



Floodplain Regulations Update

Official Community Plan, Zoning & LUP Bylaw Amendments

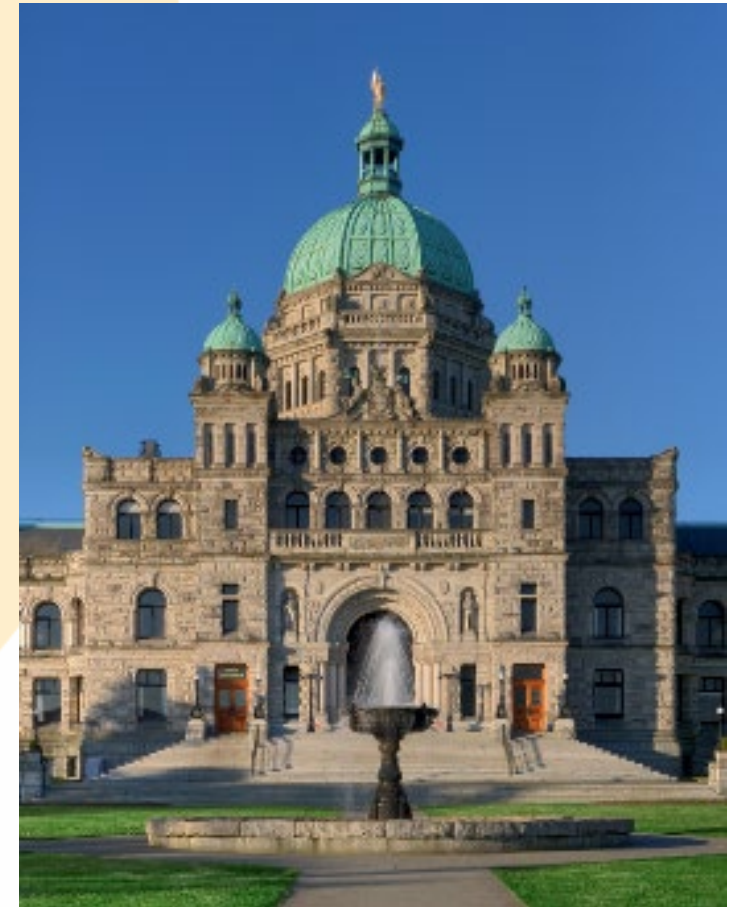
Committee of the Whole Meeting

October 14, 2025

Floodplain Regulations Update

Statutory Authority

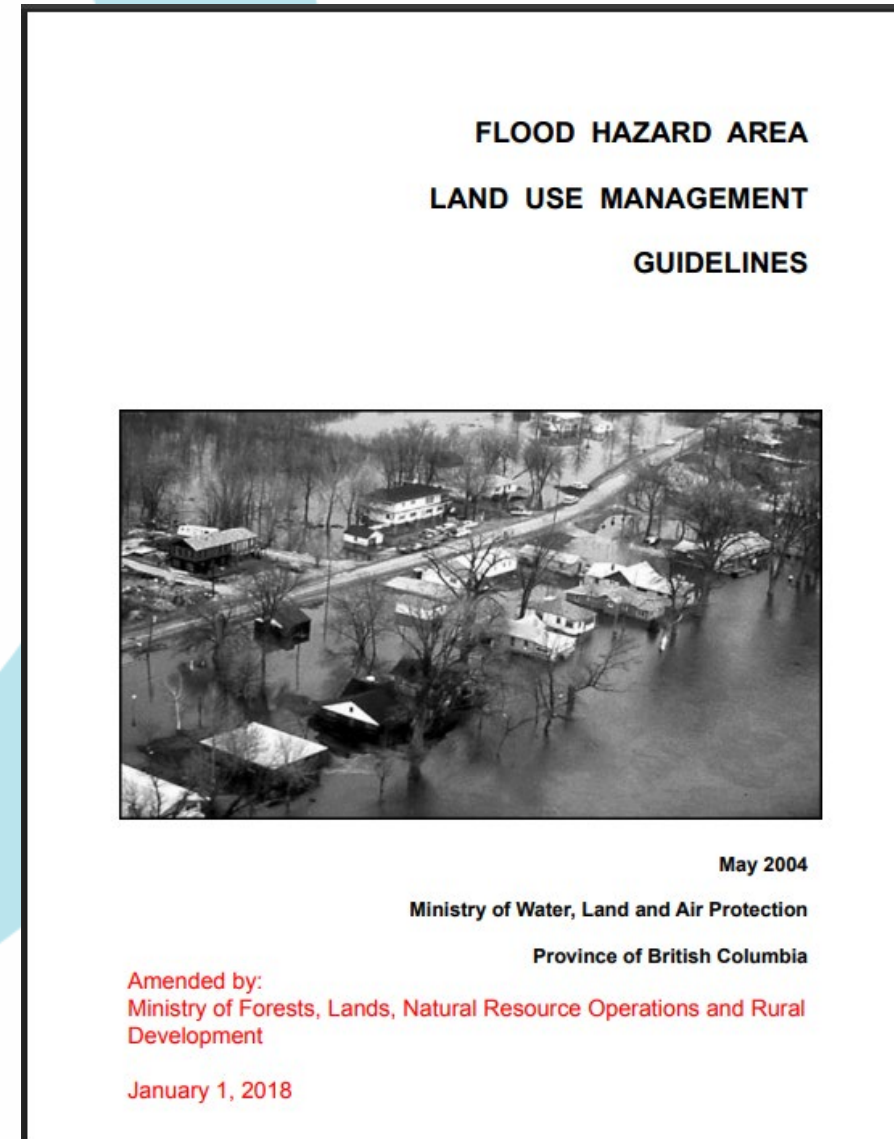
- Under Section 524 of the *Local Government Act*, “if a local government considers that flooding may occur ... [it] may [emphasis added], by bylaw, designate the land as a flood plain.”
- In doing so, the local government may;
 - establish a flood level;
 - establish a setback from a body of water.



Floodplain Regulations Update

Statutory Authority

- A local government “must consider the Provincial guidelines” when adopting floodplain regulations.
- These guidelines seek to:
reduce or prevent injury, human trauma and loss of life, and to minimize property damage during flooding events.



Floodplain Regulations Update

Statutory Authority

A local government may exempt a person from complying with its floodplain regulations, if:

- the exemption is consistent with the Provincial guidelines; and
- it has received a report that the land may be used safely for the intended use by a professional engineer or geoscientist and experienced in geotechnical engineering.

FLOOD HAZARD AREA
LAND USE MANAGEMENT
GUIDELINES



May 2004

Ministry of Water, Land and Air Protection

Province of British Columbia

Amended by:
Ministry of Forests, Lands, Natural Resource Operations and Rural
Development

January 1, 2018

Floodplain Regulations Update

Background

- The Town has, since at least 1980, regulated development within the flood plain associated with Osoyoos Lake through its zoning bylaw.
- The Zoning Bylaw has designated the “floodplain” of Osoyoos Lake as being any area with an elevation lower than 280.70 metres Geodetic Survey of Canada (GSC) datum.

Floodplain Regulations Update

Background

- The rising level of Osoyoos Lake in 2018 impacted private properties and threatened Town infrastructure.
- Pumping water from flooded basements threatened the Town's sewer system.



Floodplain Regulations Update

Background

- The Town was subsequently successful in obtaining funding from UBCM in 2021 for the preparation of various flood mitigation measures.
- This funding was provided under the Community Emergency Preparedness Fund — Flood Risk Assessment, Flood Mapping & Flood Mitigation Planning stream.

The image shows the cover page of a document titled "Community Emergency Preparedness Fund Flood Risk Assessment, Flood Mapping & Flood Mitigation Planning 2020 Program & Application Guide (Updated December 2019)". The UBCM logo is in the top right corner. The page is divided into sections: "1. Introduction", "Background", and "Flood Risk Assessment, Flood Mapping & Flood Mitigation Planning Funding Stream".

Community Emergency Preparedness Fund
Flood Risk Assessment, Flood Mapping & Flood Mitigation Planning
2020 Program & Application Guide (Updated December 2019)

1. Introduction

The [Community Emergency Preparedness Fund](#) (CEPF) is a suite of funding programs intended to enhance the resiliency of local governments, First Nations and communities in responding to emergencies. Funding is provided by the Province of BC and is administered by Union of BC Municipalities (UBCM).

Starting in May 2019, the funding streams include:

- Indigenous cultural safety and cultural humility training
- Emergency operations centres and training
- Emergency support services
- Evacuation route planning
- Flood risk assessment, flood mapping and flood mitigation planning
- Structural flood mitigation
- Volunteer and composite fire departments equipment and training

Background

Flooding is a significant natural hazard in BC that can damage important infrastructure, cause serious economic losses, and create social disruption. Flooding in BC is often due to:

- Climatic conditions – intense rainfall, rain on snow, ice jams, rapid snowmelt, storm surges, etc.
- Geomorphic processes – debris flows, tsunamis, landslides
- Structural failures – dike failure, dam failure, culvert failure

Additionally, climate change will impact the frequency and magnitude of flooding in BC through changes to precipitation patterns and sea level rise. It is estimated that sea levels along the coastline will increase by approximately 1m by the year 2100 (Ausenco Sandwell 2010).

Therefore, it is important for communities to understand the flood hazards they face and how to adapt to these risks.

Flood Risk Assessment, Flood Mapping & Flood Mitigation Planning Funding Stream

The intent of this funding stream is to support eligible applicants to ensure they have accurate knowledge of the flood hazards they face and to develop effective strategies to mitigate and prepare for those risks.

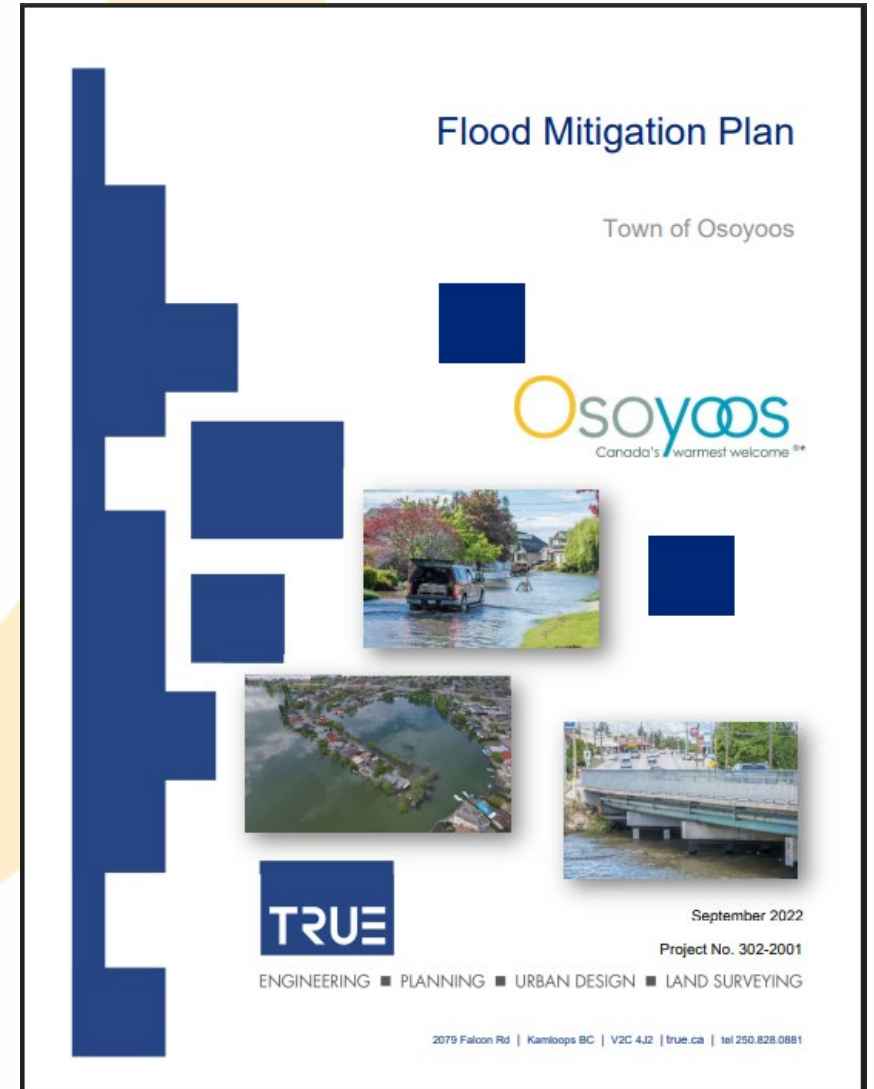
One or more of the following components may be developed through this funding stream:

2020 Flood Risk Assessment, Flood Planning & Flood Mitigation Planning (Updated December 2019) 1

Floodplain Regulations Update

Background

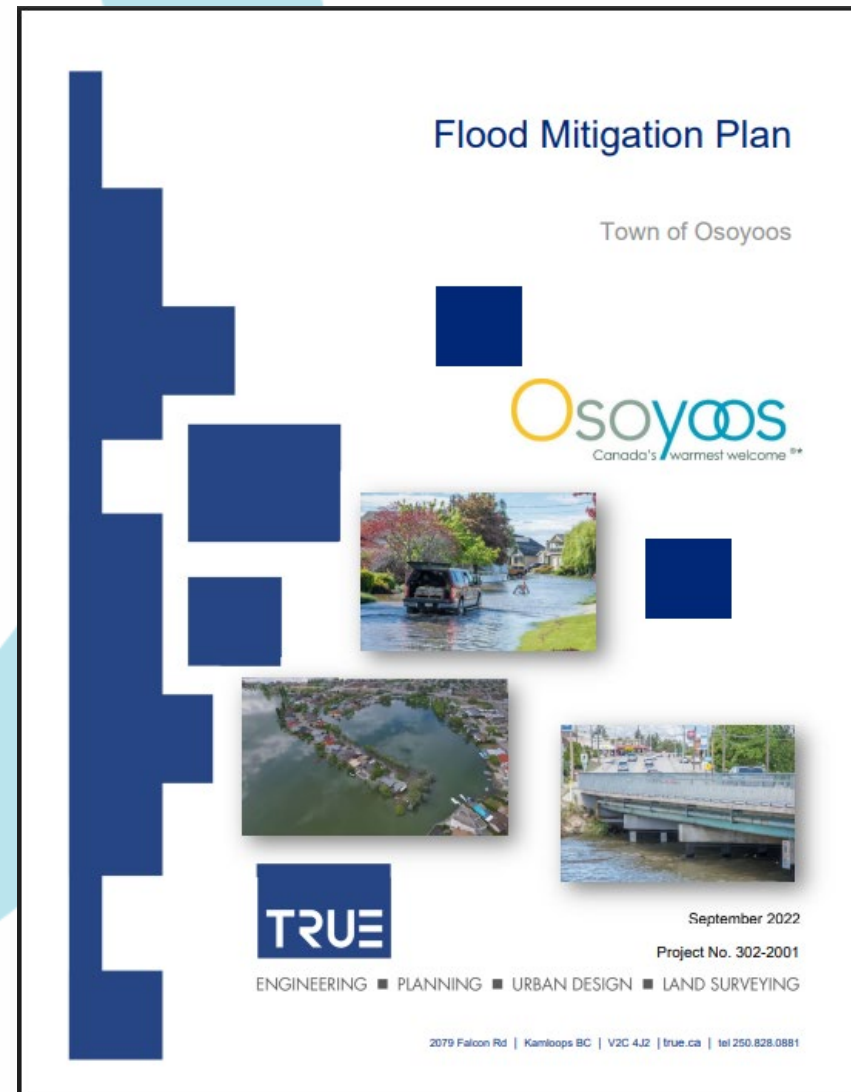
- UBCM funding was used to support the preparation of a *Flood Mitigation Plan* in 2022.
- An overview of this Plan was presented to Council's Committee of the Whole (COTW) at its meeting of April 11, 2023.



Floodplain Regulations Update

Background

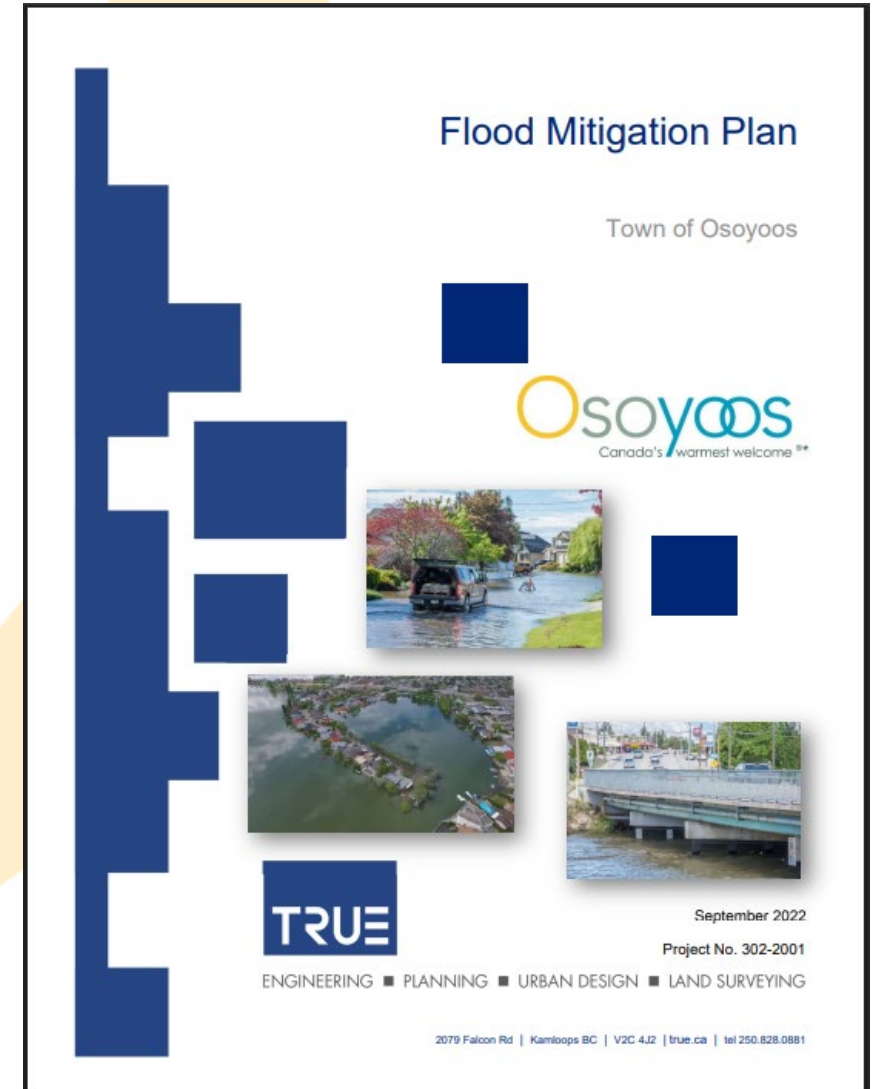
- The *Flood Mitigation Plan* contains many recommendations, including the following “high” priorities in relation to the Town’s land use bylaws:
 - Update the Town’s OCP land use policy statements and maps; and
 - Update the Town’s Zoning Bylaw to include revised setbacks, wave action measures, flood construction levels and floodproofing reqmt’s.



Floodplain Regulations Update

Items for Consideration

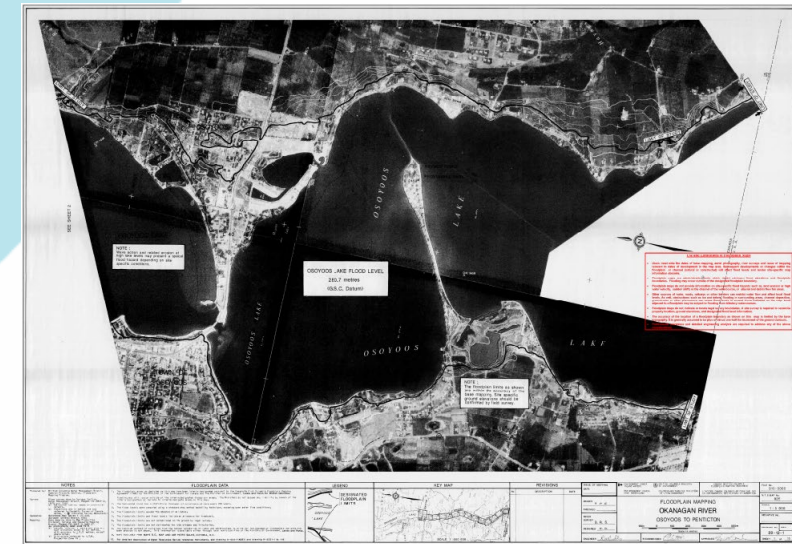
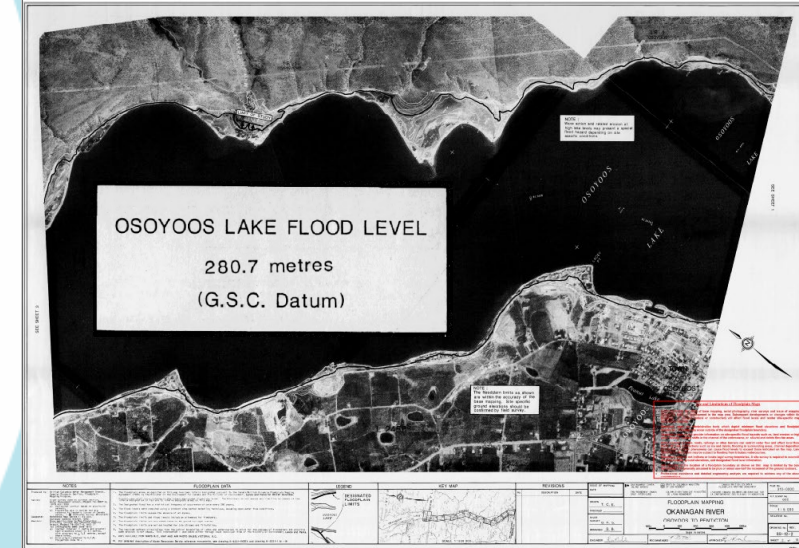
1. Floodplain Level; and
2. “Wave Flood Zone”.



Floodplain Regulations Update

Floodplain Regulations - Zoning

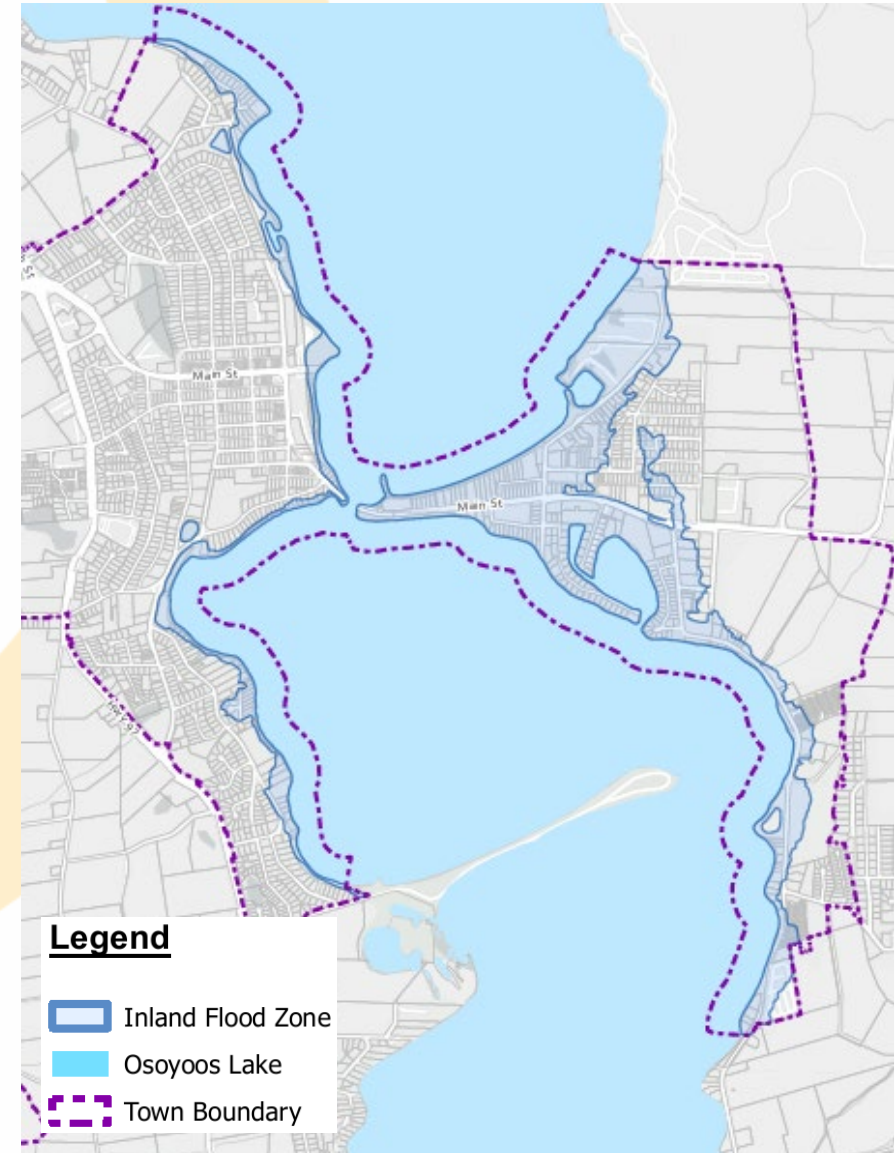
- The Town's Zoning Bylaw has historically established the floodplain of Osoyoos Lake at 280.7 metres Geodetic Survey of Canada (GSC) datum.
- Current Floodplain Maps are based on provincial mapping prepared in the late 1980s.
- Ideally, floodplain maps should be updated every 15-20 years.



Floodplain Regulations Update

Proposal No. 1 - Floodplain Level

- The Flood Mitigation Plan is recommending that:
 - the flood level for Osoyoos be increased to from 280.7 to 280.8 metres GSC datum; and
 - that Schedule '3' (Floodplain Maps) of the Zoning Bylaw be updated to include a new map reflecting this elevation.



Floodplain Regulations Update

Proposal No. 1 - Floodplain Level

- Recommended change to 280.8 metres GSC datum is based on floodplain mapping previously completed by the Okanagan Basin Water Board (OBWB) in 2020.
- If implemented, the floodplain for Osoyoos Lake would not be extended to include any additional properties.

Okanagan Basin WATER BOARD **nhc**

Okanagan Mainstem Floodplain Mapping

Prepared for: Okanagan Basin Water Board (OBWB)	Prepared by: Northwest Hydraulic Consultants Ltd. (NHC)
OBWB Project Contacts: Nelson Jatel, PhD(c), PAg Water Stewardship Director	NHC Project Contact: Piotr Kuras, MASC, PEng, PE, RPF Hydrologist / NHC Associate

Photo credits of the 2017 flood, clockwise from top: District of Summerland, District of Lake Country, City of Kelowna (2) - Michael Wittinger.
Graphics designer: Christina Perreini.

Floodplain Regulations Update

Proposal No. 1 - Floodplain Level Recommendation:

- That the flood construction level (FCL) for land designated as a floodplain adjacent Osoyoos Lake be set at 280.80 metres GSC datum;
- That Schedule '3' (Floodplain Maps) be updated to include new mapping data;
- That OCP policies related to flood hazard be updated; and
- That the Land Use Procedures Bylaw be amended to include application requirements for floodplain exemption requests (e.g. development unable to comply with an FCL of 280.8m)

Floodplain Regulations Update

Proposal No. 2 – “Wave Flood Zone”

- The current flood construction level of 280.7 metres does not account for “wave action” and treats the shoreline of Osoyoos Lake in a uniform manner.
- The shoreline is not uniform and has a variety of foreshore types (rock revetments, sand beaches, gentle slopes, steep slopes).
- The use of a single uniform measurement suggests that wave effects could be underestimated for some parts of Town and overestimated for other parts.

Floodplain Regulations Update

Proposal No. 2 - “Wave Flood Zone”

Shown is an example of “wave action”:

- Shoreline treatment is a retaining wall;
- Due to location, “wave action” is a consideration and may cause damage to the wall, including “overtopping”.



Floodplain Regulations Update

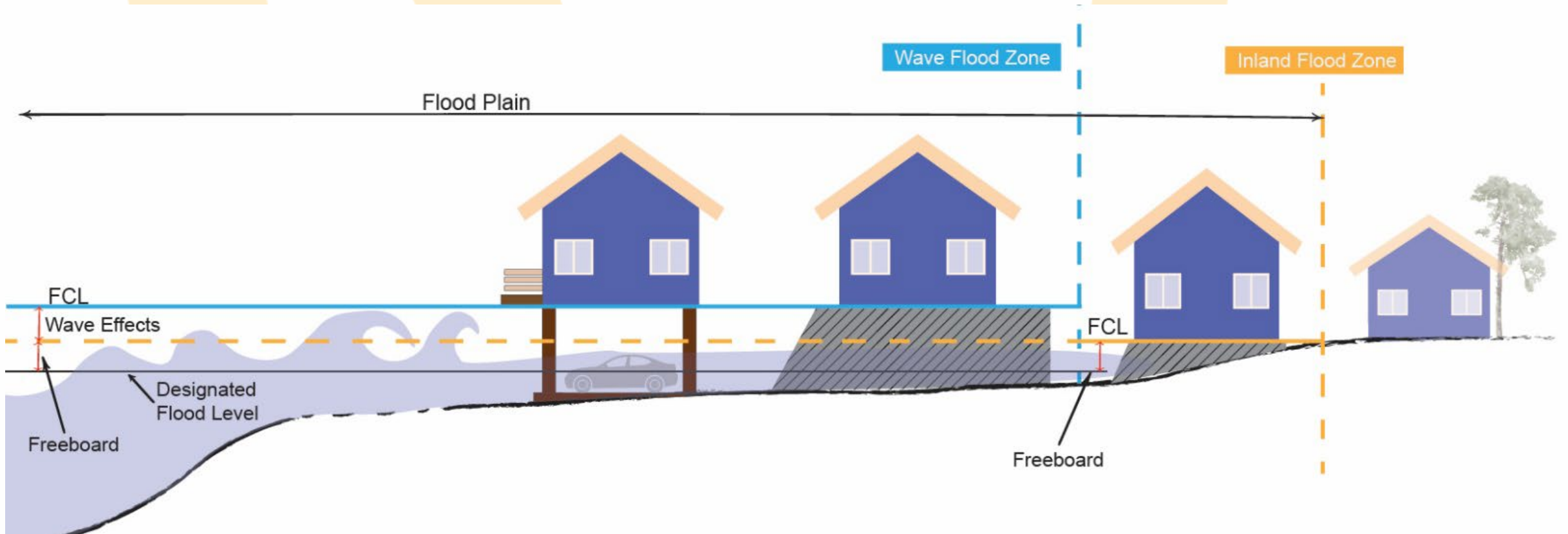
Proposal No. 2 – “Wave Flood Zone”

- The Flood Mitigation Plan is recommending the introduction of a more nuanced approach in which building elevation requirements are based on shoreline treatment.
- For instance, if the shoreline is comprised of:
 - gentle grass slopes, there will be a higher wave runup (up to ~1.7 metres); or
 - steeper or armoured slopes, there will be a lower wave runup (~1.0–1.3 metres).

Floodplain Regulations Update

Proposal No. 2 - “Wave Flood Zone”

“Wave Flood Zone” vs “Inland Flood Zone”



Floodplain Regulations Update

Proposal No. 2 - “Wave Flood Zone”

Proposed Flood Construction Levels

Flood Zone on Schedule “3”	Shoreline Treatment	Shoreline Slope (horizontal: vertical)	Freeboard (meters)	Flood Construction Level (CGVD28)
Wave Flood Zone	As required by a site-specific flood hazard assessment.	> 2H:1V	As required by a site-specific flood hazard assessment.	As required by a site-specific flood hazard assessment.
Wave Flood Zone	Rock	2H:1V	0.3m	282.1m
Wave Flood Zone	Rock	3H:1V		281.8m
Wave Flood Zone	Grass	3H:1V		282.2m
Wave Flood Zone	Grass	4H:1V		281.8m
Wave Flood Zone	Grass	5H:1V		281.5m
Inland Flood Zone	Not applicable	Not applicable		0.6m

Floodplain Regulations Update

Proposal No. 2 - “Wave Flood Zone” - Considerations

- implementing the “Wave Flood Zone” would accurately reflect the higher hazard that lake front properties directly exposed to waves experience;
- the floodplain map would become more nuanced and provide information beyond just a single contour by differentiating exposed vs. protected reaches;
- this would allow for early incorporation of “floodproofing” design considerations in the preparation of development plans for properties within the “Wave Flood Zone”.

Floodplain Regulations Update

Proposal No. 2 - “Wave Flood Zone” - Considerations

- lakefront development (e.g. dwellings and commercial buildings) in wave-exposed locations would need to be built significantly higher than under current regulations;
- assessing floodplain compliance based on shoreline treatment could be problematic as the landscaping of a property *may* change over time;
- tools are available to the Town to regulate and limit such changes to shoreline treatment, such as a Soil Permit or Development Permit, however, these are not always effective.

Floodplain Regulations Update

Proposal No. 2 - “Wave Flood Zone” - Considerations

- the Town may not have the resources or expertise to monitor shoreline changes across all lakefront parcels over time; and
- shoreline changes may result in a development being technically compliant at the time of authorization but functionally unsafe at a later date if changes to the shoreline are undertaken.

Floodplain Regulations Update

Proposal No. 2 - “Wave Flood Zone” Options:

1. status quo;
2. a “Wave Flood Zone” is established with flood construction levels based on the shoreline treatment; or
3. a “Wave Flood Zone” is established with a standard flood construction level of 282.20 metres GSC datum, and new development having to comply with the following:
 - a) constructed on a specified foundation;
 - b) if fill is used, slope shall not be greater than 3:1; and
 - c) the height of a retaining wall shall not exceed 0.6 metres.

Floodplain Regulations Update

Proposal No. 1 – “Wave Flood Zone” Recommendation:

- That a “Wave Flood Zone” not be implemented at this time;
and

NOTE: further information regarding a “Wave Flood Zone” could be brought forward to a future COTW meeting should Council request additional details on this option.

Floodplain Regulations Update

Liability Considerations:

- While a local government can be liable for negligence, this is not the case if the alleged negligent act or omission is the result of a “policy decision”.
- Council is not obligated to implement any of the recommendations in the Flood Mitigation Plan (2022) and, if it resolves to not do so for “policy” reasons (impacts, benefits, financial implications, etc.) it is unlikely to incur liability for negligence.



Floodplain Regulations Update

Questions?