program that includes gravity sewers, forcemains and pump station replacements.

The City continues to complete upgrades to its sanitary sewer system based on anticipated demographic growth to meet long-term needs through development requirements and the City's Development Cost Charges (DCC) program. In 2015 and 2016, the City upgraded 557 m of gravity sewers as part of its capital infrastructure program in order to accommodate anticipated demographic growth as identified in the City's 2041 Official Community Plan. In 2016, the City updated its 2016-2041 City-Wide DCC

Capital Programs and City-Wide DCC Rates to better reflect anticipated development activities. Key projects that form part of this program include new sanitary pump stations in the Lansdowne and Hamilton areas, as well as gravity main upgrades in the City Centre area.

**Action 3.4.6** – Ensure liquid waste infrastructure and services are provided in accordance with the Regional Growth Strategy and coordinated with municipal Official Community Plans (Ongoing).

*Attachment 9:*

- a) *If not already provided, provide updated GIS shape files of the municipal sanitary sewer network, including manholes, pump stations, pipe diameters for the municipal sewer system as of the end of 2016. Please indicate what changes have been made for 2015-2016.*

**NOTE:** *This information is part of the routine information provided to Metro Vancouver every two years in response to municipal obligations under the GVS&DD Act. This information will be used to update Metro Vancouver's GIS data base and to create a composite map showing alignment and discrepancies with the RGS.*

**Action 3.4.7** – Develop and implement integrated stormwater management plans at the watershed scale that integrate with land use to manage rainwater runoff (2014).

*Narrative 23: Summarize and highlight key initiatives relating to the development and implementation of the integrated stormwater management plans for each watershed/ISMP area.*

**NOTE:** *Format and content should be similar to the reporting provided in January/February 2014 for the Interim Report: 2013 for the Integrated Liquid Waste and Resource Management Plan. See:*

*<http://www.metrovancouver.org/about/publications/Publications/2014InterimReport-SSOsISMPs.pdf>*

Richmond's ISMP, the Integrated Rainwater Resource Management Strategy (IRRMS), was endorsed by council for public consultation. In 2016, the City has hosted two stakeholder workshops to present and receive feedback on the City's strategy. The IRRMS is a watershed level strategic approach to manage stormwater within the City's floodplain ecosystem. It identifies strategies to detain stormwater, improve water quality, control sediments, harvest and re-use rainwater, and protect and enhance green infrastructure.

The IRRMS is highly integrated with the green infrastructure initiatives identified in Richmond's Ecological Network Management Strategy (ENMS). The ENMS and the IRRMS identifies issues such as water and habitat quality, impervious surfaces, riparian ecology and bank erosion, and provides

comprehensive actions and initiatives to address these issues through green infrastructure enhancement opportunities to increase ecosystem services. A key initiative developed under the ENMS is the Bath Slough Revitalization Initiative which includes the planting of a 2.6 acre pollinator pasture with native plants used not only to enhance native pollinator habitat but to retain stormwater and ameliorate water quality before it reaches Bath Slough. Native planting along the City-owned Railway corridor also retains and filters stormwater run-off, providing important ecosystem services.

**Attachment 10:**

- a) *GIS shape files showing the ISMP boundaries and their status: Development Phase= Yellow; Implementation Phase = Light Green; Completed Phase = Dark Green. Add ISMPs still to start development as outlined only).*

**NOTE:** The ISMPs will be summarized and mapped similar to the Interim Report 2013: <http://www.metrovancouver.org/about/publications/Publications/2014InterimReport-SSOsISMPs.pdf>

**Action 3.5.8 –** Biennially produce a progress report on plan implementation for distribution to the Ministry of the Environment that: (a) summarizes progress from the previous two years on plan implementation for all municipal actions, including the status of the performance measures, (b) includes summaries and budget estimates for proposed LWMP implementation programs for the subsequent two calendar years (*July 1<sup>st</sup> biennially*).

*List budget estimates for the LWMP implementation programs and subsequent two years beyond biennial report (from 5 yr plan)*

**Table 9 Summary of LWMP Implementation Budgets and Forecasts**

LWMP Implementation Action	Details/Notes	Budget			
		2015	2016	2017	2018
Sanitary Sewer Capital Program	Includes pump station replacement, gravity sewer and forcemain replacement, and sanitary rehabilitation works	7.6M	5.5M	8.2M	5.6M*
Development Projects (Servicing Agreements)		3.1M	1.0M	Unknown	Unknown

*\* Subject to council approval*



*Action 3.5.9 – This reporting is an annual requirement. In the year of the biennial report, this action is covered off by municipal reporting on 3.4.7 & 3.3.7. In other years this addressed through the Interim Report. This municipal reporting is summarized regionally by Metro Vancouver under its Action 3.5.6.*

**Note:** *The Interim Report: 2013 was submitted to the Ministry of Environment in February 2014.*

**Ministerial Condition 2** – Member municipalities are strongly encouraged to business case and/or implement residential water metering programs and to consider municipal rebate programs for water efficient fixtures and appliances to reduce potable water use.

*Narrative 24: Discuss initiatives that evaluate/support water metering and rebate programs to water fixtures and appliances*

Richmond has comprehensive water meter programs for both residential and commercial properties. All industrial, commercial, and farm properties in Richmond are metered. In 2014, Richmond started implementing universal water metering for all single-family properties, with a target completion in 2017. Multi-family complexes can volunteer for water meters, with the City providing a maximum subsidy of \$100,000 per complex. By the end of 2016, 93% of single-family properties and 40% of multi-family properties are metered in Richmond.

In 2014, Richmond also introduced a pilot project for Fixed Base Meter Reading that facilitates the continuous reading of meters through radio towers. The program provides real time consumption data which allows staff to better help residents identify causes of leaks and water consumption habits. Based on the successes of the trial and the significant benefits and efficiencies, the Fixed Base Network will be deployed universally as part of the City's 2017 capital program.

To complement these water meter programs, Richmond provides metered customers with free water conservation kits, which include low flow showerheads, faucet aerators, toilet fill cycle diverters, toilet leak detection tablets, and educational water conservation tools. In addition, Richmond offers a \$100 rebate to residents for replacing old toilets with new low-flush toilets, and subsidized rain barrels to collect and store water for outdoor use. Richmond also partnered with BC Hydro to offer a \$100-200 rebate for high-efficiency clothes washer replacements. At the end of 2016, 6422 toilet rebates, 1307 rain barrels, and 474 clothes washer rebates have been issued to Richmond residents.

**Ministerial Condition 3** – Metro Vancouver, in partnership with member municipalities, is encouraged to pursue a region-wide water conservation program targeting the industrial, commercial, institutional and agricultural sectors as part of its new Drinking Water Management Plan. Remaining municipalities in the region that have not implemented metering for these sectors are encouraged to do so.

*Narrative 25: Summarize whether any new municipal water metering policies or programs were introduced in 2015-2016 that address this action. If no changes, then indicate, "Same as the 2013-2014 reporting period: no changes".*

Same as the 2013-2014 reporting period: no changes.

**Ministerial Condition 7** – Member municipalities will, with MV planning and coordination, and to the satisfaction of the Regional Manager, develop a coordinated program to monitor stormwater and assess and report the implementation and effectiveness of Integrated Storm Water Management Plans (ISMPs). The program will use a weight-of-evidence performance measurement approach and will report out in the Biennial Report. The Regional Manager may extend the deadline for completion of ISMP by municipalities from 2014 to 2016 if satisfied that the assessment program could result in improvement of ISMP and protect stream health.

*Narrative 26: Quote relevant OCP sections addressing stormwater, stream health and their consideration of ISMPs.*

*Given the ISMP deadline requirement, please indicate in as a list any ISMPs not developed by the end of 2016.*

Richmond's Integrated Rainwater Resource Management Strategy (IRRMS) addresses Richmond's needs for water quality treatment and monitoring. Due to Richmond's unique water quality conditions, the Monitoring and Adaptive Management Framework (MAMF) parameters developed by Metro Vancouver do not adequately reflect the effectiveness of Richmond's stormwater management plan. Richmond is utilizing a modified MAMF that is more appropriate for lowland development systems and wetlands such as Richmond. Measurements according to Richmond's IRRMS and modified MAMF will occur in 2017.

*Attachment 11:*

*a) If initiated, results per watershed (as per ISMP Adaptive Management Framework)*

Not available at this time

*b) If undertaken, a map plus GIS shape files/coordinates showing location of monitoring*

Not available at this time

**Ministerial Condition 9** – The ILWRMP has a goal of protecting public health and the environment. In keeping with this goal and to ensure alignment with other national, provincial and regional initiatives, Metro Vancouver and member municipalities are encouraged to: (a) Have a local land use planning consider the direction provided by the ISMPs, (b) Consider how the degree, type and location of development within a drainage can affect the long-term health of the watershed, (c) Consider how to protect the stream, including the riparian areas that exert an influence on the stream, from long-term cumulative impacts and (d) Use scenarios and forecasting to systematically consider environmental consequences/benefits of different land use approaches prior to build-out (for example, Alternative Future type approaches).

*Narrative 27: Please describe any changes to how you have used proactive planning processes as listed in Ministerial Condition 9 for 2015-2016 and provide examples. If there are no changes since 2013-2014, then indicate: "Same as the 2013-2014 reporting period: no changes".*

The strategies identified in the IRRMS are consistent with actions identified within the City's Ecological Network Management Strategy (ENMS), adopted by Council in 2014. Through the ENMS the City has identified an interconnected network of natural and semi-natural areas across Richmond's landscape to protect, connect and restore. These natural areas include green infrastructure that provides essential ecosystems services related to stormwater management.

Actions under the ENMS related to Ministerial condition 9 in this reporting period include:

- Enhanced riparian protection measures for development within and adjacent to the City's Riparian Management Areas (RMA) that are protected under the Riparian Area Regulation as described in info-bulletin 23, and review of the City's RMA approach to inform 2017 compliance updates.
- Continued encouragement of riparian enhancement through development and redevelopment of previously disturbed sites.
- Introduce an avoid, mitigate, compensate approach following a net gain objective to dyke master planning to support a multi-barrier approach to dike upgrades that incorporates green infrastructure where possible.
- Incorporate tidal flushing mechanisms (actuated valve) into new pump stations designs to draw nutrient rich water off of the Fraser River, promote exchange natural between the Fraser River and inland water systems and improve inland water quality.
- Map aquatic and invasive species within riparian setbacks as associated watercourses to inform 2017 treatment priorities to maintain riparian and aquatic integrity.
- Continue to support and strengthen the pollinator pasture and the Bath Slough Revitalization Initiative as well as initiate pollinator pasture projects on suitable sites throughout the city.



*Attachment 12:*

- a) Map showing any 2015-2016 changes to protected riparian areas & possible stream classifications. If no changes, then this figure is not required.*

No changes.

**Municipal Progress Summary Table**

*The summary table is the same format at pervious Biennial Report. The columns (Dec 2014 + Additions/Changes) should add to equal the Dec 2016 Total.*

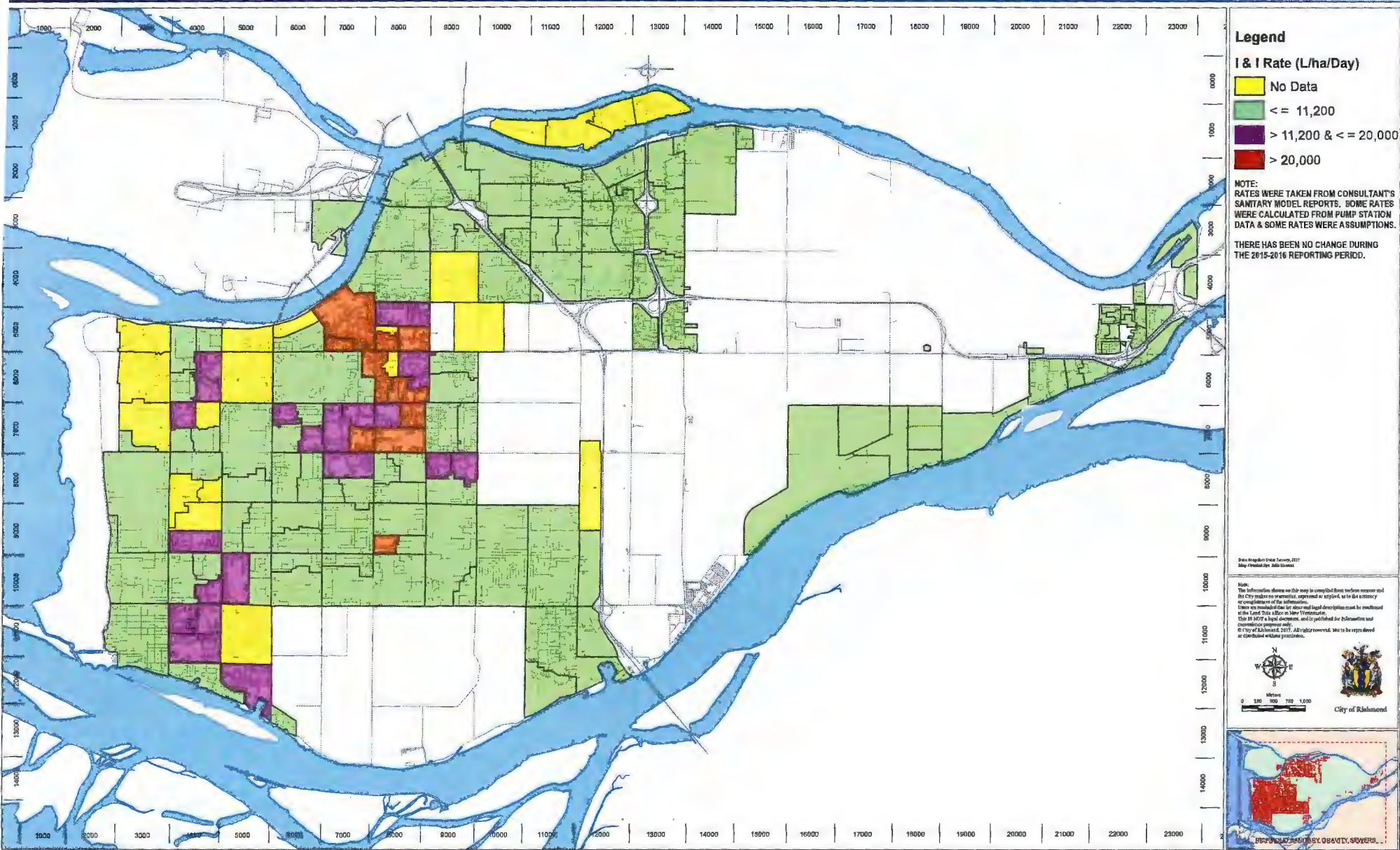
**Table 10 Summary of Municipal Progress 2013-2014**

Description	Unit	Total as of Dec 31 <sup>st</sup> , 2014	Additions & Changes	Total as of Dec 31 <sup>st</sup> , 2016
<b>1. Municipal Sewer System Inventory</b>				
a. Sanitary Gravity Sewers	m	464,456	4,044	468,500
b. Sanitary Services (Connections)	ea.	31,520	45	31,565
c. Sanitary Force mains	m	101,010	190	101,200
<b>2. Combined Sewer System Inventory</b>				
a. Total Combined Sewers	m	0	0	0
b. Combined Services (Connections)	ea.	0	0	0
c. Combined Sewers Separated	m	0	0	0
d. Percentage of total system separated	%	0	0	0
<b>3. Sanitary Sewer System Evaluation Program</b>				
a. Sanitary Sewers Video Inspected	m	413,300	22,188	435,488
b. Percentage of Entire Municipal Sewer System Dye & Smoke Tested	%	0.7%	N/A	0.7%
c. Percentage of Entire Municipal Sewer System Video Inspected	%	89.7%	10.3%	100%
d. Percentage of Entire Municipal Sewer System Structurally Rated	%	89.7%	10.3%	100%
<b>4. Sewer System Rehabilitation</b>				
a. Total Length of Sewers Rehabilitated	m	2,584	0	2,584
b. Total Length of Sewers Replaced/Capacity Upgraded	m	11,340	3,424	147,64
c. Total Number of Service Laterals Rehabilitated	ea.	40	5	45
d. Number of Structurally Repaired Manholes/Cleanouts	ea.	2,779	107	2,886
e. Number of Cross-Connections Corrected	ea.	7	4	11
<b>5. Sanitary Sewer Overflows</b>				
a. Total Number of Reported Dry Weather SSOs	ea.	0	0	0

Description	Unit	Total as of Dec 31 <sup>st</sup> , 2014	Additions & Changes	Total as of Dec 31 <sup>st</sup> , 2016
b. Total Number of Reported Wet Weather SSOs	ea.	0	0	0
c. Number of Breakdowns from Failures	ea.	126	10	136
<b>6. Greenhouse Gas Emissions</b>				
a. CO <sub>2</sub> emission reduction from sewer system	kg CO <sub>2</sub>			
<b>7. Summary of Costs</b>		<b>2015</b>	<b>2016</b>	<b>Total</b>
a. Sanitary Sewer Condition Evaluation Program		0.2M	0M	0.2M
b. Combined Sewer Separation Program		0	0	0
c. Sewer System Rehabilitation Program		4.05M	4.72M	8.77M
d. CO <sub>2</sub> Reduction Program		0	0	0
e. ISMP Implementation		0	0	0
f. Total Cost for the Biennial Period		4.25M*	4.72M*	8.97M*

*\*Cost associated with items listed under 7-a to 7-e only. Capital investments associated with other aspects of sanitary system management are not included.*

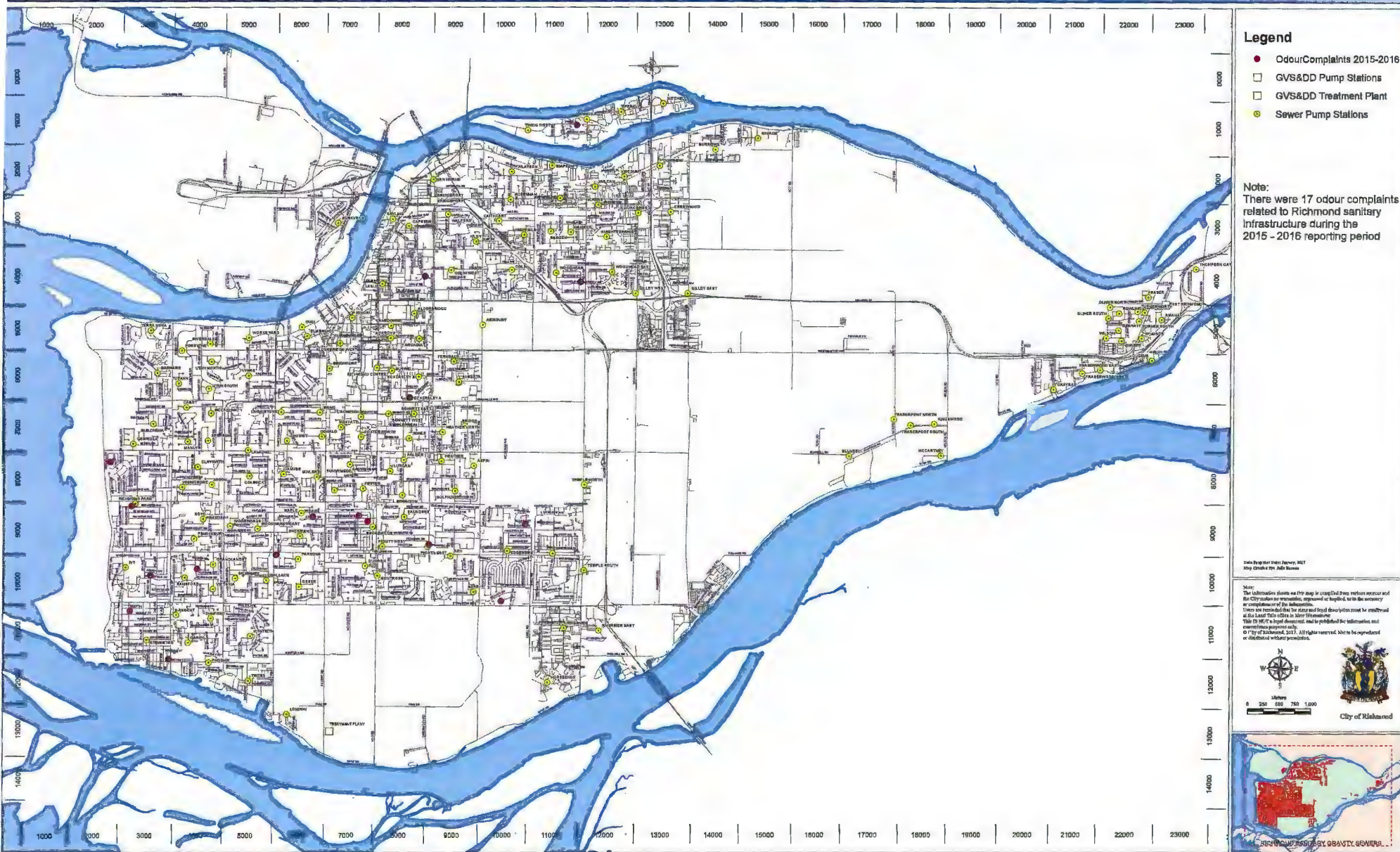




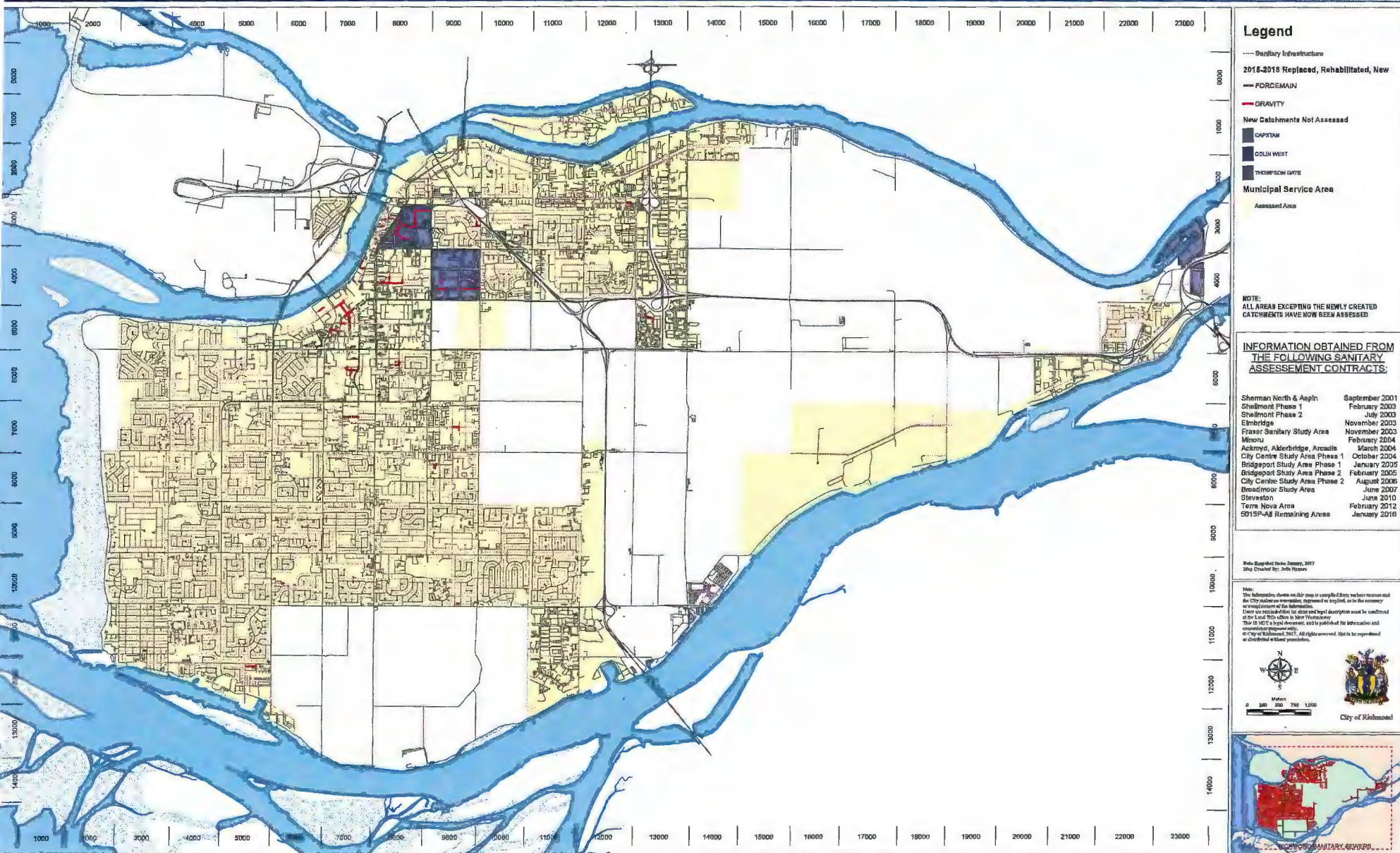


Richmond

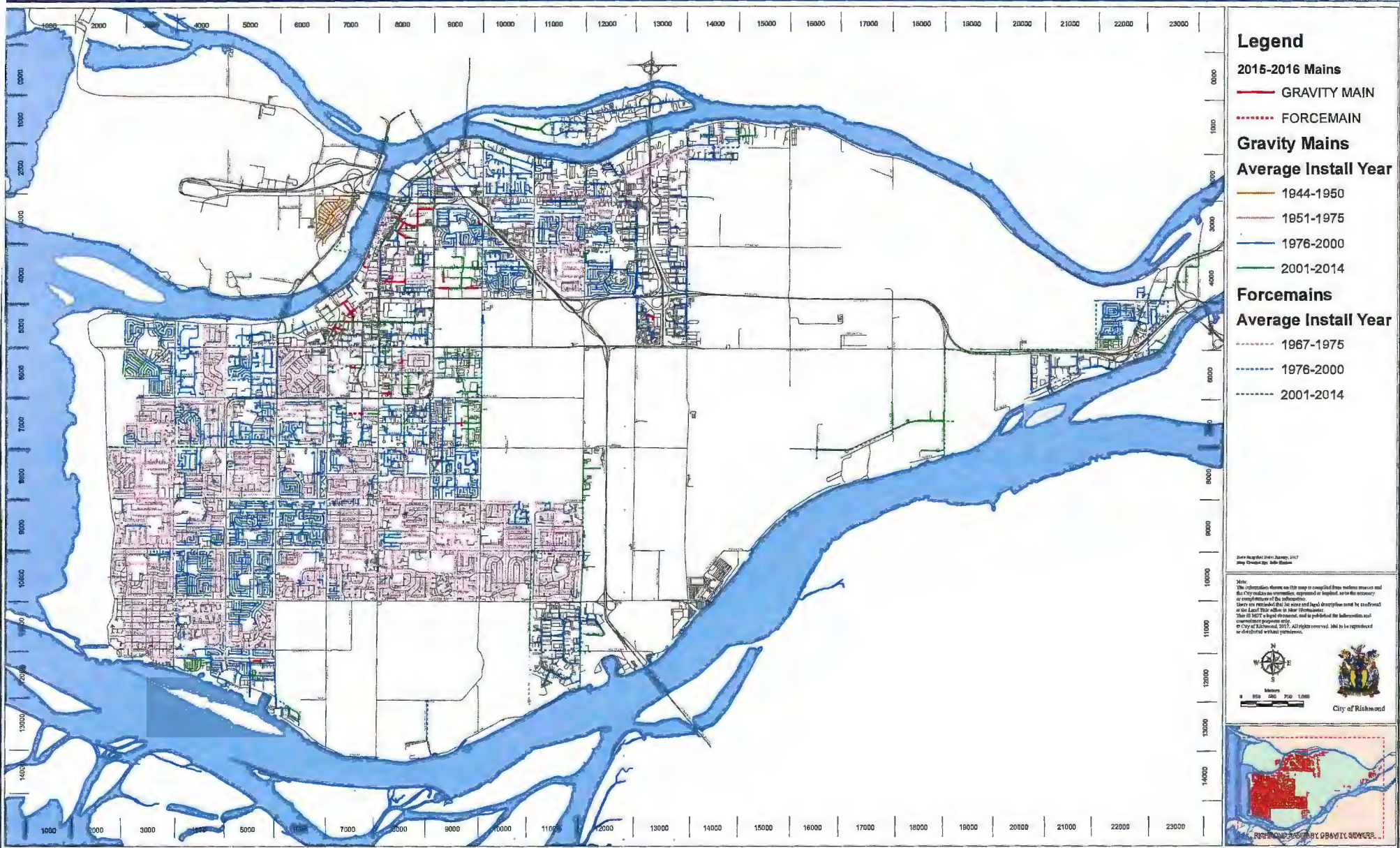
## City of Richmond Odour Control Facilities At Sanitary Pump Stations - January 2017



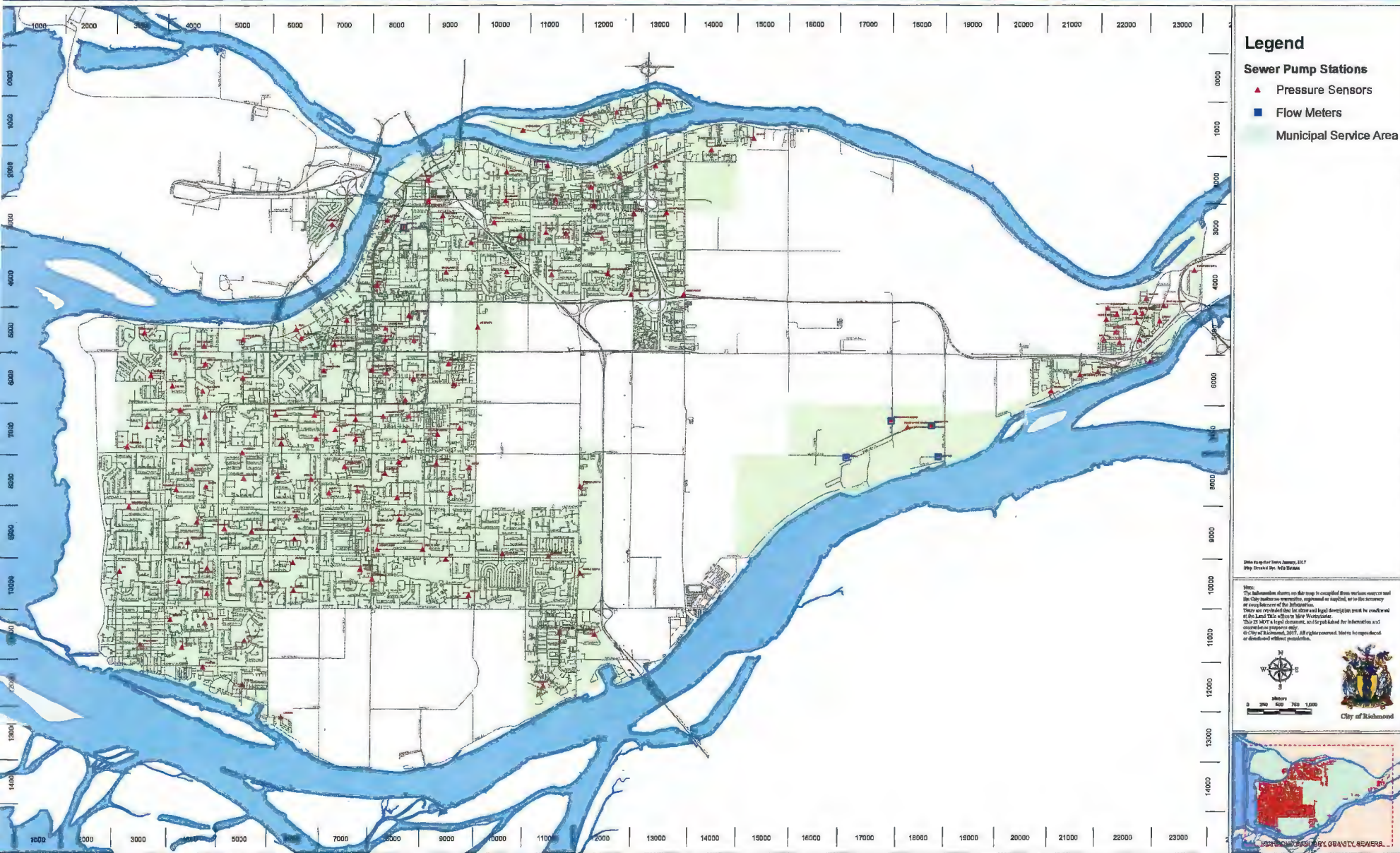


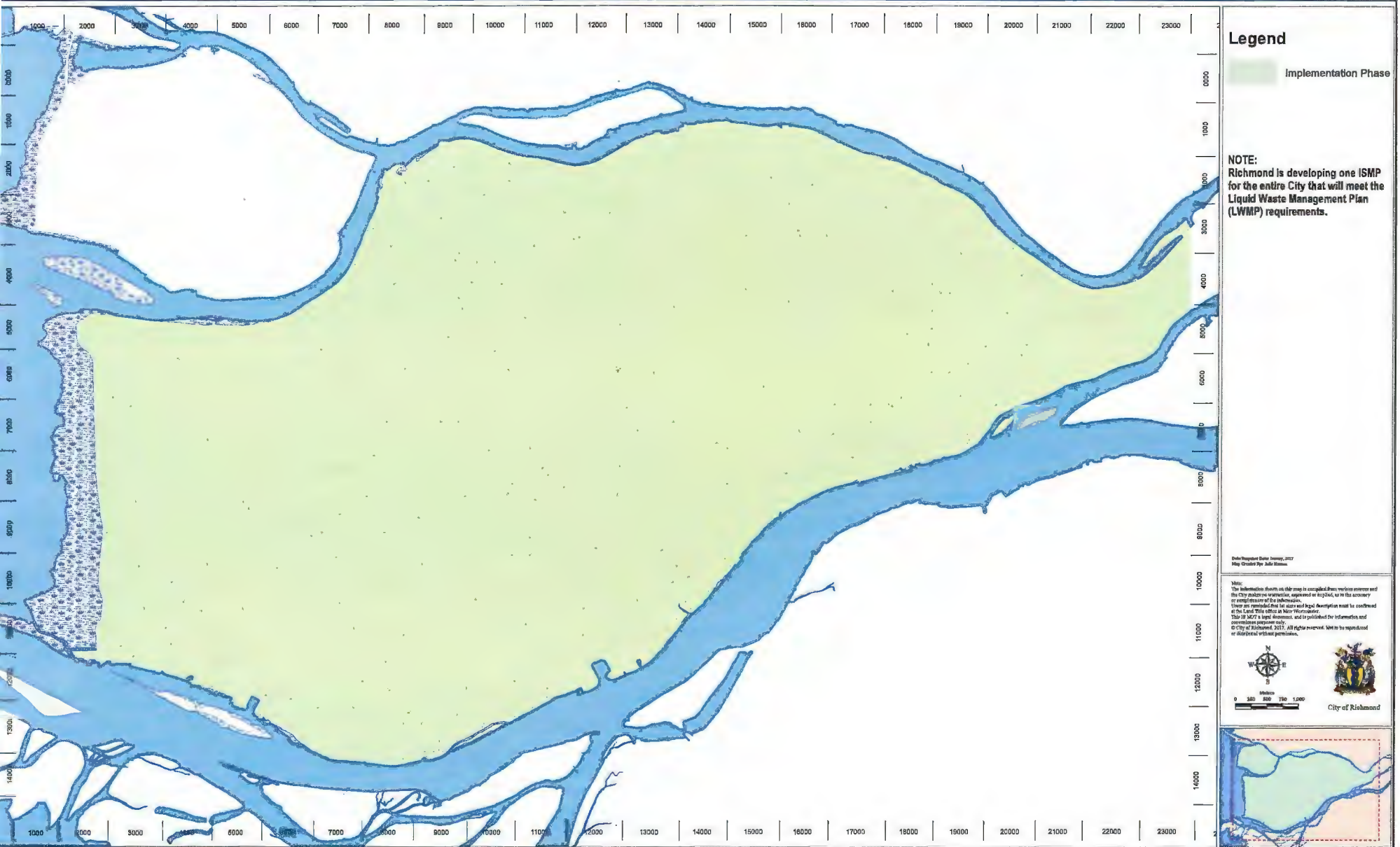
















# City of Richmond

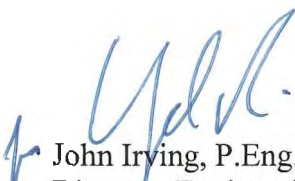
## Report to Committee

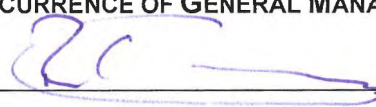

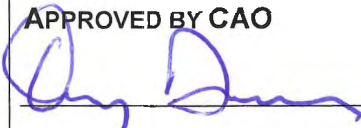
**To:** Public Works and Transportation Committee  
**From:** John Irving, P.Eng. MPA  
Director, Engineering  
**Re:** 2017 Clothes Washer Rebate Program

**Date:** February 22, 2017  
**File:** 10-6060-01/2017-Vol  
01

### Staff Recommendation

1. That the City of Richmond partner with BC Hydro to the end of 2017 to offer rebates of up to \$200, equally cost shared between BC Hydro and the City, for the replacement of inefficient clothes washers with new high efficiency clothes washers;
2. That the scope of the existing Toilet Rebate Program funding be expanded to include clothes washer rebates; and
3. That the Chief Administrative Officer and General Manager, Engineering and Public Works, be authorized to execute an agreement with BC Hydro to implement the Clothes Washer Rebate Program.

  
John Irving, P.Eng. MPA  
Director, Engineering  
(604-276-4140)

REPORT CONCURRENCE		
<b>ROUTED TO:</b>	<b>CONCURRENCE</b>	<b>CONCURRENCE OF GENERAL MANAGER</b>
Finance Department Water Services	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	
<b>REVIEWED BY STAFF REPORT / AGENDA REVIEW SUBCOMMITTEE</b>	<b>INITIALS:</b> 	<b>APPROVED BY CAO</b> 

## **Staff Report**

### **Origin**

BC Hydro and local governments have an interest in encouraging the conservation of water and energy. Through PowerSmart, BC Hydro offers a variety of incentive programs that encourage uptake of energy-efficient technologies, including energy-efficient appliances.

Since 2014, the City has partnered with BC Hydro to implement the Clothes Washer Rebate Program. The program offered a rebate of up to \$200, which was equally cost shared between BC Hydro and the City.

BC Hydro is offering the Clothes Washer Rebate Program again in 2017 and is requesting that the City continue its participation.

The program supports the 2041 Official Community Plan (OCP), the Corporate Sustainability Framework, as well as the Community Energy and Emissions Plan, which includes “promoting building efficiency through outreach and education and providing incentives for building retrofit action.”

### **Analysis**

#### **Clothes Washer Rebate Program**

To date, the Clothes Washer Rebate Program has issued 437 rebates at a total cost of \$34,000 to the City resulting in an estimated annual savings in water and energy of 1,647,560 liters per year and 42,130 kilowatt hours per year, respectively. Twelve municipalities, including the City of Abbotsford and the City of Vancouver, participated in the partnership program with BC Hydro in 2016.

#### **2017 Clothes Washer Rebate Program**

The proposed 2017 Clothes Washer Rebate Program offered by BC Hydro will run during the spring and fall of this year. It is anticipated that all twelve municipalities that partook last year will participate in this year’s partnership program with BC Hydro.

BC Hydro has also partnered with Samsung and Home Depot, with each of these organizations offering to match BC Hydro’s rebate. The Samsung rebate will apply to eligible Samsung models, and the Home Depot rebate will apply to eligible models purchased at Home Depot. Including recommended City participation, the rebate for an eligible Samsung clothes washer purchased at Home Depot will be up to \$400.

This year’s program details are as follows:

- City partners with BC Hydro to offer a combined Clothes Washer Rebate Program, which will provide a rebate of up to \$200, equally cost shared between BC Hydro and the City, for the replacement of an inefficient clothes washer with a new high efficiency clothes washer;



- The proposed spring and fall campaign will run from May 1 to June 30 and October 1 to November 30 of this year.

Staff recommend that the City partner with BC Hydro to match rebate offers on high efficiency washing machines for the proposed dates and any future extensions that may be requested.

### *Roles and Responsibilities*

The City and BC Hydro roles and responsibilities are outlined in Table 1. BC Hydro will be responsible for carrying out program administration and associated activities, and the City will be responsible for providing matching funding to supplement the BC Hydro rebate and advertising the rebate program within Richmond.

Table 1: City and BC Hydro Roles and Responsibilities

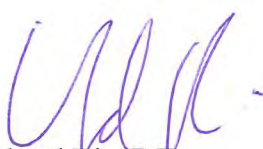
City of Richmond	BC Hydro
<ul style="list-style-type: none"> <li>• Provide funding to supplement the BC Hydro rebate</li> <li>• Advertise the rebate offer locally</li> </ul>	<ul style="list-style-type: none"> <li>• Answer email and phone inquiries about the program</li> <li>• Receive and process online applications</li> <li>• Provide rebate directly to applicants, and invoice the City for its portion</li> <li>• Provide post campaign reporting to the City</li> </ul>

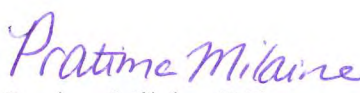
### **Financial Impact**

Staff recommend that the rebates be funded from the approved Toilet Rebate Program. The Toilet Rebate Program has an annual budget of \$100,000, with \$91,500 remaining in 2017. The uptake on toilet and washing machine rebates has a high degree of variability. Staff will monitor participation and report back to Council if there is higher than anticipated participation. BC Hydro will be responsible for all costs associated with program administration.

### **Conclusion**

The City has an opportunity to continue partnering with BC Hydro to provide rebate incentives to residents for purchasing efficient clothes washers through the Clothes Washer Rebate Program. Staff recommend that the City continue to participate in this combined rebate program which provides a rebate of up to \$200, equally shared between BC Hydro and the City, and that the scope of the existing Toilet Rebate Program funding be expanded to include clothes washer rebates.

  
 Lloyd Bie, P.Eng.  
 Manager, Engineering Planning  
 (4075)

  
 Pratima Milaire, P.Eng.  
 Project Engineer  
 (4039)



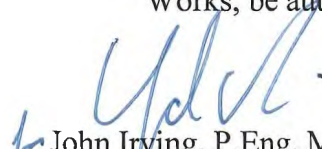
# City of Richmond

## Report to Committee

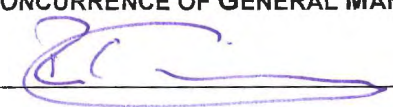

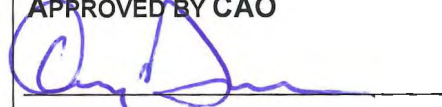
**To:** Public Works and Transportation Committee **Date:** February 23, 2017  
**From:** John Irving, P.Eng. MPA **File:** 10-6060-01/2017-Vol  
Director, Engineering 01  
**Re:** Servicing Agreement with YYH Development Ltd. for 6340 No. 3 Road

### Staff Recommendation

1. That the City enter into a servicing agreement with YYH Development Ltd. to remove and replace an ageing City sanitary sewer main located on their property at 6340 No. 3 Road;
2. That the existing statutory rights-of-way (SRW), Registration No. A18319, 288432C, 288922C, and 52405, registered to 6340 No. 3 Road (Lot 169 Section 9 Block 4N Range 6W New Westminster Plan 41547) be discharged in its entirety; and
3. That the Chief Administrative Officer and the General Manager, Engineering and Public Works, be authorized to execute the above recommendations.

  
John Irving, P.Eng. MPA  
Director, Engineering  
(604-276-4140)

Att. 1

REPORT CONCURRENCE		
<b>ROUTED TO:</b>	<b>CONCURRENCE</b>	<b>CONCURRENCE OF GENERAL MANAGER</b>
Law	<input checked="" type="checkbox"/>	
Sewerage & Drainage	<input checked="" type="checkbox"/>	
Development Applications	<input checked="" type="checkbox"/>	
<b>REVIEWED BY STAFF REPORT / AGENDA REVIEW SUBCOMMITTEE</b>	<b>INITIALS:</b> 	<b>APPROVED BY CAO</b> 

## **Staff Report**

### **Origin**

The property owner of 6340 No. 3 Road, YYH Development Ltd. ("the Owner"), has requested to enter into a servicing agreement with the City to remove and replace an ageing City sanitary sewer main located on their property at 6340 No. 3 Road.

This report supports Council's 2014-2018 Term Goal #6 Quality Infrastructure Networks:

*Continue diligence towards the development of infrastructure networks that are safe, sustainable, and address the challenges associated with aging systems, population growth, and environmental impact.*

*6.1. Safe and sustainable infrastructure.*

*6.2. Infrastructure is reflective of and keeping pace with community need.*

This report outlines the terms of the proposed servicing agreement and seeks Council approval to enter into a servicing agreement with the Owner and to discharge existing statutory rights-of-way (SRW) registered to their property.

### **Analysis**

In order for the Owner to proceed with development-related site preparation works and to prevent damage to City infrastructure, a servicing agreement is required for the Owner to remove and replace a City sanitary sewer main.

The Owner intends on submitting a rezoning application to redevelop 6340 No. 3 Road. The proposed servicing agreement is independent of potential rezoning applications, and entering into the agreement does not impact Council's consideration of such rezoning applications. If a rezoning application is submitted, a separate staff report will be provided to Planning Committee and Council for consideration at a later date. The staff report will identify infrastructure works that will be required for development, along with a separate servicing agreement.

The following are the key terms and conditions of the proposed servicing agreement with the Owner:

- The Owner to construct new sanitary sewer main on Cook Road and connect to future sanitary main on Buswell Street, while maintaining service to neighbouring properties, at their cost;
- The Owner to remove existing sanitary sewer main on their property and along Cook Road, at their cost;
- The Owner to complete the works within a defined schedule, to be determined through the servicing agreement process;

- The Owner to provide financial security for the City to complete any unfinished works, the amount of which to be determined through the servicing agreement process; and
- The Owner to indemnify the City.

Attachment 1 outlines the sanitary sewer works included in the proposed servicing agreement. It is the City's preference to locate infrastructure within road dedications. Entering into the proposed servicing agreement will benefit the City by advancing the replacement of ageing sanitary infrastructure and by relocating infrastructure onto City road dedication.

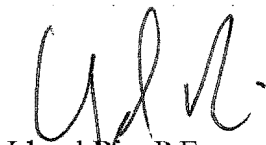
Once the sanitary sewer is removed and replaced, staff recommend that SRW Registration No. A18319, 288432C, 288922C, and 52405, registered to 6340 No. 3 Road (Lot 169 Section 9 Block 4N Range 6W New Westminster Plan 41547) be discharged in its entirety. The SRWs currently serve the existing sanitary sewer and will not be required once the sanitary sewer is removed and replaced.

#### **Financial Impact**

None.

#### **Conclusion**

The Owner has requested to enter into a servicing agreement with the City to remove and replace an ageing City sanitary sewer main located on their property, in order to proceed with development-related site preparation works and to prevent damage to City infrastructure. Staff recommend support for the works and request Council approval to enter into a servicing agreement with the Owner.



Lloyd Bie, P.Eng.  
Manager, Engineering Planning  
(4075)

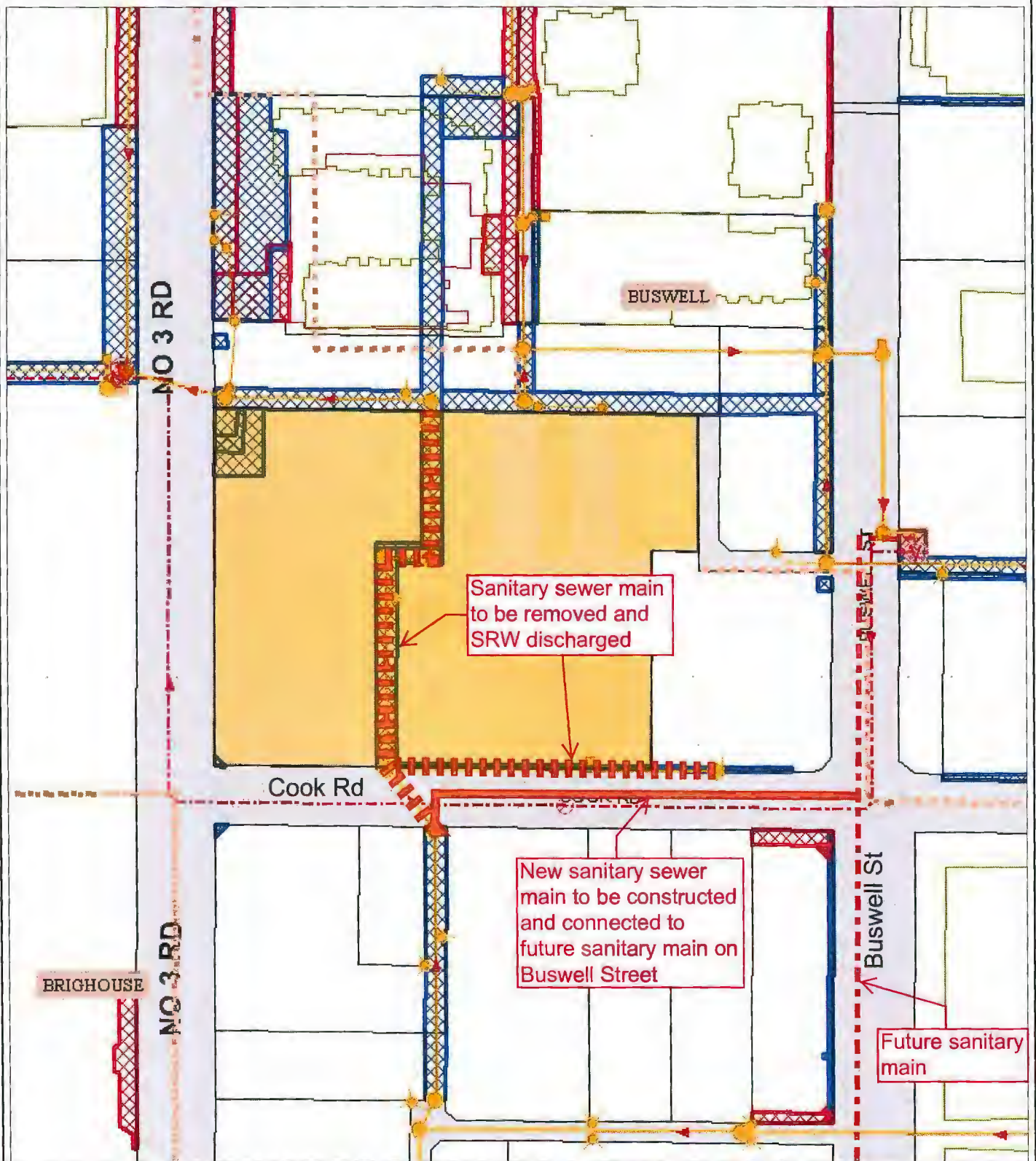


Jason Ho, P.Eng.  
Project Engineer  
(1281)

LB:jh

Att. 1: Proposed Infrastructure Works for 6340 No. 3 Road

# Proposed Infrastructure Works for 6340 No. 3 Road



76.7 0 38.33 76.7Meters

This map is a user generated static output from an Internet mapping site and is for reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable.





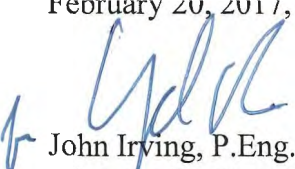
# City of Richmond

## Report to Committee

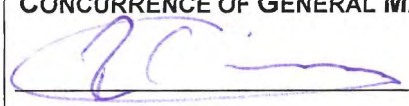

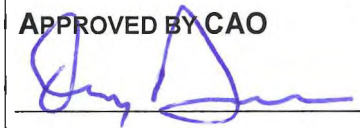
**To:** Public Works and Transportation Committee **Date:** February 20, 2017  
**From:** John Irving, P.Eng. MPA **File:** 10-6125-07-02/2015-Vol 01  
Director, Engineering  
**Re:** Community Energy and Emissions Plan - 2017 Update

### Staff Recommendation

That the staff report titled "Community Energy and Emissions Plan – 2017 Update," dated February 20, 2017, from the Director, Engineering, be received for information.

  
John Irving, P.Eng. MPA  
Director, Engineering  
(604-276-4140)

Att. 1

REPORT CONCURRENCE		
<b>ROUTED TO:</b>	<b>CONCURRENCE</b>	<b>CONCURRENCE OF GENERAL MANAGER</b>
Development Applications	<input checked="" type="checkbox"/>	
Economic Development	<input checked="" type="checkbox"/>	
Policy Planning	<input checked="" type="checkbox"/>	
Transportation	<input checked="" type="checkbox"/>	
<b>REVIEWED BY STAFF REPORT / AGENDA REVIEW SUBCOMMITTEE</b>	<b>INITIALS:</b> 	<b>APPROVED BY CAO</b> 

## **Staff Report**

### **Origin**

In January 2014, Council adopted the Community Energy and Emissions Plan (CEEP). This report provides an update on implementation of the CEEP as committed when the plan was adopted.

This report supports Council's 2014-2018 Term Goal #4 Leadership in Sustainability:

*Continue advancement of the City's sustainability framework and initiatives to improve the short and long term livability of our City, and that maintain Richmond's position as a leader in sustainable programs, practices and innovations.*

*4.1. Continued implementation of the sustainability framework.*

### **Background**

In 2010, Council adopted targets in Richmond's Official Community Plan to reduce community greenhouse gas (GHG) emissions 33% below 2007 levels by 2020, and 80% below 2007 levels by 2050. The 2041 Official Community Plan also includes a target to reduce energy use 10% by 2020 below 2007 levels. In January 2014, Council adopted Richmond's Community Energy and Emissions Plan (CEEP). The CEEP identifies key strategies and actions to reduce community energy use and GHG emissions, organized across five themes:

- Neighborhoods and Buildings
- Mobility and Access
- Resilient Economy
- Sustainable Infrastructure and Resources
- Climate Change Leadership

The CEEP included modeling of the impacts of these strategies and actions on Richmond's community emissions out to 2050. This modeling suggests implementing CEEP actions will reduce emissions approximately 25% below 2007 levels by 2050. This would comprise an important contribution to climate action, but is still below the City's 80% target.

In order to achieve the 80% emissions reduction target, the CEEP identifies three "Big Breakthroughs" that the City can pursue in partnership with other stakeholders:

- Near universal adoption of zero carbon vehicles (such as plug-in electric vehicles).
- Zero carbon new building construction by 2025.
- Deep energy improvements to most existing buildings, sufficient to reduce emissions by over 70% by 2050.

The CEEP recognizes that these reductions are not achievable by the City alone; rather, they require provincial and federal regulatory changes and funding, market innovation, increasing carbon pricing, and more coordinated and effective efforts between all levels of government and industry. The CEEP specifies that the City work to pursue the "Big Breakthroughs" in coordination with other levels of government, and the private and non-profit sectors.

In November 2015, the Public Works and Transportation Committee received a Community Energy and Emissions Plan - 2015 Update report, outlining progress in implementing the CEEP.

This 2017 Update report summarizes achievements and ongoing initiatives to pursue the actions and breakthroughs identified in the CEEP.

## **Analysis**

### **Energy Use and Emissions Trends**

As noted in the Community Energy and Emissions Plan 2017 Update (Attachment 1), in 2008 the province committed to providing local governments with a Community Energy and Emissions Inventory (CEEI), summarizing energy and emissions trends. The latest year for which complete CEEI data has been released is 2012, though the province has released electricity and natural gas consumption data for 2014; the province has yet to release 2014 Transportation GHG emissions data.

Between 2007 and 2012, Richmond's emissions declined by 6%, despite population growth of 7% during this timeframe. Important reasons for these emissions reductions include:

- The City's compact urban development policies;
- The City's success in diverting community solid waste from landfills;
- City and utility energy efficiency and "water-wise" programs;
- The introduction of the provincial carbon tax;
- An increased percentage of zero-emission "green" electricity;
- The introduction of BC's low-carbon fuel regulation for vehicle fuels; and
- The opening of the Canada Line in 2009.

Between 2007 and 2014, electricity consumption increased 1% while population increased 11%. Natural gas consumption declined 4% during this time. This increase in community energy efficiency is estimated to save Richmond residents \$13 million per year.

### **Achievements Implementing the CEEP**

This 2017 Community Energy and Emissions Plan Update highlights key achievements that have been made since the CEEP was adopted from across the different themes noted above, including:

- Continuing to secure energy performance in new developments through the Townhouse Rezoning Policy and City Centre Sustainability Package, the latter of which currently includes a policy for LEED Silver equivalency design and district energy ready design.
- Contributing to the development of BC's Energy Step Code, a forthcoming provincial standard that local governments may apply to new construction in their communities.
- Improving walking, biking and rolling transportation infrastructure, including the Parkside Neighbourhood Bikeway, pedestrian walkway improvements on 7<sup>th</sup> Avenue, and extension and enhancement of the Railway Greenway.

- Continuing the City's commitment to providing improvements on emission-friendly transportation modes such as transit shelters and stops, pedestrian connections and cycling infrastructure / education as alternatives to driving.
- Initiating implementation of a project to nearly quadruple the number of bus shelters and double the number of street benches within the next ten years through the new street furniture contract to significantly improve on transit and walking.
- Delivering of cycling skills training to over 1,300 elementary school students at 12 schools and 85 recent immigrants since 2013.
- Delivering energy programs for Richmond businesses, which include: The Building Energy Challenge, a friendly competition to reduce energy use with over 95 buildings representing over 7 million square feet of property participating; the ClimateSmart for Businesses Program; and an Efficient Water Fixtures program delivered in 2016 that is saving food service businesses \$220,000 in utility costs each year.
- Expanding district energy systems. The Lulu Island Energy Company is a corporation wholly owned by the City of Richmond and manages district energy systems in Richmond. The Alexandra District Energy Utility (ADEU) expanded to serve the Smart Centers development in 2016, and the Oval Village District Energy Utility (OVDEU) now provides space heating and domestic hot water to over 1,224 residential units with a total area of 1.39 million sq. ft.
- Receiving recognition for excellence in district energy systems. The Alexandra District Energy Utility has received multiple awards, including the 2016 International District Energy Associations (IDEA) System of the Year Award— IDEA's highest honour.
- Informing the BC Climate Leadership Plan. The City has taken multiple opportunities to engage with the province of BC in the development of the BC Climate Leadership Plan. This includes being a signatory to the "Call for Action on Energy and Climate in the Building Sector", which is considered partially responsible for the province committing to the BC Building Code requiring "net zero ready" performance by 2032.
- Improving green fleet performance. In 2016, the City of Richmond became the first municipality to receive a Platinum Rating from E3 fleet, a national program that recognizes excellence in fleet management and environmental performance.
- Taking action to achieve deep emissions reductions in City buildings by 2020. In 2016, Council endorsed a target of reducing GHG emissions from City owned buildings by 65% from 2007 levels by 2020.

#### Communicating Climate Action

The City's progress on climate action, outlined in this Community Energy and Emissions Plan – 2017 Update, will be communicated via social media, press release, newspaper publications and other channels. The City will also continue to communicate to Richmond residents and businesses about opportunities that can save money on energy and reduce GHG emissions.



February 20, 2017

- 5 -

### **Financial Impact**

None.

### **Conclusion**

This report presents the Community Energy and Emissions Plan – 2017 Update, outlining key achievements implementing the CEEP to date, and noting ongoing efforts to pursue Richmond GHG emissions and energy reduction targets.



Peter Russell  
Senior Manager, Sustainability & District Energy  
(604-276-4130)



Brendan McEwen  
Sustainability Manager  
(604-247-4676)

BM:bm

Att. 1: Community Energy and Emissions Plan - 2017 Update



City of Richmond

# Energy Action in Richmond

Community Energy and Emissions Plan

**2017** Update



## RICHMOND'S COMMITMENT TO CLIMATE ACTION

Richmond's 2041 Official Community Plan (OCP) commits the City to greenhouse gas (GHG) reduction targets of 33% by 2020, and 80% by 2050, below 2007 levels. Additionally, the OCP includes a target to reduce energy use 10%. The Area Plans support these commitments.

Richmond's Community Energy and Emissions Plan (CEEP) includes detailed strategies and actions organized around five themes to achieve City targets:

- **Neighborhoods and Buildings**
- **Mobility and Access**
- **Resilient Economy**
- **Sustainable Infrastructure and Resources**
- **Climate Change Leadership**

Additionally, the CEEP identifies three "Big Breakthroughs" necessary to achieve Richmond's targets: 1) Near universal adoption of zero carbon vehicles; 2) Zero carbon new building construction by 2025; 3) Deep energy improvements to most existing buildings.

This document summarizes achievements to date in implementing the CEEP, and notes additional opportunities to achieve targets and pursue "Big Breakthroughs".

Based on 2007 levels  
**City GHG reduction  
targets**

**33%**  
by 2020

**80%**  
by 2050

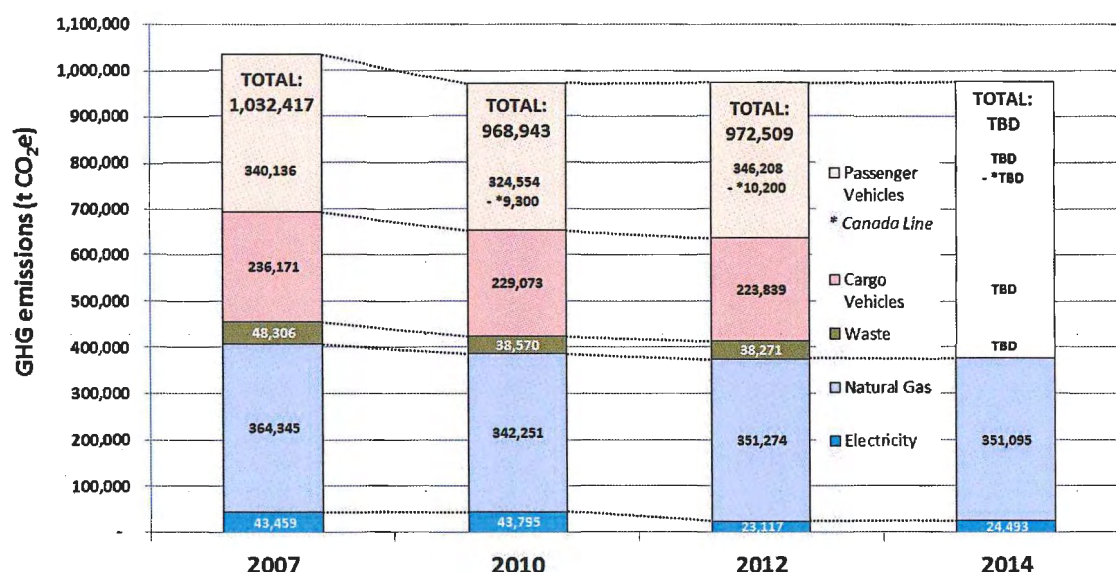


# PROGRESS TOWARDS TARGETS

**GHG emissions:** According to the province's Community Energy and Emissions Inventory, total GHG emissions from the City of Richmond in 2007 were equivalent to 1,032,417 tonnes of carbon dioxide (t CO<sub>2</sub>e). By 2012, the City's population had increased by 7%, but overall GHG emissions actually decreased by over 63,000 tonnes to 968,943 t CO<sub>2</sub>e – a 6% decline.

Different initiatives contributed to this success, including:

- the City's compact urban development policies;
- City and utility energy efficiency and "water-wise" programs;
- the City's success in diverting community solid waste from landfills;
- an increased percentage of zero-emission "green" electricity;
- the introduction of BC's low-carbon fuel regulation for vehicle fuels; and
- the opening of the Canada Line in 2009



**Energy use:** Between 2007 and 2014, Richmond's population increased by approximately 11%. During this same time, the total amount of electricity used in Richmond increased by only 1%, while natural gas consumption use declined by 4%. Increased energy efficiency provides cost savings as well as greenhouse gas emission reductions. Electricity consumption by the average Richmond household was over 10% lower in 2014 than it was in 2007; during the same period, the average Richmond residential household using natural gas reduced its consumption by over 12%. In 2014 alone, these energy efficiency gains resulted in \$12.8 million of savings off of Richmond residents' utility bills.



# NEIGHBOURHOODS AND BUILDINGS

## DIRECTIONS

The CEEP supports Richmond towards the following:

1. **Compact, Complete Neighbourhood Design**
2. **Increase Energy Efficiency in New Buildings**
3. **Increase Energy Efficiency in Existing Buildings**

## KEY ACHIEVEMENTS

**Supporting a fundamental shift in how Richmond grows:** In recent years the City has advanced key transit-oriented development initiatives aimed at reducing sprawl and encouraging compact, vibrant, high-amenity, mixed use communities. Neighbourhood planning for Alexandra, The Gardens, and along arterial roads has encouraged new low-rise apartment, townhouse, and duplex growth in proximity to parks, amenities, and transit. Inside the City Centre, density bonus and amenity strategies in use since 2009 have facilitated over 10,000 new apartments, two new community centres, child cares, waterfront and neighbourhood parks, office, hotel, and employment uses, and funding towards the new Capstan Canada Line station.

**Continuing to secure energy performance requirements for new developments:** The City secures energy performance for new developments as part of rezonings and development approvals. Notably, the 2009 City Centre Area Plan established a LEED Silver standard for new large buildings, and in 2014 Council adopted a policy of EnerGuide 82/Energystar performance for townhouses. Going forward, options to reference BC's forthcoming Energy Step Code (see below) will be brought for Council's consideration.

**Developing the Energy Step Code:** City of Richmond staff represented the Union of BC Municipalities at the provincial Energy Efficiency Working Group, which provided recommendations on BC's forthcoming Energy Step Code, a new provincial standard to create more efficient, healthy and comfortable new buildings. Local governments will be able to apply the Energy Step Code to new construction in their communities.

# 667

New townhouse  
units approved with  
beyond-Code  
energy efficiency  
performance since  
2015





## FUTURE ACTIONS

**Implement the Energy Step Code:** In 2017, Council will consider options to implement the Energy Step Code for new development in Richmond.

**Lead on Building Energy Benchmarking:** Energy Benchmarking is the process of tracking energy performance, and comparing it to similar buildings. Benchmarking is considered a key energy management practice, and is associated with large reductions in buildings' energy and emissions. The City is working with other local governments and the province to develop benchmarking tools and requirements to ensure that all large buildings undertake this key best practice.

# MOBILITY AND ACCESS

## DIRECTIONS

1. **Prioritize and Fund Walking, Rolling and Cycling**
2. **Promote Low-Carbon Personal Vehicles**
3. **Facilitate Car-Sharing**

## KEY ACHIEVEMENTS

**Active transportation infrastructure:** The City continues to expand the network of active transportation facilities. Recent projects in 2016 include:

- Parkside Neighbourhood Bikeway: completion of a 2.85-kilometre cycling route linking South Arm Park to Garden City Park via Ash Street and off-street connecting pathways.
- Pedestrian walkway improvements on 7<sup>th</sup> Avenue (east side between Regent Street and Pleasant Street) and Bridgeport Road (Viking Way to No. 6 Road).
- Extension and enhancement of the Railway Greenway with the upgrade of the crossing at Westminster Highway-McCallan Road to a pedestrian signal and a new ramp to the Middle Arm Dyke Trail at River Road.
- Implementation of 5 new special crosswalks to support walking and access to transit.
- Upgrade of 24 bus stops to become accessible and implementation of Accessible Pedestrian Signal features at 27 signalized intersections.

**Partnership with TransLink and HUB Cycling:** Delivery of cycling education courses to approximately 400 Grade 4-7 elementary school students and 14 new immigrants in 2016. Since 2013, over 1,300 elementary school students at 12 schools plus 85 new immigrants have received cycling skills training.

**Expansion of transit shelters and benches:** Transit shelters provide weather protection, a more comfortable and safer waiting area particularly at night due to shelter lighting, and improved visibility of a bus stop, all of which encourage transit use. As part of the new street furniture contract signed in 2016, the number of transit shelters and benches will expand to 200 and 600 respectively over the next 10 years.

**Facilitating car sharing in Richmond:** In 2016, for the first time as part of the development process, Modo the Car Co-Op stationed two vehicles in the off-street parking area of the City Centre Community Centre. The City also entered into a 6-month pilot program with Modo to evaluate City use of Modo car-share vehicles during business hours as part of the City's Green Fleet Action Plan to meet emission reduction targets.



**New Ramp to the Middle Arm Dyke Trail at River Road**

As of 2016

**71 km**  
of bike routes and

**71.9%**  
of bus stops are  
accessible

**96**  
special crosswalks





The City supports Electric Vehicles in Richmond with home charging provisions in new multifamily developments. The City is exploring updating standards for new developments and DC Fast Charging Infrastructure.

## FUTURE ACTIONS

**Continue to support electric vehicle charging in new developments:** To meet the City's 2050 emissions targets, the majority of vehicle trips will need to be zero carbon. Since 2012, the City has required that a minimum of 20% of parking stalls in new multifamily developments provide electric charging outlets, with an additional 25% constructed to accommodate future installation. In January 2017, Council directed that staff consult with stakeholders on options for revising EV charging infrastructure requirements in new developments.

**Consider DC Fast Charging to Support Electric Vehicles:** A DC Fast Charging network can support adoption of electric vehicles. In November 2016, Council directed that staff investigate opportunities to expand the City's public charging network, including DC Fast Charging.

**Expansion of Active Transportation Infrastructure:** Walking and cycling projects over the next 1-2 years will feature "Triple A" (all ages and abilities) facilities, providing paved off-street multi-use paths that protect users from adjacent motor vehicle traffic at the following locations:

- River Drive (No. 4 Road-Van Horne Way):
- Great Canadian Way (Bridgeport Road-Van Horne Way):
- Westminster Highway (No. 8 Road-Nelson Road):

**Southwest Area Transport Plan:** TransLink's original Richmond Area Transit Plan, completed in 2000, is currently being updated through the Southwest Area Transport Plan, which will be TransLink's first sub-area plan that is multi-modal (reviews the entire transportation network rather than just transit). Phase 1, completed in 2016, identified current issues and opportunities such as areas with existing unmet travel demand. Phase 2 is targeted for completion in Fall 2017 will prioritize strategies and actions to address the issues and opportunities.

# RESILIENT ECONOMY

## DIRECTIONS

1. Encourage Energy Efficient Businesses
2. Encourage Businesses to Reduce GHG Emissions
3. Promote Investment in Sustainable Energy and Green Jobs

## KEY ACHIEVEMENTS

**Building Energy Challenge:** Now beginning its third year, the Challenge is a friendly competition between buildings to reduce energy use. In the first year of the program, participating buildings reduced GHG emissions by 12 percent. The City provides workshops and supports energy management training for building operators.

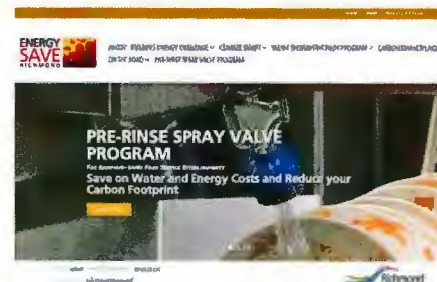
**Climate Smart Businesses:** In 2016, with support from the City of Richmond, 13 Richmond-based businesses participated in the Climate Smart program. Climate Smart helps businesses measure and profitably reduce their carbon emissions through small-group training sessions, and expert one-on-one advising. Three previous Richmond-based participant firms have achieved 245 t of GHG reductions, and \$17,560 in annual cost savings. A total of 43 Richmond-based businesses have participated in the Climate Smart program to date.

**Efficient Water Fixtures Program:** In 2016, the City delivered an efficient water fixture program for businesses in partnership with FortisBC. The City's net contribution was less than \$25,000. The fixture upgrades are projected to save participating businesses a total of \$220,000, 465 tonnes of CO<sub>2</sub>, and 63 Million liters of water *each year*.

**Green Business Attraction:** Richmond continues to attract new clean technology businesses. Innovative solutions being developed by the private sector locally include greenhouse nutrient recovery systems, electronics waste recycling, hybrid energy storage systems, and wastewater treatment processes.

**Metro Vancouver Clean Technology Expo:** In 2016 Richmond partnered in the regional clean technology expo by providing an opportunity for local businesses to showcase their innovations and including a Richmond stop on a bus tour of venture capital delegates.

**Strong Green Business Sector:** Green Business continues to be one of Richmond's top 10 sectors, delivering a range of products and services including clean transportation, energy management technologies, building materials and environmental consulting.



**Climate Smart  
Businesses**

Results from the  
**Efficient Water  
Fixtures Program**  
**Annual Savings:**  
**\$222,000** business cost  
**63 Million L Water**  
**465 Tonnes CO<sub>2</sub>**





The City of Richmond partnered in the delivery of the  
2016 Metro Vancouver Clean Tech Expo

## FUTURE ACTIONS

**Continue to offer sustainability and energy savings opportunities to businesses:** The City will continue to deliver energy savings programs for businesses in our community, including continuing to offer the Building Energy Challenge. The City will also communicate the benefits of a range of opportunities, including energy upgrades, electric vehicles, and solar power.

**Support the green economy:** The City will continue to attract green economy leaders to Richmond.





# SUSTAINABLE INFRASTRUCTURE AND RESOURCES

## DIRECTIONS

1. Continue Advancement of District Energy Systems
2. Utilize Local Energy Sources
3. Continue to Utilize Waste Management and Minimize the Use of Waste



## KEY ACHIEVEMENTS

**Expansion of the Alexandra District Energy Utility (ADEU):** The ADEU provides renewable heating, cooling, and hot water to 1.4 million square feet of residential and commercial spaces by utilizing geo-exchange energy source. Completed in 2016, the ADEU Phase 4 expansion included a satellite energy plant with high efficiency air source heat pumps to connect its first commercial customers, adding an additional 500,000 sqft of floor space. This new energy plant also allows for potential energy sharing with the main ADEU distribution system. As of the end of 2016, it is estimated that the ADEU has resulted in a savings of 1,653 tons of GHG emissions.

**Expansion of the Oval Village District Energy Utility (OVDEU):** The OVDEU now provides space heating and domestic hot water to seven multifamily developments. Energy is currently supplied from the two interim energy centres with natural gas boilers which combined provide 11 MW of heating capacity. A future energy centre will harness low carbon energy from the Gilbert Trunk sanitary force main sewer. Over the project's lifetime, the OVDEU system is anticipated to reduce the GHG emissions by more than 52,000 tonnes of CO<sub>2</sub> compared to business as usual.

**Lulu Island Energy Company:** In 2013, the City incorporated Lulu Island Energy Company (LIEC) for the purposes of managing district energy utilities on the City's behalf. As of January 2017, all district energy assets are being transferred under the LIEC, and LIEC is now managing both Oval Village District Energy Utility (OVDEU) and Alexandra District Energy Utility (ADEU), as well as future district energy opportunities.

**Solid waste diversion:** In 2016, the City introduced bi-weekly garbage collection service for more than 33,000 single-family homes and townhomes as part of promoting greater recycling and waste diversion. Residents are able to reduce the fees they pay for garbage service by selecting smaller cart sizes. The City also introduced Demolition Waste and Recyclable Materials Bylaw No. 7516, which requires that 70% of waste from single-family home demolitions be recycled or diverted from waste disposal. Donation Bin Bylaw 9502 was also introduced, which restricts donation bin placement to registered charities only and establishes suitable, safe locations for bin placement to promote reuse of used household clothing and other items.

At build out  
Oval Village District  
Energy Utility will  
meet

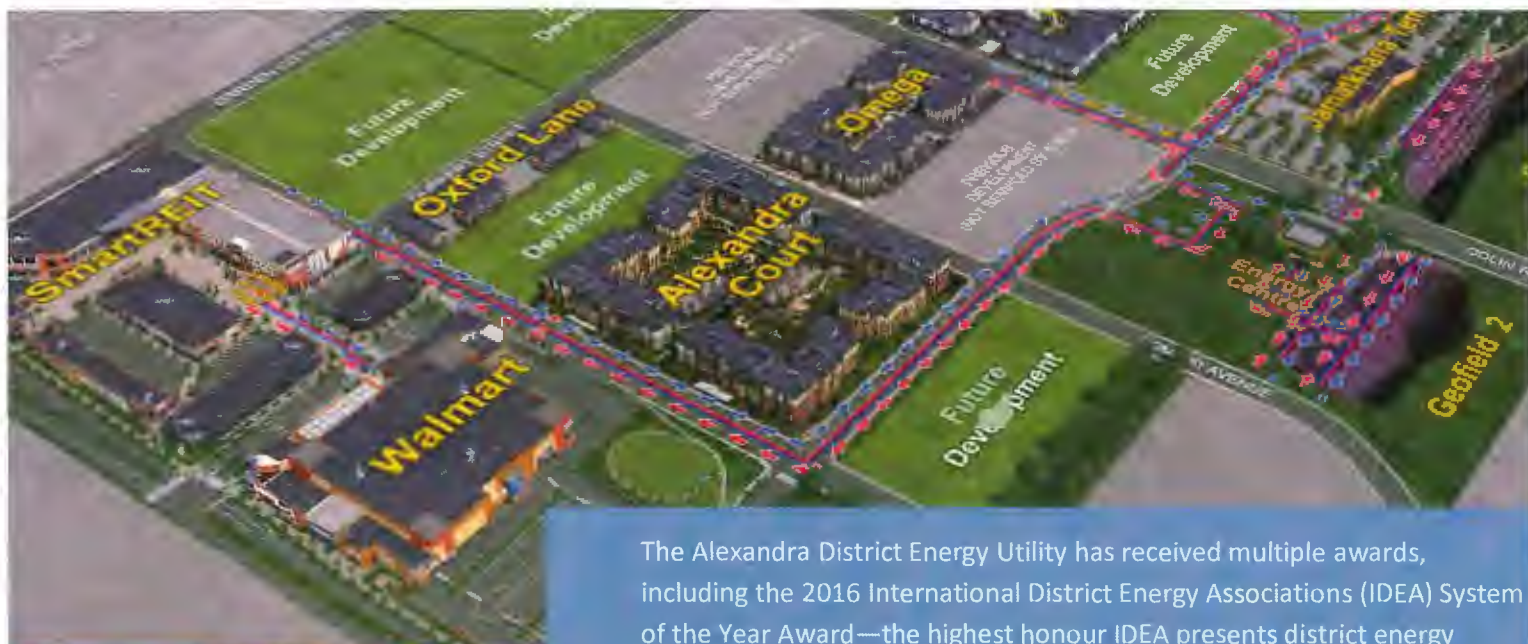
70%

of the  
neighbourhood's  
thermal energy  
needs

Oval Village District Energy  
Utility is now provides  
energy to over

1,224

residential units



The Alexandra District Energy Utility has received multiple awards, including the 2016 International District Energy Associations (IDEA) System of the Year Award—the highest honour IDEA presents district energy system.



## FUTURE ACTIONS

**Expanding on existing district energy systems:** The City will continue to serve new developments in the service areas of the Alexandra and Oval Village District Energy Utilities as they occur.

**Exploring further district energy nodes:** Through Lulu Island Energy Company, the City is evaluating partners to establish district energy systems in the Capstan and Bridgeport Village neighbourhoods of Richmond's City Centre.

**Explore implementing innovative technologies throughout the community:** The City is currently assessing opportunities for smaller-scale sewer energy recovery facilities within the City's municipal sanitary system, as well as potential synergies with sewer grease extraction. The City will conduct costing and feasibility studies on the top-ranked opportunities to provide low-carbon heating to new urban developments that are identified in the study.



# CLIMATE ACTION LEADERSHIP

## DIRECTIONS

1. Maintain a Leadership Position on Climate Action
2. Continue to Advocate for Support from Senior Levels of Government
3. Engage Community on Climate Action

## KEY ACHIEVEMENTS

**Informing the BC Climate Leadership Plan:** Achieving a low carbon society requires action by the provincial and federal governments. The City has taken multiple opportunities to engage with the province of BC in the development of the BC Climate Leadership Plan. This includes being a signatory to the “Call for Action on Energy and Climate in the Building Sector”, which is considered partially responsible for the province committing to the BC Building Code requiring “net zero ready” performance by 2032 and the establishment of the Energy Step Code.

**Achieving carbon neutrality:** As a signatory to the Climate Action Charter, Richmond is committed to being carbon neutral in its corporate operations. For the third straight year, Richmond achieved carbon neutrality in 2015, and anticipates achieving neutrality in 2016.

**Low Carbon buildings:** In 2016, the City endorsed a target of reducing GHG emissions from City owned buildings by 65% from 2007 levels by 2020. Through its Sustainable High Performance Building Policy and specific targets for energy optimization, the City is well on its way to achieving this target and will continue to work towards lowering emissions in corporate buildings.

**Green Vehicle Fleets:** In 2016, the City became the first municipality to receive a Platinum Rating from E3 fleet, a national program that recognizes excellence in fleet management and environmental performance. Guided by efforts in the City’s [Green Fleet Action Plan](#), the department is now retrofitting some vehicles with solar panels; supporting an interactive anti-idling campaign; piloting GPS use to manage fuel consumption; and supporting car-sharing services.

Recent  
**LEED Gold® City  
Buildings**



**City Centre  
Community Centre**



**Steveston Fire Hall**





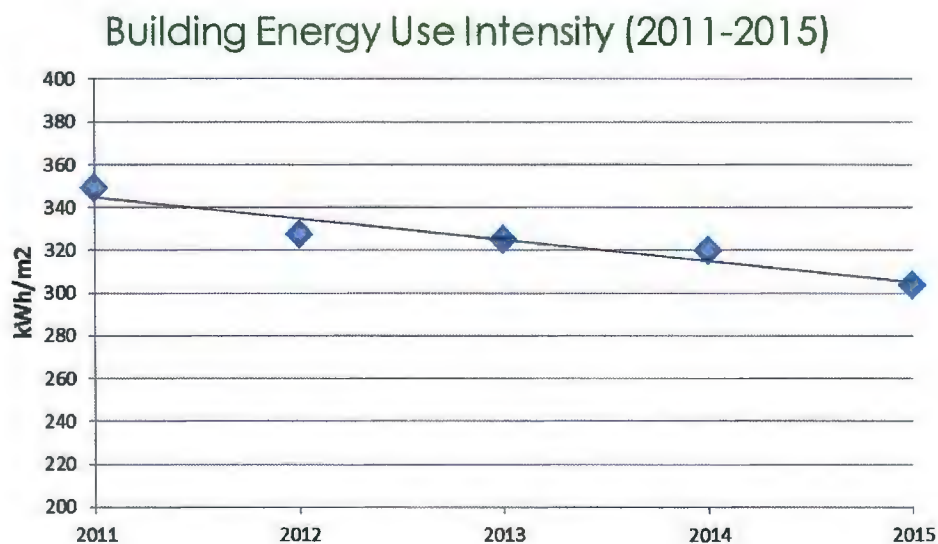
The City of Richmond has become the first municipality to receive a Platinum Rating from E3 fleet, a national program that recognizes excellence in fleet management and environmental performance

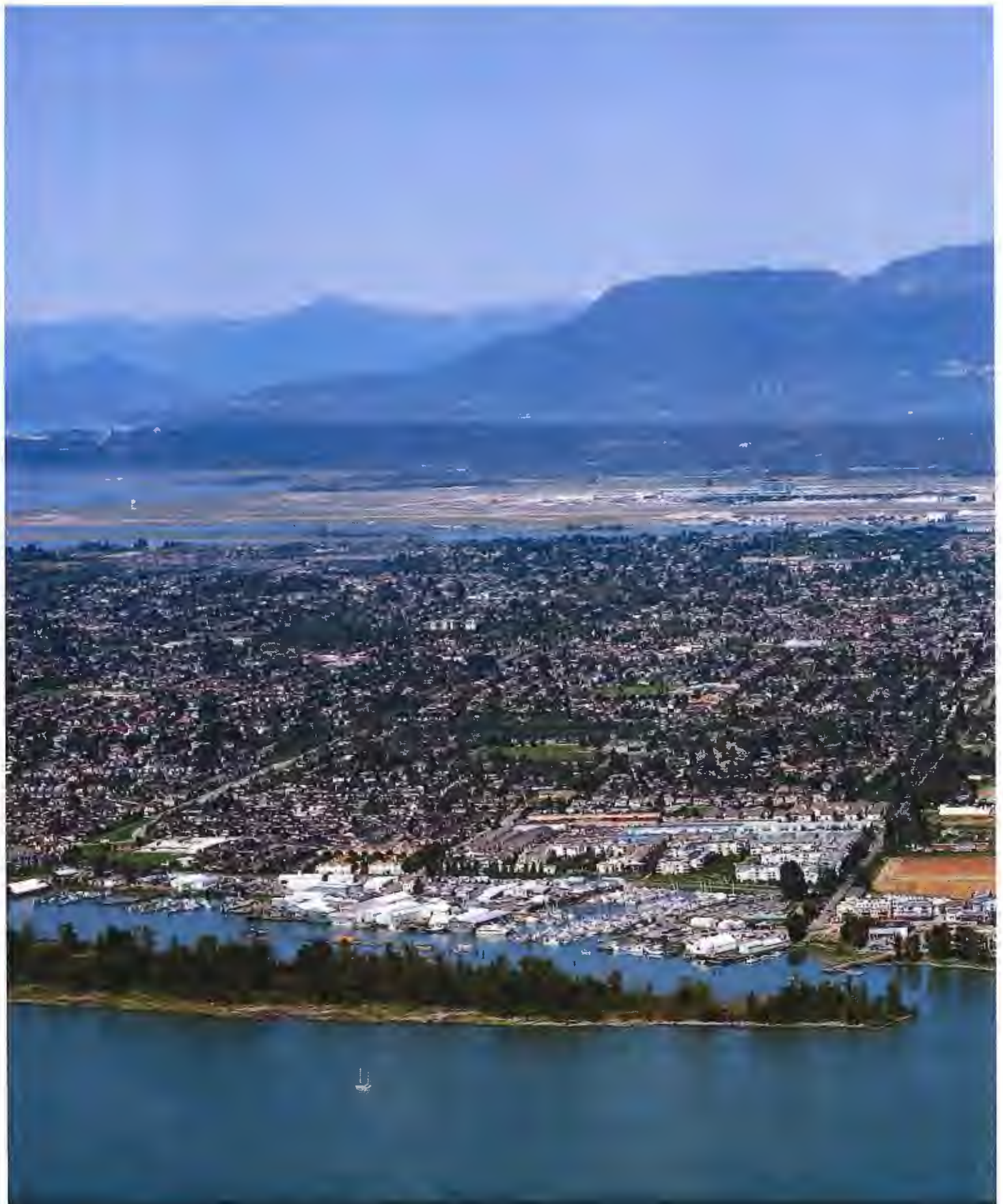
## FUTURE ACTIONS

**Continue to evaluate green building standards for City buildings:** The City will continue to review appropriate standards that measure green building performance, such as Passive House, and evaluate whether to reference them in City policy.

**Monitor green building performance in new buildings:** The City is nearing completion of several new corporate buildings, built to high sustainability standards. It is imperative that as those buildings are commissioned and become fully operational they are monitored and fine-tuned so that energy and GHG emissions saving measures are effective as possible.

**Coordinate with regional stakeholders to maximize sustainability outcomes:** The City will work with other local governments and regional stakeholders to ensure that high impact policies such as building benchmarking, stretch energy standards, and transportation policy can be scaled across jurisdictions for maximum impact.





## City of Richmond

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