# Regional Board Report

**TO:** Regional Board

**FROM:** Todd Cashin
Director of Community Services

**DATE:** November 4, 2021

**SUBJECT:** Regional Floodplain Management Plan – Phase 3 (6430-18)
Central Okanagan Flood Mitigation Planning

**Voting Entitlement:** *All Directors - Unweighted Corporate Vote - Simple Majority - LGA 208*

**Purpose:** To present information regarding the Central Okanagan Flood Mitigation Planning project.

## Executive Summary:

Flooding and other natural hazards continue to pose a risk to Canada's economic vitality, infrastructure, environment, and citizens. The Regional District Central Okanagan is no stranger to flood damages having experienced them on riverine and lake hazard zones in recent years. The Regional Board's Strategic Priorities identifies hazard management as a priority and further supports the completion of Phase 3 of the Regional Floodplain Management Plan.

The current project is the culmination of several years of work, including investigations of lake and creek flood hazard, as well as flood risk assessments. Building on this work, Phase 3 seeks to prepare a mitigation planning framework to reduce flood risks with a focus on non-structural mitigation strategies. Tamsin Lyle, Principal Engineer of Ebbwater Consulting Inc, will be providing a presentation on the Central Okanagan Flood Mitigation Planning project, including a summary of the project outcomes and deliverables.

## RECOMMENDATION:

**THAT** the Regional Board receive the Central Okanagan Flood Mitigation Planning Resource Guide and Technical Report and the Regional Floodplain Management Plan – Phase 3 report from the Director of Community Services dated November 4, 2021 for information.

Respectfully Submitted:

Todd Cashin
Director of Community Services

Approved for Board's Consideration

Brian Reardon, CAO

*Prepared by: Brittany Lange, Environmental Planner*

Attachment(s):

- Resource Guide
- Technical Report

**Implications of Recommendation:**

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| Strategic Plan: | Receiving the update on the Central Okanagan Flood Mitigation Planning Resource Guide and Technical Report for information supports the Regional Board Strategic Priorities 2019-2022 with respect to "Environment" and supports the completion of Phase 3 of the Regional Floodplain Management Plan. |
| Policy: | Receiving the update on the Central Okanagan Flood Mitigation Planning Resource Guide and Technical Report for information supports numerous policies contained within Our Land, Our Water, and Our Governance outlined in the Regional Growth Strategy Bylaw No. 1336. |

## Background:

Flood is a natural and regular process that has shaped the physical geography of the Okanagan Valley since time immemorial. With more people and development in the region, these floodwaters now cause more damage and devastation, most recently in 2017 when high lake levels caused widespread flooding along the shorelines in the region, and in 2018 when the lake and creeks spilled their banks onto adjacent floodplains.

Flood is a complex problem that creates diverse and cascading impacts. People may be evacuated from their homes and deal with stress and anxiety when they return to damage in their communities. In rare cases, people may lose their lives during large magnitude or sudden flood events. Floods damage the environment when contaminated waters cover valuable habitats or when riparian areas are severely eroded.

Floods also cause both short and long-term financial impacts when structures are damaged, businesses disrupted, and significant emergency and recovery services are deployed. These are just some of the many impacts associated with a flood event. Fortunately, there are many flood mitigation options available. The challenge is for local governments and stakeholders to choose the best available option or group of options given the unique characteristics of a given area, and the available (and usually limited) resources.

The Regional District of the Central Okanagan along with First Nation and local governments and other regional partners have been working together for many years to increase understanding of local flood hazards and their trajectory with climate change. This information, coupled with recent damaging floods have highlighted the need for new approaches in flood management.

### Regional Floodplain Management Plan

In June of 2016, the Regional District of Central Okanagan Regional Floodplain Management Plan (RFMP) Phase 1 Report was completed. The RFMP identified high risk areas in a region-wide high-level risk assessment and gap analysis and established the scope and priorities intended to be completed with Phases 2 and 3. Phase 2 included development of flood hazard maps for a number of streams, the shores of Okanagan, Ellison, and Kalamalka/Wood lakes, as well as ongoing risk assessments and dam inundation studies around the region.

Phase 3 seeks to use the information collected through Phases 1 and 2 to develop non-structural flood mitigation strategies; where non-structural describes mitigation activities that do not involve large engineered structures (e.g., dikes, dams, etc.).

**Regional Growth Strategy (RGS) Priority Projects Plan**

In accordance with the RGS, through a collaborative process, RDCO staff, RGS Steering Committee members, and elected officials developed a 5-year action plan to outline the priority initiatives to implement the RGS. The 5-year action plan, endorsed by the Regional Board on July 24, 2017, is the framework for RGS implementation and based on the regional initiatives identified within the RGS and by the Regional Board. The completion of Phase 2 and Phase 3 of the Regional Floodplain Management Plan was listed as priority project number one.

**Okanagan Climate Projections Report**

The Regional Districts of the Okanagan Valley partnered with the Pacific Climate Impacts Consortium to develop a Climate Projections report for the Okanagan. This report provides the scientific foundation to make informed decisions that support community action and to better prepare for climate variations over the next 30 and 60 years. Wildfire, flooding, and drought have already tested local infrastructure, caused economic losses, and posed health risks to communities. Based on these changes, there is a need to plan for a greater likelihood of more intense and hotter fires, increasing water shortages, and spring flooding. Findings indicate that the Okanagan can expect significant changes including:

- Warmer temperatures year-round;
- Summers will be considerably hotter;
- Increased duration of growing season;
- Warmer winter temperatures;
- Increased precipitation; and,
- Summer is expected to remain the driest season and become drier.

The report indicates precipitation increases can be expected across all seasons, except summer. The largest increases in precipitation will take place during the spring and autumn months. This can lead to more frequent flooding and stress to ecosystems and infrastructure.

While it can be daunting to try to plan around so much change and uncertainty, there are some silver linings when it comes to flood. For example, wildlife and waterways can benefit from flooding, and, with creative and thoughtful planning, floodplains can present increased opportunities for parks, natural space, and recreation when not flooding. As such, it is important to consider what is happening in the floodplain outside of flood season, and to focus on options that produce co-benefits.

## Central Okanagan Flood Mitigation Plan:

In early 2021, the RDCO retained the consultant team of Ebbwater Consulting Inc., SHIFT Collaborative, and EcoPlan International to work with governments and community members in the Okanagan to build a shared understanding of the wicked nature of flood management. Non-structural flood mitigation actions, the broad group of actions that can be taken to reduce flood risk and increase resilience that are not large engineering works, offer an excellent opportunity to reduce flood risk and gain valuable co-benefits.

Throughout this process, the consulting team, with the support of a steering committee, developed a strategic resource guide to assist governments and others to act both individually and collectively to enable non-structural flood mitigation actions. Two broad categories were explored, including:

- **Risk Reduction:**
  - Land stewardship – maintaining and restoring natural areas (e.g., watersheds, wetlands, riparian areas, natural waterways) to help reduce flooding.
  - Land use management - encouraging or requiring types of land use in flood hazard areas that will prevent or reduce potential damage. For example, a green space would be less affected by flooding than a new subdivision.
  - Building management - regulations and strategies that make structures and belongings less susceptible to flood damage. For example, using flood-resistant materials for the ground floor of a building.

- **Resilience:**
  - Education and awareness – homeowner guides, flood and climate change education, neighbourhood preparedness programs, and other learning resources.
  - Emergency response - early warning systems, temporary barriers, evacuation route planning, and other flood response programs.
  - Insurance and disaster financial assistance - managing financial risks where no other mitigation strategies are available.

Completion of a flood mitigation plan for the region will provide an opportunity and framework for Central Okanagan jurisdictions to consider mitigating and preparing for risks using consistent strategies while continuing to build strong working relationships.

The deliverables of Phase 3 work include the following:

1) Engagement Framework and Engagement Summary.
2) Non-structural Flood Mitigation Planning Resource Guide.
3) Non-structural Flood Mitigation Planning Technical Report.
4) Presentations to member municipalities, First Nations, and the RDCO.

Summary of Engagement Activities

The project was guided by a diverse and multi-jurisdictional steering committee, who provided input at key stages throughout the process. Two online stakeholder engagement workshops, attended by approximately 40 people have been conducted. This was complemented by public engagement including the development of project flyers, advertising, and posters, a project website hosted by the RDCO, several online 1-hour community conversations, a public survey as well as a presentation to the RDCO Governance and Services Committee in July.

Two key themes were explored in these sessions. In the first instance, stakeholders and the public were asked about their overall values and concerns related to flooding in the region. These values will be used to assess the suitability of flood mitigation actions for the Okanagan Valley. We heard that the following are important:

- Human health and safety;
- Safety and resilience of homes and neighbourhoods;
- Function of infrastructure and transportation networks;
- Protection and recognition of Indigenous and other cultural values;

- Environmental protection and function;
- Health of the local and regional economies; and,
- Access to recreation and outdoor activities.

In the second round of engagement, we explored the potential toolbox of non-structural mitigation actions to learn from stakeholders and the public which are appealing, and which are less attractive. We heard that there is broad support for most actions, however, that environmentally focused options (watershed protection and restoration) are slightly preferred over building controls. A third and final round of stakeholder engagement took place in the fall to confirm the suite of preferred mitigation options as well as the overall strategy direction.

Summary of Resource Guide

For the last century, flood risk has been primarily managed using large structural engineering works such as the Okanagan Lake Dam, and dikes along creeks and rivers. With climate change and increasing development pressures, these hazard reduction measures are being tested to their limits.

With recognition that existing structural mitigation has limits and alternative measures will be needed to mitigate flood damages in the future, this Resource Guide has been developed as a go-to reference to support decision making by local and First Nation governments who are considering non-structural flood mitigation in the Central Okanagan region. Given the range of possible locations, priorities, and conditions across this area, this Guide has been developed as a "toolbox," profiling a range of 40 possible non-structural flood mitigation options together with accompanying information that can be used to assess their suitability to a particular context or community needs.

Summary of Technical Report

This report is a companion document for the Central Okanagan Non-Structural Flood Mitigation Resource Guide. This document provides the historical context of flood hazards in the Okanagan, best management practices and key international guidance, as well as the British Columbia governance context. It also provides background information, methods, and the results of a public and stakeholder engagement process that informed the development of values-based criteria to support the selection of most preferred non-structural mitigation activities (as outlined in the Resource Guide). This is followed by a series of recommendations, including key concepts that are best tackled at a regional scale.

## Policy Considerations:

### Regional Board Strategic Priorities 2019-2022

RDCO's strategic priorities, developed by the Regional Board, speak to important goals, services and needs on which the Board wishes to focus the organization's attention and resources. Hazard management has been identified as a priority with a need for a regional coordinated approach to efforts aimed at risk assessment, mitigation, and emergency planning. The strategic plan further supports the completion of Phase 3 of the Regional Floodplain Management Plan.

### Regional Growth Strategy (RGS) Bylaw No. 1336

The RGS provides overall direction to work with local governments and provincial agencies to assess and mitigate risks in floodplains. Additionally, this project aligns with various policies of Our Land, Our Water, and Our Governance.

Our Land goal is to manage the land base effectively to protect natural resources and limit urban sprawl. Policies Include:

- Encourage cooperation and information sharing with regional partners on hazard identification and mapping programs to provide better and more information on hazard management (Policy No. 3.2.1.11); and,
- Encourage cooperation and information sharing with regional partners to identify data and information necessary to improve hazard and resiliency planning (Policy No. 3.2.1.12).

Our Water goal is to manage and protect water resources. Policies include:

- Work with local governments, provincial agencies to assess and mitigate the risks in floodplains (Policy No. 3.2.3.3).

Our Governance goal is to respond to the needs of the region with an effective and efficient governance service model. Policies include:

- Support opportunities for regional partners to collaborate, communicate and coordinate on matters of regional significance (Policy No. 3.2.10.4).

## Financial Considerations:

Flood is Canada's most frequent and costly hazard, causing $1.8 billion in direct losses and damages to households, property, and infrastructure, and affecting thousands of Canadians annually (Insurance Bureau of Canada, 2018). With climate change, flooding will pose an increasing risk to Canada's economic vitality, infrastructure, environment, and citizens.

As it relates to the Central Okanagan Flood Mitigation Planning project, the Regional District has received $150,000.00 from the Province of BC through the Community Emergency and Preparedness Fund, administered through Union of BC Municipalities, to complete Phase 3 of the Regional Floodplain Management Plan.

## External Implications:

The project conducted an extensive communications and engagement component to gain input from member local governments, Syilx communities in the region, stakeholders, and the public to ensure that the proposed mitigation options are acceptable and supported region wide. Engagement and input are important and necessary components of a flood risk reduction strategy. This includes learning from stakeholders and the public about their values and concerns related to flooding, and then incorporating this into project outcomes will support public acceptance of flood mitigation actions.

## Organizational Issues:

Along with the fiscal and reporting responsibilities, the Regional District is involved in the strategy development process through overall project management, contract management, and other administrative functions, including, but not limited to budget tracking, request for proposal processes, retaining and liaising with consultants, and preparing progress reports and briefing notes.

Further, the Central Okanagan Flood Mitigation Resource Guide and Technical Report will support the RDCO Regional Emergency Program through consistent, region-wide mitigation strategies that will create ongoing efficiencies now and into the future. This work and series of recommendations may affect day-to-day operations and support evacuation route planning in addition to events that require activation of the Emergency Operations Centre.

***Considerations not applicable to this report:***

- *General*
- *Legal/Statutory Authority*
- *Alternative Recommendation*