City of Richmond

Report to Committee

To:	Public Works and Transportation Committee	**Date:**	February 21, 2019
From:	John Irving, P.Eng. MPA Director, Engineering	**File:**	10-6060-04-01/2019-Vol 01
Re:	**Flood Protection Management Strategy 2019 – Public and Stakeholder Engagement**		

Staff Recommendation

That the public and key stakeholders be engaged as identified in the staff report titled "Flood Protection Management Strategy 2019 – Public and Stakeholder Engagement" from the Director, Engineering, dated February 21, 2019.

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

Att. 1

REPORT CONCURRENCE		
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REVIEWED BY STAFF REPORT / AGENDA REVIEW SUBCOMMITTEE	**INITIALS:**	**APPROVED BY CAO**

Staff Report

Origin

The 2008 – 2031 Richmond Flood Protection Strategy (2008 Strategy) is a high-level guidance document for management of flood risk in the City of Richmond. Since Council's endorsement of the 2008 Strategy, Staff have implemented flood protection updates in policy, partnered with the Provincial and Federal government to secure funding, completed Dike Master Plans in anticipation of climate change induced sea level rise, and constructed drainage and dike upgrades in priority locations.

The 2008 – 2031 Richmond Flood Protection Strategy recommends periodic review to incorporate new information on flood hazard management.

On October 24, 2016, Council endorsed the City's submission to the National Disaster Mitigation Program requesting funding to complete the City of Richmond's Flood Protection Management Strategy 2019 (Strategy). The project was approved and is funded through the grant to a maximum of $150,000.

The purpose of this staff report is to present at a high level the flood mitigation work completed since the City's adoption of the 2008 – 2031 Flood Protection Strategy, new information included in the Flood Protection Management Strategy 2019, and seek Council's endorsement to engage the public and key stakeholders for feedback on the updated Strategy.

Background

The City of Richmond has made significant progress in the flood protection program since adopting the 2008 Strategy. All of the short term goals and the majority of mid to long term goals have been accomplished. Following the 2008 Strategy's work plan and recommendations, the following work has been completed or is underway as a part of the long-term flood protection program.

Infrastructure Improvements

In 2002, Council established a drainage utility to provide dedicated funding for drainage improvements. Since then the City has done significant upgrades or rebuilt 15 of its 39 drainage pump stations and replaced over 180 kilometers of drainage piping. Since the adoption of the 2008 Strategy the City has completed over $100 million in flood protection works.

The next project to enter the construction phase is the upgrade of the south dike between Gilbert Road and No. 3 Road. Upgrades include raising and widening approximately 650 m of dikes and improving the adjacent multi-use path to enhance the safety and accessibility of pedestrians and cyclists. Construction is expected to commence in spring 2019.

In addition to flood protection upgrades completed as part of the Capital program, 6.2 km of dike has been re-armoured with rip-rap as part of the City's Dike Maintenance Program over the last 10 years.

The City has successfully partnered with developers to secure dike upgrades through development. In particular, the City is actively pursuing opportunities to construct superdikes, where land supporting development behind the dike is filled to the same elevation as the dike crest. This eliminates visual impacts of a raised dike structure on waterfront views while providing an enhanced flood protection structure for the City.

Superdikes secured through development include sections of the north dike near the Richmond Olympic Oval and at the Imperial Landing and Kawaki developments in Steveston. Superdike construction is expected to continue at the Parc Riviera development and the River Green developments on the north side of Lulu Island in 2019. Staff estimate that up to 20% of dike upgrades along Lulu Island's perimeter dikes will be completed through development.

Dike Master Plans

A key action identified in the City's 2008 – 2031 Flood Protection Strategy involves preparing and implementing a comprehensive program to raise the City's perimeter dikes to address climate change induced sea level rise and land subsidence. The City's Dike Master Plans address this need by recommending dike upgrade options for each dike reach throughout the City.

Dike Master Plan Phases 1 and 2 have been completed.

Public consultation for Dike Master Plan Phases 3 and 5 have been completed. Finalized plans that incorporate the feedback received through public consultation will be brought forward to Council for consideration in spring 2019. Preparation of Dike Master Plan Phase 4 is underway and a draft will be brought forward to Council in 2019.

Other studies related to long term flood protection were also completed, such as the Mid Island Dike Study and East Richmond Agricultural Water Supply Study.

Policy and Development

The Flood Plain Designation and Protection Bylaw No. 8204 was adopted in 2008, as recommended by the 2006 – 2031 Flood Protection Management Strategy, and outlines building, landfill, and structure setback strategies for flood protection. Elevation requirements include Flood Construction Level (FCL) guidelines or exemptions for those in specific development areas; an example is Area A (Schedule B of Bylaw No. 8204) where buildings are exempt from FCL guidelines if the floor system or pad is 0.3 m above the crown of the road adjacent to the parcel. This bylaw has been progressively updated to ensure that current requirements for flood protection are followed.

Funding and Partnerships

The Drainage and Diking Utility currently generates $11.6 million annually to maintain and upgrade Richmond's flood protection infrastructure.

The 2008 Strategy identifies a target of 50% funding for dike improvement efforts from senior government. Over the last 10 years, the City has been successful in securing over $30 million in

senior government grants that go towards implementing over $48 million of dike and pump station improvements as well as flood protection assessments, exceeding the 2008 Strategy's target of 50%. As of January 2019, additional applications for over $15 million in grant funding for flood protection upgrades have been submitted and are pending senior government review.

Analysis

Flood Protection Strategy Update

The 2008 – 2031 Richmond Flood Protection Strategy is a landmark document that:

- documented climate change and sea level rise as emerging issues that the City would need to address;
- recognized the Lulu Island perimeter dike as the City's primary flood defences;
- initiated a dike master planning process for dike upgrading;
- identified the need for seismic dike design review;
- identified the need for an updated floodplain designation and protection bylaw to regulate development;
- provided for widespread land raising to be considered in the planning process; and
- recommended the review secondary inland dikes.

The focus of this Strategy is to identify and incorporate learning and new information, and thus further protect the City, its assets and its residents. These features are summarized below.

Changes in Risk and Flood Level

The flood risk in Richmond and other coastal areas is gradually changing. In Richmond this is due to three primary factors: rising sea levels, land subsidence, and changing precipitation. Sea level rise has been measured at an average rate of 3 mm/year and this number is expected to increase as the climate warms. Climate change models predict that sea level rise will accelerate due to thermal expansion of the oceans as well as the melting of glaciers and ice sheets.

The Flood Protection Management Strategy 2019 looks at relevant research and standards to determine the changes in flood risk and mitigation strategies for the City of Richmond.

Program Vision

The City of Richmond is recognized as a leading dike authority in British Columbia. The City's dikes meet or exceed the 2006 BC design guidelines based on the 1894 flood of record. The City is now upgrading dikes to meet the new BC design criteria to allow for 1m of sea level rise by 2100. As the population and economic investment in Richmond continues to increase, the City's priorities and management of flood risk needs to be reviewed.

The Flood Protection Management Strategy 2019 reviews the City of Richmond's vision, regional guidelines, and innovation in flood protection to establish a world-class standard for Richmond's flood protection system.

Future Considerations and Recommendations

The 2008 – 2031 Flood Protection Strategy provides short to long-term goals to guide Richmond's flood protection program. Similarly, the Flood Protection Management Strategy 2019 will include an Implementation Program outlining next steps and long-term strategies for policy planning, infrastructure upgrades, and other areas related to flood risk mitigation.

Public Engagement – Next Steps

Staff recommend engagement with key external stakeholders and the public on areas of interest. Key stakeholders include:

- Richmond residents and the general public
- Agricultural Advisory Committee (AAC)
- CN Rail
- Environment Canada
- Port of Vancouver
- Department of Fisheries and Oceans
- BC Inspector of Dikes
- Advisory Committee on the Environment (ACE)
- Urban Development Institute (UDI)
- Lafarge
- BC Ferries
- Ministry of Transportation and Infrastructure
- Ministry of Forests, Lands, Natural Resource Operations and Rural Development
- City of New Westminster
- Crown Packaging
- Canadian Fishing Company
- Finn Slough Heritage & Wetland Society
- Mitchell Island Businesses
- Vancouver Airport Authority
- Milltown Marina
- Translink
- City of Vancouver
- Sea Island Community Association

The key external stakeholder group will be engaged through ongoing meetings, social media, and LetsTalkRichmond.ca. Public engagement will include two public open houses. The results of external stakeholder engagement and any updates to the Flood Protection Management Strategy 2019 will be presented to Council in a subsequent report for Council's consideration.

Financial Impact

None at this time.

Project costs will be presented for Council consideration as individual initiatives and programs through the annual budget process.

Conclusion

The City of Richmond's 2008 – 2031 Flood Protection Strategy has been revisited to address current climate change science, provide long-term flood mitigation planning, and update the goals for future work in Richmond's flood protection program.

Staff request Council's endorsement to engage public and external stakeholders regarding the Flood Protection Management Strategy 2019 and obtain their feedback. Feedback will be utilized to update and finalize the report, which will subsequently be presented to Council for consideration.

Eric Sparolin, P.Eng.
Acting Manager, Engineering Planning
(604-247-4915)

Christopher Chan, BASc, EIT
Acting Project Manager, Engineering Planning
(604-204-8516)

ES:cc

Att. 1: Flood Protection Management Strategy 2019