



THE CORPORATION OF THE CITY OF COURTENAY

STAFF REPORT

To: Council

File No.: 5225-04-IFMS

From: Chief Administrative Officer

Date: May 4, 2015

Subject: Integrated Flood Management Study – Final Report Presentation

PURPOSE:

The purpose of this report is to deliver to Council the final Integrated Flood Management Study (IFMS). The City's consultants on this project, McElhanney Consulting Services Ltd, are in attendance today to present the project evolution and outline the final conclusions and recommendations of the study.

CAO RECOMMENDATIONS:

That based on the May 4th, 2015 staff report, "*Integrated Flood Management Study – Final Report Presentation*," Council approve Option 1 and adopt the Integrated Flood Management Study (January 2014) report.

Respectfully submitted,

David Allen, BES, CLGEM, SCLGM
Chief Administrative Officer

BACKGROUND:

On November 15, 2009 and January 11, 2010 the City experienced two separate flooding events causing damage and disruption to property and infrastructure located within the Puntledge Road Commercial area. City owned properties sustained damages in excess of \$130,000. The City recognized a need to improve the existing levels of protection and applied for funding assistance through the BC Flood Protection Program to support a flood protection project entitled "Tsolum River Floodwall".

In January 2012, *Building Canada Fund - Communities Component, Flood Protection Program* confirmed that the City of Courtenay's grant application was successful. The project funding was administered by Emergency Management BC (EMBC) and all reporting requirements were provided to EMBC. The grant provided 2/3 funding for all eligible costs associated with the project, which included the development of updated floodplain mapping with high resolution orthographic photos, hydrologic modelling, preparation of the Integrated Flood Management Study and leading into the design and construction of the Tsolum River Floodwall (concept project for basis of grant). The City retained McElhanney Consulting Services Ltd (MCSL), partnered with Kerr Wood Leidal (KWL) Consulting Engineers and HB Lanarc, to undertake consulting services for this project.

MCSL and KWL developed a hydrologic model able to forecast flood levels for various climactic conditions and different flood protection configurations. Three options for flood protection were reviewed using the hydrologic modelling. The options included the Tsolum River Floodwall and two separate ring dike configurations. The review concluded that the Tsolum River Floodwall, as proposed in the grant application could not meet the provincial requirements of providing 1:200 year flood protection. As a result the project was not supported by provincial authorities and no longer qualified for funding assistance.

Staff responded to these findings by submitting a scope change request to support construction of the Tsolum River Floodwall as the first phase in the larger ring dike project. The request for scope change was not accepted by grantor. Instead it was recommended that the City submit a grant funding application to the 2013 Flood Protection Intake in support of constructing the complete ring dike.

Staff completed the required precursor steps in putting together the application, including requesting a Council commitment to provide 1/3 of the cost of the project. Several other factors required resolution to satisfy provincial agencies and Council, including:

1. Approval from the Provincial Diking Authority for the “Ring Dike” concept.
2. Fulfilling EMBC’s request for an expanded business case.
3. Public engagement with general acceptance of the proposed project
4. Successful borrowing process to fund the project

Staff worked to satisfy these requirements but could not address the issues within the allotted time frame and budget. Staff presented this conclusion at the September 23, 2013 council meeting and it was resolved that:

“Moved by Hillian and seconded by Anglin that the report from the Municipal Engineer on the topic of the IFMS be received; and

That Council endorse and direct staff to pursue the following actions relating to this project:

Complete the flood study to the satisfaction of the Ministry of Forests, Lands and Natural Resource Operations (MFLNRO) Diking Authority within the existing 2013 capital project budget.”

MCSL and KWL have now completed the IFMS to the satisfaction of the Ministry of Forests, Lands and Natural Resource Operations (MFLNRO) Diking Authority. Staff has received and reviewed the final draft study.

DISCUSSION:

The flooding events of 2009 and 2010 demonstrated the City of Courtenay’s vulnerability to flooding. This was reinforced in December 2014 when the Puntledge Road Commercial area flooded over a two day period. Damages sustained to properties during these flood events reinforce the need for the City to continue to develop opportunities to mitigate flood risk. The Tsolum River Floodwall project was conceived as a low cost project to mitigate flooding for a number of properties that were impacted by previous flood events, however could not meet the funding requirements of providing protection to a 1:200 year flood event and therefore was not eligible for the grant funding.

This funding did generate a valuable tool for the City - a dynamic flood model to support staff in understanding the potential impacts of flood scenarios; the potential impacts of developing or building infrastructure in the flood plain and new floodplain mapping.

The IFMS presented a number of options to mitigate the flooding risk. These included the installation of a flood wall to mitigate more frequent floods (less than \$1.0M) and a ring dike around the Puntledge Road Commercial area to mitigate the larger, less frequent floods (greater than \$5.0M). In addition to the physical options, the IFMS presents a number of 'soft' options to increase the level of flood protection including stricter controls for land use within the floodplain, education and public awareness campaigns, floodplain bylaw revision and updating emergency response plans were recommended as lower cost strategies.

Staff's work plan includes short-term next steps based on this study and the model information generated such as:

- A revision to the City's Floodplain Bylaw No. 1743 (1994) and OCP section relating to floodplain
- Updated emergency response plans to be informed by the study data
- Create an infrastructure plan for flood protection (short (5-yr), medium (10-yr), long term (25-yr))

A potential engineered solution for long-term flood mitigation and/or policy changes to restrict land use for development in the floodplain are larger discussions that staff and Council will embark upon as part of the City's overall Asset Management Plan. Council's direction is needed in this regard based on larger discussion surrounding levels of service, priorities and funding opportunities or restrictions. Once staff has identified the scope of work, options and impacts for infrastructure solutions and/or land use changes, staff will return to Council to have this discussion.

Mark DeGagné, P.Eng of McElhanney Consulting Service Ltd. is here today to review the overall project with Council and explain the conclusions determined as a result of the Integrated Flood Management Study.

FINANCIAL IMPLICATIONS:

The IFMS study was funded in partnership through the Build Canada Fund – Communities Component, Flood Protection Program (administered by EMBC). The project has expended approximately \$320,000 with approximately \$155,000 recaptured from the grant.

ADMINISTRATIVE IMPLICATIONS:

Staff has expended approximately 20 hours to undertake meetings, review the report and prepare correspondence in 2015.

The overall project spanned 3 years and involved several (5) staff members. Project time was not tracked during this period; however staff spent both statutory hours and time outside of work to deliver the project.

ASSET MANAGEMENT IMPLICATIONS:

The study will inform the development of any new infrastructure that will be required to mitigate potential flood impacts.

STRATEGIC PLAN REFERENCE:

The 2015 Strategic Plan includes a "Now" initiative carried forward from 2014 to complete the Integrated Flood Management Study (IFMS) and to present it to Council.

OFFICIAL COMMUNITY PLAN REFERENCE:

There are many references to management of the floodplain throughout the OCP. This study will inform a revision to the OCP with respect to the boundaries of the floodplain to ensure they are accurately depicted.

REGIONAL GROWTH STRATEGY REFERENCE:

Goal 8: Climate Change

Objective 8-F: Plan for climate change adaptation

8F-2: Promote inclusion of climate change modelling and impacts in future infrastructure and resource studies.

8F-6: All new developments within established floodplains should be discouraged and redevelopment of lands within floodplain areas should only be supported where technical analysis by a qualified professional has been undertaken to ensure that lands are safe for use, development will not impact floodplain functions, and construction levels include safety factors to account for climate change and potential sea level rise and associated extreme storm surges.

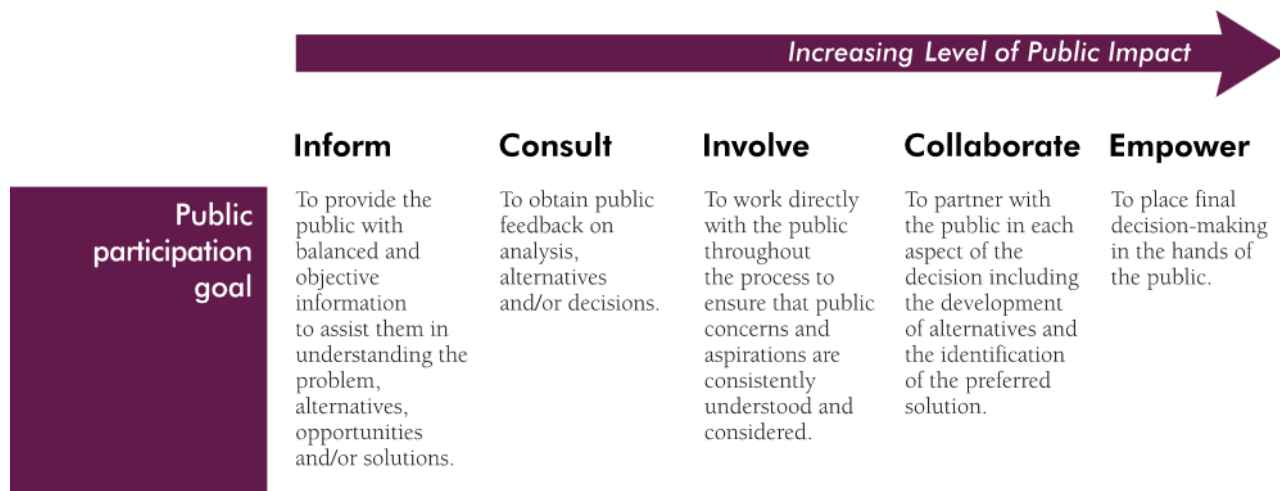
CITIZEN/PUBLIC ENGAGEMENT:

A number of public and stakeholder events were held in association with this project:

- An introductory event (June 28, 2012) for the public to provide information related to the scope and intent of the IFMS.
- A regulatory review workshop (June 28, 2012) to ensure that all government information and policies relevant to the project were compiled.
- An options Community Workshop (November 15, 2012) was held to introduce the approximate flood extents and general options for flood mitigation to community stakeholders.
- Direct contact with First Nation representatives was undertaken on December 14, 2012.
- Draft recommendations were presented to the community at a final workshop held on January 30th, 2013.

This project has been performed at a collaborate level of public participation based on the IAP2 Spectrum of Public Participation:

http://c.ymcdn.com/sites/www.iap2.org/resource/resmgr/imported/IAP2%20Spectrum_vertical.pdf



OPTIONS:

Option 1: That Council adopt Integrated Flood Management Study.

Option 2: That Council receive Integrated Flood Management Study for information.

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