

Update on Upstream Bow River Flood Mitigation

EXECUTIVE SUMMARY

With provincial commitment to Springbank Reservoir on the Elbow River, Calgary's remaining flood risk is primarily on the Bow River. This report summarizes the status of the recommendations of the Bow River Working Group (BRWG) and identifies opportunities to move forward more urgently on upstream flood mitigation on the Bow River. Flood mitigation remains one of The City's top infrastructure needs. The City's Flood Mitigation and Resilience Strategy relies on upstream mitigation complemented by local community mitigation projects to provide mitigation to at least a 2013 flood event.

The City of Calgary participated in the BRWG with the Province, which explored options for flood mitigation and enhanced water supply on the Bow River. The BRWG's 2017 May report recommends construction of at least one new reservoir, as well as operational and infrastructure enhancements, to address flood and water supply management for the Bow River Watershed. Since the release of the 2017 May report, the Province has initiated some of the recommendations and recently announced funding commitments for feasibility studies for key infrastructure recommendations. Administration advocates for continued collaboration to drive this process forward.

A future reservoir and operational efficiencies upstream are essential components to address Calgary's flood resiliency and regional water supply availability in the face of uncertain climate change impacts. The City of Calgary also provides drinking water to about 1 in 3 Albertans and is dedicated to implementing the Government of Alberta's *Water for Life* strategy through an integrated water management framework to ensure reliable and resilient water servicing for Calgary and regional customers. This report also seeks to initiate discussions with the Province to develop solutions for The City's regional watershed management challenges.

ADMINISTRATION RECOMMENDATION:

That the SPC on Utilities and Corporate Services recommend that Council:

Send a letter to the Province requesting:

- a. The Province reconvene the Bow River Working Group with a renewed governance framework as soon as possible;
- b. All projects in The City's 2017 Alberta Community Resilience Program application be approved and funded as submitted; and
- c. The Province work with Administration to develop a proposed scope of work for a bi-lateral Task Force to address The City's flood mitigation, policy, and watershed management issues.

PREVIOUS COUNCIL DIRECTION / POLICY

On 2014 June 26, Council approved the Expert Management Panel's River Flood Mitigation Panel Final report (PFC2014-0512), which included direction to explore upstream storage improvements to manage potential floods on the Bow River. Update reports from Administration have followed annually (UCS2015-0082, UCS2016-0168, UCS2017-0266).

Council directed Administration to develop an implementation and funding plan for community flood mitigation work in the 2016 annual update report which was accepted by Council on 2017

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June 26 (PFC2017-0462). Administration was also directed to confirm and communicate to other orders of government that flood mitigation is a top strategic priority for The City of Calgary.

On 2018 February 14, The SPC on Utilities and Corporate Services received the Flood Resiliency and Mitigation 2017 Annual Report (UCS2018-0092), which outlined the Council-approved strategic approach to watershed and community level flood mitigation measures for Calgary. During the meeting, Council requested Administration return with an update on the status of upstream flood mitigation by the Province on the Bow River.

BACKGROUND

The Bow River Working Group (BRWG) was formed in 2015 by the Province with representation from The City of Calgary, regional municipalities, First Nations communities, irrigation districts, TransAlta, and other stakeholders. The group's mandate was to provide advice on a long-term water management plan that considers both flood and drought for the region. In 2017 May, the *Advice to Government on Water Management in The Bow River Basin* report (Attachment) was published with recommendations to improve flood resilience and water management in the Bow River Watershed. The recommendations include construction of at least one reservoir, as well as operational and minor infrastructure enhancements, to provide long-term flood mitigation and improve regional water supply management.

INVESTIGATION: ALTERNATIVES AND ANALYSIS

The BRWG report identified 11 recommendations related to regional drought and flood mitigation for further study. As of 2018 April, the Province has begun work on several of the recommendations which are critical to Calgary's flood resilience. This includes:

- Initiated a conceptual study in partnership with TransAlta to increase the drawdown rate in the Ghost Reservoir and expand the reservoir's water storage capacity.
- Committed to funding a conceptual assessment for the three most promising major infrastructure options for an upstream reservoir for flood mitigation and water supply:
 - A New Glenbow reservoir on the Bow River upstream of Bearspaw
 - A New Morley reservoir on the Bow River upstream of Ghost Reservoir
 - Expansion of the existing Ghost Reservoir.
- Initiated discussions with TransAlta to extend and expand the current operational agreement, including adding Spray Lake and Lake Minnewanka to the agreement and using Barrier Lake for flood mitigation. The current agreement expires in 2021 and provides significant flood mitigation for Calgary.

On 2018 May 1, the Minister of Environment and Parks announced the Province's commitment to completing both the feasibility study for the Ghost Reservoir drawdown and the conceptual assessment for the major infrastructure options.

Areas of opportunity

Bow River Working Group

- More urgency is needed to move the BRWG studies beyond conceptual stages. The City is committed to continued collaboration to advance this work and has been strongly encouraging the Province to reconvene the BRWG process. A renewed governance framework for the BRWG should be developed to support moving from conceptual studies to implementation of upstream initiatives.

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Complementary Bow River community barriers

- The City finalized its flood mitigation plan in 2017 (PFC2017-0462), which is consistent with the BRWG report's conclusions. As part of the plan, four barriers are required to maximize flood mitigation on the Bow River: downtown, Bowness, Sunnyside, and Pearce Estate-Inglewood. The City has initiated the design process for the barriers and community engagement has started. Community input on design is expected to begin in the fall of 2018.
- The proposed barriers will mitigate against smaller flood events and are intended to be complementary to upstream mitigation. Community barriers alone cannot mitigate an event similar to 2013 without significantly disrupting established communities. Administration has completed comprehensive technical studies and has determined that other mitigation alternatives are not technically feasible.
- The City submitted funding applications to the Alberta Community Resilience Program (ACRP) for the four barriers. On 2018 May 1, the Province awarded ACRP funding for the downtown barrier, which will mitigate against a 1:200 flood. The Province indicated that for future ACRP approvals, two of the remaining three barriers need to be higher and provide mitigation to a 1:100 flood on their own.
- Requiring barriers to meet the Province's mitigation requirements is not technically or socially feasible in Calgary's established communities. This would result in significant cost increases, changes to project scope, and could have additional negative impacts on affected communities.
- Provincial recognition that upstream mitigation is critical to Calgary's flood resilience on the Bow River and cannot be replaced solely by barriers is needed. The City is seeking ACRP approval for the remaining barriers as submitted in 2017 September to complement upstream efforts.

Policy and regulations

- Updated Provincial Flood Hazard Area mapping and floodway regulations have been delayed. Administration continues to advocate for Provincial policy that recognizes the impacts of structural and operational flood mitigation efforts, as there are implications on local mitigation project designs, municipal land use policy and development, and eligibility for disaster relief.

Regional watershed management

- There are a number of watershed management issues facing The City, both short and long term. This includes progress on flood mitigation, water supply security in the Bow River basin in the face of a changing climate, and the role of The City in providing regional water supply through its water licences to other members of the Calgary Metropolitan Region Board.
- The City takes an integrated approach to watershed management and would like to work with the Province in the same way. These watershed management issues cross different departments and ministries within the Province, and need to be addressed holistically.
- Administration proposes to work with the Province to establish a bi-lateral Task Force between senior administrations to initiate a solutions-focused framework to address integrated watershed management issues, including flood mitigation, drought, water supply, and water security.

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Stakeholder Engagement, Research and Communication

The City collaborates with internal and external stakeholders on building flood mitigation and resilience. Through a proposed bi-lateral Task Force between The City and the Province and renewed BRWG process, The City will continue engaging with stakeholders on building water management solutions for the region.

The City continues to engage with flood affected communities to ensure local flood mitigation projects on the Bow River are supported by the community. A robust engagement plan is being implemented to support this work.

Strategic Alignment

The Flood Mitigation and Resilience Strategy aligns with the Resilient Calgary initiative and The City's Climate Program. Our integrated watershed management approach contributes to a number of Council's Priorities for 2015-2018: N2 - Build resiliency to flooding. H3 - Manage the interrelationships between flood protection, water quality and quantity, and land use. H4 - Work with our regional partners and the Government of Alberta on an integrated approach to the watershed.

Social, Environmental, Economic (External)

The City's flood mitigation program is building community resiliency by protecting critical infrastructure and the social and economic fabric of communities from flood risk. Given the region's water security concerns, a new upstream reservoir on the Bow River must address both flood mitigation and water supply. With an understanding of integrated watershed management issues, Provincial action is required on regional water security so growth and economic prosperity are supported while minimizing environmental and social risks.

Financial Capacity

Current and Future Operating Budget:

Program initiatives to achieve flood resiliency goals are incorporated in the 2015-2018 Utilities budget.

Current and Future Capital Budget:

ACRP projects underway since 2014 are funded within the approved capital budget. The City continues to pursue potential external funding opportunities for new projects as they arise.

Risk Assessment

Failure to move quickly on these recommendations leaves communities along the Bow River and the downtown at risk of severe flood damage when another flood occurs. Administration has determined that there is no way to mitigate floods to 2013 levels or higher solely through barriers, and that at least one new reservoir is required on the Bow River. Regulatory uncertainty remains a risk to The City's flood mitigation work, and The City continues to raise its concerns with the Province.

Climate change is likely to increase the frequency of flooding and drought in the region, placing strain on regional water security. The work identified in this report will contribute to mitigation of

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flooding and help address risks related to water security, anticipated changes to service delivery, and the impacts of climate change.

REASON FOR RECOMMENDATION:

Administration advocates for a continuation of the BRWG process to drive the implementation of recommendations on flood mitigation and water supply improvements on the Bow River that are essential to Calgary's flood and water supply resilience. Support from Council is needed to gain Provincial agreement on: renewed governance of the Bow River Working Group, approval of all of The City's 2017 Alberta Community Resilience Program projects as submitted, and a Provincial-City mechanism to address Calgary's watershed management challenges.

ATTACHMENT(S)

Executive Summary: Advice to Government on Water Management in The Bow River Basin