

Regional Floodplain Management Plan – Phase 3

Flood Mitigation Planning – Project Update

July 8, 2021

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rdco.com



Purpose

- Provide an update on Phase 3 of the Regional Floodplain Management Plan – Flood Mitigation Planning project.

Background



Regional Floodplain Management Plan (RFMP) Phase 1



FINAL REPORT

Regional District of Central Okanagan

Regional Floodplain Management Plan:
Phase 1

- Region-wide high-level risk assessment and gap analysis.
- Established the scope and priorities for Phase 2 & 3.



June 2016

ISO 9001 and 14001 Certified | An Associated Engineering Company



Priority Projects: Five Year Action Plan

#	Project	2017	2018	2019	2020	2021
1	Regional Flood Management Plan: Phases 2 and 3					
2	Regional Planning Lab					
3	Regional Housing Needs Assessment					
4	Regional Growth Strategy Monitoring Program					
5	Regional Citizen Survey					
6	Regional Housing Strategy					
7	Regional Growth Strategy Five-year Review					
8	Regional Agricultural Strategy					
9	Regional Employment Lands Inventory					

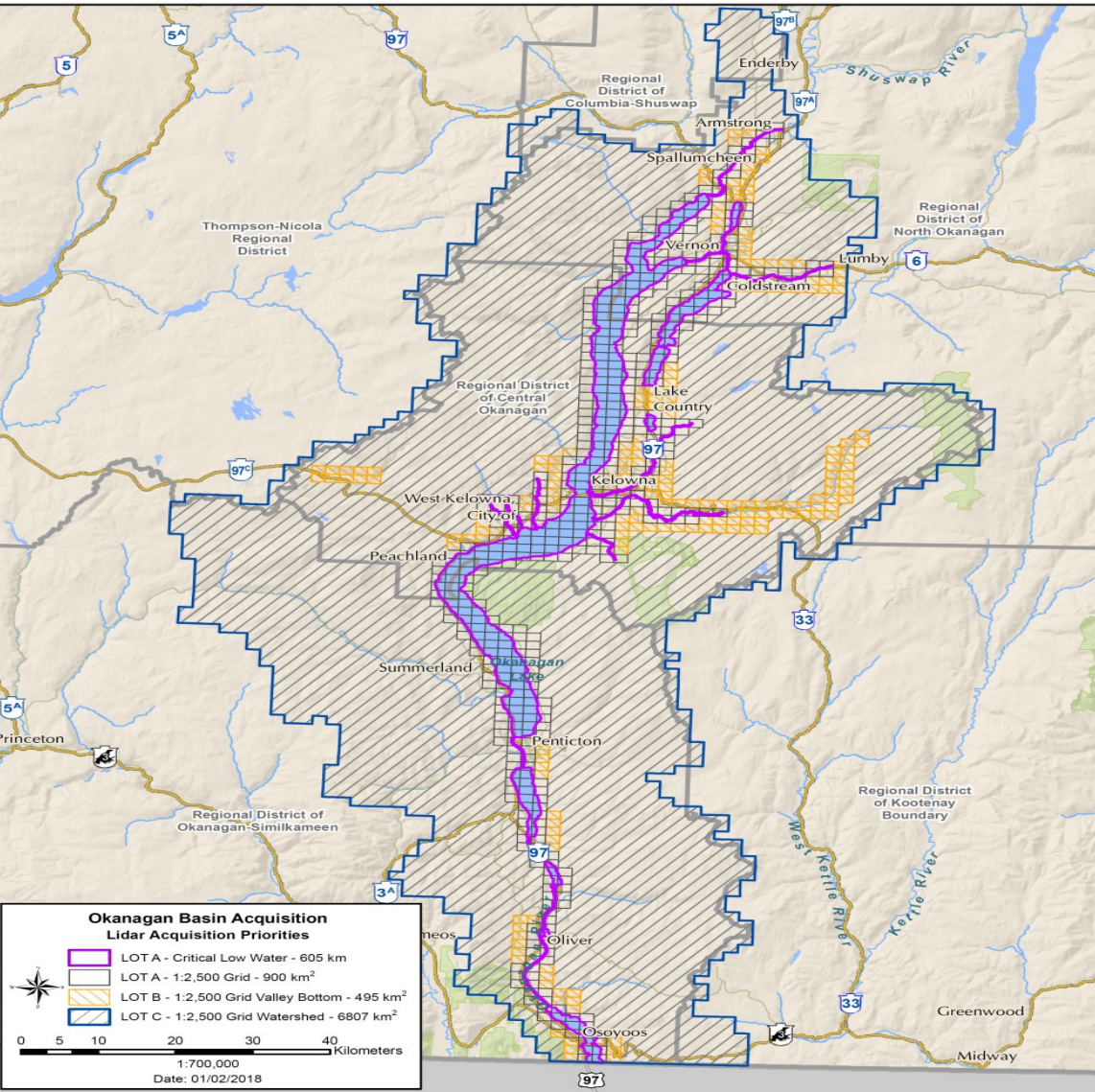
Background – RFMP Phase 2



Recommended Actions for Phase 2:

- Mission Creek Floodplain Mapping Update – *completed*
- Mission Creek Dike Breach Analysis – *completed*
- Mill Creek Floodplain Mapping – *completed*
- Okanagan Lake Flood Level Mapping - *completed*
- Wood and Kalamalka Lakes Flood Level Mapping – *completed*
- Confirm floodplains and alluvial fans within urban or residential developments
 - Lake Country (Vernon Creek) - completed
 - Peachland (Peachland & Trepanier Creeks) - completed
 - Kelowna (Bellevue Creek) - in process
 - West Kelowna (Powers and McDougall Creeks) – in process

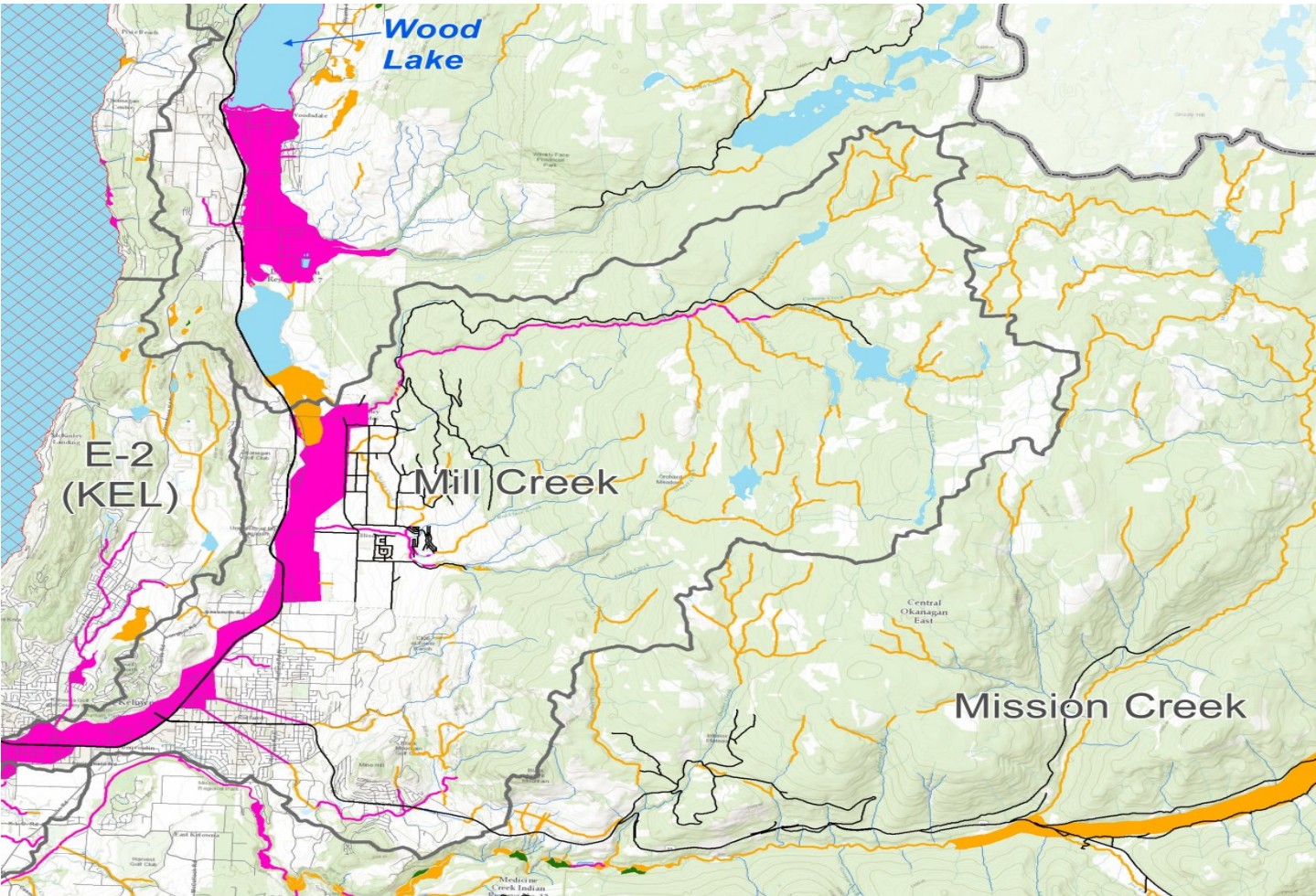
Okanagan, Wood, Kalamalka & Ellison Lakes Flood Level Mapping



- Finalized:
 - OBWB & GeoBC LiDAR project
 - Funding from EMBC
 - RDCO, RDOS, RDNO & OBWB flood mapping collaboration
 - Funding from NDMP & UBCM
- Outcome: Flood modelling and digital mapping

Dam Failure Inundation Mapping

- Beaver (Swalwell) & Crooked Lakes:
 - Completed in cooperation with the District of Lake Country in 2018
- Ideal (Belgo) Lake:
 - Completed in cooperation with the Black Mountain Irrigation District in 2018



Background – RFMP Phase 3

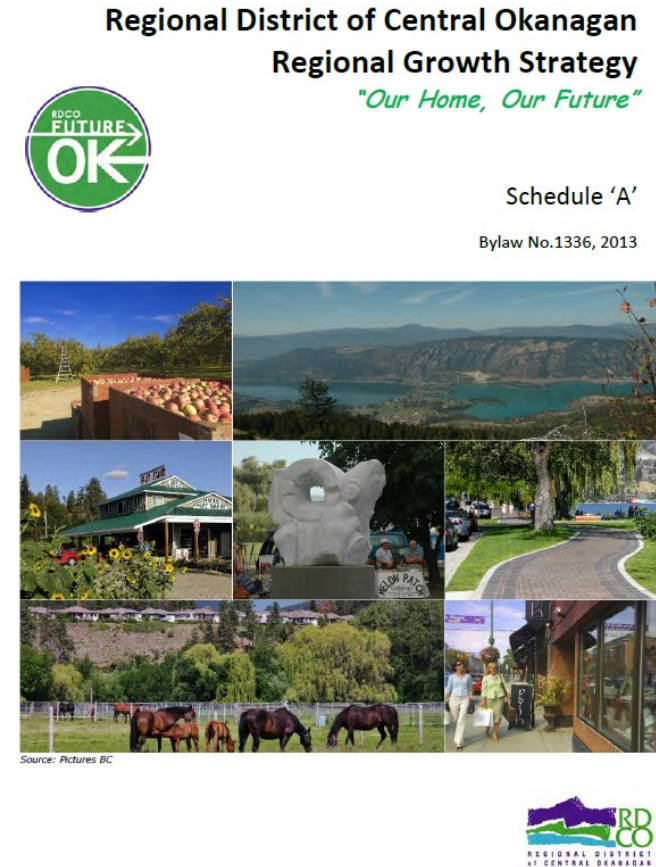


Flood Mitigation Planning

- \$150,000 UBCM grant funding received.
- Project initiated in January 2021.
- Next step in the process is to identify the best and most cost-effective mitigation strategies.

Regional Growth Strategy Policies

- 3.2.1.11
 - Encourage cooperation and **information sharing** with regional partners on hazard identification and mapping programs to provide better and more information on **hazard management**.
- 3.2.1.12
 - Encourage cooperation and information sharing with regional partners to identify data and information necessary to improve hazard and **resiliency planning**.



Regional Board Strategic Priorities

Environment: We will initiate and support efforts to reduce our environmental footprint, adapt to climate change and connect with nature.

Specific actions include:

- Complete Phase II & III of the Floodplain Management Plan.

Through these actions we will see:

- A reduction in new construction in higher risk floodplain areas.

Desired Outcomes of the Floodplain Management Plan:

- Reduce flood risk.
- Improve emergency response.
- Increase resiliency to climate change.



An aerial photograph of a lake with a marina and surrounding residential area. The water is dark blue, and the shoreline is lined with houses and trees. A large black rectangle is overlaid on the right side of the image, containing the title text.

Central Okanagan

FLOOD MITIGATION PLANNING

Governance and Services Committee Presentation

July 8th, 2021



Today's Presentation

- **Project & Engagement Overview**
- **Community Values & Decision Criteria**
- **Non-Structural Options**

Project Objectives

1

Reduce Flood Risk

2

Improve Emergency
Flood Response

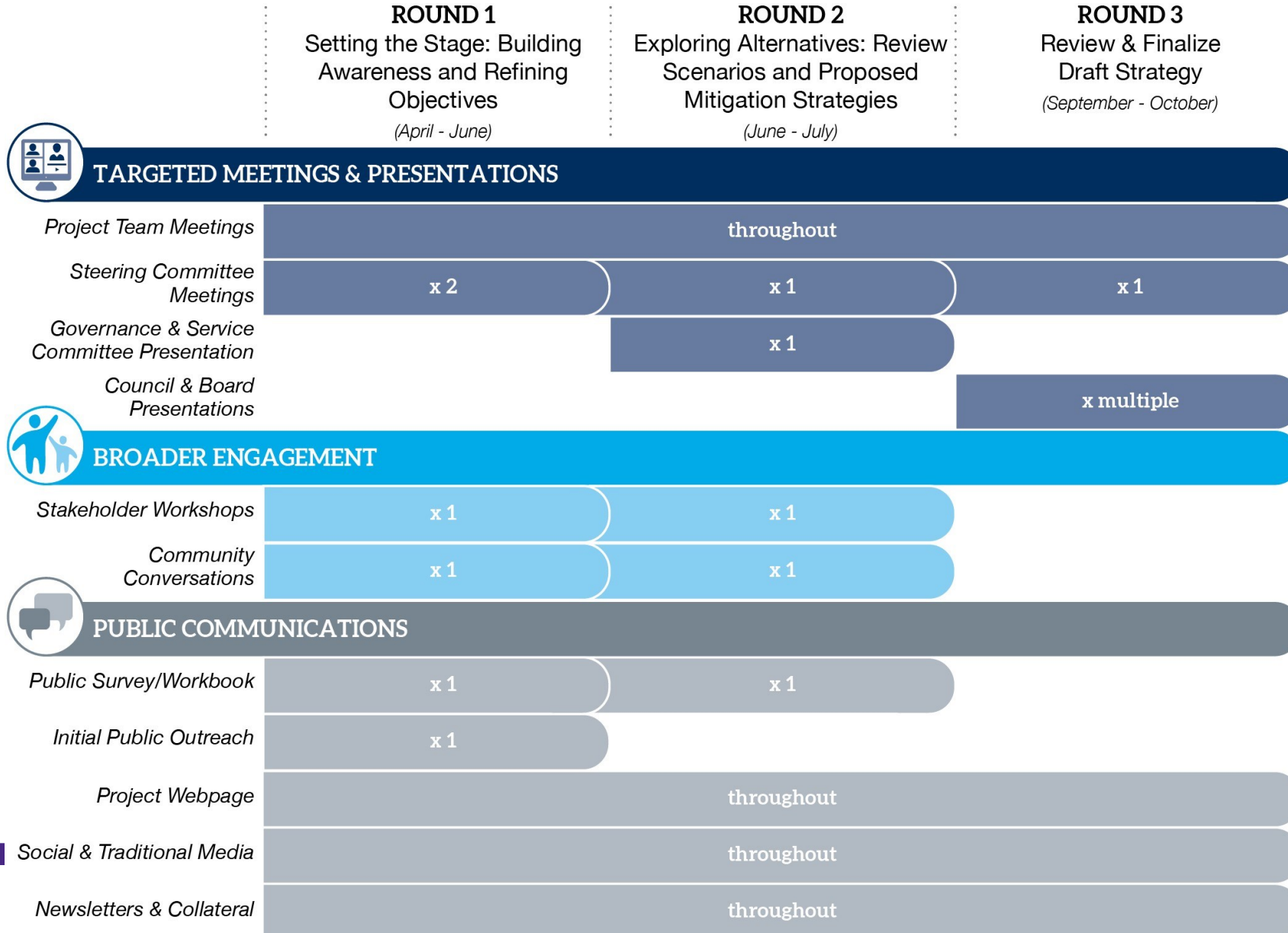
3

Increase Resiliency
to Climate Change

Flood Mitigation Planning: Phase III

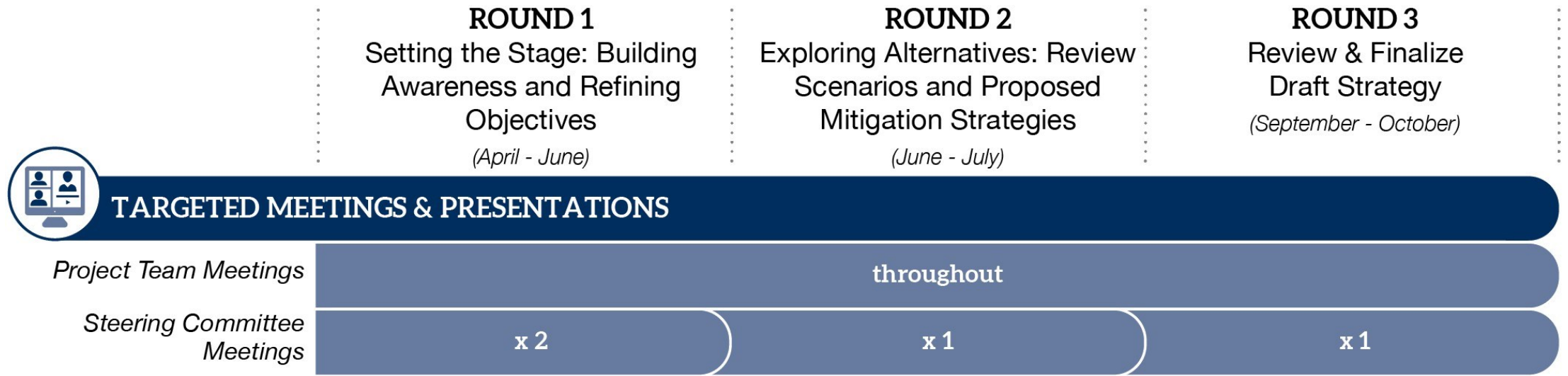


Flood Mitigation Planning: Phase III



Steering Committee

- 3 meetings
- 20 members
- 12 organizations (local governments, First Nations, OBWB, EOC, Okanagan Collaborative Conservation Program and UBCO)



Engagement



Outreach

Local & social media

Websites & newsletters (RDCO, Kelowna)

Posters, sandwich boards, digital billboard

120+ stakeholders invited



Community Members:

2 events + 1 survey

52 participants / responses

Stakeholders:

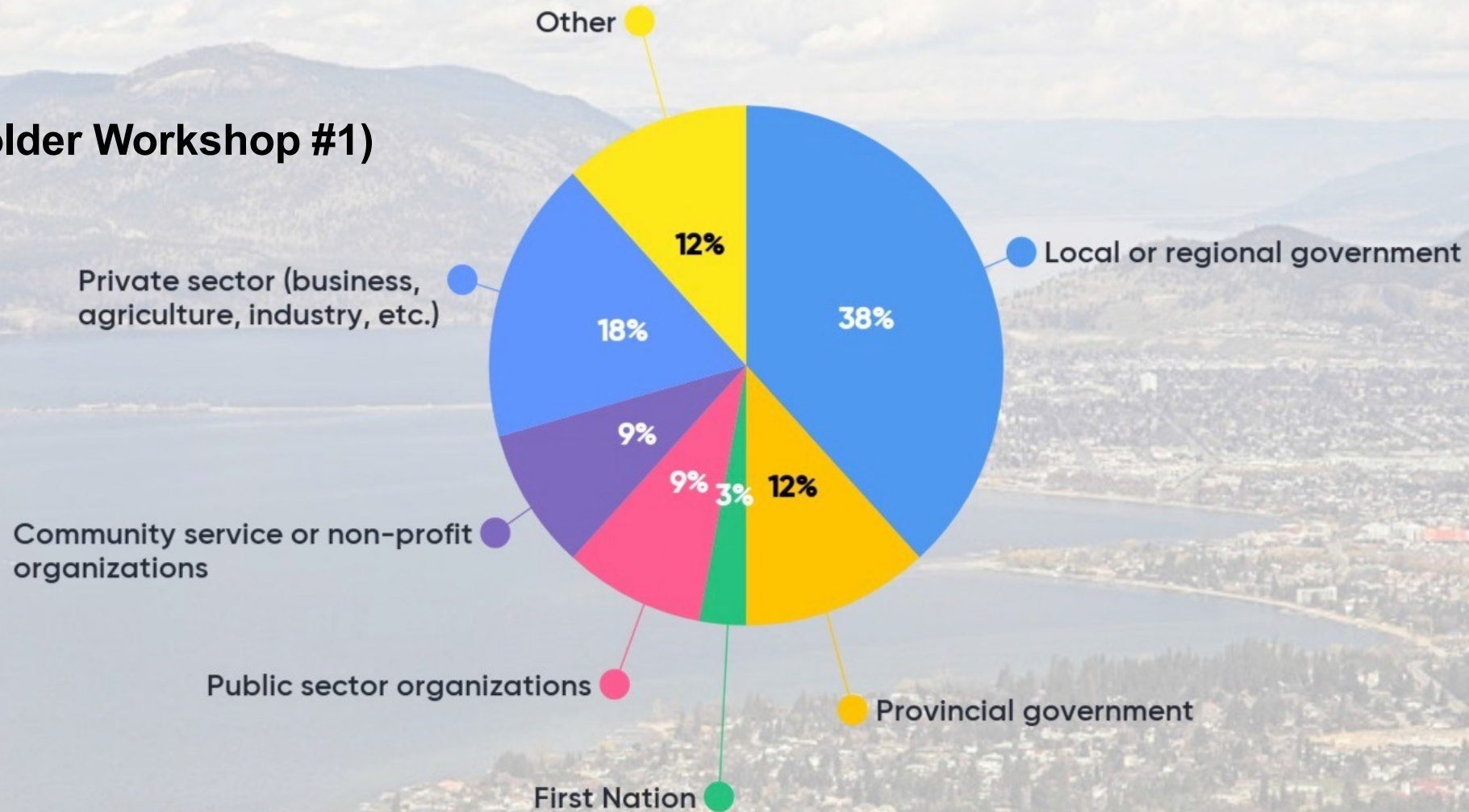
Session #1: 34 participants

Session #2: 37 participants



What sector are you representing ?

(Stakeholder Workshop #1)



The background of the slide features a repeating pattern of thin, light gray wavy lines on a dark gray background, creating a textured, water-like effect.

Let's talk water..

Tamsin Lyle, Ebbwater Consulting Inc.

Let's Start with Water



“When we take care of the land and water, the land and water take care of us” ---

---- siw^k Water Declaration

Reasons to Respect Water	Consideration
Water is powerful	It will always find a way around obstructions and is destructive. It is a source of power in many dimensions.
Water is life	It is part of, and sustains, humans and all life; it feeds and regenerates ecosystems in water and on land.
Water is connection	It connects living and non-living things, in the past, present and future. Water is our relation

1903



Bernard Avenue at
Abbott Street

City of Kelowna Archives

2017

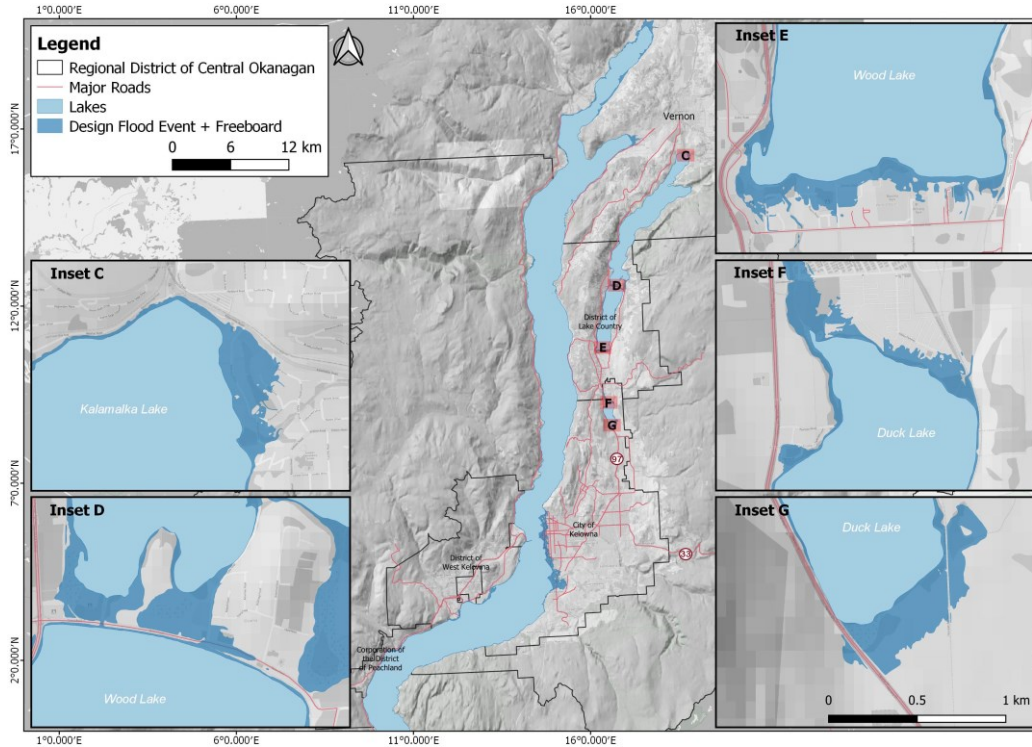


Off Sutherland Avenue

RDCO image. Used with permission

Not all flood hazards are created equal

Key message and best practice response



Lake (Coastal)

Creek and River

- Clearwater flood
- Debris flood-flow

Secondary Hazards

- Erosion
- Avulsion



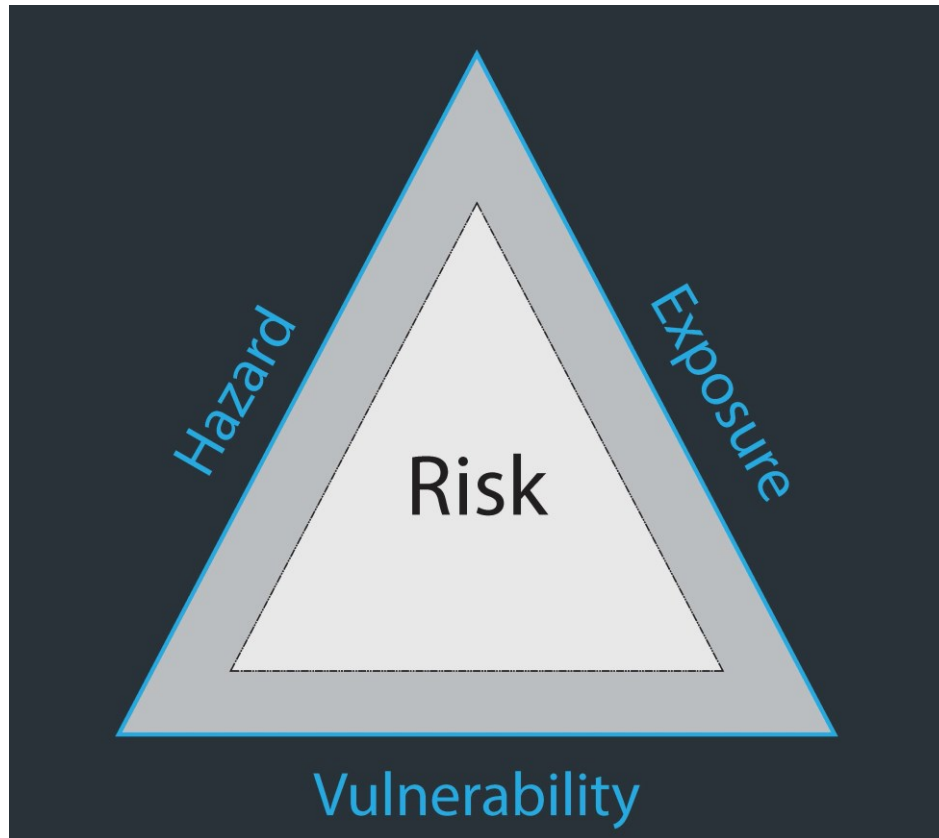
Key message #1: Flood hazards are nuanced. Mitigation actions need to be too.



Action #1: Consider the nuance and range of events, as well as periods when it is NOT flooding in decision processes.

Damages and consequences are what matter

Key message and best practice response



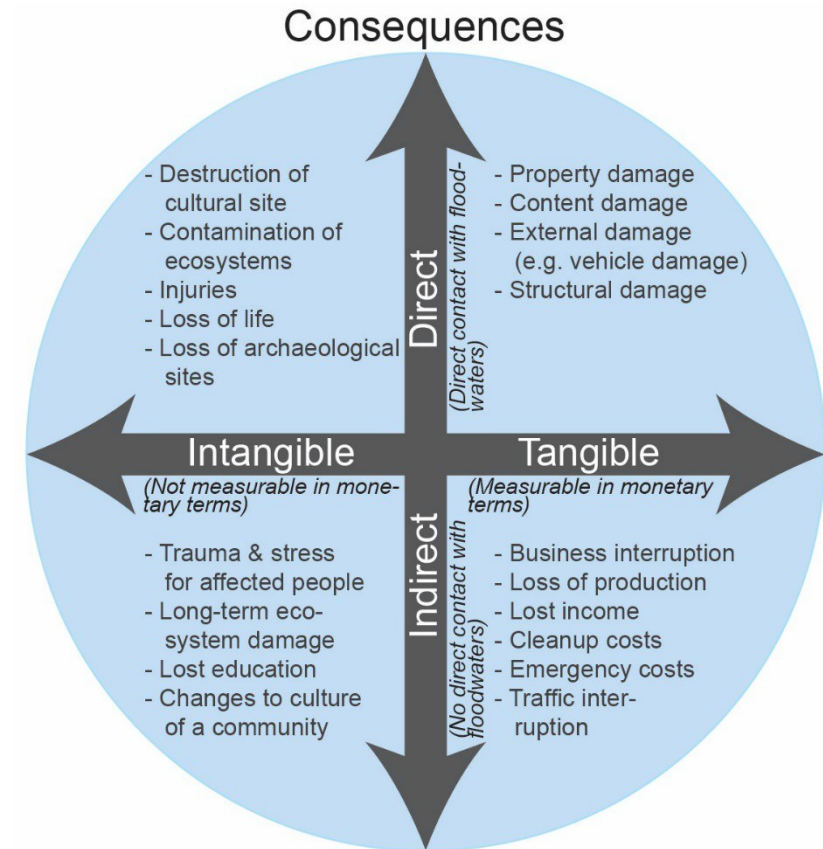
Key message #2: It's RISK that matters. Risk is messy and complex.



Action #3: Use risk as the basis for analysis. Acknowledge the messiness and uncertainty. Apply a decision process that does too.

Flood risks are wide ranging

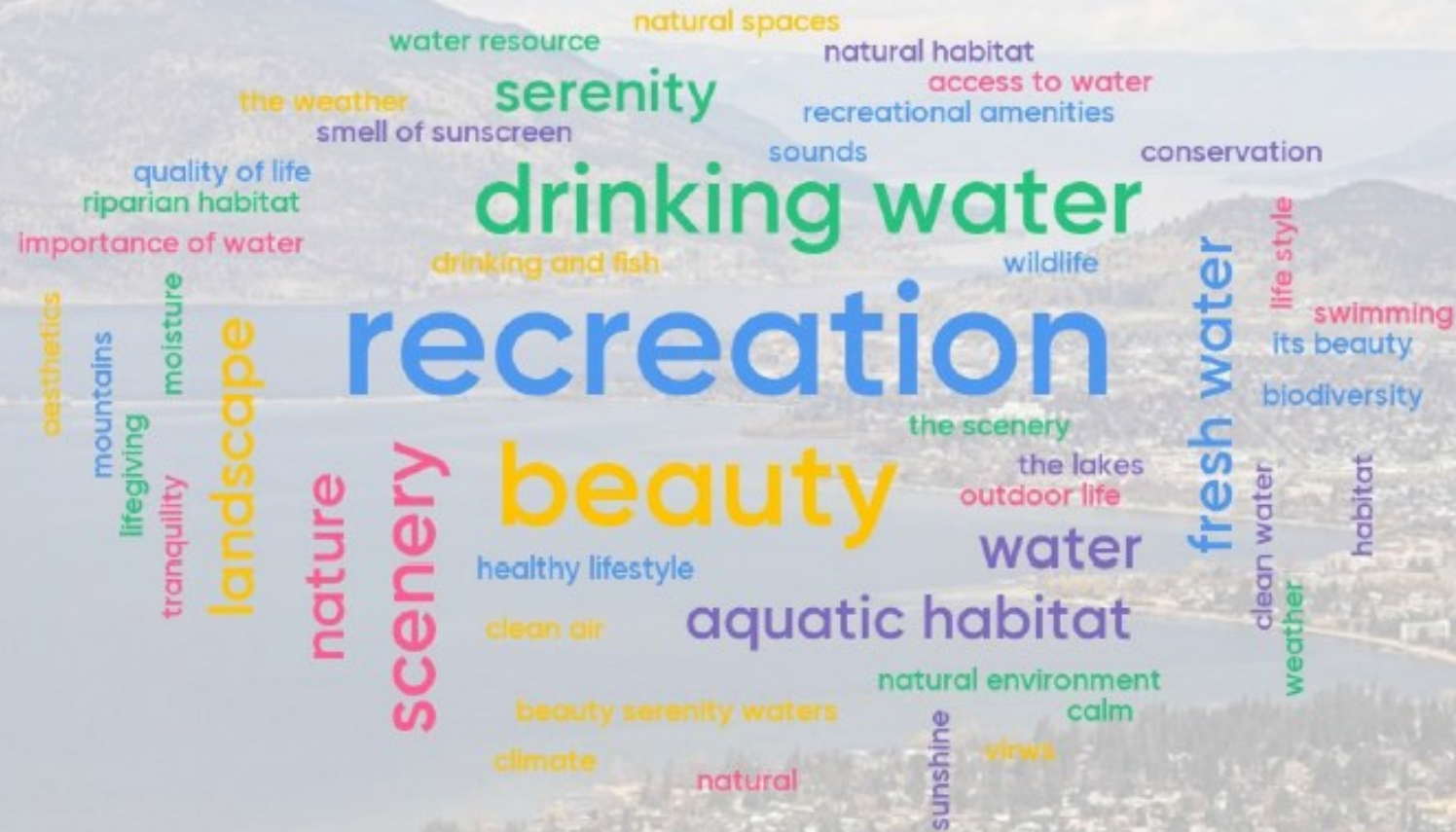
Wicked and Systemic



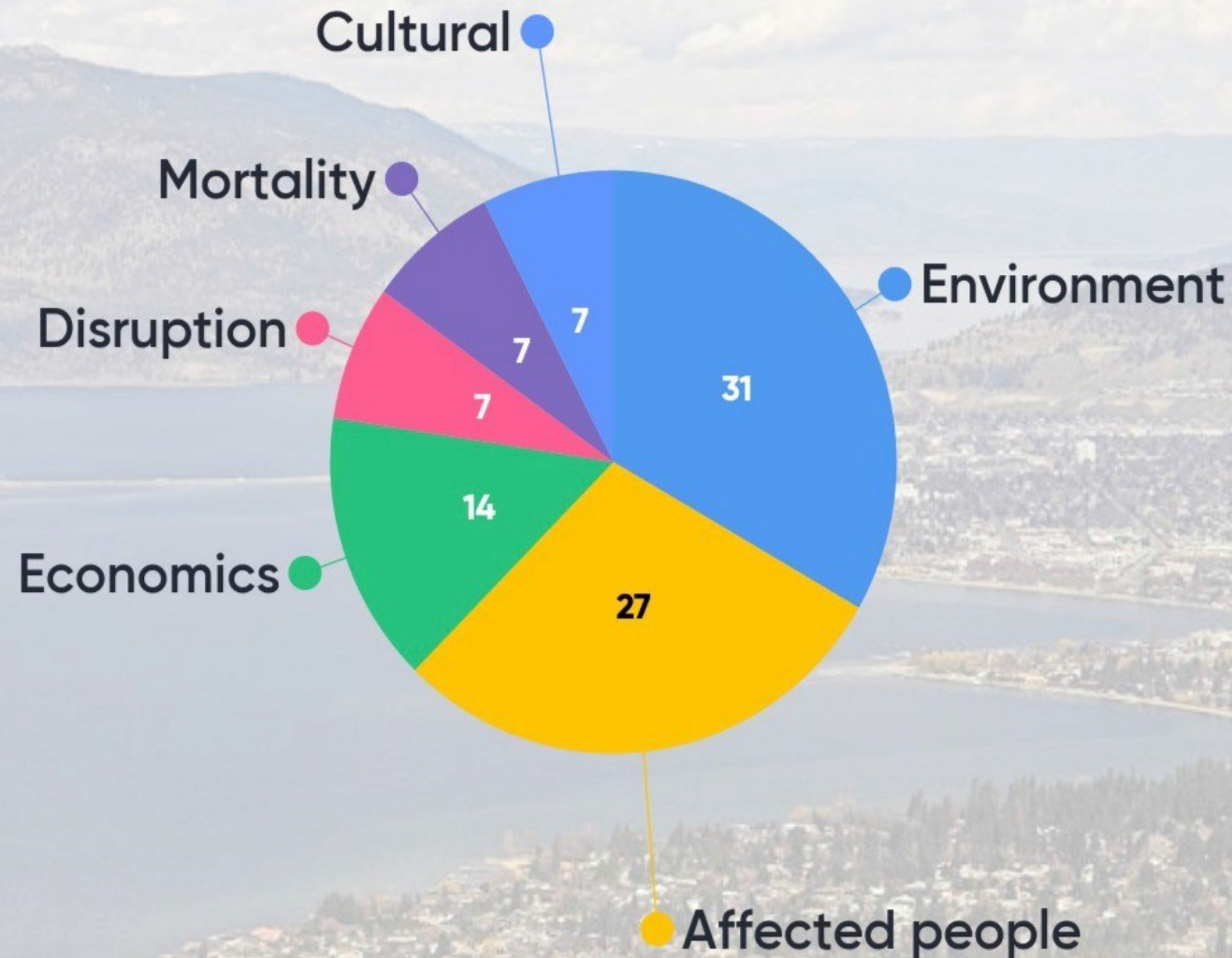
What Matters?

Values Inform Risk-Based Decision-Making

What do you value about living among the lakes and rivers of the Okanagan?



Which of these types of impacts are most important to consider for the Central Okanagan? (top 3)



Economics

**Affected
People, Equity**

Environment

Infrastructure

Some Considerations

- Be proactive & learn from the past
- Be adaptive
- Move from risk to resilience
- Equity
 - Responsibility: who pays?
 - Accounting for different levels of exposure, vulnerability, sensitivity
- Reconciliation
- Respect floodplains, get out of the way of water

Community Values



Decision Criteria



Homes and neighbourhoods



Human health and safety



Infrastructure and transportation



Environment



Local and regional economy



Culture



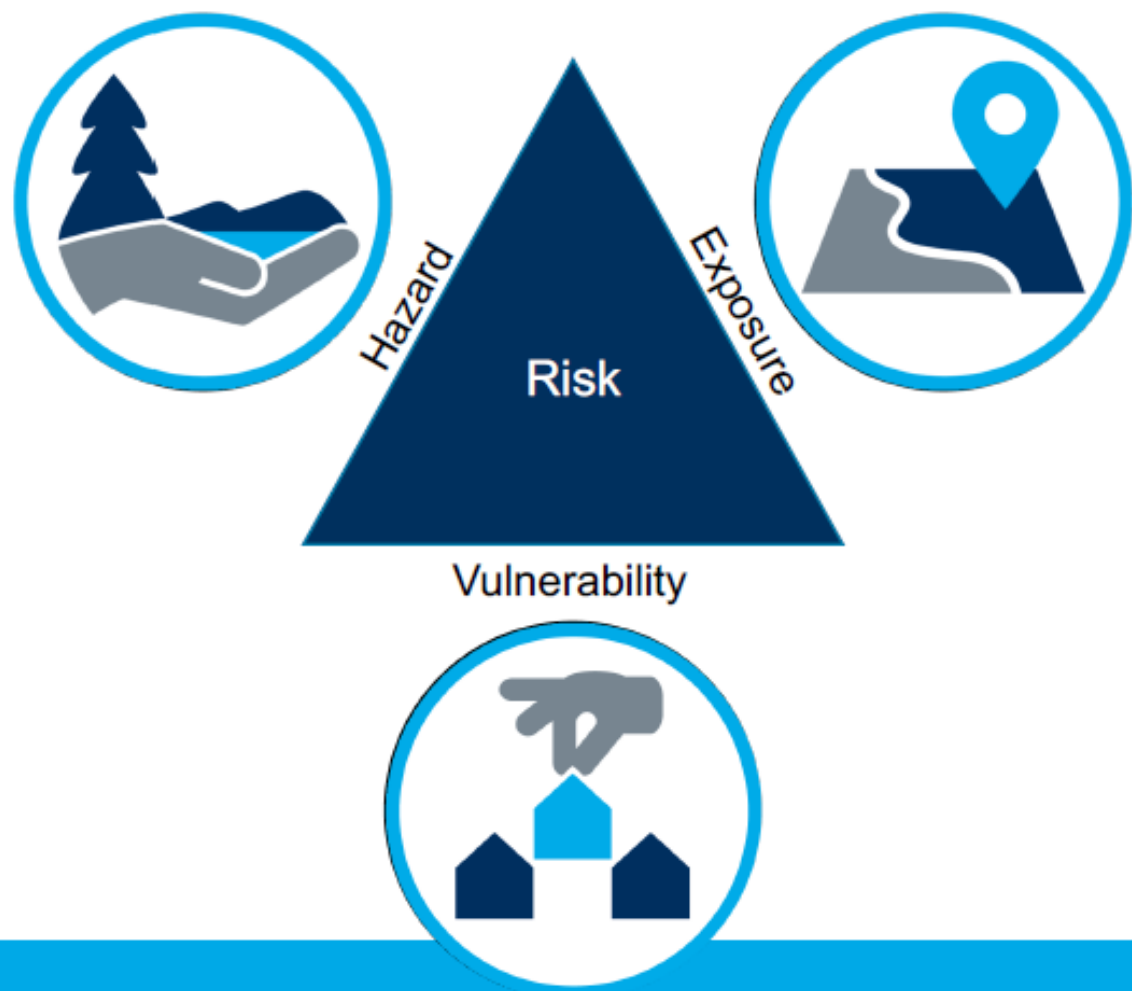
Recreation and outdoor lifestyle

Non-Structural Flood Mitigation

Tamsin Lyle, Ebbwater Consulting Inc.

What do we mean by non-structural?

High Level Risk Reduction Options

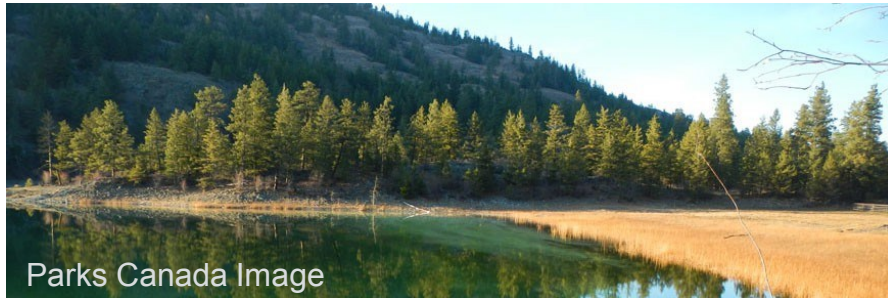


- **Land stewardship** – maintaining and restoring natural assets and systems
- **Land use management** – strategies and regulations to reduce exposure
- **Building management** – strategies and regulations that can reduce sensitivity of structures to flood damage



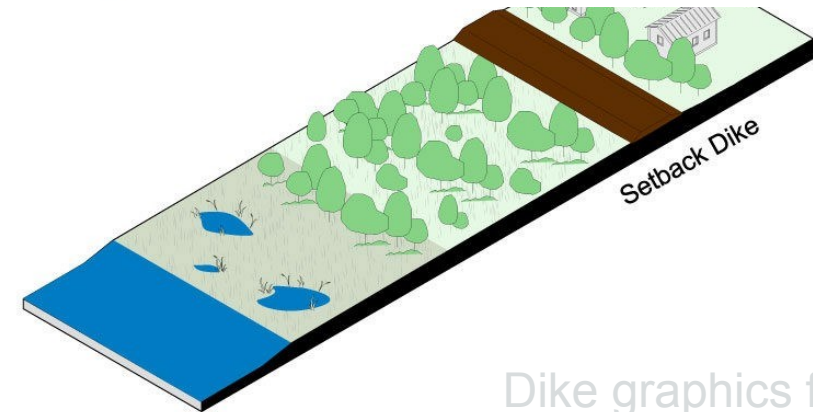
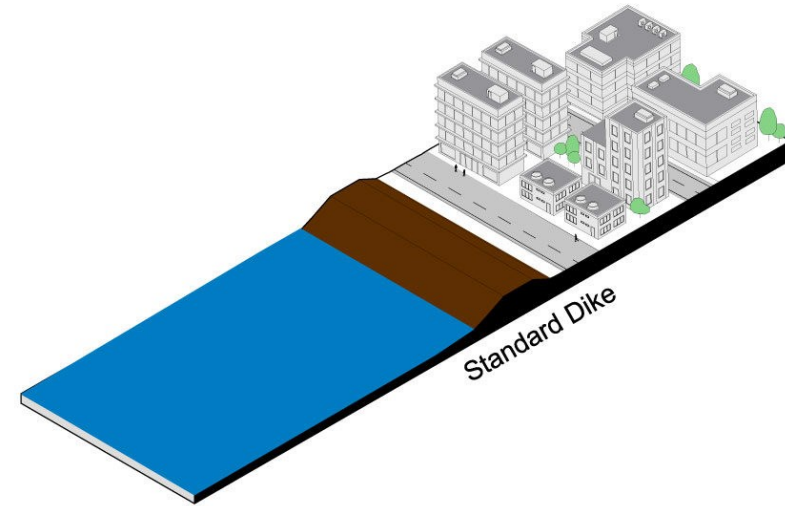
Land Stewardship

- Maintain natural assets
- Restore natural assets



Parks Canada Image

e.g., Proposed National Park Reserve in South Okanagan-Similkameen



Dike graphics from
www.floodwise.ca



Land Use Strategies

- Avoid
- Retreat
- Redistribute over space
- Co-usage of land

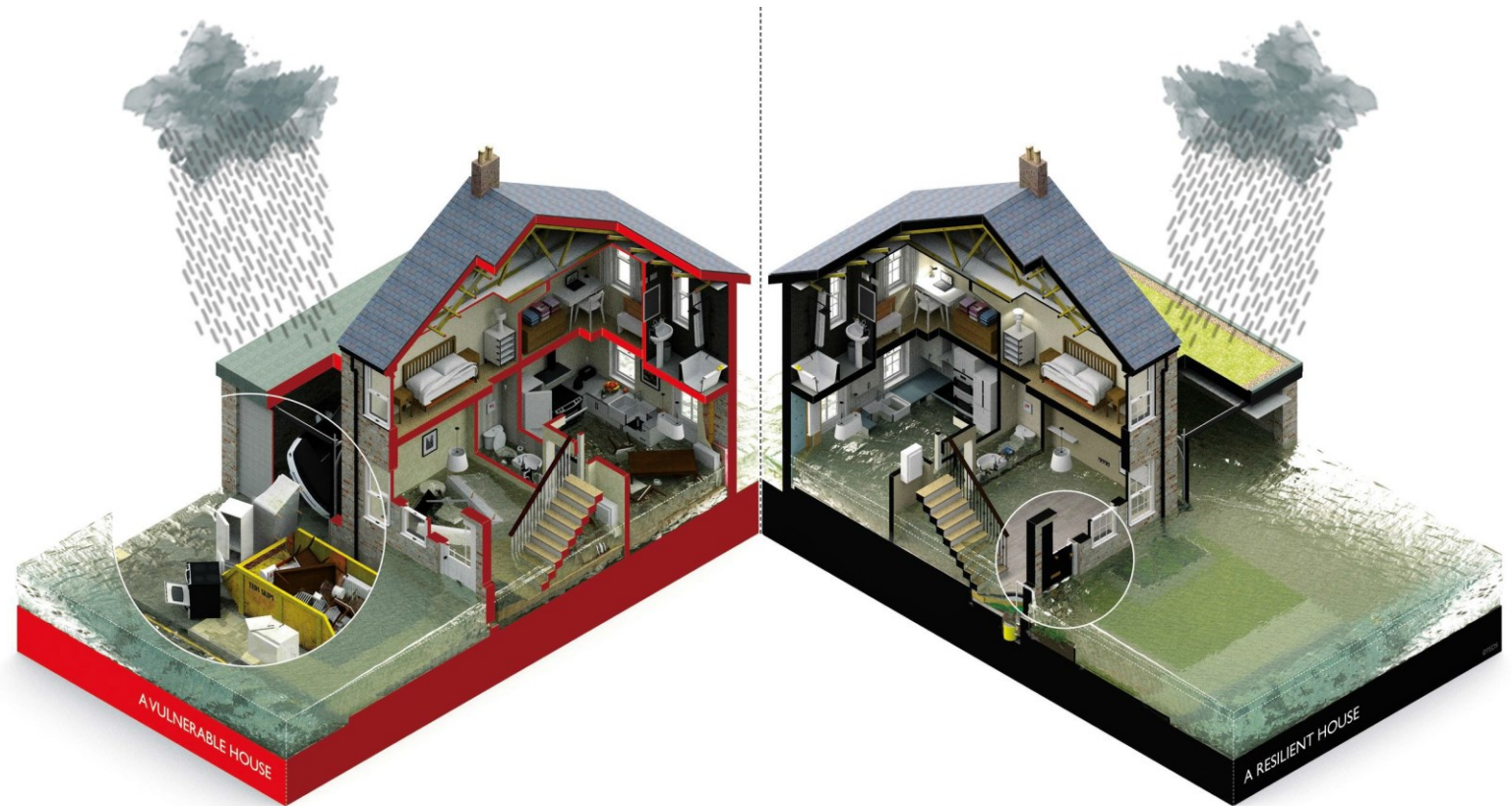


Graphics from Thistlethwaite, Henstra and Ziolecki 2020



Building Management

- New builds
- Retrofits
 - Elevate
 - Dry flood-proofing
 - Wet flood-proofing



Graphic from Retrofitting for Flood Resilience (Barsley 2020)



What do we mean by non-structural?

Resilience and Supporting Activities



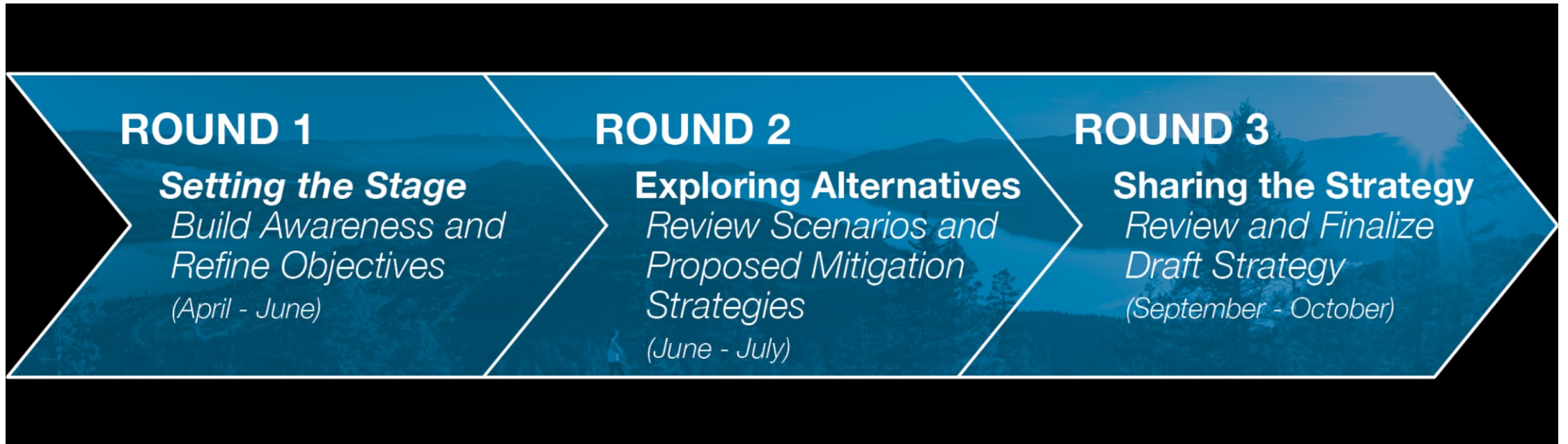
- **Emergency Response** – early warning systems, temporary barriers and response activities.
- **Insurance and disaster financial assistance** – financial mechanisms to manage residual risk and support recovery.
- **Education and awareness** – learning resources to support ‘all-of-society’ resilience.

Which of the non-structural options are you most drawn to now, to help mitigate risk & build resiliency in the Central Okanagan? (top 2)



Mill Creek

Next Steps



An aerial photograph of a coastal town, likely Victoria, British Columbia, showing the city built on a peninsula with a large harbor and a river flowing through it. The image is dark and serves as a background for the text.

Thank You!

For more information go to:
www.rdco.com/flood

Tamsin Lyle, Ebbwater Consulting
Tamsin@ebbwater.ca



What matters most about flood risk & resilience for the region as a whole?

Which of these types of strategies would you prioritize for the region as a whole, and why?



**Land
Stewardship**



**Land Use
Management**



**Building
Management**



**Education &
Awareness**



**Emergency
Preparedness**



**Insurance / Financial
Assistance**

Recommendation:

THAT the Governance and Services Committee receive for information the Central Okanagan Flood Mitigation Planning update report dated June 28, 2021.