

FLOOD RESILIENCY AND MITIGATION 2015 UPDATE

EXECUTIVE SUMMARY

The Flood Resiliency and Mitigation 2015 Update highlights progress since the 2014 Annual Report. It is based on the 27 recommendations from the Expert Management Panel Report on River Flood Mitigation as well as updates on other flood related activities in the Corporation.

The 2015 Update serves as the framework for accountability to both Council and Calgarians on flood mitigation and resiliency. It is presented in conjunction with the Watershed Management Planning Update 2015 (UCS2016-0167) and reports on one of the four integrated watershed management goals, *Build Resiliency to Flooding*, as discussed in the report.

ADMINISTRATION RECOMMENDATIONS

That the SPC on Utilities and Corporate Services receive this report for information.

PREVIOUS COUNCIL DIRECTION / POLICY

On 2014 December 02, Council approved Administration's Implementation Plan for River Flood Mitigation and Establishing Corporate Resiliency (PFC 2014-0777), including program funding, FTE requests and Administration's deferral request to report on corporate activities underway no later than 2015 Q2 to SPC on Utilities and Corporate Services as part of the first annual report on flood resilience.

On 2015 May 27, The SPC on Utilities and Corporate Services received the Flood Resiliency and Mitigation 2014 Annual Report (UCS2015-0082) for information.

BACKGROUND

In 2014 June, an external Expert Management Panel on River Flood Mitigation delivered 27 recommendations to Council aimed at achieving a safer, more flood resilient Calgary. Using these recommendations, Administration developed an implementation plan for 2015-2018 to progress the goal *Build Resiliency to Flooding* as part of The City's integrated watershed approach. The Flood Resiliency and Mitigation 2015 Update report (Attachment 1) summarizes progress made toward the goal since the 2014 Annual Report. It provides updates within the five key performance areas outlined in the flood resiliency and mitigation plan:

- Understanding flood risk;
- Investing in flood protection;
- Strengthening flood-related policies;
- Partnering for a flood resilient Calgary; and
- Communicating with Calgarians.

Attachment 2 provides a results based accountability (RBA) summary of progress made toward our goal and citizens perspectives on flood mitigation and associated investment.

INVESTIGATION: ALTERNATIVES AND ANALYSIS

The Flood Resiliency and Mitigation 2015 Update summarises progress on corporate activities in each of the five key performance areas. While it was identified in the 2014 Annual Report as part of the flood resiliency and mitigation framework, *Partnering for a flood resilient Calgary* will be discussed this year as its own performance area to highlight the significance of key partnerships in advancing flood resiliency.

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Understanding flood risk

There will always be a risk of river flooding in Calgary. To understand, prepare and mitigate this risk, The City continues to improve its understanding of flood risk since 2013 through a range of tools – from river monitoring, forecasting models, updated flood mapping and river morphology studies to developing climate change models, community risk and damage model assessments. In 2015, The City:

- Updated and published flood inundation maps for 1:5, 1:10, 1:20, 1:50 and 1:100 events on Calgary.ca. The updates reflect changes in our waterways since 2013 and show that the total land area now anticipated to be inundated during a 1:100 event has increased.
- Updated the Province's Flood Damage Assessment Study with post-2013 hydrology, social and environmental impacts and groundwater considerations to more accurately understand The City's current flood risk.
- Initiated a project to explore climate modelling specific to Calgary's regional watersheds to help understand the impacts of climate change on our rivers.

Investing in flood protection

By understanding the risk, The City recognizes the significant scale of impact and the considerable investments needed for flood mitigation. Provincial and federal funding is essential at this investment level and The City continues to try to secure funding through all orders of government. In 2015, The City:

- Secured an allocation of \$150M over the next 10 years for flood resiliency measures for Calgary through the Alberta Community Resiliency Program (ACRP).
- Applied for and received funding from ACRP for the following projects:
 - Glenmore Dam elevated hoist system (\$7.60M)
 - Heritage Drive Permanent Barrier (\$3.96M)
 - Centre Street Bridge Lower Deck Permanent Barrier (\$1.53M)
 - Stormwater Outfall Gate Improvements (\$1.80M)
 - Bonnybrook Wastewater Treatment Plan Flood Protection (\$11.46M)
 - West Eau Claire Park Flood Protection (\$1.38M)
- Through ongoing discussions with the Province, received a commitment to develop Springbank off-stream reservoir. The reservoir, operated in tandem with Glenmore Dam and its new gates (anticipated to be complete in early 2019), should protect to a 2013 event.
- To determine the best suite of mitigation measures to invest in, The City is undertaking a Flood Mitigation Measures Assessment using a triple bottom line approach. All potential mitigation measures, including upstream and local infrastructure, operational strategies, land use and building policy and riparian solutions will be analysed for both the Bow and Elbow rivers in 2016 to develop a flood mitigation investment plan moving forward.

Strengthening flood-related policies

The City is anticipating that the Province will be looking at increasing provincial floodplain standards beyond the current 100-year protection level once their flood hazard mapping is updated. Provincial decisions will inform policy changes made by The City for future development, setback policies, and service levels. In 2015, The City:

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- Engaged the Province on its work updating provincial flood hazard area maps. The City intends to participate in the Province's engagement on floodplain standards and Special Policy Areas (SPAs) in 2016, once flood hazard mapping is completed.
- Initiated discussions with Public Safety Canada and Natural Resources Canada and attend workshops on the development of national floodplain guidelines for Canadian municipalities. The City will continue to participate in federal workshops in 2016 to evaluate how national guidelines could potentially affect The City of Calgary's emergency response, operations, regulated flood protection levels and the risk faced by citizens.

Partnering for a flood resilient Calgary

The City's flood resilience work is dependent on strong partnerships with the Province, other stakeholders such as TransAlta Utilities, citizens, flood-related organizations and communities upstream and downstream of Calgary. In 2015, The City:

- Established on-going meetings with Alberta Environment and Parks to continue strategic alignment on flood resiliency and mitigation options, policies and engagement.
- Continued participation on the Springbank off-stream reservoir technical committee.
- Was named co-chair of the Bow River Advisory Committee and is participating on the Bow River Working Group that will explore flood mitigation opportunities upstream on the Bow River.
- In partnership with the Canadian Water Resources Association and ICLEI Canada, hosted over 170 delegates and presenters at the 2015 Livable Cities Forum on Building Flood Resilient Communities. As a result of the Forum, a steering committee has been formed to establish a national network to address municipal flood resilience priorities across Canada.

Communicating with Calgarians

To build civic flood resiliency, The City expanded the way it shares information and communicates with citizens with respect to flooding. In 2015, The City:

- Developed a comprehensive Corporate flood communication plan that will provide citizens with year-round information on flood readiness and how to prepare for all types of flooding.
- Created a targeted public awareness campaign, *Flood Readiness*, to increase citizen understanding, preparedness and opportunities to stay informed.
- Held two open houses and continued distributing the Flood Readiness subscriber based newsletter to provide information updates on river levels, upcoming events, and flood mitigation work.
- Through the Calgary Emergency Management Agency, Launched READYCalgary to help inform, educate, and build resiliency to the impacts of emergencies and disasters in Calgary communities. To date, 16 communities have participated.
- Created and launched an engagement and communication plan for 2016, including forming a Community Advisory Group and conducting comprehensive citizen engagement to gather input on the Flood Mitigation Measures Assessment.

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Stakeholder Engagement, Research and Communication

Attachment 3 contains a roadmap with timelines and activities for the community and stakeholder engagement work occurring in 2016. This work will be used to provide input to determine future investment decisions related to flood mitigation and resiliency. Input will be gathered through:

- Community Advisory Group (March-November) – a group of 21 participants from flood-impacted and non-flood impacted communities, businesses, flood-focused community groups, watershed organization to provide input into optimizing options to meet community needs, review mitigation measures and examine trade-offs and liaise with respective organizations.
- Public Survey (March-April) – gauge citizens opinions and values on the floodplains through a telephone survey to inform the triple bottom line criteria.
- Community and stakeholder feedback (September-October) – engage communities and stakeholder groups (i.e., businesses, development industry, social agencies, etc.) to provide feedback on flood mitigation measures.

Strategic Alignment

Moving forward on flood mitigation and resilience supports and contributes to a number of Strategic Action areas in Council's Priorities for 2015-2018 including a *City of Inspiring Neighbourhoods*, a *Healthy and Green City* and a *Well-run City*.

Social, Environmental, Economic (External)

While complex and interrelated, assessing the social, environmental and economic costs and benefits of flood mitigation options is a critical component of the work within this program. A comprehensive triple bottom line approach is being taken to ensure that the social and environmental costs of mitigation are understood, in addition to more traditional economic costs. The triple bottom line approach will be used to create a prioritized list of investments and actions.

Financial Capacity

Current and Future Operating Budget:

Current work on flood mitigation analysis and community engagement is being undertaken within the existing operating budget. The City continues to monitor resource needs on an ongoing basis, and any additional resources that may be needed in future years will be obtained from existing resources or requested through The City's budget adjustment process.

Current and Future Capital Budget:

To date, the Province has committed \$27.7M to The City from the Alberta Community Resiliency Program for six resiliency projects. The cost share portion for The City is being covered within the current capital programs. Future capital projects identified in the Flood Mitigation Measures Assessment will be presented to Council in 2017, and will require capital budget for construction. Administration will continue to pursue further funding or cost sharing opportunities through the Province and Federal Government. It is currently expected that cost share obligations required by The City will be funded either through existing capital budgets, reprioritization of capital projects or through utility rate adjustments.

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Risk Assessment

Calgary is one of Canada's economic engines and our people, critical infrastructure, property, and economy must be protected from flood impacts. Lack of sufficient flood mitigation funding will increase costs to all Albertans, create significant impacts due to damage, and could worsen the risks associated with the current economic climate.

- The City continues to prioritize its mitigation projects where the need is most urgent and has received a Provincial allocation of \$150M over ten years for investment in flood mitigation measures. The City is also playing an active role in trying to secure federal funding for flood resiliency and mitigation work to limit its overall risk exposure to flood.

Implementation of flood mitigation measures within Calgary depends on decisions made by the Province, such as design and construction of the Springbank off-stream storage reservoir, upstream mitigation options on the Bow River, updated provincial flood hazard mapping, changes to provincial floodplain standards and policy; and operation of TransAlta Utilities' facilities. Failure to coordinate with Provincial activity could result in significant service delivery, financial, and reputational risks for The City.

- This risk is being mitigated through participation on the Province's technical and strategic stakeholder committees, and ongoing communication with other partners.

Potential risk exists that the Province does not proceed with its upstream mitigation plans, placing additional responsibility on The City to plan and fund mitigation.

- Upon completion of the Flood Mitigation Measures Assessment, The City intends to develop long-term plans for mitigation considering scenarios both with and without provincial upstream mitigation.

Flood mitigation is a complex issue and long-term process and The City must be prepared for flooding in the interim before major investments in protection are implemented.

- The City has stockpiled riverbank-protection and temporary barrier materials, repaired critical erosion sites, and refined its emergency response procedures. To ensure that citizens and businesses are prepared, The City improved and expanded its flood preparedness communication tools. Through partnerships, The City has provided support to businesses and community agencies to prepare for, respond to, and recover from flooding.
- To address the ongoing risk of flooding, The City continues to develop long-term strategies concurrently with mitigation work, and regularly evaluates its flood resiliency and mitigation program to ensure corporate goals are met.

REASON FOR RECOMMENDATION(S):

The Flood Resiliency and Mitigation 2015 Update provides an overview of the progress made by Administration in 2015 towards making Calgary more resilient to future river flood, and the activities planned in 2016.

ATTACHMENTS:

1. Flood Resiliency and Mitigation 2015 Update Report
2. Flood Resiliency and Mitigation 2015 Update RBA Summary
3. Flood Mitigation Measures Assessment and Engagement Roadmap