

1. OVERVIEW

Recommended Capital Project Description	Community level flood mitigation measures for Calgary
<p>Executive summary <i>Provide a brief description of the project and what it is expected to deliver. Capture only the essential elements of the business case, including most pertinent facts, in a clear, concise and strategic manner.</i></p>	<p>Investing in flood mitigation is one of Calgary’s most significant opportunities to enhance community resiliency.</p> <p>ACRP funds awarded in 2017 will support:</p> <ul style="list-style-type: none"> • Completion of two flood mitigation projects (Sunnyside pumpstations #1 and #2) currently underway. • Completion of the Western Headworks Diversion . <p>The City’s contribution for these projects is included as part of the Water Utility’s approved Water Infrastructure Investment Plan.</p> <p>Anticipated award of ACRP funds for projects proposed for submission in 2017 will support:</p> <ul style="list-style-type: none"> • Design and construction of four low-height barriers along the Bow River (Sunnyside, Downtown, Inglewood-Pearce Estates, and Bowness). • Design and construction of the Upper Plateau Separation project. <p>Available corporate capacity also supports completion of the highest priority gravel bar reshaping at the Centre Street Bridge location.</p> <p>Implementing these projects will address high-priority investments within The City’s flood mitigation measures implementation plan. Four low-height barriers along the Bow River are required to complement a new upstream reservoir on the Bow and TransAlta flood operations. These complementary barriers will reduce flood damage risk for more frequent smaller flood events and working in combination with upstream mitigation measures, will provide 2013 flood level protection for the Bow River in Calgary. These sites were identified as cost-beneficial.</p> <p>In addition to the barriers, the separation of part of the Hillhurst-Sunnyside stormwater system from communities at a higher elevation (the Upper Plateau Separation project) will provide additional flood mitigation benefits during high river levels. The Upper Plateau Separation project is also part of The City’s Community Drainage Improvements (CDI) Program.</p> <p>Corporate funding capacity is requested for the design and assessment of the barriers, design of the Upper Plateau Separation Project and reshaping of the gravel bar at the Centre Street Bridge. Gravel bar reshaping is not currently eligible for ACRP funding, but reshaping of the Centre Street Bridge gravel bar can be completed within the requested corporate capacity identified and aligns with erosion site work currently underway.</p>
<p>Expected Key Deliverables</p>	<p>Key deliverables include the following:</p> <ul style="list-style-type: none"> • Completion of the Sunnyside pumpstations #1 and #2 projects. • Completion of the Western Headworks Diversion. • Design and construction of four barriers on the Bow River to provide flood mitigation in the following communities: <ul style="list-style-type: none"> ○ Sunnyside ○ Downtown ○ Pearce Estates-Inglewood ○ Bowness. • Design and construction of the Upper Plateau Separation project. • Reshaping the gravel bar at the Centre Street Bridge.



Benefits <i>Describe and/or quantify value and outcomes of project</i>	Economic	<p>Another major flood in Calgary is likely to occur, and without these projects in place, will cause significant disruption to Calgarians, critical infrastructure, systems and services, businesses, and significant damage to public and private property. Another flood also poses business continuity risk, as well as environmental, and health and safety risks to citizens, businesses and The City's operations.</p>
	Social	<p>Community outcomes: Safety, community resiliency, healthy city, a well-run city.</p>
	Environmental	<p>The integrated approach to watershed management includes: responding and adapting to climate change impacts, and building resiliency to flooding while balancing riparian protection and community needs.</p>
Return on Investment <i>Describe short and long term investment returns including expected financial, social and environmental considerations, avoided costs etc. Include quantifiable and qualitative returns.</i>	<p>The 2013 floods caused \$5 billion dollars in damage throughout Alberta, and an expected \$400 million in damage to The City of Calgary's infrastructure alone. As part of the Flood Mitigation Measures Assessment, Water Resources conducted a Sustainability Assessment to prioritize flood mitigation measures, based on The City's Triple Bottom Line Policy cost-benefit analysis, Sustainability Direction and watershed protection goals. Input from community engagement was considered alongside subject matter expertise to assess potential impacts, and the ease of implementing the various flood mitigation measures. The projects included here ranked strongly in the Sustainability Assessment. Timely and efficient investments in these flood mitigation measures will have positive social, economic, and environmental impacts for Calgary.</p> <p>Social</p> <ul style="list-style-type: none"> • Protecting public safety through proactive community-level flood mitigation measures. • Business continuity of City operations to deliver critical services to Calgarians. • Managing flood risk while recognizing the importance of river aesthetics, access and complete communities to citizens. <p>Economic (External)</p> <ul style="list-style-type: none"> • Enhances long-range flood resiliency by implementing cost-beneficial investments in community-level flood protection. • Timely and sustainable investment in infrastructure that contributes to equitable flood protection for communities on both rivers. • Maintains The City's investments by protecting critical municipal infrastructure. • Demonstrates City of Calgary investment in flood resilience to mitigate future insurance rate and access impacts. • Optimizes investments through cost-sharing with the Province that will have no net impact on the tax rate. <p>Environmental</p> <ul style="list-style-type: none"> • These projects contribute to an integrated watershed management approach which includes a combination of community, watershed and policy-based solutions to increase flood resiliency and protect the watershed. • Climate change predictions for the region show a likely increase of flooding, in both frequency and intensity, requiring timely implementation of community and watershed level flood mitigation. • These projects balance riparian ecosystem protection with flood mitigation. 	



Project location	Address, Ward/ Catchment	City-wide	Project type (MUGS)	S - New Services
Business Unit (BU)		Water Resources		
Strategic Alignment <i>IC has this information and will complete this section</i>		Council Priorities	<ul style="list-style-type: none"> • A city of inspiring neighbourhoods (N2 - Build resiliency to flooding, N3 - Enhance The City's capacity and resiliency to prepare for and respond to pandemics, natural disasters and emergency situations). • A healthy and green city (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). 	
		Capital Investment	Resilience	
		Calgary Economic Development (CED) 10 year Economic Strategy: Focus	Community Energy – Calgary is a vibrant, urban and prosperous community that offers people friendly neighbourhoods, diverse housing and inspirational spaces	
		CED 10 year Economic Strategy: Strategy	Community Strategy 1 – Build Calgary as a model city for sustainable development and affordable living.	
		CED 10 year Economic Strategy: Action	Community Action 2 – Direct future growth in a way that fosters more compact and efficient use of land, creates complete communities, allows for greater mobility choices and enhances vitality and character in local neighbourhoods.	

2. RESILIENCE

Program / Project Assumptions	Projects contained within this proposal must be combined with upstream infrastructure and operational efficiencies to provide protection similar to a 2013 flood event.
Constraints	A funding gap exists to realize the full suite of additional projects (eg. additional gravel bar reshaping projects, additional community stormwater improvements) not listed here that will also contribute to flood mitigation and resiliency.
Dependencies:	The major dependencies for these projects include approval of 2017 ACRP submission, final design of the projects, extensive engagement with the communities identified, and land easement negotiations for the Bowness barrier site.
Risk(s): <i>Describe any known risks</i>	<p>Flooding is Calgary's number one hazard and risk, and climate change predictions show an increase in flooding frequency and intensity. Lack of funding to implement these projects will result in continued significant public safety risk from flooding, risk of flood damage to City assets and private property, potential service and business continuity disruptions. Future access to insurance and disaster recovery funding without demonstrated effort to mitigate impact are at risk.</p> <p>Construction of barriers to protect from flooding may disrupt some communities and require land access negotiation on private property in some cases. Water Resources will mitigate community disruption as much as possible and conduct extensive engagement and communications with affected communities.</p>



3. PUBLIC CONSULTATION PLANS

<p><i>Provide a brief description of public consultation completed and the dates of consultation.</i></p>	<p>Community engagement was conducted during the Flood Mitigation Measures Assessment, which informed the list of barriers presented here. Public engagement took place throughout 2016 to gather input on all potential flood mitigation measures and to inform Administration’s recommendations. Engagement included a Community Advisory Group, a survey, community workshops, open houses and online engagement. Details on engagement activities are found in UCS2017-0266.</p> <p>Further public consultation will be conducted in the affected communities during the design and implementation phases of these projects.</p>
<p><i>Provide a brief description of public consultation outstanding and the dates of the planned consultation.</i></p>	<p>Future public engagement will be undertaken with the communities impacted by the barriers to be constructed in Sunnyside, Downtown, Pearce Estates-Inglewood, and Bowness. Water Resources will develop an engagement plan in 2017, with the engagement activities to coincide with the timeline for each barrier project.</p>

4. CAPITAL ESTIMATES

<p>Estimate Class</p>	<p><i>Program Class Estimates: 5</i></p>
<p>External Funding (Anticipated / Received) <i>List funding source and their contribution to the total cost estimate</i></p>	<p>Attachment 4 proposes the projects from this Implementation Plan to be submitted to ACRP for funding in 2017. The City will have cost-share obligations under this program.</p>
<p>Operating Impact <i>Describe operating impact of investment if any (i.e. whether new or able to be absorbed within existing operating budget). Where possible provide a precise financial and operating response identifying operating benefits of the investment. Operational efficiencies may also be identified.</i></p>	<p>There are some operating budget impacts for these projects individually; however, implementation of these projects will reduce the future operating costs associated with emergency response during flooding. The funding impacts associated with the capital projects will be absorbed within the existing operating budget, and existing FTEs will be used to deliver the proposed work. Reprioritization and reallocation of resources will be completed as required.</p>