City of Richmond

Agenda

Public Works and Transportation Committee

Anderson Room, City Hall
6911 No. 3 Road

Wednesday, June 20, 2018
4:00 p.m.

Pg. # ITEM

MINUTES

PWT-5 ***Motion to adopt the minutes of the meeting of the Public Works and Transportation Committee held on May 24, 2018.***

NEXT COMMITTEE MEETING DATE

July 18, 2018, (tentative date) at 4:00 p.m. in the Anderson Room

PLANNING AND DEVELOPMENT DIVISION

1. **EXPANSION OF RESERVED ON-STREET PARKING FOR CAR-SHARE VEHICLES**
(File Ref. No. 10-6455-00) (REDMS No. 5782549 v. 2)

PWT-10 See Page **PWT-10** for full report

Designated Speaker: Victor Wei

STAFF RECOMMENDATION

That the staff report titled "Expansion of Reserved On-Street Parking for Car-Share Vehicles", dated June 8, 2018 from the Director, Transportation, to support enhanced car-share services in Richmond, be received for information.

ENGINEERING AND PUBLIC WORKS DIVISION

2. **2018 CORPORATE ENERGY MANAGEMENT PROGRAM UPDATE**
(File Ref. No. 10-6125-05-01) (REDMS No. 5846481 v. 10)

PWT-15 See Page **PWT-15** for full report

Designated Speaker: Levi Higgs

STAFF RECOMMENDATION

That the staff report titled "2018 Corporate Energy Management Program Update" from the Senior Manager of Sustainability and District Energy, dated May 25, 2018, be received for information.

3. **PUBLIC ELECTRIC VEHICLE CHARGING INFRASTRUCTURE EXPANSION**
(File Ref. No. 10-6125-07-02) (REDMS No. 5843707 v. 14)

PWT-31 See Page **PWT-31** for full report

Designated Speakers: Brendan McEwan and Suzanne Bycraft

STAFF RECOMMENDATION

That, as described in the staff report titled, "Public Electric Vehicle Charging Infrastructure Expansion" dated May 18th 2018 from the Senior Manager, Sustainability & District Energy:

(1) publicly accessible electric vehicle charging infrastructure be installed at City Hall and Richmond Olympic Oval, with funding from the 2017 Capital Budget;

(2) pending the successful award of the City's application to Natural Resources Canada's Electric Vehicle and Alternative Fuel Infrastructure Deployment Initiative grant, staff be directed to report back with any additional capital budget approval for further expansion of charging infrastructure; and

(3) a cost recovery approach to impose user fees and time limits for publicly accessible electric vehicle charging stations be endorsed as outlined in the report, and that staff be directed to bring forward amendments to the Consolidated Fees Bylaw No. 8636, the Traffic Bylaw No. 5870, Parking (Off-Street) Regulation Bylaw No. 7403, and the Notice of Bylaw Violation Dispute Adjudication Bylaw No. 8122 to implement this cost recovery approach.

☐

4. **WOODWARDS SLOUGH HABITAT COMPENSATION**
(File Ref. No. 10-6050-01) (REDMS No. 5852990 v. 12)

PWT-42 See Page **PWT-42** for full report

Designated Speaker: Milton Chan

STAFF RECOMMENDATION

That the staff report titled "Woodwards Slough Habitat Compensation," dated May 25, 2018, from the Acting Director, Engineering, be received for information.

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5. **SOUTH ARM DIKE UPGRADE BETWEEN GILBERT ROAD AND NO. 3 ROAD**
(File Ref. No. 10-6340-20-P.17302) (REDMS No. 5796103 v. 5)

PWT-48 See Page **PWT-48** for full report

Designated Speaker: Milton Chan

STAFF RECOMMENDATION

That the staff report titled "South Arm Dike Upgrade Between Gilbert Road and No. 3 Road," dated April 27, 2018, from the Acting Director, Engineering, be received for information.

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6. **BOUNDARY ROAD DRAINAGE MEMORANDUM OF UNDERSTANDING**
(File Ref. No. 10-6000-01) (REDMS No. 5804141 v. 6)

PWT-55

See Page **PWT-55** for full report

Designated Speaker: Lloyd Bie

STAFF RECOMMENDATION

(1) That the Chief Administrative Officer and the General Manager, Engineering be authorized to execute, on behalf of the City, a Memorandum of Understanding between the City and the City of New Westminster containing the material terms and conditions set out in the staff report titled, "Boundary Road Drainage Memorandum of Understanding" dated May 25, 2018 from the Acting Director, Engineering;

(2) That the 5 Year Financial Plan (2018-2022) be amended to fund the City's share of fronting costs for the Boundary Road Pump Station upgrade of $960,000 from the Drainage Improvement Reserve and the estimated annual operating cost of $4,475 be incorporated into the 2019 Budget; and

(3) That staff bring forward updates to the Works and Services Cost Recovery Bylaw No. 8752 to include recovery of the fronting costs for the Boundary Road Pump Station upgrade from benefiting developments in the Thompson Boundary Area.

7. **MANAGER'S REPORT**

ADJOURNMENT

City of Richmond

Minutes

Public Works and Transportation Committee

Date: Thursday, May 24, 2018

Place: Anderson Room
Richmond City Hall

Present: Councillor Chak Au, Chair
Councillor Harold Steves
Councillor Derek Dang
Councillor Carol Day (entered at 4:01 p.m.)
Councillor Alexa Loo

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

MINUTES

It was moved and seconded
That the minutes of the meeting of the Public Works and Transportation Committee held on April 18, 2018, be adopted as circulated.

CARRIED

NEXT COMMITTEE MEETING DATE

June 20, 2018, (tentative date) at 4:00 p.m. in the Anderson Room

PLANNING AND DEVELOPMENT DIVISION

1. **ICBC-CITY OF RICHMOND ROAD IMPROVEMENT PROGRAM – PROPOSED PROJECTS FOR 2018**
(File Ref. No. 01-0150-20-ICBC1-01) (REDMS No. 5764530 v. 5)

In reply to queries from Committee, Fred Lin, Senior Transportation Engineer, advised that should there be any safety benefits associated with any of the measures including traffic cameras, ICBC could provide some funding cost-share to the City for the projects.

Councillor Day entered the meeting (4:01 p.m.)

It was moved and seconded

(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 2018," dated May 15, 2018 from the Director, Transportation be endorsed for submission to the ICBC 2018 Road Improvement Program for consideration of cost-share 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 (2018-2022) be amended accordingly.

The question on the motion was not called as discussion took place on LED street name signs and in response to a query from Committee, Mr. Lin advised that signs are changed at approximately 5-10 locations a year depending on funding.

In response to further questions from Committee, Mr. Lin advised that there are various traffic measures being implemented on Granville Avenue, such as extending the green time to ensure pedestrians can walk across Granville Avenue, a median for pedestrians to stop and activate the signal again, and seating in the median. Also, he noted that the project is anticipated to be completed by this year.

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

ENGINEERING AND PUBLIC WORKS DIVISION

2. **UNDERPINNING WORKS AND CONSTRUCTION FENCE ENCROACHMENT BYLAW NO. 9833**
(File Ref. No. 5818564) (REDMS No. 5818564)

Staff advised that a public education component can be considered with regard to the underpinning concept. It was noted that the method of underpinning has been used for many decades; however is not a common strategy as it is costly. Staff provided a brief description of the method, noting that it is quite effective.

It was moved and seconded

That Underpinning Works and Construction Fence Encroachment Bylaw No. 9833 and Consolidated Fees Bylaw No. 8636, Amendment Bylaw No. 9868, be introduced and given first, second and third readings.

CARRIED

3. **2017 CLIMATE ACTION REVENUE INCENTIVE PROGRAM AND CARBON NEUTRAL PROGRESS REPORT**
(File Ref. No. 10-6125-07-03) (REDMS No. 5811042 v. 7)

It was moved and seconded
That, in accordance with Provincial requirements, the Climate Action Revenue Incentive Program Report and Carbon Neutral Progress Report be posted on the City's website for public access.

CARRIED

4. **2017 ANNUAL WATER QUALITY REPORT**
(File Ref. No. 10-6000-01) (REDMS No. 5778511 v. 2)

It was moved and seconded
That the staff report titled "2017 Annual Water Quality Report" dated April 23, 2018 from the Acting General Manager, Public Works, be endorsed and made available to the community through the City's website and through various communication tools including social media and as part of community outreach activities.

CARRIED

5. **UBCM RESOLUTIONS - PROVINCIAL ACTION ON ZERO EMISSIONS VEHICLES AND LOW CARBON FUELS**
(File Ref. No. 10-6125-07-02) (REDMS No. 5800684)

Brendan McEwen, Sustainability Manager, noted that there was an error in attachment two of the staff report titled "UBCM Resolutions - Provincial Action on Zero Emissions Vehicles and Low Carbon Fuels" and a revised version was distributed on table (attached to and forming part of these Minutes as Schedule 1).

In reply to a query from Committee, Mr. McEwen commented that low carbon fuel requirements apply to fuel for all types of vehicles, however the Zero Emissions Vehicle standards apply to personal vehicles only.

It was moved and seconded
That the proposed UBCM resolutions titled "Zero Emissions Vehicle Mandate" and "Strengthen Low Carbon Fuel Requirement" be submitted to the Union of BC Municipalities, as attached to the staff report titled "UBCM Resolutions - Provincial Action on Zero Emissions Vehicles and Low Carbon Fuels" dated April 11, 2018, from the Senior Manager, Sustainability and District Energy.

CARRIED

6. **MANAGER'S REPORT**

(i) Freshet Update

Tom Stewart, Acting General Manager, Public Works, provided an update on freshet, noting that even though it has reached its peak, the dikes are performing well and staff will maintain daily inspections. He noted that it has not been necessary to move any water, as the dikes are being armoured appropriately and water levels are being monitored.

In reply to queries from Committee, Mr. Irving noted that there is no urgent concern of flooding in Richmond as there is ample notification with regard to high flows of water coming towards the City.

In reply to further queries from Committee, Mr. Stewart noted that there is technology installed to measure water levels and staff are consistently examining new technology.

ADJOURNMENT

It was moved and seconded
That the meeting adjourn (4:18 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 Thursday, May 24, 2018.

Councillor Chak Au
Chair

Sarah Kurian
Legislative Services Coordinator

UPDATED

Attachment 2: Proposed UBCM Resolution – Strengthen Low Carbon Fuel Requirement

STRENGTHEN LOW CARBON FUEL REQUIREMENT **City of Richmond**

WHEREAS The Pan-Canadian Framework on Clean Growth and Climate Change calls the implementation of a clean fuel standard to reduce emissions from fuels used in transportation, buildings and industry;

AND WHEREAS British Columbia's Renewable and Low Carbon Fuel Requirements Regulation requires an increasing percentage of renewable content in transportation fuels reaching 10% by 2020, which has prevented 6.4 million tonnes of CO_2e greenhouse gas emissions between 2010 and 2016;

AND WHEREAS the Climate Leadership Team's 2015 Recommendations to the BC Government included increasing the Low Carbon Fuel Requirement to 20 per cent by 2030:

THEREFORE be it resolved that the Province be requested to increase the Low Carbon Fuel Requirement to 20 per cent by 2030.

City of Richmond

Report to Committee

To:	Public Works and Transportation Committee	**Date:**	June 8, 2018
From:	Victor Wei, P. Eng. Director, Transportation	**File:**	10-6455-00/Vol 01
Re:	**Expansion of Reserved On-Street Parking for Car-Share Vehicles**		

Staff Recommendation

That the staff report titled "Expansion of Reserved On-Street Parking for Car-Share Vehicles" dated June 8, 2018 from the Director, Transportation, to support enhanced car-share services in Richmond, be received for information.

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

Att. 1

REPORT CONCURRENCE		
ROUTED TO:	**CONCURRENCE**	**CONCURRENCE OF GENERAL MANAGER**
Community Bylaws Law	☑ ☑	
REVIEWED BY STAFF REPORT / AGENDA REVIEW SUBCOMMITTEE	**INITIALS:**	**APPROVED BY CAO**

Staff Report

Origin

At the September 24, 2012 regular Council meeting, Council approved the provision of reserved on-street parking spaces for the exclusive use of car-share vehicles at selected locations in the vicinity of the four Canada Line stations in the City Centre. Traffic Bylaw 5870 was subsequently amended to allow the City to designate such spaces. This report outlines the expansion of reserved on-street parking spaces city-wide, permitted within the current bylaw, in support of the continued growth of car-share services in Richmond.

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

> *Adhere to effective planning and growth management practices to maintain and enhance the livability, sustainability and desirability of our City and its neighbourhoods, and to ensure the results match the intentions of our policies and bylaws.*
>
> *3.3. Effective transportation and mobility networks.*

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

> *Continue development and utilization of collaborative approaches and partnerships with intergovernmental and other agencies to help meet the needs of the Richmond community.*
>
> *5.2. Strengthened strategic partnerships that help advance City priorities.*

Analysis

Current Car-Share Services in Richmond

Currently, Modo the Car Co-op (Modo) has a total of eight vehicles in Richmond. Three of the eight vehicles are located in reserved on-street parking spaces near each of the Bridgeport, Lansdowne and Richmond-Brighouse Canada Line stations. The remaining five vehicles are located in reserved off-street parking areas in the City Centre (i.e., two at City Hall, two at the City Centre Community Centre and one at Richmond General Hospital). Although on-street parking spaces have also been earmarked near Aberdeen Station, these stalls have not yet been pursued by car-share providers. Zipcar has three vehicles, all stationed in off-street reserved parking areas (i.e., one at Richmond Centre and two at YVR). Car2go has reserved off-street parking spaces at Kwantlen Polytechnic University and Pacific Gateway Hotel on Sea Island. Evo has off-street parking spaces at Park'N Fly on Sea Island.

Expansion of Reserved On-Street Parking Spaces

In response to customer requests, Modo is seeking additional reserved on-street parking spaces in locations of the city that are beyond walking distance of the Canada Line and other destinations to support first/last mile trips, such as to/from surrounding multi-family residential areas. Specifically, at this time, Modo is seeking to establish two new on-street parking spaces with one space each at the following locations (see Attachment 1):

(1) East of Garden City Road between Westminster Highway and Cook Road to serve the North McLennan neighbourhood; and
(2) along Moffatt Road between Granville Avenue and Blundell Road in the vicinity of a housing co-operative.

As noted in the 2012 report presented to Council, the parking and storage of vehicles is best provided within off-street lots while on-street spaces should only be considered as a supplement to off-street parking. In line with the policies of the *Official Community Plan*, the City is continuing to support the expansion of car-share services in Richmond by seeking the provision of off-street car-share parking spaces in multi-family residential developments as a transportation demand management (TDM) measure to reduce private vehicle travel and promote the use of alternative travel modes.

However, there are no active developments in either of the two areas that could accommodate the immediate need for car-share parking. Accordingly, staff will investigate with an intent to designate one reserved on-street parking space in each of the two requested areas as an interim measure until off-street spaces become available in those two areas. At this time, the exact locations of the parking spaces have not been determined. Staff will give consideration to adjacent land uses and observe parking demand in order to identify appropriate locations. Going forward, staff will apply this same review process should additional requests for reserved car-share parking be received.

The two areas Modo is requesting for a reserved car-share parking space experience steady on-street parking demand by residents and visitors. However, staff note that the Metro Vancouver Car Share Study–Technical Report (2014) states that the introduction of a car-share vehicle in a neighborhood has the potential to reduce private vehicle ownership by up to three personal vehicles. With car-share as an option, it is anticipated that over time more curb space may be available as nearby residents will have the option to use a car-share vehicle instead of owning a private vehicle.

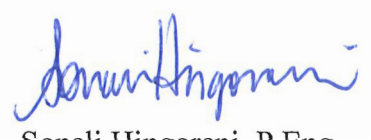
The car-sharing parking program is revenue neutral with an annual fee for a permit authorizing the use of a shared parking space for each shared vehicle of $300 plus applicable taxes. This administration fee generates funds to pay for the program costs such as signage and the issuance of vehicle decals. Staff time to implement and administer the program can be accommodated within existing divisional operating budgets.

Financial Impact

None.

Conclusion

Access to car-share services can not only allow households to reduce their vehicle ownership but also provides an incentive to reduce driving and rely more on alternative travel modes. Continued City support for the expansion of car-share services in Richmond would assist the advancement of several City goals including reducing greenhouse gas emissions and improving community mobility by providing a greater choice of cost-effective travel options.

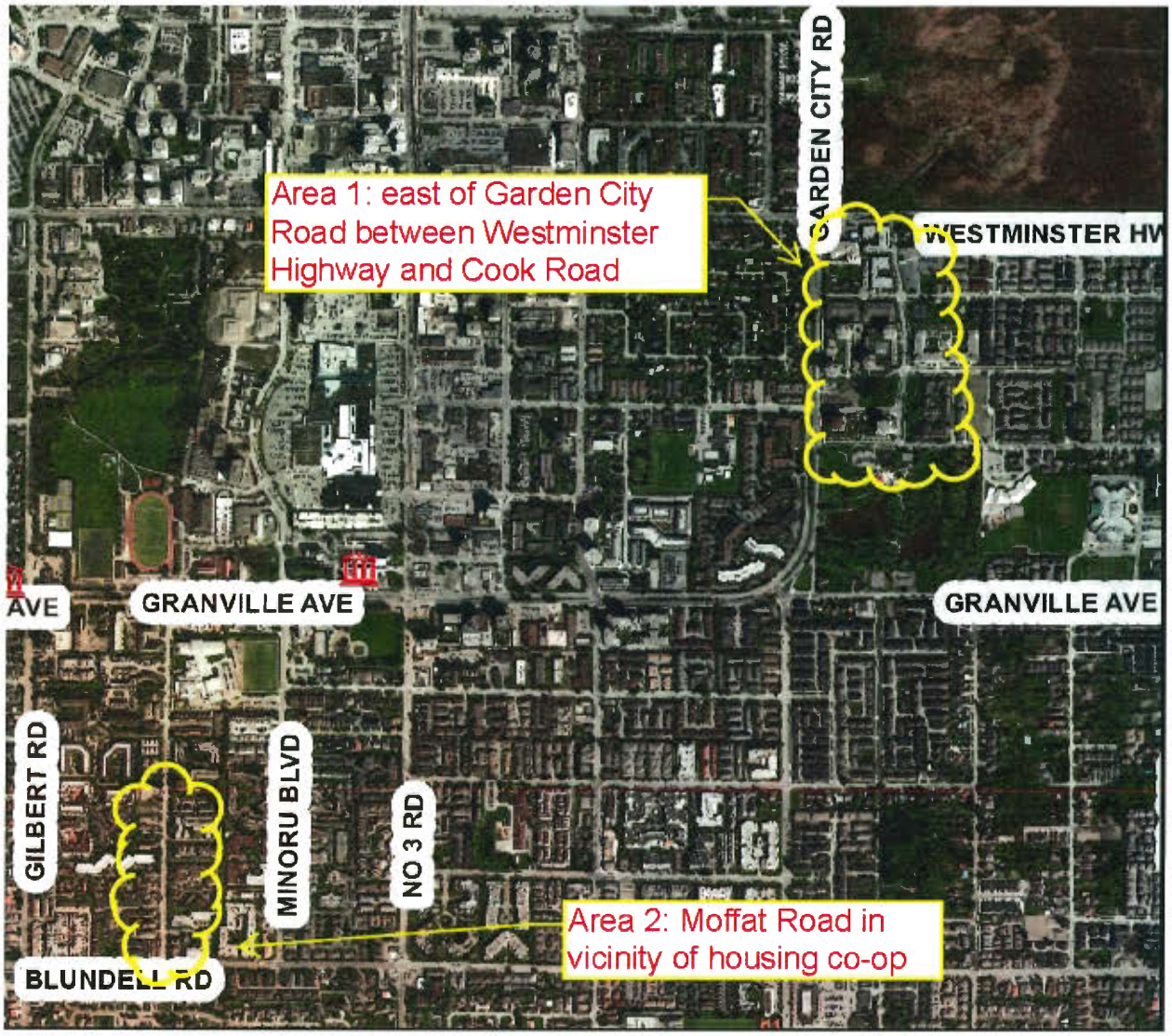


Sonali Hingorani, P.Eng.
Transportation Engineer
(604-276-4049)

Att. 1: Areas for Establishment of New Reserved On-Street Parking Space for Car-Share Vehicle

SH:jc

Areas for Establishment of New Reserved On-Street Parking Space for Car-Share Vehicle



City of Richmond

Report to Committee

To:	Public Works and Transportation Committee	**Date:**	May 25, 2018
From:	Peter Russell Senior Manager, Sustainability and District Energy	**File:**	10-6125-05-01/2018-Vol 01
Re:	**2018 Corporate Energy Management Program Update**		

Staff Recommendation

That the staff report titled "2018 Corporate Energy Management Program Update" from the Senior Manager of Sustainability and District Energy, dated May 25, 2018, be received for information.

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

Att. 2

REPORT CONCURRENCE	
Concurrence of General Manager	
REVIEWED BY STAFF REPORT / AGENDA REVIEW SUBCOMMITTEE	INITIALS: CJ
APPROVED BY CAO	

Staff Report

Origin

The City's Energy Management Program (EMP) and energy initiatives described in this report support the following Council 2014-2018 Term Goals:

#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.*

#5 Partnerships and Collaboration:

> *Continue development and utilization of collaborative approaches and partnerships with intergovernmental and other agencies to help meet the needs of the Richmond community.*
>
> *5.1 Advancement of City priorities through strong intergovernmental relationships.*
>
> *5.2. Strengthened strategic partnerships that help advance City priorities*

#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.*

The "Energy Update Report – Summary 2017" (Attachment 1) includes a summary of key highlights of the Energy Management Update Report and recent City energy initiatives.

Background

Through the implementation of a variety of projects and initiatives, as well as working collaboratively within the City, the EMP supports continued improvements in corporate energy use and efficiency. The City's EMP is integral to the long term goal of maintaining carbon neutral operations through projects that reduce and optimize natural gas use.

To help accomplish the City's sustainability commitments the EMP focuses on three main action areas:

1. Energy conservation – reduce the overall demand for energy (e.g., increased energy use awareness and improved operational control to reduce waste)
2. Energy efficiency – reduce the energy required for operations (e.g., lighting retrofits to more efficient technologies)

3. Renewable and clean energy – increase the use of renewable energy and reduce the carbon intensity of emissions (e.g., installation of solar thermal energy systems)

The City continues to develop innovative corporate energy efficiency projects as part of the capital submission process, as well as work on policy related initiatives. More recently a majority of the focus of the EMP has been on ways to reduce natural gas use and associated greenhouse gas (GHG) emissions, to help achieve the City's ambitious building reduction target. Staff remain focused on reducing natural gas use in an effort to achieve a reduction of 65% in GHG emissions by 2020 from 2007 levels.

At the same time, the City remains committed to electricity use optimization and reduction in partnership with BC Hydro. Staff also actively engage with other external stakeholders to bring forward reduction initiatives in a collaborative way and maximize partnership opportunities.

As part of the 2016-2017 EMP funding agreement with BC Hydro, the City committed to an electricity reduction target of 2.1% or 896,000 kilowatt hours (kWh) by April 2018 (from 2016 levels). The agreed target was exceeded, as actual electricity reduction from projects completed in the last year was over 2.8% or 1,200,000 kWh. This target maximizes the overall incentive funding the City receives, and allows for the continued delivery of energy management projects.

Analysis

Past EMP Achievements – 2008 to 2016 EMP Highlights

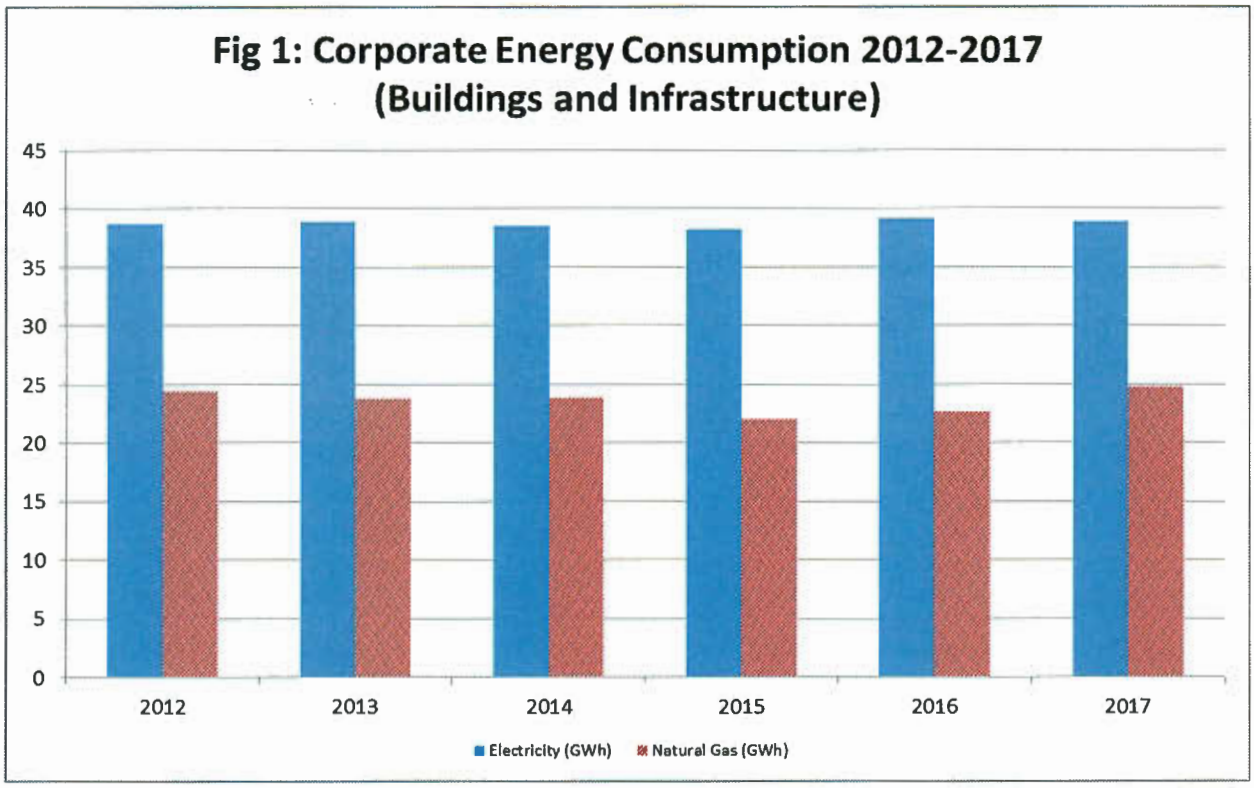
Energy conservation work at the City has cumulatively saved over 69.0 gigawatt hours (GWh) of energy since 2008 (which is equal to enough conventional energy to power the City's corporate operations for an entire year). Other key metrics associated with these cumulative savings since that time include;

- Avoided approximately $3,500,000 in energy related operational costs,
- Over 9,000 tonnes of greenhouse gas emissions (CO_2e) avoided, which is equal to the annual emissions from 2,800 Richmond cars.
- Execution of external partnerships and agreements that included over $2,000,000 in funding to support EMP associated projects and programs

Corporate Energy Use Overview - 2017

City assets, not including the fuel used by the City's fleet, consumed approximately $5.5 million dollars of electricity and natural gas, or a total of 63.6 GWh (equivalent to the amount of energy used on average each year by approximately 1,500 homes in Richmond). This energy use resulted in corporate emissions of approximately 4,800 tonnes of CO_2e.

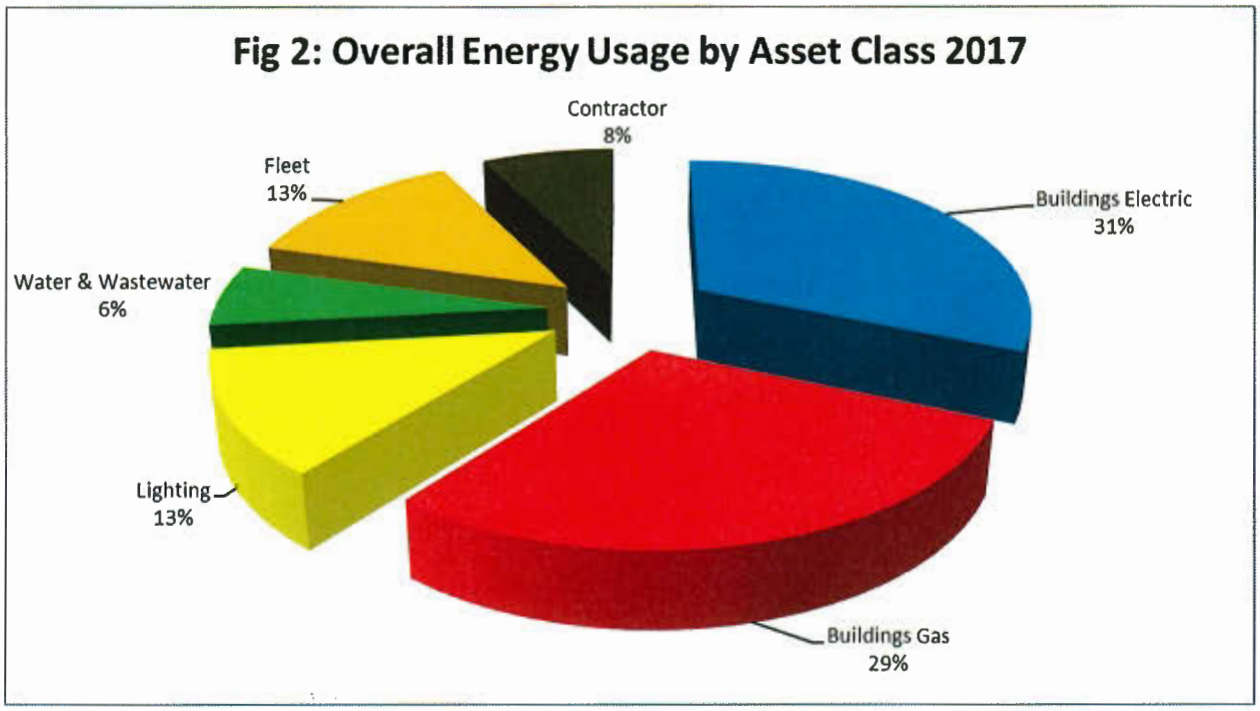
As shown in Figure 1 below, the total electricity use for City buildings and infrastructure has remained fairly stable since 2012. This is a positive result over that time period, given that the City has added infrastructure (i.e. the Community Safety Building, the City Centre Community Centre, and Fire Hall No.3) and has been regularly switching building energy use from natural gas to cleaner electricity where feasible.



It is noted that over the previous two years corporate natural gas use has increased as compared to 2015, which is mostly due to increased use during an unusually cold weather period between December 2016 and March 2017. During this time the heating requirements for buildings were 17% higher than the previous 5 year average. Over this past winter heating requirements were more in line with past averages, and it is anticipated that natural gas use at corporate buildings will be lower in 2018 than in 2017. As compared to 2007, overall natural gas usage has decreased by approximately 18%.

Replacement of the Minoru Aquatic Centre and the Minoru Place Seniors Centre with the Minoru Centre for Active Living (MCAL) will help to further the City's progress towards its 65% corporate buildings GHG emissions reduction target by 2020 from 2007 levels. Remaining planned projects that will be instrumental in helping the City achieve its reductions target include equipment upgrades and renewable energy project at the Cultural Centre, and the gas equipment replacement plan at smaller City facilities.

Since energy use in civic buildings accounts for a majority (approximately 60%) of total reported corporate energy use in 2017, a continued focus of the City's EMP has been on increasing the energy efficiency at City facilities (see Figure 2 below – Overall Energy Usage by Asset Class).



Comprehensive benchmarking could help the City focus investment and identify key opportunities for improved energy efficiency in buildings. In conjunction with other municipalities, staff are exploring the implementation of a regional building energy use benchmarking initiative that would enable the comparison of the energy performance of similar municipal building types. The City has led the development of the initiative over the past six months, and is hopeful that an agreement on sharing data and costs can be completed shortly.

Civic building energy use intensity has decreased from approximately 348 kWh/m^2 in 2011 to 301 kWh/m^2 in 2017. Similar to the increase in natural gas use over the past two years, building energy use intensity increased in 2016 and 2017, mostly due to the unusually cold weather period in the winter of 2017. Further reduction in building energy use intensity is expected to be achieved in the coming years once the replacements of Fire Hall No.1 and the Minoru Aquatic Centre and Minoru Place Senior's Centre have been completed. The overall reduction in building energy use intensity since 2011 is due to the continued investments by Council in corporate energy efficiency, through the City's EMP and replacement of aging infrastructure. It is estimated that the City's annual energy use would have been approximately 25% higher in 2017 without these past investments in corporate buildings.

Although the City's EMP focuses significantly on facilitating energy use reduction and optimization initiatives, other corporate and community benefits are also pursued in conjunction with energy projects (e.g. improved lighting/safety, increased client comfort, and improved operator control). Energy projects are conducted in collaboration with multiple stakeholders, to ensure that the largest number of project benefits is achieved. This collaborative pursuit of multiple benefits helps to ensure that City staff are aware that energy management best practices is everyone's responsibility, and to encourage everyone to play an active role in identifying energy efficiency and reduction opportunities whenever possible.

EMP Achievements - 2017 EMP Highlights

Numerous energy efficiency projects were completed over the past year that will provide benefit to the City including avoided energy use, cost, and GHG emissions. The following are the key metrics that the City achieved with the completed projects in 2017;

- Will avoid over $70,000 in energy utility operational costs
- Over 2,000,000 kWh in future electricity and natural gas use reduction (equal to the power used in 45 homes in Richmond in a year), and
- More than 200 tonnes of GHG emissions avoidance (equal to the emissions from over 60 Richmond cars.

The largest component of these anticipated energy and cost savings is from the completion of an equipment replacement and optimization project at Watermania. The total energy savings represents approximately 3.0% of the overall City energy use.

As part of the previous 2017-2018 EMP funding agreement with BC Hydro, the City committed to reduce electricity use by 2.1% or 896,000 kWh by April 2017 from 2016 levels. The City was able to exceed that target by over 300,000 kWh this past year through various electricity reduction initiatives.

A detailed overview of EMP project highlights in 2017 is provided in Attachment 2. General highlights include:

- External Funding: $110,000 of external funding was leveraged to support the City and the Corporate Energy Management Program in 2017.
- Showcase projects:
    - Boiler replacement and heating systems and controls optimization at Watermania Aquatic Centre.
    - Completed Phase 2 of the Street Lighting Fixture replacement plan, replacing over 1,400 inefficient fixtures in the West Richmond area with more efficient LED fixtures.
    - Replaced and upgraded corporate parking lot and exterior lighting at numerous City sites and facilities.
    - Completed lighting and control upgrades at Fire Hall No.6 and Ironwood Library
- Policy Implementation:
    - Expanded the Energy Statement Initiative to include infrastructure areas of street lighting, drainage stations, and sanitary stations. The energy statements aim to engage staff and increase corporate energy use and cost awareness.

Summary of Key Financial Achievements:

Through a variety of external partnerships agreements with energy utilities and governmental organizations since 2008, the City has been able to leverage its corporate energy efficiency investments and has received over $2,000,000 in support funding for its EMP and capital projects. Some of this additional support funding has been used to accelerate the repayment of capital funding to the corporate Enterprise Fund, which is an internal fund that many EMP projects are funded through, with energy utility savings used to repay the fund. This type of funding mechanism for energy efficiency best management practice projects is a leading best practice of interest to other cities.

The City has also benefitted from its continued investment in the EMP with energy cost avoidance savings. Since 2008 it is estimated that the City has cumulatively saved over $3.5 million dollars in energy utility operational cost, which has been used to fund other Council and City priorities, once repayment to the Enterprise Fund has been completed.

EMP Goals for 2018 and Upcoming Projects

The following main focus areas are in place for the EMP for 2018:

- Develop projects and policies that help to reduce corporate energy resource use and promote greater corporate energy use awareness
- Ensure planned corporate projects maximize the potential benefit of external funding and partnerships with outside agencies
- Improve the usability of energy use data at key facilities
- Continue to work with other departments to ensure continuity of building improvement and energy management related projects, so that they are delivered as seamlessly as possible

The following key energy initiatives are in various stages of implementation, and are scheduled to be completed in 2018:

- Complete the major equipment replacement and upgrade at Thompson Community Centre, including the revitalization of the geo-exchange field on-site.
- Complete building automation system upgrades and improved energy monitoring capabilities at Thompson Community Centre, Fire Hall No.4 and No.5, and at the Community Safety Building.
- Complete the commissioning of the City's first solar photovoltaic system at Fire Hall No.1

Financial Impact

None.

Conclusion

The main action areas of the City's Energy Management Program is to facilitate energy reduction initiatives, embed best energy management practices into corporate processes, and maximize external funding support. With Council and senior management support, the EMP has been successful at delivering energy reduction projects and tracking other corporate energy efficiency results over the past decade. Without past investments and improvements to corporate energy efficiency, it is estimated that the City's energy use would have been approximately 25% higher in 2017, equal to an increase of 11 GWh.

The EMP remains committed to focusing on reducing corporate GHG emissions and achieving the ambitious 2020 corporate building reduction target. This includes bringing forward innovative projects and initiatives that achieve multiple benefits for the City, such as reduced operational costs and improved occupant comfort. Some of the initiatives may include further fuel switching from natural gas to cleaner electricity. In conjunction, it remains imperative that projects aimed at electricity use reduction continue to be developed and implemented, so that overall corporate energy reduction can be achieved long term. As the City grows, greater levels of service and infrastructure will be needed to keep up with demand. Reducing resource use in existing buildings and infrastructure helps the City incorporate expanded services without increasing its overall environmental footprint.

Levi Higgs
Corporate Energy Manager
(604-244-1239)

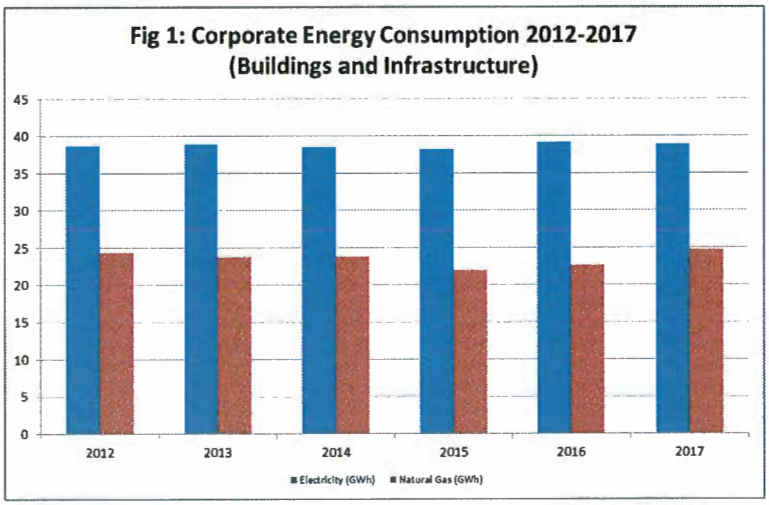
Att. 1 Energy Update Report – Summary 2017
Att. 2 City Energy Management Program – 2017 Key Initiatives

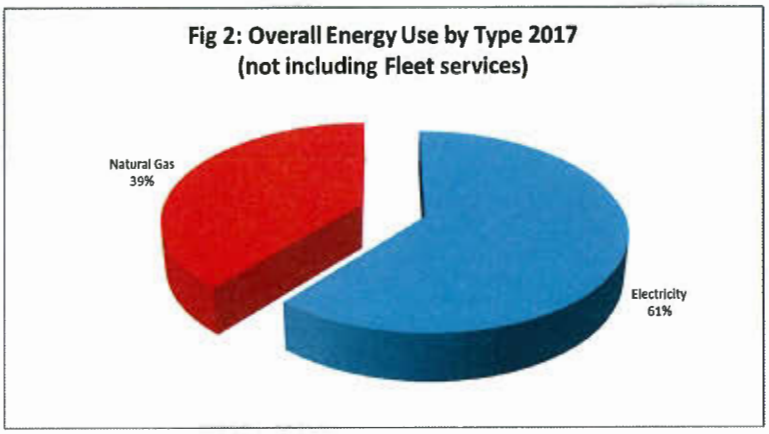
Energy Update Report
Summary 2017

Richmond

City Energy Use

- Cost of energy in 2017 for City of Richmond buildings, lighting, water and wastewater services = **$5.5 million dollars or 63.6 GWh** (this is equal to the average power consumed in ~1,500 homes in Richmond in 1 year).
- This energy use resulted in approximately 4,800 tonnes of greenhouse gas (GHG) emissions.
- The total electricity use for City infrastructure has remained fairly stable over the last five years, even with new facilities and increased services coming online over that time period.
- Given the investments that the City has made in infrastructure renewal and energy efficiency since 2008, the City has cumulatively avoided over **69.0 GWh** in conventional energy use (equal to the energy consumption in ~1,650 Richmond homes annually), and over **9,000 tonnes** of greenhouse gas emissions (equal to emissions from ~2,800 Richmond cars).
- Due to an unusually cold weather period between December 2016 and March 2017, natural gas use in 2017 was similar to 2012 after three straight years of reduction. Over this past winter heating requirements were more in line with past averages. As compared to 2007, overall natural gas usage has decreased by approximately 18%.





Steveston Community Centre

City Energy Use

- In 2017, the majority of corporate energy use was by **buildings-60%**, followed by **lighting-13%** and **fleet services-13%** (see Fig. 3).
- For corporate buildings, three recreational buildings accounted for 40% of building energy use—Watermania, Richmond Ice Centre, and Minoru Aquatic Centre (see Fig. 4).
- For corporate GHG emissions, natural gas usage in buildings is responsible for a majority of the City's annual emissions—accounting for over 50% in 2017 (see Fig. 5, on next page).
- Although the City's EMP focuses significantly on facilitating energy use reduction and optimization initiatives, other corporate and community benefits are also pursued in conjunction with energy projects (e.g. improved lighting/ safety, increased client comfort, and improved operator control).

Fig 3: Overall Energy Usage by Asset Class 2017

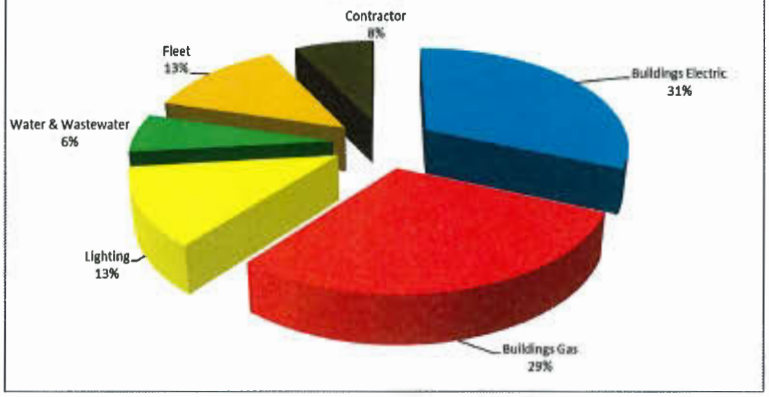
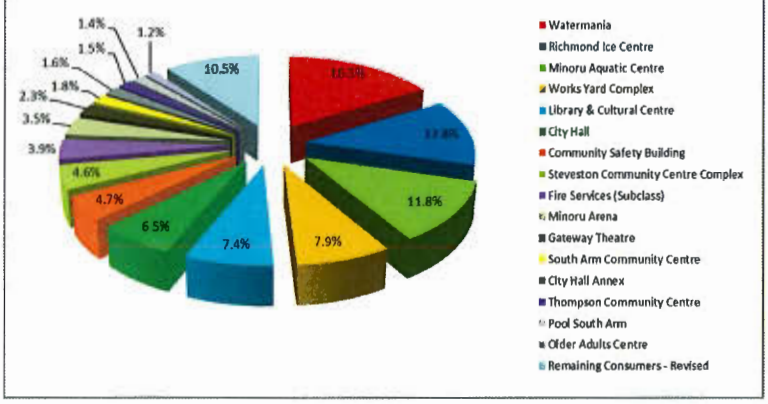


Fig 4: Building Energy Consumption Breakdown 2017



Richmond Ice Centre

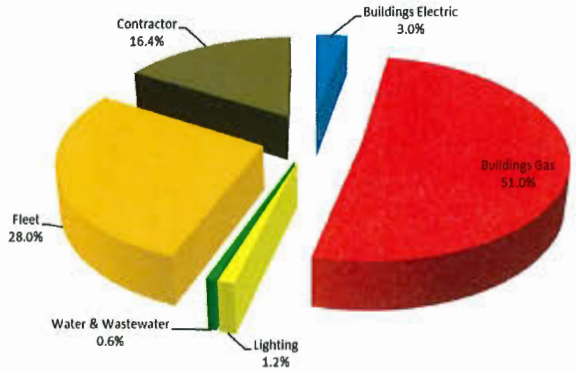
2017 Highlights:

- Maintained the City's **Carbon Neutral** status for corporate operations.
- Secured over **$110,000** of external funding to support the Energy Management Program.
- Avoided over **1,000,000 kWh** in electrical and natural gas use and over **25 tonnes** of GHG emissions from a variety of 2016 completed projects.
- This energy reduction represents approximately **1.35%** of the City's current corporate annual energy use.
- This energy reduction will result in over **$80,000** in operational cost avoidance savings.
- Anticipate achieving over 2.0 GWh in electrical and natural gas savings in 2018 from projects completed in 2017.

CARBON NEUTRAL CLIMATE LEADER

BC CLIMATE ACTION COMMUNITY 2016

Fig 5: Overall GHG Emissions by Asset Class 2017



Sanitary pump replacement

Watermania

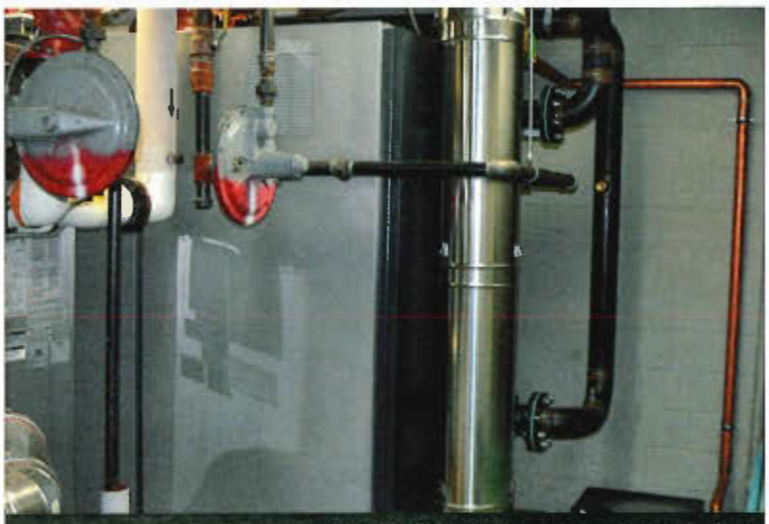
Showcase Projects:

- Boiler replacement and heating systems and controls optimization at Watermania Aquatic Centre.
- Completed Phase 2 of the Street Lighting Fixture replacement plan, replacing over 1,400 inefficient fixtures in the West Richmond area with more efficient LED fixtures.
- Replaced and upgraded corporate parking lot and exterior lighting at numerous City sites and facilities.
- Completed lighting and control upgrades at Fire Hall No. 6 and Ironwood Library.

Policy Implementation:

- Expanded the Energy Statement Initiative to include infrastructure areas of street lighting, drainage stations, and sanitary stations. The energy statements aim to engage staff and increase corporate energy use and cost awareness.

LED street light replacement at No. 1 and Moresby Road



New high efficiency Watermania boiler

New Watermania heat exchanger

2018 Vision and Goals

The following main focus areas are in place for the EMP for 2018:

- Develop projects and policies that help to reduce corporate energy resource use and promote greater corporate energy use awareness.
- Ensure planned corporate projects maximize the potential benefit of external funding and partnerships with outside agencies.
- Improve the usability of energy use data at key facilities.
- Continue to work with other departments to ensure continuity of building improvement and energy management related projects, so that they are delivered as seamlessly as possible.

2018 Action items:

- Complete the major equipment replacement and upgrade at Thompson Community Centre, including the revitalization of the geo-exchange field on-site.
- Complete building automation system upgrades and improved energy monitoring capabilities at Thompson Community Centre, Fire Hall No. 4 and No. 5, and at the Community Safety Building.
- Complete the commissioning of the City's first solar photovoltaic system at Fire Hall No. 1.

Solar thermal system at Thompson Community Centre

Thompson Community Centre

City Energy Management Program – 2017 Key Initiatives

	2017 Key Initiatives
Plan	***Energy Strategic Planning:*** • Received $110,000 in external funding to support City energy efficiency related projects and the Corporate Energy Management Program in general. • Completed a project development assessment for the planned lighting infrastructure upgrade and replacement project at South Arm Park. • Completed a natural gas using equipment replacement and upgrade plan, which will be used to develop a 2019 capital submission for Council consideration. The implementation of this plan would help the City achieve its building emissions targets. • Applied for Federation of Canadian Municipality funding to support a comprehensive energy retrofit and equipment replacement project at the Library Cultural Centre. • Continued working closely with Project Development and Facilities to ensure that planned infrastructure and equipment improvement projects achieve the highest energy efficiency results as possible, and qualify for available external incentives.
Do	***Building Capacity*** • Continued providing the Energy Statements to pertinent staff and areas. Expanded the initiative to include infrastructure areas of street lighting, drainage stations, and sanitary stations. The energy statements aim to engage staff and increase corporate energy use and cost awareness. • Continued to work together with other departments to align capital submissions for yearly building improvement and energy management related requests, so that building related projects are delivered as seamlessly as possible. ***Reducing Energy Use or Displacing conventional energy sources*** • Completed lighting and control upgrades at Fire Hall No.6 and Ironwood Library • Completed mechanical equipment and HVAC related control upgrades at South Arm Community Centre. • Replaced one boiler and optimized the heating systems and controls at Watermania Aquatic Centre. • Completed Phase 2 of the Street Lighting Fixture replacement plan, replacing over 1,400 inefficient fixtures in the West Richmond area with more efficient LED fixtures. • Replaced and upgraded corporate parking lot and exterior lighting at numerous City sites and facilities. ***Increasing Financial Security & Stability*** • Over $65,000 in expected energy and maintenance cost avoidance savings • Continued work on developing and completing external project funding agreements with stakeholders, helping to reduce the capital cost of projects and provide funding for future project development

	2016 Key Initiatives
Monitor & Report	*Improving Energy Monitoring System* • Building automation system upgrades are planned for Thompson Community Centre and the Community Safety Building – Direct Digital Control Replacement Plan Phase 3 • Continued to utilize the corporate energy use database to inform internal departments of corporate energy use metrics and to help to facilitate public reporting needs *Reporting Performance* • Annual Corporate-wide Energy update report to Council • Annual reporting to Senior Management, on Energy Management Program status and work plan • Quarterly reporting to BC Hydro
Innovate & Improve	*Exploring New Approaches and Technologies* • Through the completion of feasibility studies and energy savings assessments, the following potential projects are planned to be assessed in the coming months for possible inclusion in the 2019 capital submission process; o Natural gas major equipment upgrade at various facilities o Renewable energy system installation at Library Cultural Centre o Street lighting LED and replacement plan development – Phase 3 *Energy Management System Evaluation* • The City is continuing the development of an online dashboard tool to allow both Facilities Management and Energy Management to quickly review and interpret energy use information, as well as view and manage building system anomalies. This planned tool will also allow for a dynamic public display electronic information board to be established at key facilities to increase public awareness of the City's Energy and Facilities Management Program. *Development of Internal Building Optimization Procedures* • The City's is continuing the development of an optimization procedure plan and process for buildings, to ensure that buildings are systematically assessed and optimized on an on-going basis, and that changes in scheduling and system operation are tracked effectively. This procedure plan and process will support both energy efficiency improvements as well as look to improve occupant comfort where possible.

City of Richmond

Report to Committee

To:	Public Works and Transportation Committee	**Date:**	May 18, 2018
From:	Peter Russell Senior Manager, Sustainability & District Energy	**File:**	10-6125-07-02/2017-Vol 01
Re:	**Public Electric Vehicle Charging Infrastructure Expansion**		

Staff Recommendation

That, as described in the staff report titled, "Public Electric Vehicle Charging Infrastructure Expansion" dated May 18th 2018 from the Senior Manager, Sustainability & District Energy:

1. Publicly accessible electric vehicle charging infrastructure be installed at City Hall and Richmond Olympic Oval, with funding from the 2017 Capital Budget;

2. Pending the successful award of the City's application to Natural Resources Canada's Electric Vehicle and Alternative Fuel Infrastructure Deployment Initiative grant, staff be directed to report back with any additional capital budget approval for further expansion of charging infrastructure;

3. A cost recovery approach to impose user fees and time limits for publicly accessible electric vehicle charging stations be endorsed as outlined in the report, and that staff be directed to bring forward amendments to the Consolidated Fees Bylaw No. 8636, the Traffic Bylaw No. 5870, Parking (Off-Street) Regulation Bylaw No. 7403, and the Notice of Bylaw Violation Dispute Adjudication Bylaw No. 8122 to implement this cost recovery approach.

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

Att. 3

REPORT CONCURRENCE		
ROUTED TO:	**CONCURRENCE**	**CONCURRENCE OF GENERAL MANAGER**
Law	☑	
Parks Services	☑	
Recreation Services	☑	
Transportation	☑	
REVIEWED BY STAFF REPORT / AGENDA REVIEW SUBCOMMITTEE	**INITIALS:**	**APPROVED BY CAO**

Staff Report

Origin

In January 2014, Council adopted the Community Energy and Emissions Plan, which includes *Action 19: Continue expanding the City-owned network of EV charging stations.*

On November 28th 2016, Council directed "that staff report back regarding the potential installation of community Level 3 charge stations, including an energy cost recovery approach, as part of advancing greenhouse gas emissions under the City's Community Energy and Emissions Plan." To help gauge community support for the cost-recovery concept as well as consult on potential locations for additional charging stations, public consultation was undertaken during 2017. Community consultation was approved by Council at their January 23, 2017 meeting.

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.*

This report presents an overview of the consultation feedback and proposes priority charging station locations to be considered. This report further discusses partnership and funding opportunities for electric vehicle (EV) charging expansion as well as outlines an approach for cost recovery.

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. Transportation accounts for more than half of Richmond's GHG emissions recorded in BC's Community Energy and Emissions Inventory, with emissions from personal transportation accounting for more than 40% of emissions.

Richmond's 2014 Community Energy and Emissions Plan (CEEP) outlines strategies and actions for the City to take to reduce community energy use and GHG emissions, including:

- **Strategy 7:** Promote Low Carbon Personal Vehicles
    - **Action 19:** Continue expanding the City-owned network of electric vehicle (EV) charging stations.

Modeling undertaken as part of the CEEP indicates Richmond's 2050 emissions reduction targets can only be achieved with the near-universal adoption of zero emissions personal vehicles by the 2040s, in addition to increasing transit ridership, walking, bicycling, car/ride sharing, and other transportation modes.

"Levels" of EV Charging

As the City moves to consider expanding infrastructure EV charging opportunities, it is helpful to understand the different levels of EV charging, per industry standards, noted below:

Table 1: Common EV service equipment charging levels.

Charging Level	Voltage	Amperage	Apprx km of range per hour	Time to fully Recharge	Applications
AC Level 1	120 VAC	12-16 A	~ 7 km/hr	5 to 30 hours	At home, at work
AC Level 2	208 / 240 VAC	<=80A (30 A most common)	~ 45 km/hr (at 30A)	2 to 8 hours	At home, at work, public charging
DC Fast Charge ("Level 3")	200–400 VAC	80–400 A	200-1000 km/hr	<10 min to 1 hour	Major public rapid-recharge locations

City Action on Electric Vehicles

As part of enhancing community EV adoption, multiple options need be available to EV users to avoid issues such as range anxiety (running out of charge). The importance of providing publicly accessible charging is outlined in Attachment 1.

To advance community uptake in EV adoption, the City has undertaken a mix of policy and infrastructure actions, including:

1. **Policy Action** – Supporting EV Charging in Private Developments

   On December 18th, 2017, City Council adopted a requirement in the Parking and Loading section of the Richmond Zoning Bylaw that all residential parking spaces in new developments, excluding visitor parking, feature an energized electrical outlet capable of providing Level 2 charging. The City was the first jurisdiction in Canada to make such a requirement. Other jurisdictions are now building from Richmond's leadership – the City of Vancouver adopted essentially the same requirement in March 2018, and a number of other local governments are considering such a requirement.

2. **Infrastructure Action** – Installed Public Charging Infrastructure

   In March, 2013 the City also installed four public Level 2 charge stations (total of eight charging ports) at the following locations:

   - Steveston Community Centre
   - Thompson Community Centre
   - Cambie Community Centre
   - City Hall

Additionally, the Richmond Olympic Oval offers two Level 2 charging stations.

As summarized in Table 2 below, usage of the City's stations has grown, indicating growing demand for public charging. The hours of use experienced at some stations suggest that City-owned EV charging infrastructure is reaching capacity.

Table 2: Usage of City-owned EV charging infrastructure

	2013	2014	2015	2016	2017
Times used	776	1,974	4,597	7159	10924
Charging time	975 hours	2,609 hours	8,377 hours	11,995 hours	18,300 hours
Energy used	4,345 kWh	11,809 kWh	35,904 kWh	48,406 kWh	82,984 kWh
Energy cost	$434	$1,181	$3,590	$4,841	$8,298

As outlined in the staff report presented at the November 28, 2016 Council meeting, there are also opportunities to install charging infrastructure as part of new or major facility/park upgrade projects. Since that date, Level 2 charging stations have been implemented, or are being planned, at the Minoru Civic Precinct, Firehall #1, and Firehall #3.

In addition to City-owned public EV charging infrastructure, there has also been an increase in the number of charging stations available for public use provided by other organizations. According to information from Plug-In BC's website, there were 43 other publicly accessible locations in Richmond where drivers can charge their EVs as of May 2018, including 39 offering Level 2 infrastructure and four offering DC Fast Charging.

Funding and Partnership Opportunities

Staff have submitted a grant application to Natural Resources Canada's (NRCan) Electric Vehicle and Alternative Fuel Infrastructure Deployment Initiative. This grant funds the expansion of publicly accessible DC Fast Charging infrastructure. Applicants located in the province of BC are automatically enrolled in the BC Clean Energy Vehicle Public Fast-Charging Program for additional funding. The City requested $1.35 million in combined federal and provincial funding under this grant. A decision is expected by September 2018. A recommendation is included that directs staff to report to Council should the City's proposal be awarded the additional funding.

The City has also been approached by an automobile dealer interested in providing a financial contribution to the City's EV charging expansion. In exchange, they propose that charging stations would feature their logo, in addition to City of Richmond branding. Staff will further explore sponsorship opportunities, and will report back to Council with any recommendations with regards to sponsorship that can offset costs of expanding the City-owned network of EV charging stations.

Analysis

Public consultation was undertaken to gather feedback and as part of establishing the desired levels and locations for additional charging infrastructure. Consultation was approved by Council at their January 23, 2017 meeting.

Consultation

The City's EV consultation program consisted of:

1. **Digital engagement** – An online Let's Talk Richmond webpage and survey. The survey was open to the public from May 14th to June 26th, 2017. It was distributed via press release, social media, and notifications by the Richmond Chamber of Commerce and other organizations. 484 visits to the webpage occurred, with 168 visitors completing the survey. Of survey respondents, 34% currently drove an EV and 78% were considering an EV for their next vehicle purchase.
2. **A Public Open House** – The Open House was held June 15th, 2017, and included introductory information about EVs, their role in mitigating climate change, and the City's action to support EVs to date. Thirty-three people attended the Open House.

Both the survey and the Open House solicited participants' feedback on where in the City public EV charging infrastructure is desired, and on key questions related to the provision of public charging services. The map in Attachment 2 illustrates the public's responses regarding where in Richmond additional public EV charging infrastructure is desired. The findings included that both DC Fast Charging and Level 2 charging infrastructure is desired across the community, especially at City Hall, in the City Centre area, and proximate to Steveston Hwy and Hwy 99. Attachment 3 summarizes further feedback received during stakeholder consultations relating to public charging. As shown, there is strong community interest for the City to add Level 3 Fast Charging infrastructure for improved convenience.

Public Charging Infrastructure Expansion

Council approved $300,000 in the 2017 Capital Budget to support the next phase of investment in public EV charging network. The consultation process noted above was used to identify appropriate locations to expand the City-owned EV charging network. Based on stakeholder feedback regarding preferred sites for expansion of the City's public charging network, costing information, and known gaps exist in the public charging network, a range of City facilities have been identified as appropriate locations for expanded publicly accessible EV charging infrastructure. These are listed in order of priority, from highest to lowest:

1. City Hall
2. Richmond Olympic Oval
3. Richmond Ice Centre (current lease permits implementation of EV charging infrastructure)
4. Hamilton Community Centre (located on Richmond School District property)
5. Garry Point Park
6. Hugh Boyd Soccer Fields
7. Minoru Centre for Active Living (Minoru Civic Precinct)
8. Cambie Community Centre

9. Garden City Lands (subject to ALC approval)

It is recommended that the $300,000 in the 2017 Capital Budget be used to support implementation of charging infrastructure at City Hall and the Richmond Olympic Oval. These sites were selected because they are proximate to areas of high demand indicated during consultation, and because they are relatively cost-effective to implement due to existing electrical capacity. The City Hall infrastructure will be located adjacent to current charging infrastructure. The Oval charging infrastructure is proposed to be located within the enclosed parking area. Each site will feature one 50kW dual-headed DC Fast Charging ("Level 3") and a Level 2 charging station, with three parking stalls dedicated to EV charging.

As noted in the Background section above, the City has applied to NRCan's Electric Vehicle and Alternative Fuel Infrastructure Deployment Initiative. If the City is successful in its grant application, additional City funds may be necessary to meet leverage requirements of the grant. If the grant application is successful, staff will report back with recommendations to implement EV charging infrastructure at the sites noted above, subject to final negotiation of sites between the City and its funding partners. If the City is unsuccessful in this grant application, staff will explore other funding opportunities and report back to Council with options to continue to expand EV charging infrastructure in priority locations.

Cost Recovery

To date, the City has offered access to its public EV charging infrastructure free of charge. This incentivized adoption of EVs during the early years of their availability. As EVs become more mainstream and gain an increasing share of vehicle sales and the vehicle fleet, the need for electricity cost incentives lessens. Benefits of user fees include:

- **Help to ensure availability of chargers and efficient use of infrastructure.** By charging a time-based fee, users are encouraged to charge only for as long as they need to receive sufficient charge, and then leave the charging station. This has the effect of increasing the likelihood that the charging station will be available for other users, increasing convenience and making more efficient use of the charging station asset. Current City-owned charging stations are often in use by individual vehicles for multiple hours even when not charging, and the City has begun to receive more frequent feedback from users that they frequently cannot access charging stations.
- **Support cost recovery of implementing charging stations.** User fees can be set to cover the operating costs of charging stations. With sufficiently frequent use, the capital cost of implementing the stations may also be covered. Introducing user fees can allow the City and other entities to implement a greater amount of public charging than might otherwise be possible, improving services for EV drivers.
- **Differentiate between different levels of service** – The qualities of different levels of EV charging differ. Level 2 is lower cost to provide, but requires a longer period to recharge (up to 6 hours or more to fully recharge a long range vehicles). Level 3 DC Fast Charging can recharge vehicles much more quickly; moreover, varying levels of power can be delivered through DC Fast Charging systems, resulting in different recharge times (from 10 minutes or less, to an hour) and costs. Differentiating user fees based on the nature of the service offered allows drivers use charging infrastructure that is most

appropriate for their needs – Level 2 for a longer stay or a "top up", faster charging for a rapid refill.

In relation to user fees for cost recovery, the majority of consultation participants suggested that public charging be free until there is further adoption of EV's. A minority supported user fees, with the concern expressed that taxpayer funded free energy for EV owners is not equitable.

User fees are in place for EV charging infrastructure on some other local government locations in BC. Table 3 below summarizes pricing models in place for charging infrastructure on local government sites.

Table 3: EV charging infrastructure user fees

Jurisdiction	DC Fast Charge (50kw)	Level 2 (9.6kW)
City of Vancouver	$16.00 per hour	$2.00 per hour
Fortis BC operated (various local govt. sites)	$18.00 per hour	N/A
BC Hydro operated (various local govt. sites)	$0.35 per kWh	N/A
Township of Esquimalt	N/A	$1.00

It is proposed to adopt the following pricing model for its EV charging infrastructure:

- $2.00 per hour for access to 9.6 kW Level 2 Charging.
- $16.00 per hour for access to 50kW DC Fast Charging.
- $8.00 per hour for access to 25kW DC Fast Charging.

This approaches aligns with other comparable user fees regionally. This proposed rate equates to roughly $0.50 per litre of gasoline. While this is a higher cost than drivers can expect to pay to charge EVs at home (estimated at roughly the equivalent of $0.20 per litre of gasoline), it still equates to much less on a dollar per distance basis than drivers would have to pay for travel in a gasoline or diesel vehicle.

Bylaw amendments will be required to give effect to this change. As part of this, it is important that other applicable bylaws be amended to ensure that only EVs connected to the EV charging infrastructure be parked in EV parking stalls. Amendments to the Consolidated Fees Bylaw No. 8636, the Traffic Bylaw No. 5870, Parking (Off-Street) Regulation Bylaw No. 7403, and the Notice of Bylaw Violation Dispute Adjudication Bylaw No. 8122 would be required. Staff will bring forward proposed amendments if the energy recovery fee concept is supported by Council.

All revenues from user fees are recommended to be directed to support ongoing operations, maintenance and costs associated with network expansion. The operating costs and revenue from the proposed energy recovery fee cannot be determined at this time, as it is dependent on the degree and rate of expansion; variability in use; and opportunity to access different revenue streams, such as credits for providing low carbon fuel.

Should Council choose not to implement user fees, staff will bring forward other strategies, such as signage or fees for remaining in EV parking spaces for longer than required to charge, in order to ensure efficient use of the infrastructure.

Resource Implications

As the City expands its public charging infrastructure, there are expected resource implications associated with installation, maintenance, repairs, complaint management, data analytics and administration that will exceed current capacity. An additional maintenance technician position is expected to be required for this purpose. This requirement and associated costs will be included in a future report presented to Council, once NRCan funding amounts are known.

Financial Impact

Council approved $300,000 in the 2017 Capital Budget to support the next phase of City capital investment in its public EV charging network. These funds will support implementation of EV charging infrastructure at City Hall and the Richmond Olympic Oval. Staff will report back with any additional expansion to priority locations, pending award of the grant from Natural Resources Canada.

Conclusion

Expansion of City-provided electric vehicle charging infrastructure is a tool to advance community electric vehicle adoption. Community consultation was undertaken to identify priority locations for electric vehicle charging infrastructure expansion. This report recommends implementing additional charging infrastructure at City Hall and the Richmond Olympic Oval. It is also noted that staff have applied for additional funding to enable implementation of EV charging infrastructure at other priority locations. Partnership opportunities are also explored as part of this report, with further information to be reported back to Council once funding application decisions are known.

Community feedback on implementation of an energy recovery fee for charging station use was also sought. Staff are suggesting appropriate steps be taken to bring forward user fees and establish time limits to help make charging infrastructure more broadly accessible.

Brendan McEwen
Sustainability Manager
(604-247-4676)

Suzanne Bycraft
Manager, Fleet and Environmental Programs
(604-233-3338)

BM:bm

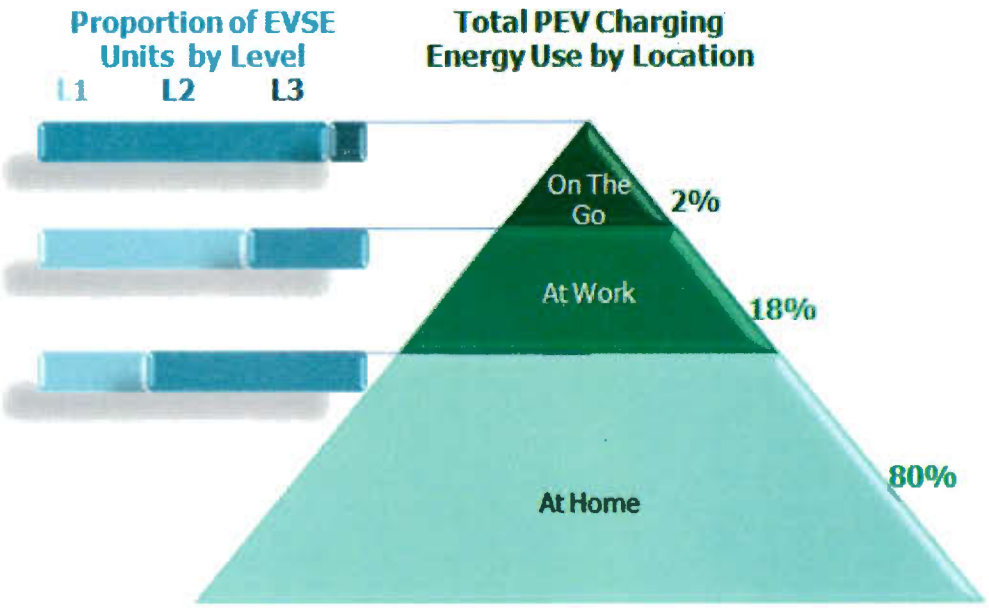
Att. 1: The Importance of Public Charging
2: Public Responses Regarding Preferred Locations for City-Owned EV Charging Infrastructure
3: Summary of feedback during public consultations

Attachment 1: The Importance of Public Charging

Despite the relative infrequency of "on the go" charging, a network of publicly accessible charging stations is recognized as critical to facilitate EV adoption. Public charging:

- **Helps eliminate "range anxiety"**. A barrier to adoption of EVs is concern that on longer trips, drivers may be stranded without ability to recharge. Public charging locations provide for charging mid-trip.
- **Serves drivers on longer trips.** Drivers on longer trips between regions need access to fast recharging.
- **Provides for households without adequate access to "at home" or "at work" charging**. Many households, such as those living in multifamily buildings or those that park on street, do not have ready access to either charging at home or at work. Providing public charging can serve these households.
- **Creates greater visibility of EVs**. Public EV charging infrastructure can be an important reminder of the increasing availability of EVs. Implementation of EV charging is an important opportunity to showcase a community's support of EVs.

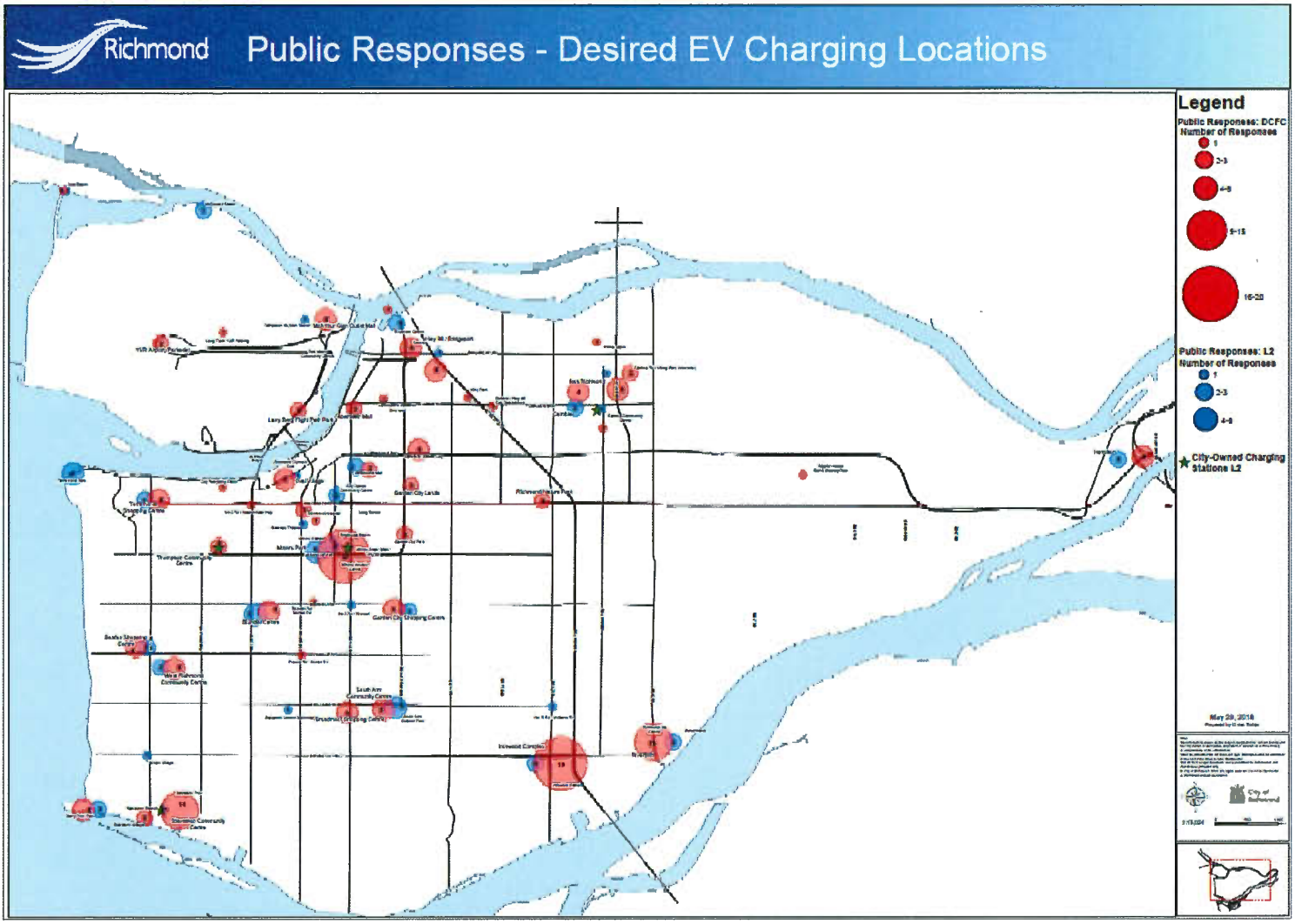
Public charging stations largely consists of "AC Level 2", with a growing number of "DC Fast Charging" (or "Level 3") stations that provide a much faster rate of charge being implemented in strategic locations.



Attachment 2: Public Responses Regarding Preferred Locations for Additional City-Owned EV Charging Infrastructure

Notes:

- Circle size indicates number of respondents who selected a site.
- Red circles represent DC Fast Charge infrastructure.
- Blue circles represent Level 2 charging infrastructure.
- Green stars represent existing City-owned Level 2 charging infrastructure.



Attachment 3: Summary of feedback during public consultations

What we heard...	City response
Different perspectives on user fees • A majority expressed desire to keep public chargers free until adoption increases, and EVs become more popular. • Some supported user fees, and expressed concerns that the City is providing free energy for EV owners using tax payer's money.	• The proposed user fees for public charging still represent costs for fuel well below that for gasoline or diesel vehicles • User fees will likely allow more efficient use of infrastructure, and control/recovery of costs as use increases
Support for workplace charging at City Hall • Some City employees noted the value of providing workplace charging, either on a fee for service basis or as a perk of employment.	Staff are exploring workplace charging options.
Perception of Public Charging Concern that there are not enough publicly accessible chargers available to service the growing EV community in Richmond. • 58% of respondents would be more likely to consider switching to an EV if a DCFC was located within 5 min from their home or nearby shopping district. •	City developing options for DCFC and expanded L2 network for Council's consideration.
Desire for charging at multiple facility types • Respondents indicated their desire to have public charging infrastructure available at a variety of locations across the City. • The most common responses for charging locations were shopping centres and retail areas, Highway access points, and Community Centres.	• A diverse range of geographic locales of charging infrastructure implementation are proposed. • The City will explore private sector interest and opportunities to support greater charging infrastructure in retail centres

City of Richmond

Report to Committee

To:	Public Works and Transportation Committee	**Date:**	May 25, 2018
From:	Lloyd Bie, P.Eng. Acting Director, Engineering	**File:**	10-6050-01/2018-Vol 01
Re:	**Woodwards Slough Habitat Compensation**		

Staff Recommendation

That the staff report titled "Woodwards Slough Habitat Compensation," dated May 25, 2018, from the Acting Director, Engineering, be received for information.

Lloyd Bie, P.Eng.
Acting Director, Engineering
(604-276-4075)

REPORT CONCURRENCE		
ROUTED TO:	**CONCURRENCE**	**CONCURRENCE OF GENERAL MANAGER**
Parks Services Sustainability	☑ ☑	
REVIEWED BY STAFF REPORT / AGENDA REVIEW SUBCOMMITTEE	**INITIALS:**	**APPROVED BY CAO**

Staff Report

Origin

The City is required through the *Federal Fisheries Act* to provide habitat compensation for infilling of drainage canals that was done to complete the Westminster Highway and Nelson Road widening capital projects. The City owned Woodwards Slough Natural Area (Woodwards Slough) has been identified as the preferred location for these compensatory works. The design for the habitat compensation works have progressed to the point where impacts to exiting trees and shrubs have been identified.

The purpose of this report is to provide Council with background information for this habitat compensation work and the public information plan for the project.

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.*

Analysis

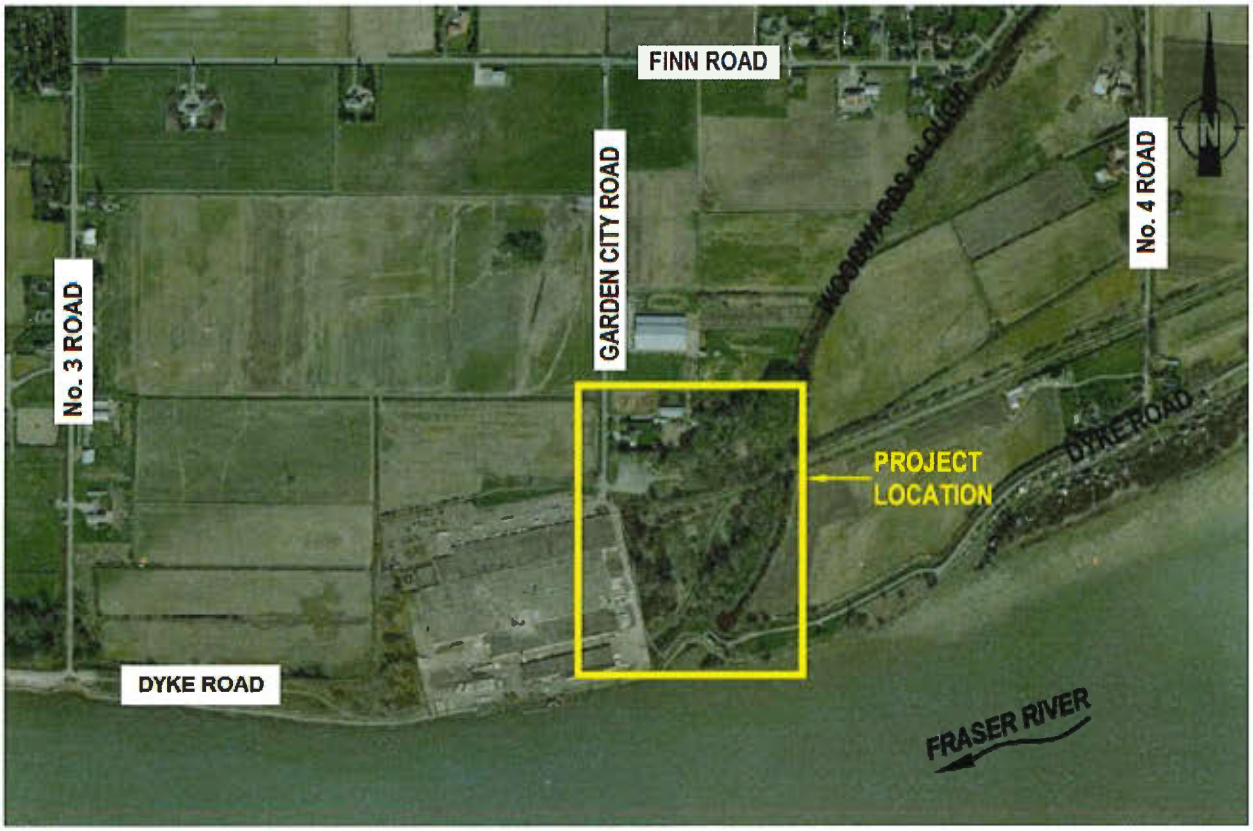
Project Background

As part of the Westminster Highway and Nelson Road widening capital projects, approximately 1,700m of existing drainage canals located within the Riparian Management Area were in-filled with storm sewer pipes to provide space for additional traffic lanes and multi-use pathways. The road dedication was not wide enough to allow for relocation of the drainage canals within the project area.

The Department of Fisheries and Oceans (DFO) has required the City to create approximately 11,000 m^2 of new aquatic and riparian habitat to compensate for the loss of existing habitat.

Due to the size of the required aquatic and riparian compensation, there are few areas in the City available for construction of these works. Staff have identified Woodwards Slough (which is designated as a Park) as the preferred location for the work as it allows the compensation to be provided in one location and enhances the habitat value of the area. Woodwards Slough is shown in Figure 1.

Figure 1- Project Location – Woodwards Slough - 13888 Garden City Road



Existing Site Conditions

Woodwards Slough is located at the south end of Garden City Road (13888 Garden City Road). The park is owned by the City and within the Agricultural Land Reserve (ALR). The park currently consists of mostly natural areas inaccessible to the public. There are several small groves of trees, some heavily wooded areas, a grassy meadow, an active railway line, an abandoned rail spur, and a gravel area. The Woodwards Slough Canal runs along the east side of the park; the dike along with the Woodwards Drainage Pump Station are located to the south. Crown Packaging is located to the west of the park and the South Dyke Trail is located along the south and west edges of the park. BC Hydro transmission towers and power line along with an encompassing right-of-way run through the park.

Agricultural Land Reserve

The project site is located on City owned property within the ALR. City staff have discussed the habitat compensation project with planning staff at the Agricultural Land Commission (ALC) and have been advised that no formal application or notification to the ALC is required.

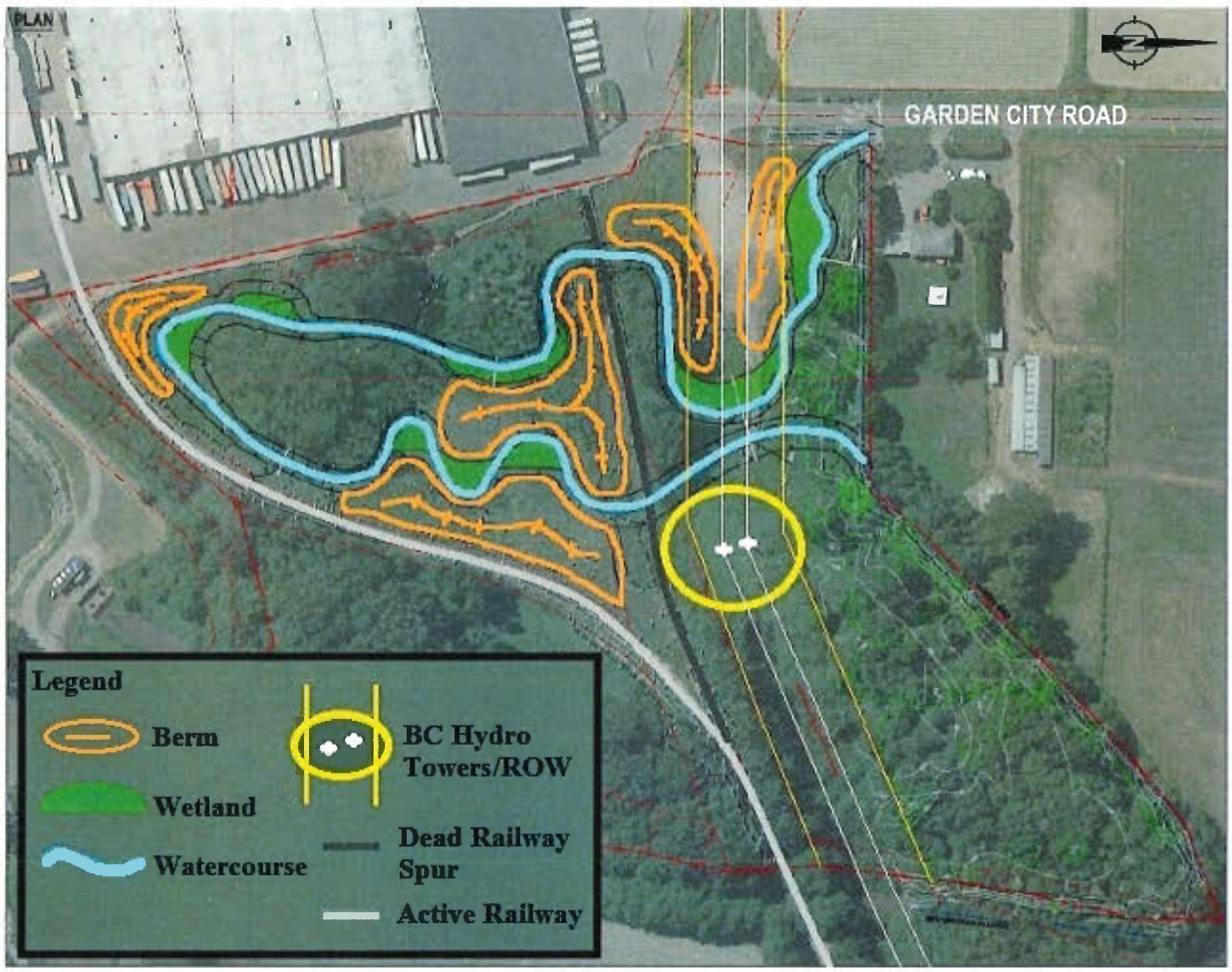
Project Scope

This project creates approximately 11,000 square meters of compensatory habitat comprised of riparian vegetation fish habitat, watercourse compensatory fish habitat and cattail vegetation fish habitat consistent with the City's Ecological Network Strategy, Invasive Species Action Plan and Integrated Rainwater Resource Management Strategy.

The design layout was chosen to minimize the impact on existing trees, to follow the natural ground contours, and to allow for clearance and access to existing railway and BC Hydro infrastructure. The design also allows for excavated material from the new watercourse to be utilized onsite to create berms and hills.

The project scope for the habitat compensation is shown in Figure 2.

Figure 2 – Project Scope – Woodwards Slough Habitat Compensation



Tree Removal and Compensation

The proposed design was created to optimize the preservation of significant size trees and high value habitat. The new channel was designed to avoid existing trees where possible; however, some small trees may require removal. Adjustments will be made in the field during construction to decrease the impact on the existing trees.

As part of the project, removed vegetation will be replaced with new trees, shrubs, grasses, cattails and plants. The replacement planting will be done at this location and consists of predominantly native tree and shrub species. Invasive blackberry plants will be removed as required to accommodate the proposed works.

In advance of construction, tree protection fencing will be installed around existing trees adjacent to the construction zone and bird nest surveys will be done prior to the removal of any trees or shrubs.

Construction Impacts to Road, Trail and Land Users

The existing trails in the surrounding areas are used by pedestrians and recreational cyclists. Access to the adjacent residential and industrial properties, and the South Dyke Trail, will be maintained during construction.

Project Schedule and Procurement

The habitat compensation work is scheduled to commence in late summer 2018 by City forces. Preliminary survey layout and clearing works will commence prior to construction.

Project Information Plan

Project information signs will be installed at either end of the site. In addition to an overview of habitat compensation, scope and schedule, these signs will include information on impacts to trees, existing trails, parking areas, and planned interim measures. Information will also be provided on the tree and shrub compensation included in the project. Contact information for the City's Project Manager will also be provided should the public have further inquiries about the trail access, tree removal, compensation, or any other aspects of the project prior to construction.

Financial Impact

Funding to complete the habitat compensation at Woodwards Slough was approved by Council as part of the 2013 Capital Budget for the Westminster Highway and Nelson Road capital projects. There are sufficient funds available to complete the habitat works.

Conclusion

Habitat compensation is required as part of the environmental compensation for the Westminster and Nelson Road Widening capital projects. Woodwards Slough has been identified as the preferred location. Design has progressed to the point where impacts to adjacent trees and shrubs have been identified and the compensatory layout has been identified. A preliminary Project Information Plan has also been formulated to communicate impacts to road and trail users, and the general public. Work will continue on finalizing the design and coordinating construction for this project.

Eric Sparolin, P.Eng.
Senior Project Engineer
(604-247-4915)

Milton Chan, P.Eng
Manager, Engineering Design and Construction
(604-276-4377)

MC:es

City of Richmond

Report to Committee

To:	Public Works and Transportation Committee	**Date:**	April 27, 2018
From:	Lloyd Bie, P.Eng. Acting Director, Engineering	**File:**	10-6340-20- P.17302/Vol 01
Re:	**South Arm Dike Upgrade Between Gilbert Road and No. 3 Road**		

Staff Recommendation

That the staff report titled "South Arm Dike Upgrade Between Gilbert Road and No. 3 Road," dated April 27, 2018, from the Acting Director, Engineering, be received for information.

Lloyd Bie, P.Eng.
Acting Director, Engineering
(604-276-4075)

REPORT CONCURRENCE		
ROUTED TO:	**CONCURRENCE**	**CONCURRENCE OF GENERAL MANAGER**
Parks Services	☑	
REVIEWED BY STAFF REPORT / AGENDA REVIEW SUBCOMMITTEE	**INITIALS:** CS	**APPROVED BY CAO**

Staff Report

Origin

As part of the 2017 and 2018 Capital Programs, Council approved upgrades to the south dike, including the section between Gilbert Road and No. 3 Road. The design for upgrading this dike has progressed to the point where impacts to the adjacent area have been identified.

The purpose of this report is to provide Council with background information for this dike upgrade and the public information plan for the project. The public information plan will include trail access during construction and information on trees and shrubs affected by the project.

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.*

Analysis

Project Background

Richmond's flat, low lying topography has inherent flood risk from inundation and rainfall. Understanding and managing this risk is critical to the City's success and a primary municipal responsibility. Richmond's diking and drainage systems provide a high level of flood protection for businesses and residents in Richmond. These systems require ongoing maintenance and upgrading to maintain this high level of service given ageing infrastructure challenges and forecasted climate change induced sea level rise.

Richmond City Council adopted the 2008 – 2031 Richmond Flood Protection Management Strategy in 2008. This strategy is the overarching framework that guides Richmond's flood protection activities. As presented at the February 26, 2018 Public Works and Transportation Committee Meeting, staff are currently updating the flood protection management strategy to incorporate the latest climate change science and seek new options and opportunities to improve flood risk management.

Guided by this strategy and aging infrastructure planning, the City has developed Dike Master Plans, ongoing maintenance programs and capital plans for infrastructure improvements. The Dike Master Plan is a comprehensive guide to upgrade the City's dikes. It identifies future dike alignments and associated issues such as wave mitigation strategies. There are five phases to the Dike Master Plan. Phase 1 was endorsed by Council on April 22, 2013, Phase 2 was presented to Council in April 2018, and work on Phases 3, 4 and 5 are scheduled to be completed in 2018.

Dike upgrade capital projects are identified through a combination of factors, including the existing dike elevation, other capital projects that impact the dike (i.e. drainage pump stations), and condition assessments of the existing dike. Once a section of dike is identified for upgrade and a project is endorsed by Council as part of the Capital Program, the Dike Master Plan provides guidance on the design details for that project.

South Arm Dike Upgrade Between Gilbert Road and No. 3 Road

This South Arm Dike Upgrade project was approved by Council as part of the 2017 Capital Program and includes approximately 650m of dike between Gilbert Road and No. 3 Road. This dike is located entirely on City property and is shown in Figure 1 below.

Figure 1 – South Arm Dike Upgrade Project Extents

Existing Site Conditions

Dyke Road is located along the top of the dike in this area. There is also a very well used section of the South Dike Trail. The trail is separated from the road for about ¾ of the length of the project area. The rest of the trail is directly beside the road and also acts as the road shoulder. Parking spaces, benches and picnic tables for trail users are located at either end of the project area. Immediately north of Dyke Road is a large drainage canal. There are also a number of trees in and along the bank of the drainage canal, ranging in size from 5cm to 110cm diameter at breast height (DBH). The property just north of the Fraser River between Gilbert Road and No. 3 Road is owned by the City and is used for various purposes, including a City tree farm and the Kwantlen Polytechnic University (KPU) Richmond Incubator Farm.

Agricultural Land Reserve

The project site is located on City owned property within the Agricultural Land Reserve (ALR). Dike construction and maintenance is a permitted use in the ALR. City staff have discussed the dike upgrade project with planning staff at the Agricultural Land Commission (ALC) and have been advised that no formal application or notification to the ALC is required.

Project Scope and Future Dike Raising

The dike will be raised by approximately 1.6m vertically. This is high enough to protect the City from climate change induced sea level rise until at least 2100. The perimeter drainage pump stations constructed over the past few years have also been raised to provide this level of flood protection.

Raising the dike will require the dike to be widened, which will impact the existing drainage canal to the north. This canal will be filled in and replaced with a new canal further inland, away from the dike. Moving the drainage canal away from the dike improves the stability of the raised dike. Infilling the canal will impact 10 trees (10-15cm DBH) that are currently within the banks of the canal. Staff will attempt to relocate these, however due to equipment access issues these may need to be removed and replaced under the direction of a certified arborist.

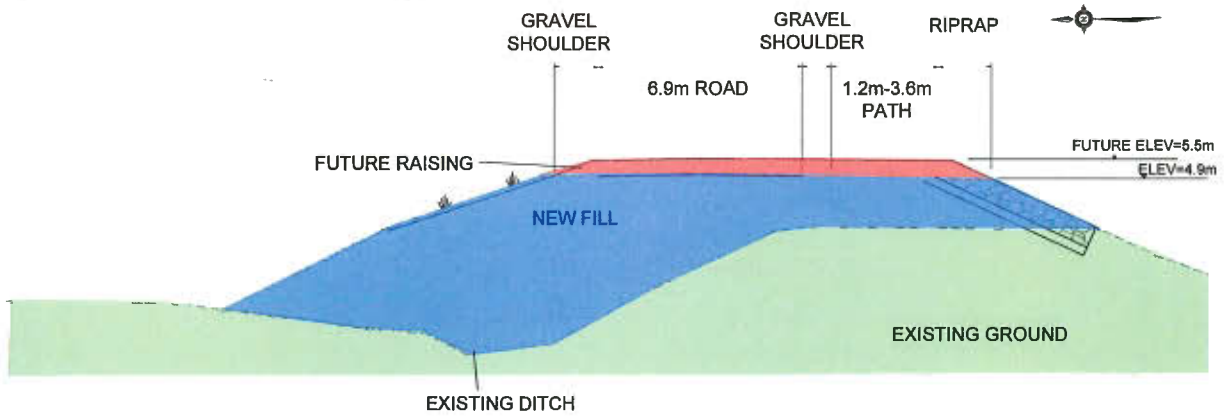
Dyke Road will be reinstated atop the raised dike. The portion of the South Dike Trail that is currently separated from the road ranges from 2m to 3m wide. The portion of the trail/road shoulder that is not separated from the road ranges from 1m to 2m wide. Where space allows, the existing trail is being widened to 3.6m and separated from the road with bollards.

In the portion of the project where the existing trail is not separated from the road, there are four sizable trees close to the existing dike and canal (ranging from 25cm DBH to 60cm DBH). To avoid impacting these trees, a 1.2m wide trail will be installed in this area.

New picnic tables, benches and trash receptacles will also be installed.

The Dike Master Plan identifies a future need to raise dikes to an elevation of 5.5m to provide flood protection beyond the year 2100. During the detailed design process, the dike profile and new canal location were required to accommodate a design elevation of 5.5m. A typical cross section showing the proposed works is as follows:

Figure 2 – South Arm Dike Upgrade Typical Cross Section



Dike Fill Material/Native Material

The key component to the dike is the fill material. A significant amount of the fill needs to be impervious to water to act as a dam against the water outside of the dike. This impervious fill is not commonly available - it contains much more clay and silt than regular fill material. The clay and silt also make this material very sensitive to weather conditions. It can only be placed and compacted in dry conditions. If conditions are rainy, the material cannot be compacted properly.

The allowable ratio of clay and silt to other larger particles must also be within a narrow range, further limiting the availability of suitable fill material.

Due to the tight material requirements and location of the project site within the ALR, staff will be heavily involved in the management of materials being imported and exported from this project. Wherever possible, native material will be re-used either in the project or on the adjacent City property. Any proposed imported material will be tested to ensure that it meets the required environmental and technical standards prior to being brought onto the site.

Tree Removal and Compensation

The project is being designed to minimize the impacts to existing trees. There are 10 red alder (10-15cm DBH) that are impacted by the proposed project scope. These are located within the banks of the existing canal. Staff will attempt to relocate these, however due to physical constraints these may need to be removed and replaced under the direction of a certified arborist.

Tree removal (if required) will be staged with construction. Depending on the contractor's methodology, the trees may be removed at the beginning of the project to facilitate relocation of the entire drainage canal at once, or tree removal may be in sections over the duration of the project. With either timeline, bird nest surveys will be done prior to the removal of any trees or shrubs.

Construction Impacts to Road, Trail and Land Users

Dyke Road will be closed to vehicle traffic during active construction. Vehicles will be redirected to Steveston Highway via Gilbert Road and No. 3 Road. The off-street parking will be closed to the public during various stages of construction at either end of the project site (approximately 50 parking spaces).

The existing dike trail in this area is used by pedestrians and recreational cyclists. Some of the benches and picnic tables removed for construction will be temporarily relocated outside of the construction area. During procurement for this project, bidders will be required to base their bids on maintaining a temporary 3m wide path from Gilbert Road to No. 3 Road throughout construction. However, periodic temporary closures of the path may be required.

KPU is leasing a portion of the City owned land for the Richmond Incubator Farm. Staff have informed KPU throughout the design process of potential impacts to the incubator farm. Based on the current design, some plots may need to be relocated to accommodate realignment of the farm service road. Staff will continue to communicate with KPU throughout the project.

Project Schedule and Procurement

The dike upgrade work is scheduled to commence in late summer 2018. Due to the varying availability and sensitivity of the dike fill material to weather, construction is anticipated to extend for up to 1 year. During active construction, Dyke Road will be closed to traffic. However, since placing impervious fill is impractical for extended periods through the winter, Dyke Road may be re-opened to traffic during these periods.

Staff are currently prequalifying contractors to bid on this project. This will help to ensure that the eventual low bidder is experienced with handling the sensitive impervious fill material, able to adequately address trail use issues, and is an active participant in communicating with the public during construction.

Project Information Plan

This project was featured in the 2018 Capital Construction Projects Open House that was held on April 18, 2018. Questions from the public regarding this project were focused on the general level of flood protection for the entire City, rather than specific questions on this project location.

A public information session will be held at the south dike on Saturday June 23, 2018 from 1pm to 4pm. The public will be advised of the open house via signs adjacent to the project site, social media and advertisements in the local newspapers.

Project information signs will be installed at either end of the site. In addition to an overview of the dike raising scope and schedule, these signs will include information on impacts to trees, existing trails, parking areas, picnic areas and planned interim measures. Contact information for the City's Project Manager will also be provided should the public have further inquiries about the trail access, tree removal, compensation, or any other aspects of the project prior to construction.

During construction, the contractor will be required to have a dedicated communications person available for the duration of the project. The City will also have a dedicated communications contact for this project in addition to the Project Manager.

Financial Impact

Funding to complete South Arm Dike Upgrades was approved by Council as part of the 2017 and 2018 Capital Budgets (along with dike upgrades in other locations). The approved budget is $8,850,000.

Conclusion

The South Arm Dike Upgrade Between Gilbert Road and No. 3 Road has been approved as part of the 2017 and 2018 Capital Program. Design has progressed to the point where impacts to the adjacent area have been identified. A preliminary Project Information Plan has also been formulated to communicate impacts to road and trail users, and the general public. Work is continuing on finalizing the design and completing procurement for this project.

Milton Chan, P.Eng
Manager, Engineering Design and Construction
(604-276-4377)

MC:mc

City of Richmond

Report to Committee

To:	Public Works and Transportation Committee	**Date:**	May 25, 2018
From:	Lloyd Bie, P.Eng. Acting Director, Engineering	**File:**	10-6000-01/2018-Vol 01
Re:	**Boundary Road Drainage Memorandum of Understanding**		

Staff Recommendation

1. That the Chief Administrative Officer and the General Manager, Engineering be authorized to execute, on behalf of the City, a Memorandum of Understanding between the City and the City of New Westminster containing the material terms and conditions set out in the staff report titled, "Boundary Road Drainage Memorandum of Understanding" dated May 25, 2018 from the Acting Director, Engineering;

2. That the 5 Year Financial Plan (2018-2022) be amended to fund the City's share of fronting costs for the Boundary Road Pump Station upgrade of $960,000 from the Drainage Improvement Reserve and the estimated annual operating cost of $4,475 be incorporated into the 2019 Budget; and

3. That staff bring forward updates to the Works and Services Cost Recovery Bylaw No. 8752 to include recovery of the fronting costs for the Boundary Road Pump Station upgrade from benefiting developments in the Thompson Boundary Area.

Lloyd Bie, P.Eng.
Acting Director, Engineering
(604-276-4075)

REPORT CONCURRENCE		
ROUTED TO:	**CONCURRENCE**	**CONCURRENCE OF GENERAL MANAGER**
Finance Department	☑	
Law	☑	
Sewerage & Drainage	☑	
REVIEWED BY STAFF REPORT / AGENDA REVIEW SUBCOMMITTEE	**INITIALS:**	**APPROVED BY CAO**

Staff Report

Origin

The City of Richmond's Thompson/Boundary area is geographically separated from the rest of Richmond by Highway 91 as identified in Figure 1 below. Richmond's Thompson/Boundary area borders the City of New Westminster's Queensborough area and is adjacent to the Boundary Road canal. The Boundary Road Drainage Pump Station, which serves this canal, is owned and operated by the City of New Westminster. While the majority of drainage from the Thompson/Boundary area drains west, under Highway 91, to the Queens Canal, some of the parcels are discharging into the Boundary Road canal without an agreement in place between Richmond and New Westminster.

Figure 1: Thompson/Boundary Area

Richmond's Official Community Plan identifies the 9.38 ha Thompson/Boundary Area as future townhouses. This future increase in housing density will increase drainage flows for this area which cannot be accommodated by Richmond's current drainage network, including the crossing under Highway 91. Upgrading the existing drainage network to accommodate the future townhouses is estimated to cost $4.5M.

Staff does not recommend the $4.5M upgrade to the City's drainage network as utilization of the Boundary Road Pump Station and Boundary Road Canal is identified as a significant cost savings, less disruptive to the community and hydraulically more efficient.

The City of New Westminster is agreeable to utilization of the Boundary Road canal for future Thompson/Boundary drainage. New Westminster is planning to upgrade the Boundary Road Drainage Pump Station and is in a position to increase the size of the proposed station to accommodate drainage from the Thompson/Boundary Area, provided Richmond pays a share of the pump station upgrading capital costs and a share of ongoing operating costs.

There is a current development application under review in the Thompson/Boundary area to upgrade seven residential lots to 120 townhouse units. To accommodate this development, staff propose that the City enter a Memorandum of Understanding with the City of New Westminster that will allow this development as well as subsequent developments to move forward with minimum drainage upgrade costs. Costs for the drainage upgrades will be borne by the benefitting developments under any scenario. The City will be required to front the pump station upgrade costs and recover these costs from development through the City's Works and Services Cost Recovery Bylaw.

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

Analysis

An independent consultant was jointly retained by Richmond and New Westminster to identify potential pump station improvements and propose funding shares based on pump station utilization at build out for both municipalities. The study identified that drainage from Richmond's Thompson/Boundary area at build out will be 16% of the Boundary Road Drainage Pump Station peak discharge capacity and proposes that Richmond's share of upgrading costs and ongoing maintenance be aligned with this value. It further proposes that Richmond contribute 9.5% of the maintenance costs for the Boundary Road Canal. These costs are estimated in Table 1.

Table 1: Estimated Cost Share for Boundary Road Drainage

Item	Estimated Cost	Richmond Share	Richmond Percentage
Boundary Road Drainage Pump Station Upgrade	$6,000,000	$960,000	16%
Boundary Road Drainage Pump Station Annual Operating	$25,000	$4,000	16%
Boundary Road Canal Annual Maintenance	$5,000	$475	9.5%

The City of New Westminster is in the process of procuring design services for the Boundary Road Drainage Pump Station upgrade. Entering a Memorandum of Understanding with the City of New Westminster will allow New Westminster to design the upgraded Boundary Road Pump Station with consideration for Thompson/Boundary drainage volume.

The material terms of the Memorandum of Understanding will include:

- Richmond will be able to drain the Thompson/Boundary Area into the Boundary Road Canal;
- Richmond's share of the capital and operating costs for the Boundary Road Pump Station will be 16% of actual costs;
- Richmond will contribute 9.5% of the maintenance costs for the Boundary Road Canal; and
- The Memorandum of Understanding is non-binding.

A future agreement regarding cost sharing will be developed based on the Memorandum of Understanding.

Financial Impact

Staff recommends updating the 5 Year Financial Plan (2018-2022) to fund the Boundary Road Pump Station, which includes an estimated $960,000 City share of fronting costs for pump station upgrades, from the Drainage Improvement Reserve and an estimated $4,475 City share of annual operating costs be included in the 2019 Budget. Staff also recommends that the Works and Services Cost Recovery Bylaw be updated to include recovery of the City's share of fronting costs for the pump station upgrades (estimated at $960,000) from benefiting developments in the Thompson/Boundary Area.

Conclusion

The Thompson/Boundary area is geographically separated from the rest of Richmond by Highway 91. Future development of the Thompson/Boundary Area will require drainage improvements. Staff recommends that the Thompson/Boundary Area utilize the Boundary Road Canal and Pump Station for future drainage based on cost and hydraulic efficiency. The alternative $4.5M upgrade of the City's pipe network is not recommended.

Staff recommends that the City enter a Memorandum of Understanding with the City of New Westminster that will allow New Westminster to include Thompson/Boundary drainage flows in the design of an upgraded Boundary Road Pump Station that identifies the cost sharing arrangement for this infrastructure. Staff also recommends that the 5 Year Financial Plan (2018-2022) be updated to fund the City's share of fronting pump station upgrade costs and annual maintenance costs from the Diking and Drainage Utility. Lastly, staff recommends updating the Works and Services Cost Recovery Bylaw to recover the City's share of fronting pump station upgrade costs from benefiting developments in the Thompson/Boundary Area.

Lloyd Bie, P.Eng.
Acting Director, Engineering
604-276-4075