



Public Works and Transportation Committee

Anderson Room, City Hall
6911 No. 3 Road

Wednesday, July 22, 2015
4:00 p.m.

Pg. # ITEM

MINUTES

PWT-4

*Motion to adopt the **minutes** of the meeting of the Public Works and Transportation Committee held on June 17, 2015.*



NEXT COMMITTEE MEETING DATE

September 23, 2015, (tentative date) at 4:00 p.m. in the Anderson Room

PLANNING AND DEVELOPMENT DIVISION

1. **SOUTHWEST AREA TRANSPORT PLAN – STRUCTURE AND PROCESS**

(File Ref. No. 01-0154-04) (REDMS No. 4573211 v. 2)

PWT-9

See Page PWT-9 for full report

Designated Speaker: Victor Wei

STAFF RECOMMENDATION

That a member of Council be appointed to TransLink's Southwest Area Transport Plan Senior Advisory Committee to provide input into the development of the Southwest Area Transport Plan.



Public Works & Transportation Committee Agenda – Wednesday, July 22, 2015

Pg. # ITEM

2. UPDATE ON GEORGE MASSEY TUNNEL REPLACEMENT PROJECT

(File Ref. No. 01-0150-20-THIG1) (REDMS No. 4595519 v. 3)

PWT-14

See Page PWT-14 for full report

Designated Speaker: Victor Wei

STAFF RECOMMENDATION

- (1) *That the staff report titled “Update on George Massey Tunnel Replacement Project” dated July 10, 2015 from the Director, Transportation, be forwarded to the Ministry of Transportation & Infrastructure’s George Massey Tunnel Replacement project team for consideration in the development of the Project Definition Report; and*
- (2) *That a letter be sent to BC Hydro advising that, should the George Massey Tunnel be decommissioned, the City’s preferred options for the relocation of the BC Hydro transmission line from the tunnel would be either an underground crossing of the Fraser River or attached to the new bridge.*



ENGINEERING AND PUBLIC WORKS DIVISION

3. PILOT MULTIFAMILY CONDOMINIUM ENERGY ADVISOR PROGRAM

(File Ref. No. 10-6125-07-02) (REDMS No. 4600669 v. 4)

PWT-22

See Page PWT-22 for full report

Designated Speaker: Brendan McEwen

STAFF RECOMMENDATION

That the development and implementation of a Pilot Multifamily Condominium Energy Advisor Program, as outlined in the staff report dated June 22, 2015, from the Director, Engineering, be endorsed.



4. AGEING INFRASTRUCTURE PLANNING – 2015 UPDATE

(File Ref. No. 10-6060-04-01) (REDMS No. 4582509 v. 6)

PWT-28

See Page PWT-28 for full report

Designated Speaker: Lloyd Bie

Pg. # ITEM

STAFF RECOMMENDATION

That staff utilize the attached “Ageing Infrastructure Planning – 2015 Update” report dated June 26, 2015 from the Director, Engineering as input in the annual utility rate review and capital program process.

5. **AGEING FACILITY INFRASTRUCTURE – UPDATE**

(File Ref. No. 06-2050-01) (REDMS No. 4578048 v. 7)

PWT-43

See Page PWT-43 for full report

Designated Speaker: Jim Young

STAFF RECOMMENDATION

That staff utilize the attached “Ageing Facility Infrastructure – Update” report dated June 15, 2015 from the Director, Engineering, as input in the annual capital and operating budget preparation process.

6. **MANAGER’S REPORT**

ADJOURNMENT



Public Works and Transportation Committee

Date: Wednesday, June 17, 2015
Place: Anderson Room
Richmond City Hall
Present: Councillor Chak Au, Chair
Councillor Harold Steves
Councillor Derek Dang
Councillor Alexa Loo
Mayor Malcolm Brodie
Absent: Councillor Ken Johnston
Also Present: Councillor Carol Day
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 Thursday, May 21, 2015, be adopted as circulated.

CARRIED

NEXT COMMITTEE MEETING DATE

Wednesday, July 22, 2015, (tentative date) at 4:00 p.m. in the Anderson Room

DELEGATIONS

1. With the aid of a PowerPoint presentation, James Repenning, Senior Vice President, Harvest Power, accompanied by Wayne Davis, Vice President of Governmental Affairs, Harvest Power, provided background information regarding Harvest Power's operations in Richmond.

Mr. Repenning then spoke of Harvest Power's odour control efforts, noting that operations can be tailored based on daily emailed forecast on the risk of odour and a portable dynamic olfactometer aids in quantitatively assessing odour levels.

In reply to queries from Committee, Mr. Repenning advised that the anaerobic digester was not fully operational when organics collections began, which resulted in odour complaints. Also, he commented on mixed waste, stating that Harvest Power would not accept such waste as contamination levels are too high. Mr. Repenning then expressed interest in collaborating with the City on further recycling initiatives.

With the aid of a PowerPoint presentation (copy on file, City Clerk's Office), Jim Nelson, Senior Manager of Marketing, Power Smart, BC Hydro, highlighted the following information:

- the City saves approximately \$800,000 a year and 8.65 gigawatt hours as a result of its energy conservation efforts, which is equivalent to the energy consumption of approximately 780 homes;
- upgrades at existing facilities such as the Richmond Ice Centre and the installation of energy efficient equipment at new facilities such as the Richmond Olympic Oval have contributed significantly to energy savings;
- the City has received BC Hydro's Power Smart Excellence award since 2003; and
- BC Hydro is pleased to partner with the City on energy conservation programs such as the Clothes Washer Rebate program.

In reply to queries from Committee, Robert Gonzalez, General Manager, Engineering and Public Works, advised that payback on energy conservation equipment is typically five years; also, he noted that staff would provide Council with a memorandum in relation to costs saved as a result of energy conservation equipment at the Richmond Olympic Oval.

Mr. Gonzalez then commented on the City's partnership with BC Hydro on the Clothes Washer Rebate program, noting that should interest in the program exceed that of the program's budget, additional funding would be required to expand the program and as such, a staff report would be brought forward for Council's consideration.

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Discussion took place on the City's commitment to reducing energy consumption by 10% by 2020, and it was noted that information regarding lower mainland municipalities' efforts would be interesting.

PLANNING AND DEVELOPMENT DIVISION

2. **GILBERT ROAD WIDENING (DINSMORE BRIDGE-ELMBRIDGE WAY) – IMPLEMENTATION STRATEGY**

(File Ref. No. 10-6360-01) (REDMS No. 4543746 V. 2)

It was moved and seconded

That the staff report titled "Gilbert Road Widening (Dinsmore Bridge-Elmbridge Way) – Implementation Strategy," dated April 24, 2015 from the Director, Transportation be received for information.

CARRIED

3. **PROPOSED IMPLEMENTATION STRATEGY FOR RIVER PARKWAY: GILBERT ROAD TO CAMBIE ROAD**

(File Ref. No. 10-6360-01) (REDMS No. 4541620 v. 7)

In reply to queries from Committee, Donna Chan, Manager, Transportation Planning, spoke of the interim standard for River Parkway, noting that as the area develops, staff will leverage development cost charges in order to complete the final configuration, which will be a four-lane major arterial road.

Victor Wei, Director, Transportation, advised that the project's cost is anticipated to be \$11.3 million by 2019 and therefore, staff are proposing to include it as part of future 5-Year Capital programs. Also, Mr. Wei commented on several road improvements implemented along River Road in an effort to address motorists' complaints.

It was moved and seconded

(1) *That the proposed implementation strategy for River Parkway (Gilbert Road-Cambie Road), as described in the staff report dated April 24, 2015 from the Director, Transportation, be endorsed; and*

(2) *That the project to extend River Parkway from 200 m northeast of Gilbert Road to Cambie Road be submitted for Council's consideration as part of the City's budget process.*

CARRIED

ENGINEERING AND PUBLIC WORKS DIVISION

4. **ANNUAL FLOOD PROTECTION REPORT 2015**
(File Ref. No. 10-6060-04-01) (REDMS No. 4591508)

In reply to a query from Committee, Lloyd Bie, Manager, Engineering Planning, advised that the City's dike elevations are between 4.0 and 4.7 metres geodetic, and the Provincial flood protection standard is 3.5 metres geodetic.

It was moved and seconded

That the staff report titled "Annual Flood Protection Report 2015" (dated May 29, 2015, from the Director, Engineering) be received for information.

CARRIED

5. **2015 CORPORATE ENERGY MANAGEMENT UPDATE**
(File Ref. No. 10-6125-05-01) (REDMS No. 4580306 v. 9)

It was moved and seconded

That the staff report titled "2015 Corporate Energy Management Program Update" from the Director, Engineering, dated May 25, 2015, be received for information.

CARRIED

6. **BC CLIMATE LEADERSHIP PLAN**
(File Ref. No. 10-6125-07-02) (REDMS No. 4581892)

It was moved and seconded

That a letter under the Mayor's signature be sent to the Premier's office, with copies to the Minister of Environment, the Chair of the BC Climate Leadership Team, the provincial Climate Action Secretariat, and Richmond MLAs, requesting that the comment period for the draft "Framework for the Climate Leadership Plan" be extended to September 30, 2015, to provide sufficient time for local government review.

CARRIED

7. **WATER AND ENERGY CONSERVATION PROGRAMS FOR BUSINESSES AND RESIDENTIAL PROPERTIES**
(File Ref. No. 10-6125-07-02) (REDMS No. 4588225)

It was moved and seconded

That, as presented in the staff report titled "Water and Energy Conservation Programs for Businesses and Residential Properties" dated May 27, 2015, from the Director, Engineering:

- (1) *the implementation of a program to install efficient, low-flow water fixtures in businesses and institutions be endorsed;*

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- (2) *the Chief Administrative Officer and General Manager, Engineering and Public Works be authorized to execute a funding agreement with FortisBC and other potential partners to implement the program; and*
- (3) *the City's existing water conservation kit offered to properties with a water meter be expanded to include all residential customers.*

CARRIED

8. NATIONAL PUBLIC WORKS WEEK - UPDATE
(File Ref. No. 10-6000-01) (REDMS No. 4585216 v. 2)

It was moved and seconded

That the staff report titled "National Public Works Week – Update" from the Director, Public Works, be received for information.

CARRIED

9. MANAGER'S REPORT

Mr. Gonzalez referenced a memorandum dated June 4, 2015 regarding the WesPac Tilbury Marine Jetty Project, noting that the Canadian Environmental Assessment Agency has extended the project's public comment period to June 24, 2015. Also, Mr. Gonzalez advised that an update on the matter was forthcoming.

ADJOURNMENT

It was moved and seconded

That the meeting adjourn (4:59 p.m.).

CARRIED

Certified a true and correct copy of the Minutes of the meeting of the Public Works and Transportation Committee of the Council of the City of Richmond held on Wednesday, June 17, 2015.

Councillor Chak Au
Chair

Hanieh Berg
Committee Clerk



City of Richmond

Report to Committee

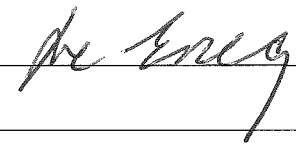

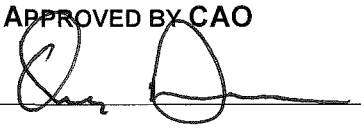
To: Public Works and Transportation Committee **Date:** June 17, 2015
From: Victor Wei, P. Eng.
 Director, Transportation **File:** 01-0154-04/2015-Vol 01
Re: Southwest Area Transport Plan – Structure and Process

Staff Recommendation

That a member of Council be appointed to TransLink’s Southwest Area Transport Plan Senior Advisory Committee to provide input into the development of the Southwest Area Transport Plan.



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

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

Staff Report

Origin

This report provides information on the update of the Richmond Area Transit Plan, now renamed to the Southwest Area Transport Plan. This report supports Council's priorities for Term Goal #3 A Well-Planned Community:

3.3 *Effective transportation and mobility networks.*

Analysis

Transition to Area Transport Plan

The original Richmond Area Transit Plan, completed in 2000, focused on Richmond only and established a long-term vision and near-term transit priorities for Richmond. TransLink is now transitioning to new Area Transport Plans (ATPs) that are multi-modal (i.e., beyond transit, and now include walking, cycling, driving, goods movement, and transportation demand management (TDM)). The Southwest Area Transport Plan (SWATP) includes Richmond, South Delta (Ladner and Tsawwassen), and Tsawwassen First Nation and will be the first of these broader plans that review the entire transportation network within the identified sub-area of the region.

Area Transport Plans recently completed by TransLink for other sub-areas in the region include: North Shore (North Vancouver City and District, West Vancouver, Lions Bay, Bowen Island) approved in Fall 2012; and Northeast Sector (Coquitlam, Port Coquitlam, Port Moody, Anmore and Belcarra), which is nearing completion.

Project Structure & Approvals

The project is being led by TransLink staff with that agency's senior management providing oversight and approval. Input from local governments (staff and elected officials) and other relevant external stakeholders (e.g., Ministry of Transportation & Infrastructure (MoTI), Vancouver Airport Authority, Port Metro Vancouver) will be received via three advisory committees as described in Table 1 below.

Table 1: Proposed SWATP Advisory Committees

Committee	Composition	Role
Senior Advisory Committee	<ul style="list-style-type: none"> TransLink: Senior strategic and system planning staff Local Government: CAO and/or senior land use and transportation staff Elected Officials: Councillors MoTI: Director 	<ul style="list-style-type: none"> Champion the project and provide overall strategic direction Ensure appropriate communication between elected officials and senior staff of jurisdictions participating in the ATP Ensure appropriate communication within respective jurisdictions to keep other elected officials and other departments informed
Technical Advisory Committee	<ul style="list-style-type: none"> TransLink: System planning staff Local Government: Land use and transportation staff MoTI: Senior planner Stakeholders: Attend as required 	<ul style="list-style-type: none"> Provide expertise and advice on technical aspects of the ATP Inform TransLink staff of local issues pertinent to ATP development Provide oversight from an agency perspective

Committee	Composition	Role
Public Advisory Committee	<ul style="list-style-type: none"> TransLink: Stakeholder relations staff Diverse municipal and external stakeholder representatives 	<ul style="list-style-type: none"> Provide input on public-facing materials and engagement Provide local perspective on the ATP planning process and scope Identify local and stakeholder issues

Currently, TransLink is developing draft terms of reference for the Senior Advisory Committee (SAC) and the Public Advisory Committee (PAC), which will include the proposed mandate and scope of authority, composition (i.e., number of members, and member and chair selection process), reporting responsibility, and any staff and resource support required.

With respect to membership of the SAC, TransLink's preference is to include one elected representative and senior municipal and First Nation staff from each community. As there is an opportunity for an elected official to be a member of the SAC, staff recommend that a member of Council be appointed to the Committee in order to provide a valuable perspective on both City and community priorities with respect to transportation. At this time, the SAC is anticipated to meet a total of three times during the process (i.e., once during each phase, which are further described below).

With respect to membership of the PAC, staff will propose to TransLink that key community groups such as Richmond Centre for Disability, Richmond Chamber of Commerce, Richmond School District, and Community Associations be invited to appoint a member while individual members be appointed via an open application process to enable the Richmond community to be broadly represented in the most effective manner.

Schedule and Process

An initial meeting of TransLink and staff to provide a briefing on the new Area Transport Plan process was held in February 2014 followed by a second meeting in February 2015 to initiate the SWATP process. The process is anticipated to take 18 to 24 months to complete from February 2015. The draft schedule defined by TransLink as shown in Table 1 below includes two windows for public consultation.

Table 2: Draft Schedule and Process for SWATP

Phase	Focus	Timing	Key Activities & Deliverables
0	Research	Spring-Winter 2014	<ul style="list-style-type: none"> Review ATP program and gather background data
1	Issues & Opportunities	Winter 2014-Summer 2015	<ul style="list-style-type: none"> Identify issues and opportunities via analysis of land use, transportation system performance, travel market, customer feedback <i>1st Public Consultation Window</i> (to be held after plebiscite in Summer 2015): confirm issues and opportunities, and community values Deliverables: technical report and public report summarizing the public engagement
2	Strategies	Fall 2015-Spring 2016	<ul style="list-style-type: none"> Develop draft strategies and conceptual network to support draft strategies

Phase	Focus	Timing	Key Activities & Deliverables
3	Priority Actions	Spring-Summer 2016	<ul style="list-style-type: none"> Develop and evaluate potential actions to support strategies, identify priority actions 2nd Public Consultation Window (Summer 2016): confirm strategies, actions and priorities Deliverables: technical report and public report summarizing the public engagement
4	Monitoring & Reporting	Summer 2016-On-going	<ul style="list-style-type: none"> Track implementation, review relevancy of strategies and actions, assess performance Deliverable: final public report

Based on the structure of TransLink’s Regional Transportation Strategy and the Mayors’ Council 10-Year Plan, the SWATP will identify priority strategies and actions related to the themes of invest, manage and partner. Recent work undertaken by the City to define Richmond’s long-term transportation network and priorities will be used to guide the SWATP process; namely, the Mobility and Access sections of the *City Centre Area Plan* and the *Official Community Plan* (adopted in September 2009 and November 2012, respectively) and the identification of Richmond’s transportation improvement priorities as part of the development of the Mayors’ Council 10-Year Vision. These key priorities for the enhancement of the transportation system in Richmond include:

- *Transit Service*: Canada Line service and station capacity improvements, implementation priorities of frequent transit network including City Centre-Metrotown B-Line, improved bus service on Sea Island (including Burkeville) and to Fraserport (Richmond properties site of Port Metro Vancouver), more local bus routes that do not necessarily travel through the City Centre, new bus service to employment areas lacking transit services including Mitchell Island and other transit service enhancements.
- *Transit Facilities*: off-street bus exchanges at Richmond-Brighouse Station and in Steveston to improve connectivity and reduce empty bus circulation/layovers on public streets.
- *Road-Goods Movement*: new additions to the Major Road Network (e.g., Nelson Road, Blundell Road east of No. 7 Road, River Parkway, No. 6 Road north of Westminster Hwy, surrounding roadways near new Brighouse busmall) to secure capital and maintenance funding.
- *Cycling*: expansion of major street and local connecting paths for cycling.
- *Walking-Rolling*: expansion of network of neighbourhood links on local roads and the completion of gaps in sidewalks on arterial roads.
- *TDM*: work with TravelSmart on school- and employer-based activities to improve transportation choices and reduce vehicle trips.

Plebiscite on Funding to Support Mayors’ Council 10-Year Plan

Development of the SWATP will be undertaken independent of the outcome of the plebiscite. The SWATP will identify priority projects for a sub-region and will not provide an implementation plan or timeline, which provides TransLink with flexibility as to when projects get implemented. The SWATP will not supersede any projects in the Mayors’ Council 10-Year Plan and implementation will be based on available resources. TransLink staff advise that most priority projects identified in an ATP could likely be implemented if the plebiscite is successful, but only a small set of the priority projects if it is unsuccessful. In the absence of additional new funding, other processes, such as service optimization, could be used to implement some projects (e.g., increased frequencies on some transit routes).

Next Steps in Preparation of SWATP

TransLink's project team has begun work related to identifying issues and opportunities for the transportation network for the Southwest Area sub-region. After the close of the plebiscite period in June 2015, a Technical Advisory Committee meeting will be held to discuss the preliminary findings with municipal and First Nation staff. Staff anticipate presenting a status update report following the completion of the first round of public consultation, which is expected to be held in Fall 2015.

Financial Impact

None.

Conclusion

The Southwest Area Transport Plan (SWATP), which includes Richmond, South Delta (Ladner and Tsawwassen), and Tsawwassen First Nation, will be the first of TransLink's new, broader multi-modal plans that will identify priority projects for the entire transportation network within the sub-area, not just transit service improvements. To support development of the Plan and help ensure that City and community priorities are articulated, staff recommend that a member of Council be appointed to the Senior Advisory Committee for the SWATP.



Joan Caravan
Transportation Planner
(604-276-4035)

JC:jc



To: Public Works and Transportation Committee **Date:** July 10, 2015
From: Victor Wei, P. Eng.
Director, Transportation **File:** 01-0150-20-
THIG1/2015-Vol 01
Re: **Update on George Massey Tunnel Replacement Project**

Staff Recommendation

1. That the staff report titled "Update on George Massey Tunnel Replacement Project" dated July 10, 2015 from the Director, Transportation, be forwarded to the Ministry of Transportation & Infrastructure's George Massey Tunnel Replacement project team for consideration in the development of the Project Definition Report.

2. That a letter be sent to BC Hydro advising that, should the George Massey Tunnel be decommissioned, the City's preferred options for the relocation of the BC Hydro transmission line from the tunnel would be either an underground crossing of the Fraser River or attached to the new bridge.

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

Att. 1

REPORT CONCURRENCE		
ROUTED TO:	CONCURRENCE	CONCURRENCE OF GENERAL MANAGER
Engineering	<input checked="" type="checkbox"/>	
Intergovernmental Relations & Protocol Unit	<input checked="" type="checkbox"/>	
Parks Services	<input checked="" type="checkbox"/>	
Sustainability	<input checked="" type="checkbox"/>	
REVIEWED BY STAFF REPORT / AGENDA REVIEW SUBCOMMITTEE	INITIALS: 	APPROVED BY CAO

Staff Report

Origin

At the June 23, 2014 Council meeting, staff presented a report that provided a status update on the George Massey Tunnel Replacement (GMTR) Project and identified proposed project objectives. Since that time, staff have provided a further update to Council on the project via a memorandum dated October 10, 2014. This report provides the status and topics of discussion regarding the project since the last staff report and also responds to the following referral made at the April 22, 2015 meeting of the Public Works & Transportation Committee:

That the materials related to Port Metro Vancouver's advocacy for the replacement of the George Massey Tunnel be referred to staff for analysis and report back.

Analysis

Technical planning work for the project by Ministry of Transportation and Infrastructure (MoTI) remains ongoing including data collection, traffic modelling and preliminary studies (e.g., potential environmental impacts). Staff continue to have regular meetings with the MoTI GMTR project team members every two weeks. Key aspects of the project discussed to date between City and the GMTR team are noted below.

Number of Lanes on Bridge

Although no formal announcement has been made to date, MoTI has stated to staff and at various stakeholder meetings that the bridge will be a ten-lane crossing comprised of the following lanes in each direction:

- three general purposes lanes (as in existing peak hour conditions);
- one transit/HOV lane; and
- one special purpose lane potentially for trucks (i.e., climbing lane) or provision for future rapid transit.

The potential impacts of the wider crossing and highway on adjacent farmland are not known at this time. Staff continue to reiterate to MoTI that the project should ensure a net zero or positive impact to agricultural land.

Origin-Destination Survey of Tunnel Traffic

Preliminary findings of field data collected by MoTI via Bluetooth technology regarding northbound morning peak period traffic volumes through the George Massey Tunnel suggest that:

- 60 per cent of the vehicles are destined for Richmond and of this 60 per cent, approximately one to two per cent is destined for the Bridgeport park-and-ride facility with the occupants continuing on to Vancouver via the Canada Line.
- Of the 40 per cent continuing on to Vancouver, 30 per cent use the Oak Street Bridge, ten per cent use the Knight Street Bridge and less than one per cent use the Arthur Laing Bridge.

Given that a new 10-lane bridge may induce higher traffic volumes on Highway 99 into Vancouver and MoTI analysis has indicated that the Oak Street-70th Avenue intersection may be a bottleneck in terms of traffic congestion, staff have requested that MoTI and City staff from both Richmond and Vancouver meet to proactively identify potential measures (e.g., signal timing changes) that could be implemented to mitigate any impacts. MoTI staff expect that this increased traffic heading towards Oak Street Bridge in the initial period after the opening of the new bridge will taper off once the new traffic patterns are stabilized.

Interchanges at Steveston Highway and Blundell Road

MoTI anticipates construction of a new interchange at Steveston Highway rather than an upgrade of the existing interchange. MoTI is examining options that would improve traffic flows for some of the key movements (e.g., northbound Highway 99 to westbound Steveston Highway and eastbound Steveston Highway to northbound Highway 99), by shifting the existing northbound Highway 99 off-ramp to the north side and re-configuring it as a cloverleaf. With respect to this option, staff have identified the impacts to farmland of a new cloverleaf ramp on the north side of Steveston Highway and have stated that the design should, at a minimum, have no net loss of farmland and strive for a positive impact given that the existing cloverleaf ramp on the south side of Steveston Highway would be eliminated under this option and that area could be returned to farmland.

The GMTR team is also modelling the effect on traffic patterns of a new interchange at Blundell Road. To date, the analysis indicates there are more disbenefits than benefits to Richmond, as traffic is diverted to rural roads east of Highway 99 (e.g., Sidaway Road). MoTI staff are continuing further analysis using more up-to-date traffic forecast modelling data and will report on the outcome of this analysis in the Project Definition Report (PDR). Should the PDR conclude that a new interchange at Blundell Road is not warranted as part of this project, then staff will re-assess the need to retain this proposed interchange in the City's long-term transportation plans as identified in the *Official Community Plan*.

Decommissioning of Tunnel

MoTI has consistently stated that the core project includes decommissioning of the tunnel as the new crossing will be more cost-effective due to on-going maintenance expenses associated with the tunnel. MoTI has not, however, elaborated on what decommissioning would entail (i.e., the extent of physical removal). The proposed decommissioning of the tunnel will trigger a BC Environmental Assessment Office (BCEAO) process and MoTI has stated that the scope of the decommissioning will be subject to this BCEAO process. To date, MoTI has not shared any business case to justify this decision.

Staff continue to assert concerns related to tunnel decommissioning and related potential impacts to City dike infrastructure, bank stability, sediment transport, fish habitat including foreshore habitat, sloughs, and the South Arm Wildlife Management Area. As past Council discussions regarding the decommissioning of the tunnel have indicated sensitivity to potential impacts such as enabling increased shipping traffic on the Fraser River, staff will continue to seek further details and advise Council accordingly when new information becomes available.

Height of New Bridge and Committee Referral re PMV Correspondence

MoTI has stated that the height of the new bridge is currently planned to be the same as that of the Alex Fraser Bridge, which is 57 m above the high water mark based on two ships passing together underneath the bridge (i.e., 200 m wide navigational envelope). This height is favoured by MoTI as it would preclude any need to shift the existing interchange locations at either end (i.e., a higher span would require longer access ramps) while allowing the grade to remain at a maximum of five per cent, which is preferred for accessibility for pedestrians and cyclists as well as for truck movements.

Staff have reviewed the referred material (dated between January 2012 and August 2014) that was obtained via freedom-of-information requests by Voters Taking Action On Climate Change (VTACC) and tabled at the April 22, 2015 meeting of the Public Works & Transportation Committee. The material comprises internal emails within PMV as well as external correspondence with MoTI regarding PMV's preferred "air draft" for the new bridge, which is the clearance for a ship between the water line and the bottom of the bridge deck. The correspondence indicates that PMV at that time preferred that the new bridge have a higher air draft of 65 m (height of navigational envelope) to provide the greatest flexibility to accommodate the potential size of ships that would sail up the lower Fraser River.

PMV has since confirmed to the City on June 12, 2015 that the height of the new bridge recommended to MoTI is 59.6 m above the high water mark based on a single ship passing underneath the bridge (i.e., 130 m wide navigational envelope as opposed to a 200 m wide envelope noted above). Based on the GMTR team's assessment, this height is essentially equivalent to the overall navigational envelope favoured by MoTI under an arc-shaped bridge span (similar to Alex Fraser Bridge) – i.e., a narrower navigational envelope (59.6 m high measured at the centre highest point) required by a single ship or a wider envelope (57 m high measured at the side sloping points) required by two opposing ships.

The GMTR team have indicated that the potential height of the new bridge would not be the only impediment to accommodating larger ships. According to information in the material obtained by the VTACC, other existing navigational constraints include:

- the depth at the top of the existing George Massey Tunnel (11.9 m at low water), which prevents larger ships that sit deeper in the water from passing upstream;
- the width of the river, which impacts the ability of larger ships to turn around in the river;
- the presence of underground utilities (i.e., Metro Vancouver water main); and
- the on-going requirement for annual dredging to maintain the navigational channel.

Under current channel conditions, the Fraser River can accommodate vessels that are 270 m in length, 32.2 m beam, and 11.5 m draft (with tidal assist). To enable their passage, larger cargo vessels with a deeper draft that already use the Fraser River are not fully loaded. Removal of the tunnel plus additional dredging to enable a draft of 13.5 m would allow these vessels to be fully loaded. In light of recent Council discussions regarding the potential industrialization of the river, staff will monitor any plans or actions towards removing the above navigational constraints and inform Council accordingly.

Environmental Impacts

City-designated Riparian Management Areas (RMAs) and Environmentally Sensitive Areas (ESAs) are comprised within the project footprint. These areas include Fraser River foreshore ESA habitat (afforded a 30 m setback from highwater mark landward and seaward) and inland watercourses (afforded 5 and 15 m setbacks) in the City's *Official Community Plan (OCP)*. Staff have advised MoTI that it is expected that the City's RMAs and ESAs will be respected and compensated for any areas impacted by the project. Staff have also identified the potential presence of species at risk within this corridor including barn owls, stream bank lupine and Northern watermeal. All environmental values within the project footprint will be addressed through the BCEAO process.

Height of Highway 99 and Dike under New Bridge

The dike in the vicinity of the tunnel is currently 3.5 m geodetic, as per the provincial standard. Where dikes are upgraded in Richmond, 4.7 m geodetic expandable to 5.5 m geodetic is the new standard height that accounts for climate change induced sea level rise. Accordingly, as part of the City's Flood Management Strategy is to ultimately utilize Highway 99 as a mid island dike, the City has requested that the area under the new bridge on Lulu Island be raised to 4.7 m geodetic and, where practical, to raise Highway 99 to 4.7 m geodetic.

Relocation of BC Hydro Transmission Line

BC Hydro has a 230 kilovolt (kV) transmission line running underground through the George Massey Tunnel and overhead on either side of the tunnel adjacent to Highway 99. The transmission line must be relocated out of the tunnel prior to decommissioning and other segments of the transmission line must be relocated prior to construction of the new bridge. BC Hydro met with City staff on March 30, 2015 and identified the following three options for the relocation of the transmission line:

- Alternative 1: an overhead crossing of the Fraser River;
- Alternative 2: an underground crossing of the Fraser River using horizontal directional drilling; and
- Alternative 3: a transmission line attached to the new bridge.

BC Hydro intends to determine the preferred alternative by Fall 2015 and is currently seeking input from stakeholders (i.e., Richmond, Delta, Metro Vancouver, and First Nations). Metro Vancouver staff will be presenting a report on this topic to its Climate Action Committee on July 15, 2015.

BC Hydro has indicated that, based on analysis to date, Alternative 1 (overhead crossing) is the leading option based on considerations of cost and ease of construction and maintenance. The agency is therefore currently proceeding with preliminary design of this alternative. Detailed design of the preferred alternative is scheduled to commence in late 2015 with construction in 2016-2017 such that the relocated transmission line is in operation in 2017 prior to construction of the new bridge.

BC Hydro will be meeting with City staff on July 20, 2015 to provide an update on the common works sections of the relocation (that runs alongside the highway) as well as the plans for public consultation; staff will provide a verbal update on the discussions of this meeting when this report is presented at the July 22, 2015 Public Works & Transportation Committee meeting. At this time, staff recommend that BC Hydro be formally advised that the City's preferred options are either Alternative 2 or 3, given that these options are aesthetically similar to the existing installation and therefore avoid the negative visual impacts of the proposed overhead system.

Potential Connection to Rice Mill Road

MoTI is investigating the technical feasibility of a direct connection between Highway 99 and Rice Mill Road. Such a connection could allow traffic travelling from No. 5 Road south of Steveston Highway (e.g., Riverside Industrial Park) to northbound Highway 99 to bypass the No. 5 Road-Steveston Highway intersection and vice versa. Further analytical work as well as a business case is required to determine the viability of the proposal including:

- quantification of the net benefit to Richmond, the region and the province;
- cost and property impacts of this connection;
- modelling of the operation (e.g., level of service) of the No. 5 Road-Steveston Highway intersection and the new Highway 99-Steveston Highway interchange with the new bridge open, which will inform development of a business case as to whether or not a separate connection to Rice Mill Road is needed;
- technical feasibility including increased traffic weaving and whether or not the connection to Rice Mill Road would need to be grade-separated; and
- any upgrades to Rice Mill Road needed to accommodate the increased traffic volume as well as pedestrians and cyclists.

Pedestrian & Cycling Connections

MoTI has stated that the new bridge will accommodate pedestrians and cyclists but the scope of the facilities has not yet been determined. The GMTR team has indicated that a multi-use path on only one side of the bridge is favoured due to lower costs and has not confirmed if a sidewalk would be present on the opposite side. Staff have expressed a preference for a sufficiently wide (e.g., 4 m) shared multi-use path on each side of the bridge to better:

- integrate with existing and planned local cycling and pedestrian facilities and avoid circuitous connections;
- tie in with the ultimate destinations of users on both sides of the river and the new bridge;
- accommodate anticipated user volumes by providing adequate capacity; and
- allow a driver of a disabled vehicle to safely access an adjacent walkway without having to cross opposing lanes of traffic.

Potential Funding Strategy

To date, staff meetings with the GMTR team have focussed on the technical aspects of the new bridge and interchange; little information has been offered regarding potential funding strategies for the construction and maintenance of the bridge (e.g., tolling). The Mayor has recently

requested information on this topic from the Minister of Transportation & Infrastructure in a letter dated July 8, 2015 (Attachment 1).

Release of Project Definition Report

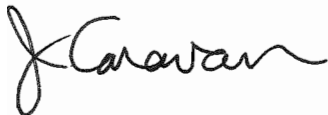
The Project Definition Report (PDR), which will formally confirm the scope of the project, is currently anticipated to be submitted to the BCEAO in Fall 2015. Staff have consistently requested to review a draft of the PDR so that staff may provide Council with an opportunity to relay comments to MoTI on the draft report prior to its finalization. MoTI has so far acknowledged the City's request for this review period but has not explicitly committed to it. This request for early sharing of the report with the City was also reiterated in the Mayor's letter to Minister Stone.

Financial Impact

None.

Conclusion

The Ministry of Transportation & Infrastructure continues to work towards the release of a project definition report and business case for the George Massey Tunnel Replacement Project in Fall 2015, which will be followed by an environmental assessment application that will include public consultation. Concurrently, BC Hydro has developed three alternatives for the required relocation of its transmission line that runs underground through the tunnel and overhead adjacent to Highway 99. Staff recommend that BC Hydro be advised of the City's preferred alternatives that do not involve new overhead power lines spanning across the river (Alternative 2 or 3) in order to minimize environmental and visual impacts.



Joan Caravan
Transportation Planner
(604-276-4035)

Att. 1: Letter from Mayor to Minister Todd Stone

JC:jc



City of
Richmond

Malcolm D. Brodie
Mayor

6911 No. 3 Road
Richmond, BC V6Y 2C1
Telephone: 604-276-4123
Fax No: 604-276-4332
www.richmond.ca

July 8, 2015

The Honourable Todd Stone
Minister of Transportation and Infrastructure
PO Box 9055 Stn Prov Govt
Victoria, BC V8W 9E2

Dear Minister Stone:

Re: George Massey Tunnel Replacement Project

Members of Richmond City Council appreciated the opportunity to attend the luncheon hosted by the Richmond Farmers Institute held July 7, 2015 at Mayfair Lakes Golf and Country Club at which you spoke of transportation and infrastructure improvements in Richmond.

As you know, the City of Richmond, as one of two host municipalities of the new proposed bridge crossing to replace the George Massey Tunnel, has a strong interest in obtaining more details about this bridge project sooner rather than later. In addition, I have three specific follow-up requests regarding this highway improvement initiative for your consideration:

- May we have a draft copy of the Project Definition Report as soon as possible? There needs to be sufficient time for Richmond City Council to review and comment on the Report before it is finalized later this year.
- May we have your advice regarding the Ministry's plan on the funding strategy for the construction and operation of the new bridge?
- What can be done to assure the preservation of the Tunnel?

The early sharing of the above information would allow the City of Richmond to further analyze the project. The Tunnel Replacement Project needs to address any issues or concerns raised by our community.

I look forward to your reply.

Yours truly,

A handwritten signature in black ink, appearing to read "Malcolm D. Brodie".

Malcolm D. Brodie
Mayor

pc: Members of Council
SMT
Victor Wei – Director, Transportation





To: Public Works and Transportation Committee **Date:** June 22, 2015
From: John Irving, P.Eng. MPA **File:** 10-6125-07-02/2015-
Director, Engineering Vol 01
Re: **Pilot Multifamily Condominium Energy Advisor Program**

Staff Recommendation

That the development and implementation of a Pilot Multifamily Condominium Energy Advisor Program, as outlined in the staff report dated June 22, 2015 from the Director, Engineering, be endorsed.

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

REPORT CONCURRENCE	
CONCURRENCE OF GENERAL MANAGER 	
REVIEWED BY STAFF REPORT / AGENDA REVIEW SUBCOMMITTEE	INITIALS:
APPROVED BY CAO 	

Staff Report

Origin

This report proposes a pilot program to provide an Energy Advisor to multifamily condominiums as part of City efforts to reduce energy, emissions, and water consumption in Richmond.

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

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

4.2. Innovative projects and initiatives to advance sustainability.

Analysis

Background

Richmond's Climate & Energy Action

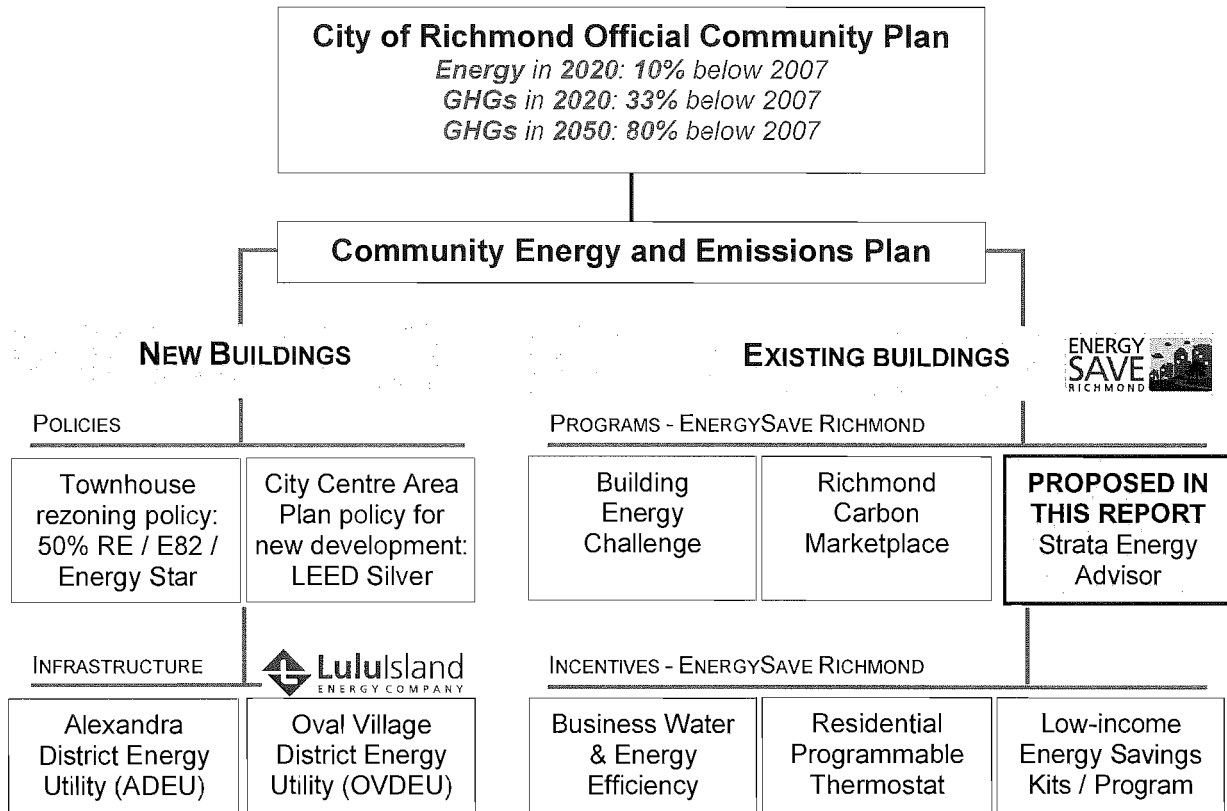
Richmond's 2041 OCP includes aggressive targets to reduce community GHG emissions 33 percent by 2020 below 2007 levels, and 80 percent by 2050. Additionally, the City has a target to reduce energy use 10 percent by 2020. The 2014 Community Energy and Emissions Plan (CEEP) identifies that deep energy improvements to most existing buildings are necessary for Richmond to meet these targets. Accordingly, Strategy #3 in the CEEP is to "Improve the Performance of the Existing Building Stock," and includes the following actions:

- Action 7: Promote building efficiency through outreach and education
- Action 8: Provide incentives for building retrofit action
- Action 9: Develop a residential energy conservation program to support housing affordability

Additionally, as a signatory to the Climate Action Charter, the City has committed to being "carbon neutral" in its corporate operations. Carbon neutrality is achieved by reducing emissions, and balancing remaining emissions with carbon credits. The Joint Provincial-UBCM Green Communities Committee has established protocols for how local governments can generate carbon balancing credits by supporting energy projects in their communities.

Elements of Richmond's climate and energy actions diagrammed in Figure 1 below.

Figure 1: Richmond’s Climate and Building Energy Actions Summary



The “EnergySave Richmond” Suite of Programs

The City has established “EnergySave Richmond” as an umbrella initiative (see logo in Figure 2), encompassing multiple different city energy programs. These programs are intended to help households and businesses save on energy costs, while reducing the community’s greenhouse gas emissions. Programs promoted under the EnergySave Richmond umbrella include the Building Energy Challenge, the Smart Thermostats pilot program, water and energy programs for households and businesses, and the Richmond Carbon Marketplace (see Figure 1). Additionally, the City communicates programs and opportunities provided by other partners through EnergySave Richmond, including: BC Hydro and FortisBC’s energy efficiency programs, and Metro Vancouver’s “Emotive: The Electric Vehicle Experience.” Staff intend to bring forward further programs under the auspices of EnergySave Richmond in the future for Council’s endorsement. Households and businesses can learn about and access these programs by visiting www.energy.richmond.ca. The Pilot Multifamily Condominium Energy Advisor Program is proposed as part of the EnergySave Richmond family of programs.



Figure 2: EnergySave Richmond Logo

Energy Upgrade Opportunities in Multifamily Stratas

Multifamily condominiums present an important energy savings opportunity for Richmond. Mid-rise and high-rise buildings constructed in Southwest British Columbia are estimated to be 37 percent more energy intensive than single family buildings, and present multiple opportunities for cost-effective energy efficiency. Almost half of all residences in the City belong to a strata, so deep improvements to existing stratas will be required if Richmond is to achieve its climate and energy targets.

Major building systems renewals present a unique opportunity for deep energy efficiency improvements. Renewals and replacements of roofing, cladding, exterior doors and windows, and/or heating, ventilation and cooling systems are often required when buildings reach 25 to 40 years of age. When such systems are being replaced, the incremental cost of implementing energy efficiency opportunities can decrease substantially and significant energy savings are possible. Moreover, in many cases, upgrades can improve indoor air quality and health outcomes. For example, a recent demonstration project undertaken as part of BC Hydro's Deep Multi Unit Residential Building Upgrade Project is piloting retrofit strategies for stratas at time of renewals; it is anticipated to achieve heating energy savings of 44 percent, realizing a return on investment of 19 percent (an approximately 5 year simple payback), while addressing ventilation deficiencies and improving indoor air quality.

It is estimated that more than 35 percent of strata units in Richmond are in buildings constructed before 1990, and many will commence renewals in coming years. Opportunities for energy improvements at time of renewal can be identified during the development of a depreciation report. A depreciation report is a legislated planning requirement for strata corporations in British Columbia (strata corporations with fewer than 5 strata lots, and those strata corporations who pass an annual three quarter vote, are exempt from the requirement). Depreciation reports involve an inventory and assessment of common property, and are used to establish long term planning and budgeting for renewals of common property. Stratas may choose to integrate assessments of energy efficiency and renewable energy opportunities into their depreciation reports, to inform energy upgrade opportunities at time of renewals.

In addition to major energy upgrades that are most cost-effective at time of renewals, many relatively simple, lower-cost energy improvements can be made at any time. These improvements can include common area and in-suite lighting retrofits, water fixture replacements, and re-commissioning or "retuning" of building mechanical systems. Simple energy efficiency opportunities exist in almost all multifamily condominiums, even those that are quite new.

Challenges Facing Multifamily Stratas

Multifamily stratas face unique challenges to implementing energy upgrades both at time of major renewals as well as lower-cost short-term measures. Frequently, strata councils do not have the expertise to recognize energy efficiency opportunities, and property management companies may not have sufficient incentive to develop and implement energy saving projects. Moreover, decision-making processes involving strata councils, management companies and individual strata owners are often complex, which often extends decision-making timeframes and

can delay or prevent building upgrades from taking place. Energy service providers note that the complicated decision-making processes and long lead times for projects can make it challenging for the private sector to provide stratas with energy services. Additionally, owners who consider their suite a shorter-term investment often believe that the market will not recognize the added value of upgrade measures, and may be hesitant to invest in the building for these reasons. Lastly, integrating energy considerations and costs into depreciation reports is not currently standard practice. For these reasons, far fewer energy upgrade projects occur in multifamily stratas than is economically rational.

Other regional initiatives

Many organizations across British Columbia and within the Metro Vancouver region recognize the need for programs to educate multifamily stratas on energy upgrade opportunities, and assist them in developing and implementing energy upgrade projects. The Condominium Home Owners Association (CHOA) has proposed to implement a British Columbia-wide outreach and education program, encompassing the following program elements:

- Case studies and guidelines for strata energy retrofit projects.
- A marketing campaign promoting the idea of energy upgrades.
- Public forums and consultations with strata corporations, strata managers, consultants, depreciation planners and local governments.
- A system to identify and track stratas interested in energy upgrades.

Correspondingly, Metro Vancouver has allotted funding for a multifamily strata program from 2015 to 2017 through its Sustainability Innovation Fund, and energy utilities currently offer incentives for many upgrades to stratas.

Proposed City of Richmond Pilot Strata Energy Advisor Program

It is proposed that the City develop a pilot Strata Energy Advisor Program. The pilot program will match candidate stratas with an Energy Advisor who will help stratas evaluate, decide on, and implement energy upgrade projects. The Energy Advisor will be delivered through staff and supporting agencies augmented by consulting support. Services may include:

- Screening and building assessment tools to identify energy opportunities in existing multifamily strata buildings.
- Assistance integrating energy upgrade considerations and energy analysis into depreciation reports and stratas' capital planning.
- Assist with evaluation and preparation of business cases for energy saving options.
- Engaging with strata councils and their members in their decision-making regarding energy upgrade projects.
- Providing advice on procuring and evaluating proposals for professional and construction services to perform energy upgrade work.
- General outreach and presentations.
- Other energy and emissions related advice.

The City will work closely with the Condominium Homeowners Association, Metro Vancouver, and energy utilities BC Hydro and FortisBC to maximize the value that the participating stratas will realize. The Condominium Homeowners Association's program is envisioned as a separate suite of educational and "culture change" services that can help recruit stratas into more detailed energy advising services offered by the City and Metro Vancouver. It is anticipated that the City's pilot will offer an opportunity to test and develop the strata energy advisor model, and subsequently inform future programs.

Staff anticipate the program initially engaging with multiple stratas, and subsequently screening those stratas with good opportunities for upgrades. Ultimately, the pilot program is intended to provide deeper Energy Advisor services to a cohort of approximately two to four stratas, and to thereby assess the viability of strata energy upgrades and the energy advisor program model. Staff will subsequently report back to Council with a recommendation on whether to expand the pilot, and/or other opportunities to enhance energy performance in multifamily stratas.

Financial Impact

The project will involve staff time and minor related costs already approved in the operating budget.

Conclusion

This report proposes that a Multifamily Condominium Energy Advisor Pilot Program be developed and implemented. The proposed program will benefit from other related initiatives and is intended to address the unique barriers facing strata corporations in undertaking energy upgrade projects in Richmond.



Brendan McEwen
Manager, Sustainability
(604-247-4676)

BM:bm



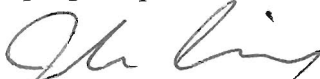
City of Richmond

Report to Committee

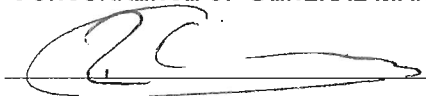


To: Public Works and Transportation Committee **Date:** June 26, 2015
From: John Irving, P.Eng. MPA **File:** 10-6060-04-01/2015-Vol 01
 Director, Engineering
Re: **Ageing Infrastructure Planning - 2015 Update**

Staff Recommendation

That staff utilize the attached "Ageing Infrastructure Planning – 2015 Update" report dated June 26, 2015 from the Director, Engineering as input in the annual utility rate review and capital program process.


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

Att. 5

REPORT CONCURRENCE		
ROUTED TO:	CONCURRENCE	CONCURRENCE OF GENERAL MANAGER
Finance Department Roads & Construction Sewerage & Drainage Water Services Transportation	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	 <hr/> 7
REVIEWED BY STAFF REPORT / AGENDA REVIEW SUBCOMMITTEE	INITIALS: 	APPROVED BY CAO  <hr/>

Staff Report

Origin

The Engineering Department previously reported to Council the estimated long-term capital requirements for age-related infrastructure renewal in July 2001, March 2006, June 2011 and August 2013. This report updates those estimates to reflect current inventory, evolving theory on infrastructure service life and changing infrastructure replacement pricing.

Background

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

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

6.1. *Safe and sustainable infrastructure.*

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

This report supports Council's 2014-2018 Term Goal #7 Strong Financial Stewardship:

Maintain the City's strong financial position through effective budget processes, the efficient and effective use of financial resources, and the prudent leveraging of economic and financial opportunities to increase current and long-term financial sustainability.

7.2. *Well-informed and sustainable financial decision making.*

This report outlines the current and long-term financial requirements for maintaining and replacing the City's ageing infrastructure. The goal is to ensure the City has capacity to meet the financial challenges of today and the future, while maintaining current level of service.

Existing Infrastructure

In managing the City's extensive network of infrastructure services, staff have developed sanitary, drainage, water and pavement management computer models to predict infrastructure performance, upgrade needs, replacement cycles and replacement costs. Coupled with field verified condition inspection and performance review, model data plays a key role in determining the City's infrastructure replacement and upgrade programs.

Table 1 is a summary of the City's inventory of water, sanitary, drainage, and roads infrastructure. The replacement value assumes that infrastructure will be replaced using the existing size or upgraded where current infrastructure does not meet the City's current minimum size requirement.

Staff has reported ageing infrastructure assessments to Council in 2001, 2006, 2011 and 2013. The 2001 and 2006 reports to Council identified that infrastructure replacement funding levels

were insufficient to maintain existing service levels over the long-term. The 2006 report proposed a number of strategies to address funding shortfalls, and a strategy of gradual rate increases to close the identified funding gaps was adopted. Substantial progress has been made since 2006. The funding gap in the Water utility was closed in 2011 and the Drainage utility funding entered the target range in 2015. The funding gap in road paving (non-Major Road Network) has remained constant since the 2013 Ageing Infrastructure report but the Sanitary funding gap has widened by the construction price index inflation rate. Going forward, staff will continue to present annual budget options that continue to close the existing funding gaps and ultimately maintain utility funding within an identified target range.

Table 1: Infrastructure Inventory

Infrastructure	Total Length	Other Features	Funding Source	Replacement Value (2015 \$)
Water	629 km	13 PRV Chambers 59 Valve Chambers	Water Utility	\$563 M
Sanitary	565 km	152 Pump Stations	Sanitary Utility	\$532 M
Drainage	622 km	39 Pump Stations 43 km Culverts 178 km Watercourses	Drainage Utility	\$1,080 M
Dike	49 km		Drainage Utility	\$200 M
Bridges	To Be Determined		To Be Determined	To Be Determined
Road Pavement (non-MRN)	1285 lane km	212,000 m ² Parking Lots	General Revenue	\$598 M
Total Replacement Value				\$3,046 M

Table 2: Annual Capital Infrastructure Funding and Reserves

Infrastructure Type	2015 Funding	Funding Source	Reserve Balance¹ (Dec 31, 2014)
Water	\$7.5 M	Water Utility	\$46.4 M
Sanitary	\$4.3 M	Sanitary Utility	\$39.5 M
Drainage and Dikes	\$10.4 M	Drainage Utility	\$44.5 M
Road Paving (non-MRN)	\$3.5 M	General Revenue	N/A
Total	\$25.7 M		\$130.4 M

¹ Includes committed funds.

Achieving the necessary funding levels to meet the City’s drainage needs was completed through the annual utility rates review process, where infrastructure funding gaps were considered when establishing utility rates. Roads are not part of a utility and the paving budget is funded from the City’s General Revenue. Road improvement requirements are addressed through the City’s capital prioritization process.

Short-term and long-term infrastructure replacements and upgrades are planned utilizing asset management and capacity computer models developed for Richmond’s extensive water, sanitary, drainage and roadway systems. This ensures that when ageing infrastructure deteriorates to the point where it is no longer economical to maintain, or it fails, it is replaced with infrastructure of sufficient size to meet the City’s long-term needs.

Analysis

Total Replacement Value and Schedule

Attachments 1 to 4 show estimated infrastructure replacement costs for the City’s water, sanitary, drainage, and road infrastructure over the next 75 years. The charts also show the estimated long-term average annual funding levels (in 2015 dollars, excluding inflation) that are required to perpetually replace assets as well as the current 2015 funding levels. The Funding Requirement Range represents the estimated level of uncertainty in the long-term annual funding levels, which is due to a number of variables including:

- potential overlap between capacity based improvements due to development or climate change;
- variability in the potential service life of the infrastructure;
- variability in the economy and the cost of infrastructure replacement; and

- unanticipated or emergency events that initiate early infrastructure replacement or repairs in excess of operating budget provisions.

Water

The City is meeting its long-term funding target for water infrastructure replacement. *Attachment 1* predicts a long-term annual water infrastructure funding requirement of \$7.4 million. Current funding levels are \$7.5 million and are within the target range. Staff recommends that funding levels be maintained in the target range.

Approximately 50% of the City's watermain inventory is asbestos cement pipelines (AC). AC pipelines will be the focus of the City's watermain replacement programs for approximately the next 30 years. Engineering utilizes the combined results of pipe testing, watermain break rate statistics, leak detection, and literature review to estimate the useful life of the watermain inventory. Replacement watermain sizing is determined utilizing a computerized hydraulic model of the City's water system that incorporates future zoning and population densities identified in the 2041 Official Community Plan.

Between 2025 and 2040 replacement costs may exceed the long-term required funding level and, as a result, may require utilization of reserves and borrowing. In the long-term (75 year horizon), the required funding level will repay debts incurred and allow for continued water infrastructure renewal.

Water pressure management and other innovative measures are being implemented to extend AC watermain service life, which could yield significant benefits in the long run. An east-west water transmission system could facilitate an overall reduction in water pressure that maintains current levels of service including fire flow. Staff are reviewing the costs and benefits of implementing an east-west transmission system and will report the findings to Council in a subsequent report.

Sanitary

Attachment 2 predicts a long-term annual funding requirement of \$6.8 million for the sanitary utility and identifies \$4.3 million in sanitary replacement funding. Funding needs in 2030 and beyond will exceed current funding levels and, unless current funding levels are increased, the long-term annual funding level will increase beyond that caused by regular construction cost inflation factors.

The City has performed closed-circuit television (CCTV) inspection of 90% of the City's sanitary sewers and will CCTV inspect the remaining 10% in 2015. The results of the video inspection indicate that the gravity sewer system is in good condition, and *Attachment 2* indicates that the long-term replacement of these sewers will begin in earnest in approximately 25 years. Current funding levels are insufficient to fund these long-term renewal needs. Bridging this funding gap will be an objective of future budgets.

Although there is no imminent backlog for the replacement of sanitary gravity sewers, the City's older sanitary forcemains and pump stations will soon need to be rehabilitated or replaced to prevent infrastructure failure and maintain current service levels. This is particularly a focus for

areas of the City where housing density is increasing, such as the City centre, and where older sanitary pump stations exist with only a single pump arrangement (opposed to a modern pump station containing two pumps that provides redundant capacity in the case of pump failure). Following the Lansdowne Road sanitary forcemain failure due to a grease blockage, capital funds were used to install pressure sensors throughout the sanitary system that assist in monitoring grease build and identifying costly infrastructure failures before they occur.

Drainage

The City is in the target range for long-term funding of drainage infrastructure replacement. *Attachment 3* predicts a long-term annual funding requirement of \$11.0 million for the drainage utility and identifies current annual funding of \$10.4 million. The City achieved the necessary long-term funding level for drainage infrastructure by increasing the Drainage Utility rate by \$10 per year since 2003. While the current level of funding is adequate, on-going focus is required to maintain this position against construction cost inflation factors and as the City's drainage needs evolve. As part of the 2016 utility rate setting process, staff will bring forward for Council's consideration alternate rate strategies that improve the overall equity of the Drainage Utility rate and maintain funding levels in the target range through rate increases to sectors that may not be paying an equitable share.

Staff have identified new Drainage utility ageing infrastructure challenges that include joint failures in some of the City's box culverts that manifest themselves as sink holes in road surfaces. The box culverts themselves are still structurally sound and are not at the end of their estimated service life; however, the failing joints are problematic. In 2015, an individual box culvert joint repair cost in excess of \$250,000. As failing joints are becoming an increasing problem, this cost is unsustainable under current operating levels and will increase short-term capital spending. In 2015, staff will trial a slip lining project on the No. 1 Road box culvert as part of the approved 2015 capital plan. Staff will report on the success of this trial in a subsequent report to Council.

In the last 12 years, the City has rebuilt 15 of its 39 drainage pump stations and has performed significant upgrades on a further 5 in order to meet the City's long-term needs. Over the next 20 years the remaining Lulu Island drainage pump stations will be rebuilt or receive significant upgrades provided the funding levels are maintained or improved. The City's drainage system computer hydraulic model has identified pumping deficiencies and the rebuilt stations have significant pumping capacity upgrades that are based on model results. Since 2008, the City has obtained \$12.1 million of provincial and federal grant funding that substantially offset drainage pump station upgrade costs. In addition to pump station upgrades, drainage program priorities relate to upgrading the City's major storm sewers leading to box culverts, laneway drainage, agricultural drainage, agricultural irrigation and implementation of stormwater retention infrastructure to mitigate the impact of intense storms.

Dikes

The 2008-2031 Richmond Flood Protection Strategy identifies climate change induced sea level rise as a future threat to be mitigated. Staff estimate conventional dike upgrade costs to address the predicted 100-year sea level rise scenario to be in the order of \$300 million.

Phase 1 of the Dike Master Plan was completed in 2103 and addresses a strategy for future dike improvements for Steveston and the Southern West Dike. The Phase 1 report indicates that diking improvements required to protect Steveston will be in the order of \$55 million over next 50 years, which is 18% of the estimated overall Lulu Island dike improvement cost. The Phase 1 plan was endorsed by Council at the regular Council Meeting on April 22, 2013.

Staff are in the process of developing Phase 2 of the Dike Master Plan to identify the specific long-term dike upgrades for North Dike and the northern West Dike. Financial requirements from the Phase 2 study will be reported through subsequent reports to Council as this information is developed.

Roads

The non-MRN long-term annual re-paving funding requirement is estimated at \$4.7 million (see *Attachment 4*). Annual funding levels for non-MRN roads is \$3.5 million, \$1.2 million below the identified long term requirement. Paving prices are heavily influenced by oil prices, which have had significant fluctuations over the past nine years. The fluctuating price of paving has a significant impact on the long-term funding requirements identified in this report. *Attachment 5* documents the fluctuating cost of asphalt paving between 2006 and 2014. Average paving prices identified in *Attachment 5* were applied to road pavement need predictions from the computerized City's Pavement Management System to determine the long-term funding requirements. The Pavement Management System indicates that current funding levels will be adequate to maintain the roadways at the current service level for the next five years; however, there will be a significant shortfall over the subsequent five years unless funding levels are improved. Staff will provide further updates as part of future capital programs.

Bridges

The City has a number of bridges and overpasses that range in size and use from pedestrian bridges in parks to the No. 2 Road Bridge. Staff completed assessment of eight of the City's bridges and overpasses over the last two years. Further assessment and valuation of City-owned bridges will be completed by the end of 2015.

The No. 2 Road Bridge is a significant piece of municipal infrastructure with an estimated replacement value of \$73 million. As the No. 2 Road Bridge is situated within the region's Major Road Network (MRN) it is eligible for regional maintenance and replacement funding. The City currently receives regional funding to operate, maintain and rehabilitate the bridge deck, which includes an allowance for re-paving. It does not, however, receive funding to maintain the bridge structure. This is a regional issue that has been a concern since Translink's establishment. Alongside the region's other municipalities, City staff are participating on Translink's Operation, Maintenance and Rehabilitation Sub-Committee to secure adequate bridge maintenance and rehabilitation funding.

Detailed assessment of the No. 2 Road bridge's condition was completed in 2013 by visual inspection and non-destructive testing to identify a long-term maintenance program. No

immediate safety issues were identified during inspection; however, several maintenance issues were addressed.

The Bridgeport overpass was inspected in 2014 and it was identified that the bridge deck is in need of repair. Council approved a \$1.1 million budget funded by the MRN Provision to repair the bridge deck and the project is scheduled for completion by the end of 2015.

The Cambie overpass was inspected in 2014 and it was identified that the bridge ramps are settling. A project will be brought forward in the 2016 Capital Plan for Council's consideration to replace some of the abutment material with light-weight fill to remedy this issue. Translink does not recognize this bridge to be part of the MRN, but as the bridge exists due to Cambie Road crossing Knight Street, an MRN route, staff will liaise with Translink to try and change this status.

Street Lighting

The City's street lighting system is growing and has become a significant asset. Approximately 200 street light poles in the Seafair and Richmond Gardens sub-divisions have reached the end of their service life, and in 2015 Council approved \$132,000 as phase one of a 5-year program to replace ageing poles. Pole failures have also been identified on the No. 2 Rd Bridge. A comprehensive evaluation of the street lighting inventory is in progress and street lighting condition will be included in subsequent ageing infrastructure reporting.

Required Funding Levels

Table 3 summarizes current and required annual infrastructure replacement funding levels, in 2015 dollars, as well as the current ageing infrastructure funding gaps. The City has made considerable infrastructure funding gains since initiating its strategy to close the funding gap in 2006.

Table 3: Infrastructure Funding Levels

Infrastructure Type	2015 Actual Annual Funding Level	Required Annual Funding Level	Funding Range	Funding Source	Estimated Additional Funding Required
Water	\$7.5 M	\$7.4 M	\$6.8 M - \$8.6 M	Water Utility	No Shortfall
Sanitary	\$4.3 M	\$6.8 M	\$6.2 M - \$7.5 M	Sanitary Utility	\$2.5 M
Drainage*	\$10.4 M	\$11.0 M*	\$10.2 M - 12.7M	Drainage Utility	\$0.6 M
Road Paving (non -MRN)	\$3.5 M	\$4.7 M	\$3.9 M - \$5.6 M	Primarily General Revenue	\$1.2 M
Totals	\$25.7 M	\$30.3 M			\$4.3 M

*Long-term dike replacement costs are yet to be determined and are excluded

Funding Strategies

Adequate annual funding levels will allow the City to implement proactive and sustainable infrastructure replacement programs. The proactive replacement of infrastructure enables the City to smart sequence utility replacement and use competitive bidding to ensure the best value for money. Replacing infrastructure at its time of failure has proven to be considerably more expensive than proactive replacement and is more disruptive to residents, City services and programs.

Closing the current \$4.3 million funding gap is achievable within the next decade or sooner. Putting this amount into rate-payer terms, Richmond has approximately 70,000 businesses and households that pay utility rates. An annual increase of \$10 to each rate-payer would close the gap in approximately 6 years. An annual increase of \$20 to each rate-payer would close the gap in approximately 3 years.

Staff have pursued available federal and provincial grants from programs such as the Building Canada Plan and BC's Flood Protection Program and will continue to do so. While grant funding has been helpful over the last few years, as a funding source, grants will always be unpredictable and therefore non-sustainable.

Development also facilitates significant infrastructure replacement that has a positive impact on the City's overall ageing infrastructure picture. However, development is subject to external forces such as the economy and does not always coincide with infrastructure that is beyond its useful life. Therefore, development is not considered a sustainable resource for ageing infrastructure replacement.

Staff will present funding options and make a recommendation to Council as part of the annual utility rate review and capital program process. Significant progress has been made over the last decade in closing the funding gap, and continuation on this path will allow the City to effectively mitigate the challenge of ageing infrastructure.

Financial Impact

None.

Conclusion

Staff will continue to gather information to better predict infrastructure replacement schedules and funding peaks and will continue to explore new technologies and best practices. Staff will also continue to recommend that the utility funding gaps between current and required funding levels be closed over time through the annual budgeting process. The rate of increase and timeframe to close the funding gaps will be impacted by Metro Vancouver's regional Solid and Liquid Waste Management plans, which are non-discretionary costs imposed on the City. The funding shortfalls outlined in this report should be considered in conjunction with the City's Long-Term Financial Management Strategy.



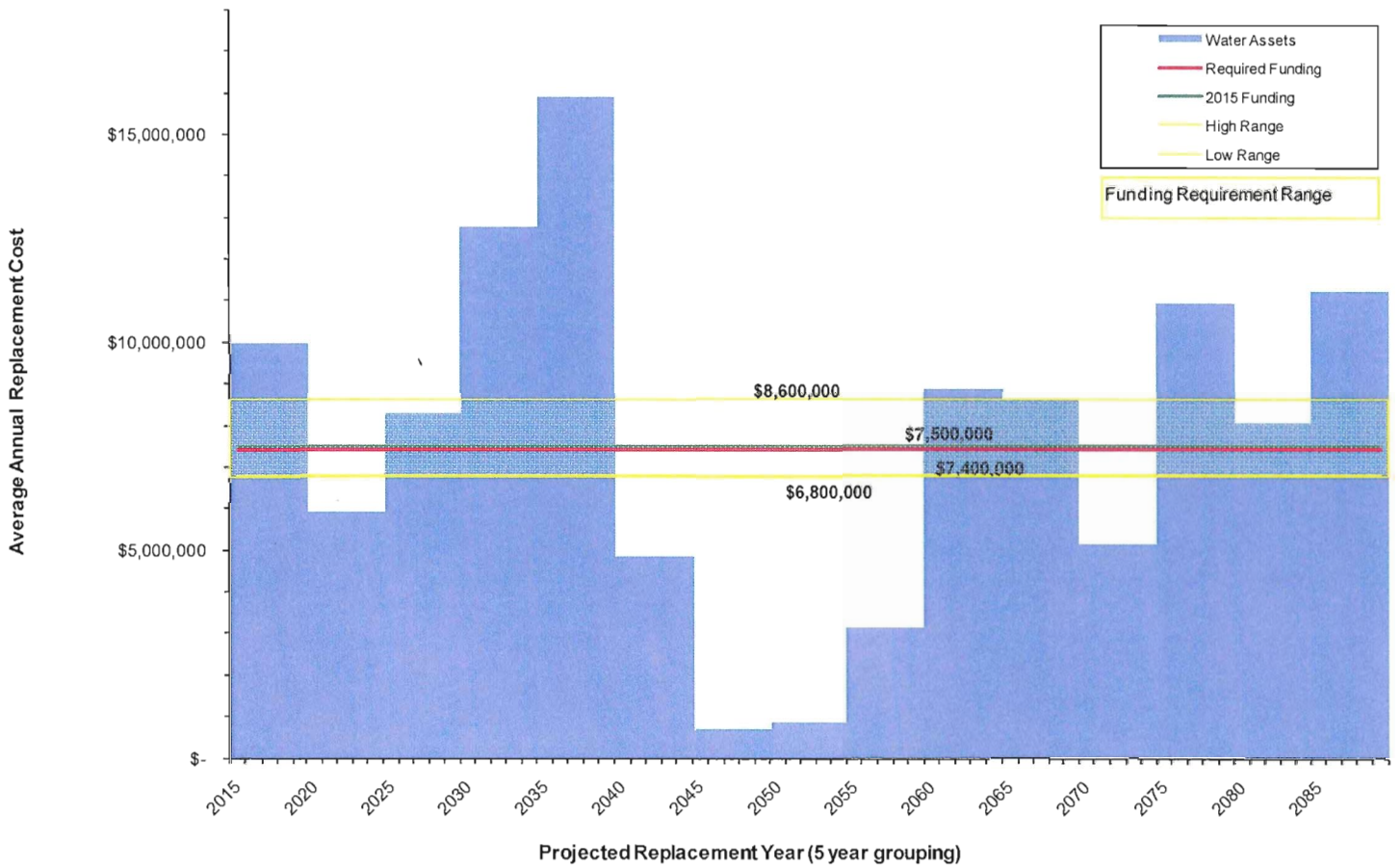
ACTING FOR
Lloyd Bie, P.Eng.
Manager, Engineering Planning
(604-276-4075)

LB:lb

- Att.1: Ageing Infrastructure Report – Water Assets
- Att.2: Ageing Infrastructure Report – Sanitary Assets
- Att.3: Ageing Infrastructure Report – Drainage Assets
- Att.4: Ageing Infrastructure Report – Non MRN Road Assets
- Att.5: Historical Costs for Capital Paving Program (2006 – 2014)

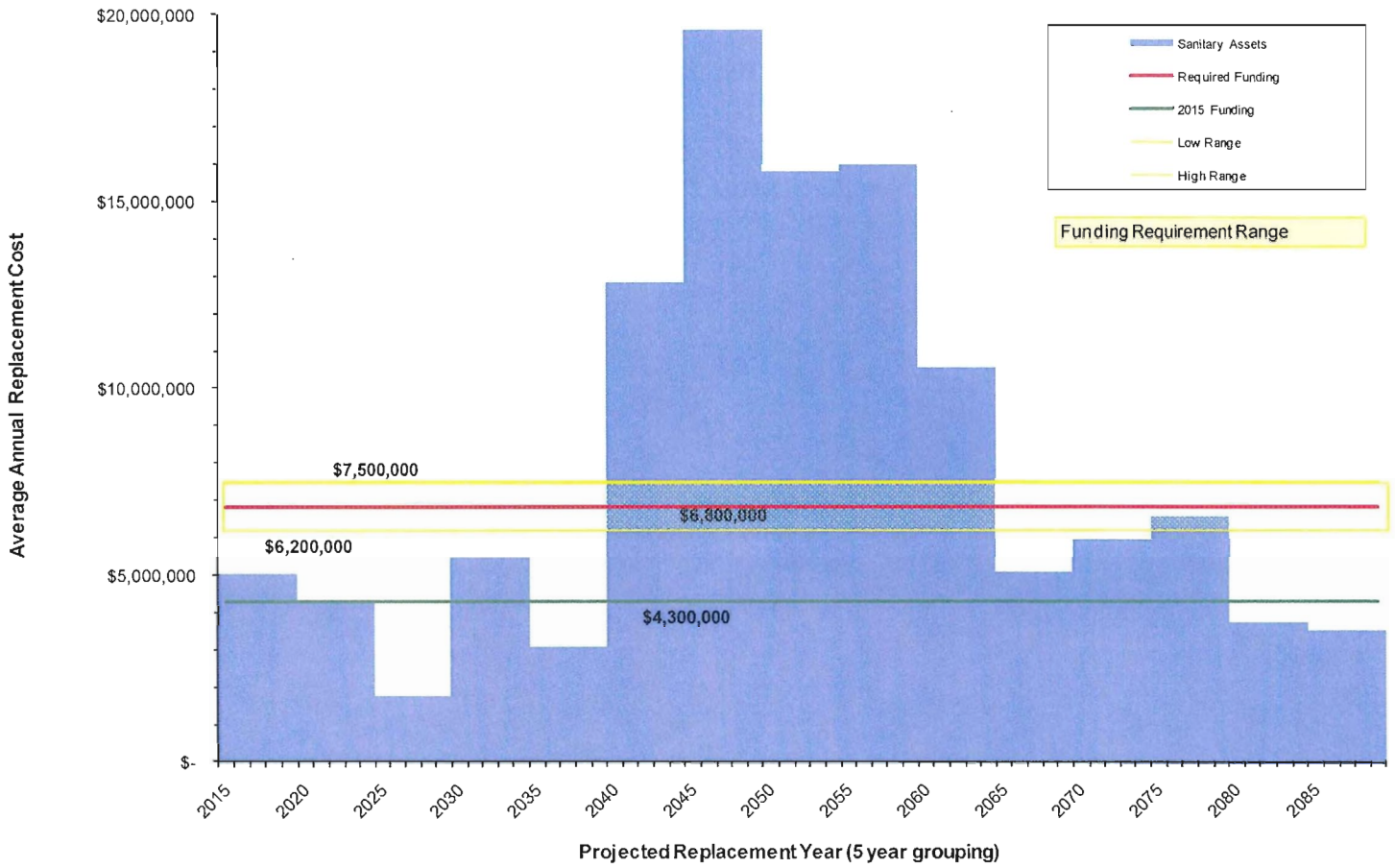
Attachment 1

2015 Ageing Infrastructure Report - Water Assets



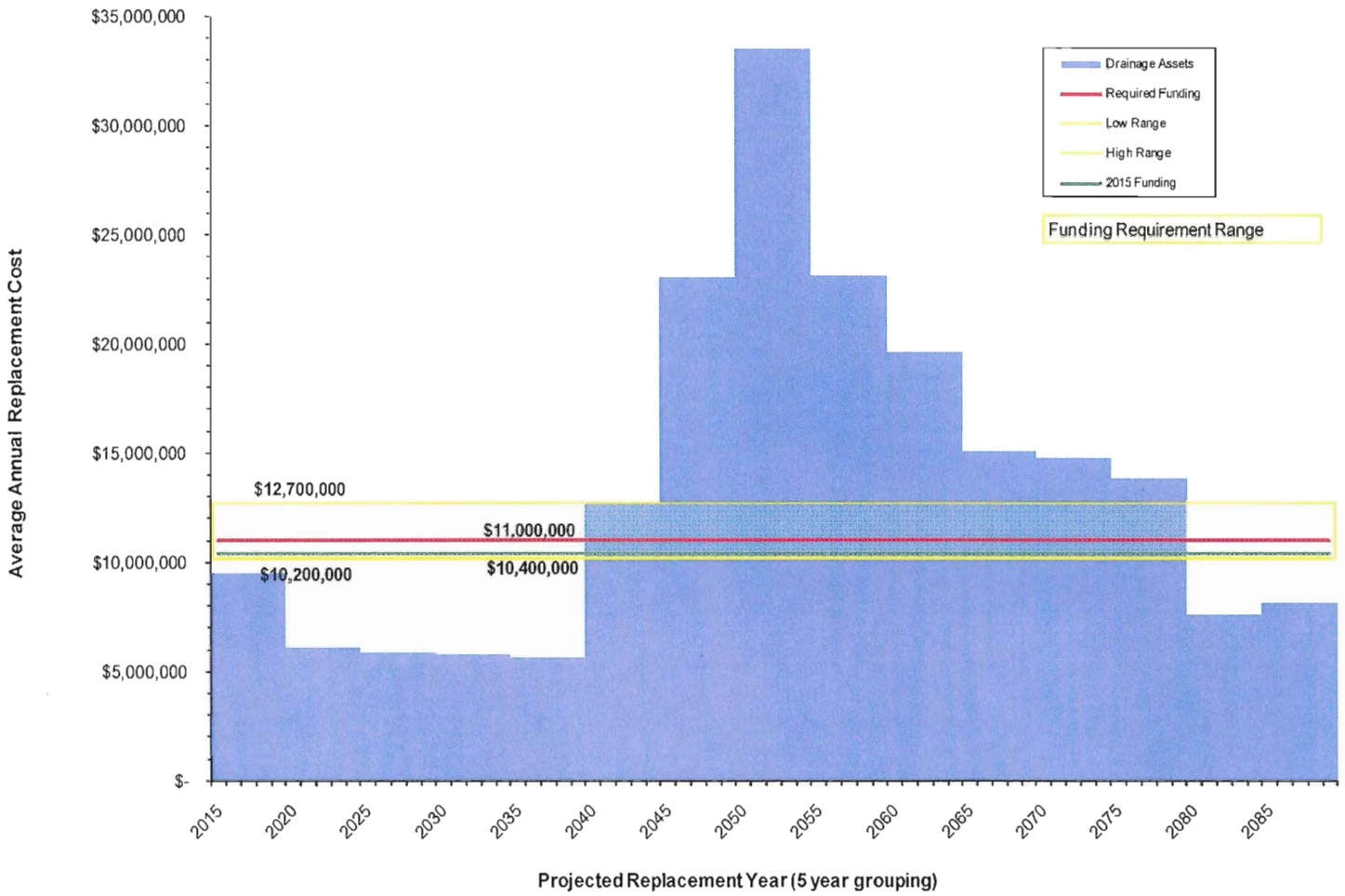
Attachment 2

2015 Ageing Infrastructure Report - Sanitary Assets



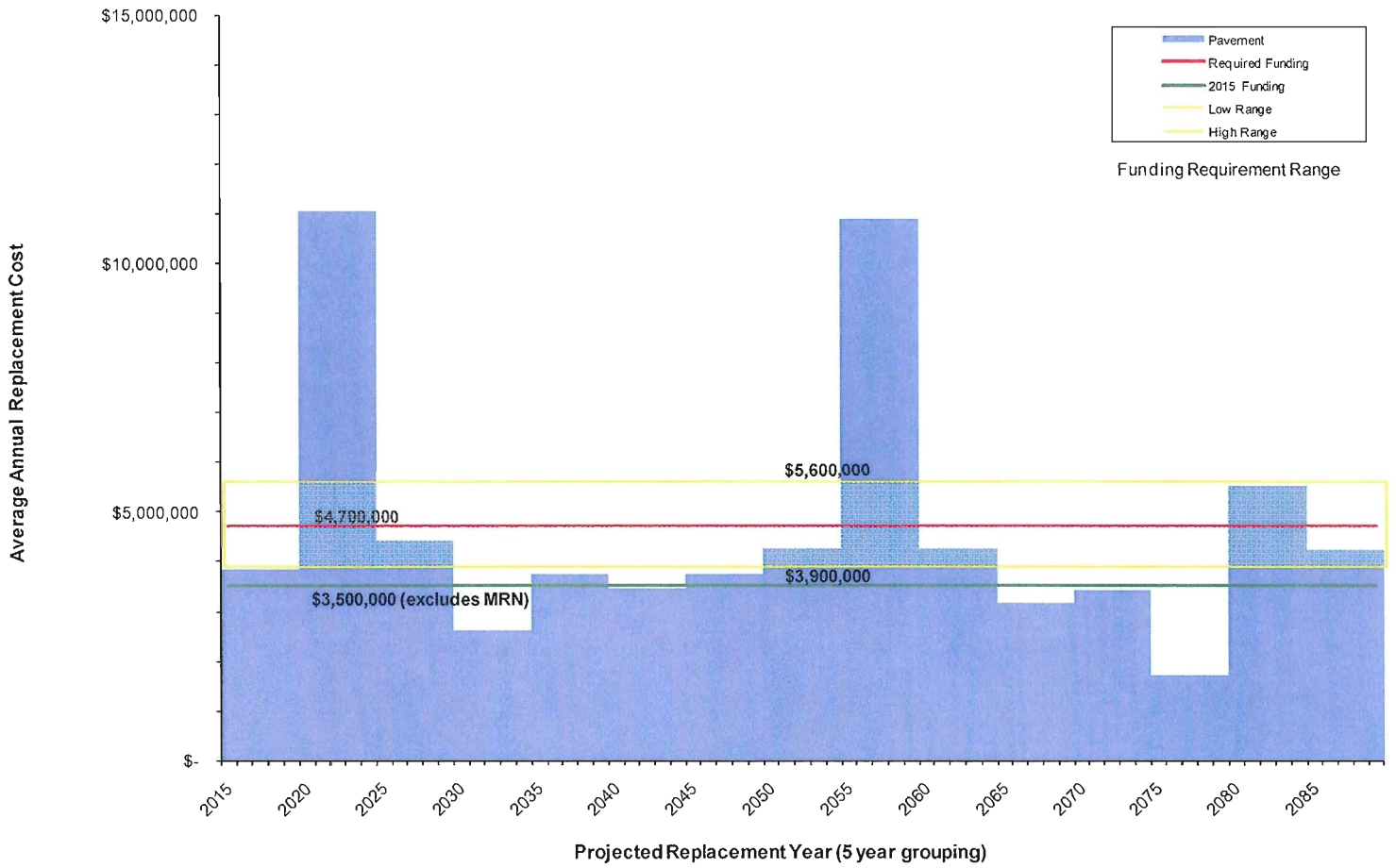
Attachment 3

2015 Ageing Infrastructure Report - Drainage Assets



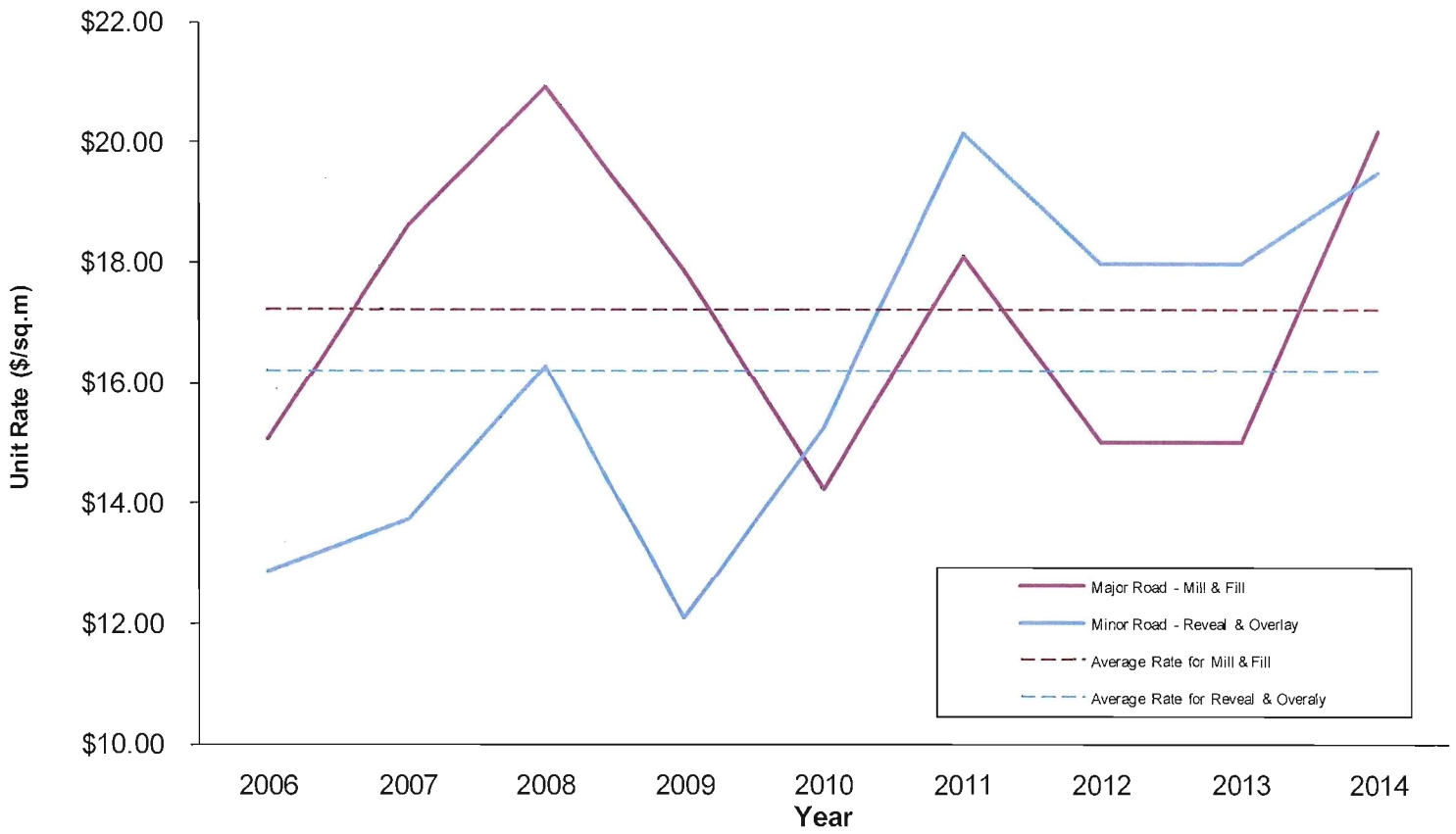
Attachment 4

2015 Aging Infrastructure Report - Non-MRN Road Assets



Attachment 5

Historical Costs for Capital Paving Program (2006 - 2014)





To: Public Works and Transportation Committee
From: John Irving MPA, P. Eng.
Director, Engineering
Re: **Ageing Facility Infrastructure - Update**

Date: June 15, 2015
File: 06-2050-01/2013-Vol
01

Staff Recommendation

That staff utilize the attached “Ageing Facility Infrastructure – Update” report dated June 15, 2015 from the Director, Engineering, as input in the annual capital and operating budget preparation process.

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

Att.1

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

Staff Report

Origin

On March 24, 2014 staff submitted an ageing facility infrastructure report to Council for information. The report provided a facility condition summary and options to better maintain the City's inventory of 150 buildings, currently comprising approximately 1,610,000 square feet of total building area.

This report provides an update to the overall condition of City facilities and building maintenance and replacement programs currently in place.

Background

The City's general buildings and leased facilities inventory consists of 150 buildings.

City facilities are critical to the delivery of a broad range of services to the public. Several of the facilities are unique to Richmond and establish an important and positive cultural or iconic identity, such as those with heritage status (i.e., Branscombe House, Seine Net Loft, etc.) and the Richmond Olympic Oval.

Construction of City owned facilities is accomplished through Council approved capital programs and/or agreements with developers. For capital projects, staff define a scope of work in consultation with the user groups and the public leading to construction through the public procurement process. A similar process is followed with developer related facilities, whereby the developer often assumes the role of design/construction lead and City staff assumes a review/approval role.

It is necessary to fund and perform day-to-day operations and maintenance activities at all facilities to enable their intended uses including janitorial services and minor repairs/replacements such as light bulb replacements. It is also necessary to fund and complete preventative maintenance programs which may include items such as roof replacement, boiler replacement, new paint for the building interior/exterior, etc., to ensure continuity of service.

The functional life of a facility is generally 45 years or more, provided regular preventative maintenance is completed. The City currently has funded operations/maintenance, preventative maintenance and capital replacement programs in place as approved by Council. The Capital Building and Infrastructure Reserve has been built to fund facility capital repair and replacement.

On an ongoing basis, staff develop and update a comprehensive plan for capital repair and improvements. This plan considers the condition of all current infrastructure assets such as buildings and equipment, and is used to plan infrastructure replacement and repair needs in the future within available capital and operating funding levels.

Analysis

The City currently has Council approved annual funding of \$3.6M for preventative maintenance programs. For 2015, the City received a one-time facility related funding of \$4.9M through the capital program, to complete major repair/restorations buildings such as the Seine Net Loft, Gateway Theatre and South Arm Community Centre.

The City generally completes annual physical audits of 20% of City facilities through detailed site visits. The findings are used to update past information in the City's facility condition assessment computer model, Vanderwell Facility Advisors (VFA), to develop a Facility Construction Index (FCI) which has become an evaluation tool used by Cities internationally.

FCI is an industry standard designation of facility condition where 0.00 to 0.05 is good, 0.06 – 0.10 is fair, and higher than 0.10 is considered poor. While this index is an excellent facility management tool, it is not a direct measure of user experience in the building. For example, a boiler that is old, inefficient and at risk of failure, will generate a poor condition score, but it may still be providing adequate heat in a building, so a building user today would not be impacted by that poor condition.

The current FCI average for all City facilities is 0.05, indicating an overall good condition. Attachment 1 provides a graphical representation of the City's current building inventory and condition as well as a 2017 projection which considers completion of the Phase I Major Facilities program (Minoru Complex, Firehalls No. 1 and 3 and City Centre Community Centre). The 2017 projection highlights the effectiveness of Council's proactive approach concerning the City's building infrastructure replacement.

A large portion of City buildings were constructed in the last 35 years and this later building stock is entering a phase of accelerated ageing. This is highlighted in particular in the 1980's and older buildings in Attachment 1. As a result, maintaining the current good condition score will require continued support for Capital and Operations Maintenance funding programs as outlined in the City's 5 Year plan, including possible increases as facilities enter the phase of accelerated ageing.

Consequence of Facility Deterioration

A generally accepted industry observation related to facilities is that it costs five times as much to repair a facility as compared to having a preventative maintenance program, and that it costs five times as much to replace a facility than what it would cost to complete repairs, notwithstanding the impacts related to service disruption. While facility replacement is an excellent solution to address growth needs and implement modern systems and design, those facilities that are intended for long term use greatly benefit from the City's preventative maintenance programs.

Significant deficiencies would be anticipated should City facilities be allowed to deteriorate over the next 20 years. An example that may be typical of non-functional facility infrastructure after 20 years includes failure of roofs, boilers, HVAC systems etc. The consequence of these items no longer functioning are significant and could lead to facility closure, service level interruption, loss of City revenue, and incurrence of significant costs to react to emergency conditions.

The current service level can be maintained through preventative maintenance funding and capital funding for building rehabilitation and replacement as follows.

Capital Replacement

The Council approved Major Facilities Phase 1 projects represent over \$130M in capital investment for the replacement of Minoru Aquatics, Older Adults Centre, City Centre Community Centre, Firehall No. 1 and Firehall No. 3. The new facilities will provide medium

term relief from the increasing cost of maintaining the old facilities and introduce service level improvements. Investing in the capital replacement of buildings is a key strategy for maintaining overall facility condition and addressing growing service level demands.

Capital Repair/Rehabilitation

In 2015, Council approved \$24.9M through the 5 Year capital program to complete major repairs and rehabilitation. The 2015 program includes approximately \$4.9M funding to complete major repairs and upgrades to City facilities. Staff will continue to prepare 5 Year capital programs with required levels of funding for Council approval.

Operating Maintenance and Minor Capital

Current facility infrastructure replacement, improvement and annual maintenance funding is approximately \$3.6M. Going forward, it is estimated that this level of funding would need to increase by approximately \$1M annually to keep pace with inflation and to maintain the current facility condition index score.

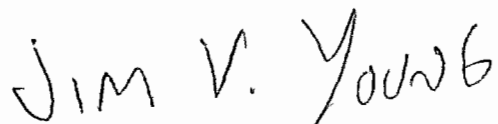
It is recommended that staff utilize the preceding analysis and information outlined in preparation of future operating and capital budgets with the objective of maintaining the current level of overall facility condition.

Financial Impact

None at this time.

Conclusion

The City's building infrastructure is currently in good condition, however, due to age many buildings are anticipated to deteriorate at an accelerated rate. In order to maintain the current average facility condition and service levels, additional funding will be required through the City's operating and capital budgets.



Jim V. Young, P. Eng.
Senior Manager, Project Development
(604-247-4610)

Att. 1: Ageing Infrastructure – Facilities

