The Corporation of the
Town of Tecumseh

Public Works & Environmental Services

To: Mayor and Members of Council

From: Phil Bartnik, Director Public Works & Environmental Services

Date to Council: September 24, 2019

Report Number: PWES-2019-47

Subject: CWN, IBC, NRCan Pilot Project
Improving Flood Risk Evaluation through Cross-Sector Sharing of Richer Data

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Recommendations

It is recommended:

That Report No. PWES-2019-43 titled CWN, IBC, NRCan Pilot Project, Improving Flood Risk Evaluation through Cross-Sector Sharing of Richer Data **be received**.

Background

In April 2018, Canadian Water Network (CWN) convened a meeting with municipal water utility leaders, the insurance sector, academic and other experts, municipal/regional organizations, and the federal government to identify opportunities to improve flood risk evaluation. Several key barriers were discussed, including how best to include municipal flood mitigation works in risk models, as well as the impact on model accuracy with the incorporation of higher resolution digital terrain maps. The outcome of this meeting forged a partnership between CWN, Insurance Bureau of Canada (IBC) and the Federal government (Natural Resources Canada – NRCan) to undertake a pilot project examining the impact to model-derived flood risk maps with the incorporation of richer datasets.

Flooding, both fluvial (riverine) and pluvial (from intense rainfall events), has caused significant damage to communities in Canada over the past two decades. Over this period, property claims have slowly increased, and now represent 36.8% of all insurance claims for the Canadian insurance sector, with the largest percentage of property claims resulting from flooding. These increased flooding events pose significant challenges to:

- **The insurance sector**, who price risk and offer products to protect against public/private losses.

- **Municipalities**, who actively invest in programs and infrastructure to build resiliency to flooding.

- **Upper-level governments**, who are responsible for disaster mitigation, public safety and supporting those communities who become impacted from flooding and other extreme events.

Pilot Project Objectives

The pilot project had three objectives:

1. To assess the potential for enhancing flood risk evaluation when higher quality topographical data and municipal flood mitigation measures are incorporated in flood risk models.

2. To determine what data type, resolution and format are most effective for improving model certainty.

3. To investigate mechanisms for sharing relevant and current data across public and private sectors.

Flood Mapping in Canada

Maps are effective tools used to communicate flood hazards and risks.

Flood hazard maps show flooding extents for given return periods (annual probabilities of occurrence), and in Canada are usually based on detailed engineering studies for 1 to 2 kilometre sections of rivers. Typically, flood hazard maps in Canada show fluvial (riverine) flooding only, but they do not consider pluvial (rainfall), coastal, ice jam, and other types of flooding. Furthermore, in many areas of Canada, flood hazard maps are either unavailable, or out-of-date.

Flood risk maps combine flood hazard maps with socio-economic information to determine the consequence of flood hazards to people, the environment, infrastructure, health, and other valued assets.

Current large-scale flood risk models in Canada rely largely on low-resolution (e.g., 30 metre) topographical data of mixed quality, and give limited consideration to flood reduction controls such as storm sewers, dykes and dry-ponds. Model accuracy may be improved with better and higher-quality input data, but there is a need to determine what data could improve model certainty and what degree of improvement can be had.

Municipalities asked to Participate in the Pilot Project

Given the short timeframe of this pilot project, the project focused on pluvial flood risk evaluation for discrete areas (approximately 30 to 50 km^2) in five municipalities in Canada. The study sites were selected based on the following criteria:

- Geographical distribution across Canada.
- Existence and accessibility to high-resolution digital elevation data collected in the last five years.
- Accessibility to municipal data (e.g., flood defense/mitigation infrastructure, pipe networks, etc.) for input into pluvial flood models.

The three core municipalities selected were: Regina, Saskatchewan, Windsor, Ontario and Halifax, Nova Scotia. Two additional study sites were also evaluated, being: Edmonton, Alberta and Tecumseh, Ontario.

Comments

CWN, in partnership with IBC, convened a meeting on May 6, 2019 with cross-sector stakeholders to present the findings from this pilot project and discuss potential next steps for improving flood risk evaluation in Canada. A total of 74 participants attended including representatives from the municipal sector, insurance sector, government organizations, research groups, flood risk modelling firms and other organizations. Tecumseh was represented at the meeting by the Director of Public Works & Environmental Services and the Manager of Engineering Services.

A final report for the pilot project was completed in June 2019 by CWN and provided to all of the participating municipalities. Although not publicly released by CWN, a hard copy of the final report is available for review in the PWES Office.

CWN has more recently advised that a ‘public-facing capture’ for the pilot project will be publicly released the week of September 23, 2019. The capture is intended to present the key findings and insights from the pilot project, as well as the cross-sector opportunities identified during the May 6th meeting. IBC is also very supportive of releasing this capture publicly through a national media campaign. Once the capture and IBC’s media release is issued the week of September 23, 2019 the final copy will be distributed to Council, placed on the Town’s website, and included as a Communication item on the Agenda for the next Regular Council Meeting.

Consultations

Chief Administrative Officer

Financial Implications

There are no financial implications associated with this report.

Link to Strategic Priorities

Applicable	2019-22 Strategic Priorities
☒	Make the Town of Tecumseh an even better place to live, work and invest through a shared vision for our residents and newcomers.
☒	Ensure that Tecumseh's current and future growth is built upon the principles of sustainability and strategic decision-making.
☐	Integrate the principles of health and wellness into all of Tecumseh's plans and priorities.
☐	Steward the Town's "continuous improvement" approach to municipal service delivery to residents and businesses.
☒	Demonstrate the Town's leadership role in the community by promoting good governance and community engagement, by bringing together organizations serving the Town and the region to pursue common goals.

Communications

Not applicable ☒

Website ☐ Social Media ☐ News Release ☐ Local Newspaper ☐

This report has been reviewed by and recommended for submission by the Chief Administrative Officer.

Prepared by:

Phil Bartnik, P.Eng.
Director Public Works & Environmental Services

Recommended by:

Margaret Misek-Evans, MCIP, RPP
Chief Administrative Officer

Attachment Number	**Attachment Name**
None	None