

Utilities & Environmental Protection Report to  
SPC on Utilities and Corporate Services  
2020 April 15

ISC: UNRESTRICTED  
UCS2020-0372

## **2019 Flood Resiliency and Mitigation Annual Update**

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### **EXECUTIVE SUMMARY**

The purpose of this report is to provide an update on The City of Calgary's (The City's) flood resiliency activities in 2019. Updates focus on the Government of Alberta's (GoA's) upstream mitigation work, community-level mitigation projects and the 2019 October provincial budget impacts. The City's flood resilience strategy remains a top priority and continues to successfully work towards building watershed, community, and property-level resilience initiatives to ensure Calgary is resilient to flooding.

Major progress in 2019 includes:

- Installation of the new gates at the Glenmore Dam. The gates will be functional for the 2020 flood season, doubling Glenmore Reservoir's storage capacity.
- Conceptual assessment of three potential new reservoir sites upstream of Calgary for flood mitigation and water supply through the GoA's *Bow River Reservoir Options* project. Additionally, the GoA is working to extend its operating agreement with TransAlta, which will end in 2021 March. This agreement is critical for flood mitigation on the Bow until a new reservoir is built.
- Continuation of the Impact Assessment Agency of Canada's Environmental Impact Assessment (EIA) for the Springbank Off-stream Reservoir (SR1). Once the EIA is completed, the GoA anticipates it will begin construction of SR1.
- Community engagement on Downtown, Sunnyside, and Bowness barriers to support the detailed design, preliminary design, and feasibility assessment of respective projects.

The City assessed the impacts of the GoA's early termination of the Alberta Community Resilience Program (ACRP) funding and recommends prioritizing the Downtown Flood Barrier and Upper Plateau Separation projects in the Water Utility's stormwater investment plan. This will result in a delay of up to one year to previously scheduled Community Drainage Improvement (CDI) projects, barring additional funding or increases to stormwater utility rates. After completing technical studies and comprehensive community engagement, proceeding with the Sunnyside Flood Barrier project with a 1:100-year service level is also recommended. This will result in an additional delay up to one business cycle to previously scheduled CDI projects. Budget adjustments will be presented no later than 2020 November mid-cycle adjustments.

The GoA continued to update flood hazard area (FHA) maps in 2019, in collaboration with The City. The City anticipates updates to its land use and development policies will be required following the release of the provincial maps and subsequent internal engagement.

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### **ADMINISTRATION RECOMMENDATION:**

That the Standing Policy Committee on Utilities and Corporate Services recommend that Council direct Administration to:

1. Proceed with the Sunnyside Flood Barrier project at Administration's recommended service level;
2. Return to Council with budget adjustments for ACRP-impacted projects no later than the 2020 November mid-cycle adjustments; and
3. Report back to the Standing Policy Committee on Utility and Corporate Services no later than Q4 2020 with recommendations regarding the Bowness barrier project.

### **PREVIOUS COUNCIL DIRECTION / POLICY**

On 2014 March 17 City Council received the 2015-2018 Drainage Financial Plan (UCS2014-0022) which included service levels and targets. A progress report on the Drainage Financial Plan (UCS2016-0414) was received for information on 2016 June 20.

On 2014 June 26, Council approved the River Flood Mitigation Panel Final report (PFC2014-0512), which included direction to provide annual updates to City Council on The City's flood resilience work. City Council approved The City's Flood Resilience Plan on 2017 April 10 (UCS2017-0266). The latest annual update was received for information 2019 May 15 (UCS2019-0653). A separate update was provided to Council regarding the GoA's upstream flood mitigation work on the Bow River on 2018 May 27 (UCS2018-0600), where Council directed Administration to pursue advocacy efforts with Council to continue upstream mitigation progress on the Bow River.

On 2020 January 27, Council approved The City's capital budget recast, which included provisions to address budget impacts as a result of the 2019 October Provincial budget.

### **BACKGROUND**

The City of Calgary's Flood Resilience Plan (the Plan) identified the following key outcomes to ensure Calgary remains resilient to river flooding:

- Springbank Off-stream Reservoir (SR1) upstream of Calgary on the Elbow River, which the Government of Alberta (GoA) remains committed to.
- Upgraded gates at the Glenmore Dam, completed for Spring 2020.
- An upstream reservoir on the Bow River and continuation of the 2016 Ghost Reservoir operating agreement between the GoA and TransAlta, which will reduce seasonal flooding on the Bow River.
- Community flood barriers in Sunnyside, Bowness, and in Downtown, which the Water Utility remains committed to despite the loss of provincial ACRP funding.
- Continuation of the Community Drainage Improvement (CDI) program, which reduces stormwater flooding in established communities.
- Property-level mitigation measures including land use regulations, flood mapping, policy changes, and flood awareness education for property owners.

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Significant progress on The City's Plan was made in 2019, advancing key community mitigation projects such as the Downtown Flood Barrier and in the community of Sunnyside. This work is expected to continue in 2020. More information on the Plan and key projects can be found in Attachment 1.

### **INVESTIGATION: ALTERNATIVES AND ANALYSIS**

The following summarizes specific key projects or developments that occurred in 2019. Some of these items could result in risks to progress in 2020.

#### *Watershed-level mitigation*

The City continues to advocate for the extension of the TransAlta operating agreement with the GoA and the Bow River Reservoir Options (BRRO) project, as these are critical components of the Plan. The TransAlta agreement expires in 2021 March, and if not renewed, would result in immediate flood risk on the Bow River. The BRRO project has received \$15M in funding in the GoA's 2020 February budget, which will support the next phase of work.

Completion of the Glenmore Gates will mitigate flooding for up to 20 per cent of the flood risk from a 2013-level flood on the Elbow River and is the most significant milestone for the Plan to date. Once SR1 is operational, a 2013-flood on the Elbow River will be fully mitigated. The gates will be operational for the Spring 2020 flood season. The GoA continues to be supportive of the Springbank Off-stream Reservoir (SR1) through the Environmental Impact Assessment (EIA) process. Once this process is complete, construction on the project will begin.

#### *Community flood resilience work*

Through the Alberta Community Resilience Program (ACRP), the GoA announced \$15M in 2019 May for the Downtown Flood Barrier (\$6.9M) and Upper Plateau Separation (\$8.1M) projects. Funding for these projects will be received in full by 2021. The GoA's announcement that ACRP funding will be ending three years early in 2021 results in an \$81M shortfall to complete outstanding projects, specifically the Sunnyside Flood Barrier and Bowness Flood Barrier projects.

The following financial levers were assessed to continue these and other ACRP-impacted projects:

- Seek alternative funding through federal programs;
- Prioritize the flood mitigation projects within the Water Utility's investment plan and delay CDI scheduled projects to later dates;
- Increase stormwater rates to deliver all projects as scheduled; or
- Request funds from eligible City reserves.

All flood related projects have been reprioritized to address funding impacts. A revised list can be found in Attachment 1. Administration recommends proceeding with the Downtown Flood Barrier and Upper Plateau Separation projects, as scheduled. Prioritizing these projects will currently result in a one-year delay to CDI projects in Sunnyside, assuming no additional external funding or increases to stormwater rates. With Provincial endorsement, the Downtown Flood Barrier and Upper Plateau Separation projects were submitted to Infrastructure Canada for funding under the Investing in Canada Infrastructure Program on 2020 March 31. Additional

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opportunities for federal funding, such as the Disaster Mitigation and Adaptation Fund, are being investigated.

The City is actively working with the communities of Sunnyside and Bowness as part of the preliminary design and feasibility phases of the Sunnyside Flood Barrier and Bowness Flood Barrier projects. With the conclusion of the ACRP, The City will be required to fully fund these projects.

### **Sunnyside Flood Barrier**

Based on community feedback, technical studies, and consultant designs, Administration recommends proceeding to detailed design of the project with a 1:100 service level design, instead of the initially proposed 1:20 service level design. A 1:100 service level reflects input feedback received through community engagement, will ensure that a 2013-level flood is managed within the community, will minimize social and environmental impacts caused by construction of a larger barrier, and will support climate resiliency with the addition of a new reservoir on the Bow River. Prioritizing this project is possible within the Water Utility's existing investment plan by delaying scheduled CDI projects by up to one full business cycle.

### **Bowness Flood Barrier**

The City continues to investigate the viability, constructability, and benefit-cost of several design options for a barrier in the community of Bowness. This includes conducting technical studies to assess project feasibility and working with the community to gather feedback and address concerns. A recommendation whether to proceed with a flood barrier will be brought to Council by Q4 2020. Potential budget implications will be known once the current feasibility assessment is completed.

### ***Flood Hazard Area mapping and flood policy***

The City is working closely with the GoA, sharing technical information to support updating provincial Flood Hazard Area (FHA) maps. The City anticipates formal municipal engagement before final maps are released by the GoA. Internal engagement with relevant business units will be required as The City's land use and development policies will require updating following the release of FHA maps.

## **Stakeholder Engagement, Research and Communication**

Administration and Council's coordinated advocacy in 2019 focused on ensuring the GoA's continued upstream mitigation efforts on the Bow and Elbow rivers. Through these efforts, the GoA has confirmed it will fund and advance the next phase of the BRRO project. In 2020, Administration will focus on advocating for the GoA to extend its operating agreement with TransAlta before it expires. Council's support and advocacy for this work is appreciated.

Citizen engagement throughout 2019 informed The City's triple bottom line assessment of preliminary barrier design options in Sunnyside. The recommended service level reflects technical study results as well as community feedback. Community feedback was collected through engagement activities, including:

- Six meetings with the Community Association,
- Two community open houses and two community pop-ups, and
- Online surveys.

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Community feedback in Bowness is informing The City's feasibility assessment. Engagement will continue for these and other projects.

### **Strategic Alignment**

Flood resilience remains a top priority for Council and is identified in the stormwater management line of service in One Calgary. Flood resilience supports key action areas in The City's Resilient Calgary Strategy and Climate Resilience Strategy. 86 per cent of citizens surveyed in the 2019 citizen satisfaction survey identified protection from river flooding as important.

### **Social, Environmental, Economic (External)**

The Plan is informed by The City's Triple Bottom Line Policy, One Calgary, Resilient Calgary Strategy, Climate Resilience Strategy, and the Water Utility's integrated watershed management goals. Individual community projects adhere to The City's Triple Bottom Line Policy and evaluation of social impacts are supported by community engagement.

### **Financial Capacity**

#### ***Current and Future Operating Budget:***

There are no operating budget implications from this report.

#### ***Current and Future Capital Budget:***

The \$81M reduction in provincial ACRP funding will impact the Water Utility's capital budget. Mainly, prioritizing impacted ACRP projects will likely delay the delivery of CDI projects scheduled in the Water Utility's investment plan by up to one business cycle without increasing stormwater utility rates. Detailed budget adjustments will be available no later than 2020 November mid-cycle adjustments.

### **Risk Assessment**

The majority of Calgary's outstanding flood risk is on the Bow River. Extending the TransAlta agreement after 2021, actively supporting the BRRO project, and completing community mitigation projects will address this risk. SR1 continues to progress as anticipated and will reduce the majority of the Elbow River's remaining risk, once completed. The loss of ACRP funding impacts flood resilience projects in Calgary and will require some combination of alternative funding and delay of CDI projects, increasing flood risk in the short-term.

#### **REASON(S) FOR RECOMMENDATION(S):**

The recommendations mitigate impacts from the GoA's elimination of ACRP funding for community flood mitigation projects being undertaken by The City of Calgary. Recommendations regarding flood mitigation in Sunnyside ensure that flood risk is managed by The City and will be further reduced by the GoA's upstream mitigation efforts.

### **ATTACHMENT**

1. Attachment 1 – 2019 Flood Resiliency and Mitigation Update
2. Attachment 2 – Public Submissions