

BRFM Meeting with Councilor Ward Sutherland

Introduction

At the outset, we agree with the Flood Mitigation Measures Assessment Report (“FMMA”) recommendation to pursue a combination of upstream flood mitigation, community level mitigation and property level mitigation solutions to manage Calgary’s flood risk.

We support the upstream mitigation strategies on the Bow River as being the best solution to preserving and protecting the natural river environment, the community of Bowness and the City of Calgary.

Each of the scenarios in the FMMA requires upstream flood mitigation on the Bow River. Notwithstanding this requirement, the City has decided to proceed with the Bowness flood barrier project (the “Bowness Barrier Project”) in the absence of committed upstream mitigation by the Province, thereby choosing to implement a City only solution, which is inconsistent with the report.

In proceeding with the Bowness Barrier Project, we wish to highlight a few of our concerns about: (i) the City’s engagement process;(ii) the fair and equitable treatment of the community of Bowness; and (iii) the project economics of the Bowness Barrier Project. ¹

Concerns about the Bowness Barrier Project

Process

1. The City did not follow its own engagement policy

The policy states that engagement is “*defined as purposeful dialogue between The City and citizens and stakeholders to gather information to influence decision making.*”

Riverside property owners, the most directly impacted of stakeholder groups, were not directly consulted before commencement of the City’s conceptual design of the barriers and were not consulted again before the City decided to proceed with the preliminary design.

2. Given the scope of work in building the Bowness Barrier Project, the City could have chosen to first undertake a number of relevant studies before spending funds on the rest of the project, thereby saving the City money if the studies deem the project not feasible. The studies not undertaken include:

¹ We can detail the balance of our concerns with you at another time so you can be fully informed of the negative impact of the City’s proposed community level mitigation plan for Bowness.

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- Hydrogeological / groundwater studies
- Geotechnical investigations
- Flood modeling
- Storm water management
- Environmental assessments

3. The City's Water Resources staff have been unable to:
 - a. clearly state the City's objective decision making criteria for a "GO / NO GO" decision on the Bowness Barrier Project, and
 - b. identify who the decision makers are for the Bowness Barrier Project.

Fair and Equitable Community Flood Protection

1. The current design and associated costing does not give Bowness fair and equitable flood protection in line with other Calgary flood prone communities. In particular, the design fails to:
 - a. include groundwater protection, and storm water management;
 - b. accommodate property owners' choice of route and type of barrier, in contrast to the properties owners experience in implementing the barrier in Inglewood. We are concerned about the different treatment of Bowness residents compared with residents in more affluent communities; and
 - c. produce a basis for the land compensation estimates. In our opinion, a conservative view of the Inglewood Land Compensation Board ruling in 2011 of an expropriated easement for flood control would yield an estimate of \$20 MM when applied to Bowness. The City has estimated \$13.4MM, as demonstrated in figure 1 below.

Project Economics

The Bowness Barrier Project economics are underestimated on the basis of the following:

1. The City appears to have chosen the cheapest design scenario for the project as compared to the existing barrier in Inglewood. The City has also stated an accuracy of +50% for the estimated costs.

The estimated cost of the Bowness Barrier Project would have been considerably higher if the design had included the elements that are included in other community solutions like Sunnyside (proposed) and Inglewood (existing), such as (i) groundwater protection, (ii) storm water management, (iii) resident's input to the routing of the barrier,

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and (iv) fair compensation for land acquisition.

2. The City's estimates of the costs of land acquisition and flood protection appear to be grossly underestimated (see figure 1 and 2).

TABLE 1 - COST ESTIMATE SUMMARY (OVERLAND PROTECTION)

Item	Amount (\$ 000s)
<i>General</i>	1,010.0
<i>Removals and Site Demolition</i>	382.3
<i>Property Acquisition</i>	13,425.0
<i>Flood Protection</i>	4,410.0
<i>Site Restoration</i>	1,371.1
Subtotal	20,598.4
<i>Engineering</i>	717.4
<i>Material Testing</i>	358.7
<i>Permitting</i>	100.0
<i>Contingency</i>	2,875.5
Total	24,650.0

Figure 1 - taken from ACRP submission

3.0	PROPERTY ACQUISITION				
3.1	Purchase of Private Property	LS	Varies	13,400,000	\$13,400,000.00
3.2	Building Demolition	EA	\$5,000.00	5	\$25,000.00
SUBTOTAL - PROPERTY ACQUISITION					\$13,425,000.00
4.0	FLOOD PROTECTION				
4.1	Supply and Install Concrete Flood Protection Wall	M2	\$7,000.00	170	\$1,190,000.00
4.2	Supply and Install Impermeable Earth Fill	M3	\$50.00	25,000	\$1,250,000.00
4.3	Supply and Install Retained Dyke	M2	\$4,000.00	0	\$0.00
4.4	Supply and Install Semi-Permanent Barrier (Stop-log System)	M2	\$4,500.00	0	\$0.00
4.5	Supply and Install Semi-Permanent Barrier (Self-Raising System)	M2	\$20,000.00	0	\$0.00
4.6	Supply and Install Outfall Improvements as per Standard Detail 4	EA	\$200,000.00	7	\$1,400,000.00
4.7	Supply and Install Gated Culvert as per Standard Detail 4	EA	\$30,000.00	19	\$570,000.00
SUBTOTAL - FLOOD PROTECTION					\$4,410,000.00

Figure 2 - taken from Flood Barrier Assessment (AE Report)

In comparison, the Bragg Creek berm will be 2.9 km long, is estimated to cost over \$32MM. We would expect that the Bragg Creek berm should be less costly to build than the Bowness barrier for the following reasons: (i) it is 100% earthen compared to the Bowness Barrier that will include flood wall sections; (ii) it has no storm water system requirements; and (iii) in a rural setting the land acquisition costs are expected to be lower.

3. As stated in the AE Report, the City purposely excluded the following costs from the estimate:
 - i) land negotiation costs,
 - ii) storm water mitigation costs,
 - iii) erosion protection on the berm and existing bank costs,
 - iv) the cost of capital for The City's part of cost sharing agreement,

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and
v) social and environmental costs.

4. Given the discussion in points 1 to 3 above, we do not see how this barrier can be built on the stated budget (+50%).
5. The benefits of the barrier have likely been over-stated since protection against groundwater flooding has not been included in the design and some untested assumptions about flood damage were made.

The AE report states an assumption that homes main floors were 0.3m above ground Level and therefore any inundation from overland flooding above this level would result in main floor water damage. The City has verbally indicated, and we concur, that the majority of homes have the main floor higher than the 2013 Flood level. This means, and the City conceded this point in our meeting on October 25th, that the damages are being over estimated. This then results in an inflated Benefit Cost Ratio.

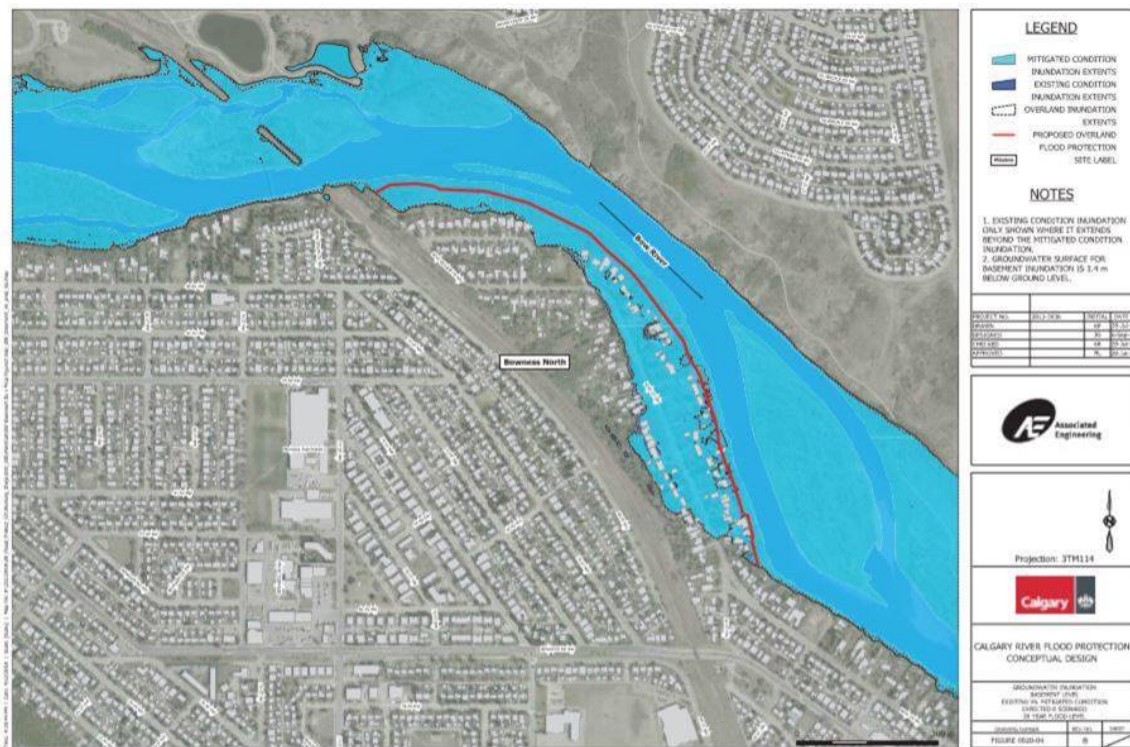


Figure - Bowness North Flood Inundation Map from AE Report

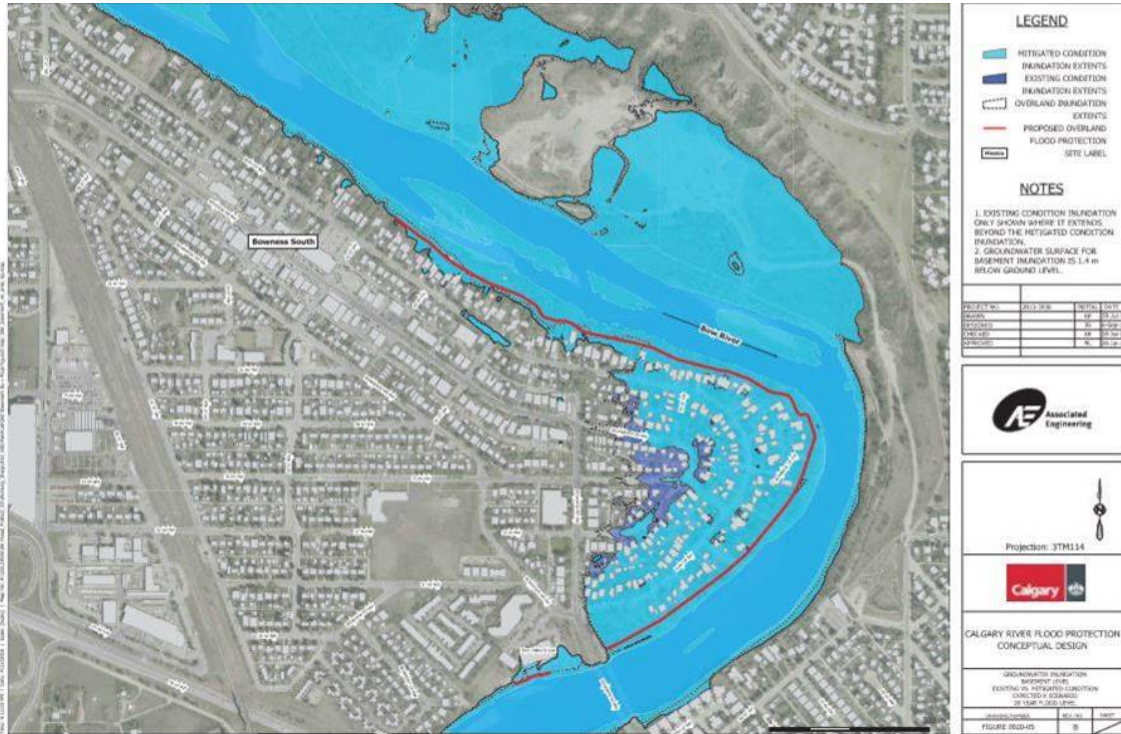


Figure 3 - Bowness South Flood Inundation Map from AE Report

Based on our understanding of the maps and the associated data in the AE report, it is only the areas that are shaded in dark blue that will not be flooded if the barrier is built. All other light blue areas will be flooded by groundwater if the barrier is built.

6. In summary, the benefit to cost ratio does not appear to support the need for barriers to protect from overland flooding in Bowness. The ratio, if the above are taken into consideration, is likely less than 1.

Requests to Councilor Sutherland

1. Going forward, we want to be consulted as per the City's own Engagement Policy.

For example, after the reports and studies are completed, we along with other Bowness residents, expect to be able to review the reports and have purposeful and meaningful dialog with the City's technical team before any decision is made to further pursue this project.

2. We expect that fair and equitable treatment of the residents of Bowness be a requirement of the proper costing of the barrier and not a negotiation position of the City.

The calculation of the benefit cost ratio at the end of the preliminary design ought to include, at minimum, the following costs:

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- i) groundwater protection;
 - ii) storm water management;
 - iii) flexible routing and type of barrier to accommodate resident's requirements;
 - iv) fees associated with land acquisition; and
 - v) equitable and fair land compensation.
3. We request that The City clearly state the decision model for the Bowness Barrier project including the objective criteria for a "GO / NO GO" decision on the Bowness Barrier Project, the stage gates for each decision and the decision maker.
 4. We would like to continue these conversations with you on a regular basis so that together we can reach the best possible solution for Bowness and Calgary.

Questions, comments and inquiries can be directed to:

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