



THE CORPORATION OF THE CITY OF VERNON REPORT TO COUNCIL

SUBMITTED BY: Brian Derrick, Manager
Engineering Development
Services
Laurie Cordell, Manager
Long Range Planning and
Sustainability

COUNCIL MEETING: REG COW I/C
COUNCIL MEETING DATE: June 13, 2022
REPORT DATE: May 30, 2022
FILE: 3900-02/6480-07

SUBJECT: **PROPOSED AMENDMENTS TO OFFICIAL COMMUNITY PLAN FOR FLOOD HAZARD AREA AND NEW FLOODPLAIN MANAGEMENT BYLAW**

PURPOSE:

To propose amendments to the Official Community Plan (OCP) that create a new Flood Hazard Development Permit Area and to propose a new Floodplain Management Bylaw that establishes flood protection regulations for land development in the floodplain.

RECOMMENDATION:

THAT Council support in principle an amendment to the Official Community Plan Bylaw 5470 to create a Flood Hazard Development Permit Area (DPA) and guidelines for any new development activity within the Flood Hazard Development Permit Area;

AND FURTHER, that Council support in principle a Floodplain Management Bylaw that would regulate development within the Flood Hazard Area as outlined in the report titled "Proposed Amendments to Official Community Plan for Flood Hazard Area and New Floodplain Management Bylaw" dated May 30, 2022 and respectfully submitted by the Manager, Engineering Development Services and Manager, Long Range Planning and Sustainability, and direct Administration to bring forward the proposed bylaw for its consideration to the Regular Meeting of June 27, 2022.

ALTERNATIVES & IMPLICATIONS:

1. THAT Council receive the report titled "Proposed Amendments to Official Community Plan for Flood Hazard Area and New Floodplain Management Bylaw" dated May 30, 2022 and respectfully submitted by the Manager, Engineering Development Services and Manager, Long Range Planning and Sustainability, for information.

Note: This would leave the City of Vernon without any mechanism to confirm safe development within the floodplain hazard area. New development would be permitted to occur within the floodplain without adherence to flood construction levels or oversight from a Qualified Professional.

ANALYSIS:

A. Committee Recommendations:

N/A

B. Rationale:

1. In 2018, the Engineers and Geoscientists of British Columbia (EGBC) published the current version of its professional practice guidelines for flood assessments. These guidelines introduce flood assessments and their role in helping communities understand flood risk, and explain the importance of applying measures to build flood resilient communities. They provide a framework and standards for conducting flood hazard assessments, and include recommendations and regulatory considerations for managing flood risk with respect to development approvals. Additionally, the guidelines provide standardized approaches, including templated documents, for professionals looking to conduct site-specific assessments in order to facilitate safe development on sites that would otherwise be constrained by the more general, jurisdiction-wide floodplain regulations. Based in part on these professional practice guidelines, and hastened by regional flood events, jurisdictions including the City of Vernon instigated flood hazard assessments in order to both understand the flood risk, and work towards becoming flood resilient communities.
2. At its Committee of the Whole Meeting of February 28, 2022, Council received the outcomes of the Flood Mapping, Risk Analysis, and Mitigation study that identifies the floodplain, flood construction levels and recommended floodplain setbacks along Vernon and BX Creeks.
3. Flood construction levels along Okanagan Lake have been recommended by the Okanagan Basin Water Board's (OBWB) "Okanagan Mainstem Floodplain Mapping" report dated March 31, 2020. Currently, the Province recommends a flood construction level along Okanagan Lake of 343.90m (CGVD2013) which is equivalent to the 1 in 200 year event plus 0.61m of freeboard. The previous floodplain mapping work of Okanagan Lake was last updated in 1991. Since then, an additional 30 years of data has been collected, as well as record breaking flood events in 2017 where the lake reached an elevation that exceeded the 1 in 200 year elevation (343.29 CGVD2013) and another flooding event in 2018 (342.93m CGVD2013). The work of OBWB provides enhanced information and new Flood Construction Levels.
4. Currently the City of Vernon does not have a bylaw to require that applicants acknowledge flood construction levels or floodplain setbacks as specified by the flood mapping studies, or that applicants adhere to regulatory considerations recommended by EGBC guidelines, including using a Qualified Professional to assess the site-specific risk in cases where a developer may want to maximize the use of a site, such as build habitable space below the flood construction levels. Now that the City has documented the risk within the floodplain, Administration recommends that Council act to make developers aware of the potential for flood hazard impacts on their property. The flood mapping from these studies has made it clear that these properties are at high risk to be impacted by flooding and it is in the best interests of the property owners to prepare for those impacts. Current practice is to recommend that flood risk be considered whenever relevant to a development proposal. The proposed new regulations would make this mandatory.
5. Administration is proposing amendments to Official Community Plan (OCP) Bylaw #5470 (Attachment 1) to establish a Flood Hazard Development Permit Area (DPA) and the creation of a Floodplain Management Bylaw (Attachment 2) based on both the flood mapping for B.X. and Vernon Creek, and OBWB's Okanagan Mainstem Floodplain Mapping studies.
6. The Flood Hazard DPA and the Floodplain Management Bylaw would work together to regulate development activities and reduce exposure to harm and loss in potential flood hazard areas. The Flood Hazard DPA would provide hazard information to development applicants at an early stage on potential hazards, establish minimum standards (as referenced in the Floodplain Management Bylaw), and offer recommended guidelines for development best practices. It is meant to ensure that applicants have considered the flood hazard in the design of their development, in advance of applying for a building permit, at which time they must meet the minimum standards of the Floodplain Management Bylaw. Both tools would reference a hazard map that designates the flood hazard area (Attachment 3).

7. More specifically, the OCP amendment would do the following:
 - a. explain why the development permit area is required and under which legislation the City has the authority to create it;
 - b. add definitions related to flood hazards;
 - c. set mandatory and recommended considerations in the floodplain setback area and the broader floodplain;
 - d. set exemptions to the development permit requirements, mirroring those of the proposed Floodplain Hazard Bylaw; and
 - e. add a hazard map that outlines the area of applicability.
8. The Floodplain Management Bylaw regulates development in the floodplain when applicants apply for subdivision or a building permit. This bylaw provides a list of regulations for working within the floodplain, and specifies terms by which various development activities would be exempted from these requirements. This bylaw also provides the option for site specific exemptions from bylaw requirements, requiring that applicants work within the EGBC framework of conducting a site-specific assessment to confirm that the site can be developed safely as intended, and register a protective covenant on title to save the City harmless from potential future flood damage. Definitions and exemptions run parallel and are generally shared with the OCP Flood Hazard DPA. Applicants must meet the standards set out in the Floodplain Management Bylaw before their building permit application can be approved.

C. Attachments:

Attachment 1 – Proposed Amendments to Official Community Plan for Flood Hazard Area
Attachment 2 – Proposed Floodplain Management Bylaw
Attachment 3 – Proposed Flood Hazard Development Permit Area Map

D. Council's Strategic Plan 2019 – 2022 Goals/Action Items:

The proposed amendment of Official Community Plan Bylaw 5470 and the creation of a new Floodplain Management Bylaw involve the following goals/action items in Council's Strategic Plan 2019 – 2022:

- Sustainability priorities: Undertake drainage studies, risk and threat assessments and related bylaw amendments

E. Relevant Policy/Bylaws/Resolutions:

1. At its Regular Meeting of February 28, 2022 Council passed the following resolution:

“THAT Council direct Administration to create the Flood Response Plan as recommended and outlined in the report titled “Flood Mapping, Risk Analysis and Mitigation” dated February 3, 2022 and respectfully submitted by the Water Resource Engineer and Manager, Infrastructure;

AND FURTHER, that Council direct Administration to incorporate floodplain mapping into the Official Community Plan and develop a floodplain bylaw for its consideration;

AND FURTHER, that Council direct Administration to update the Sediment and Debris Management Plan as recommended in the report titled “Flood Mapping, Risk Analysis and Mitigation” dated February 3, 2022 and respectfully submitted by the Water Resource Engineer and Manager, Infrastructure, funded from the Storm Maintenance Various Location budget in the Infrastructure Program;

AND FURTHER, that Council direct Administration to complete feasibility assessments for the structural mitigation projects as recommended in the report titled "Flood Mapping, Risk Analysis and Mitigation" dated February 3, 2022 and respectfully submitted by the Water Resource Engineer and Manager, Infrastructure, to be funded from the Capital Design Budget in the Infrastructure Program;

AND FURTHER, that Council direct Administration to coordinate collaboration on mitigation opportunities with the Okanagan Indian Band as recommended in the report titled "Flood Mapping, Risk Analysis and Mitigation" dated February 3, 2022 and respectfully submitted by the Water Resource Engineer and Manager, Infrastructure;

AND FURTHER, that Council direct Administration to complete a Vernon Water Reclamation Center flood assessment and emergency plan funded from Capital Design funding in the 2023 Financial Plan;

AND FURTHER, that Council approve the change of the Water Resources Engineer to a permanent full time position in 2023 to be funded from the 1.9% Infrastructure Levy;

AND FURTHER, that Council direct Administration to provide annual updates in the first quarter of each year, on the progress of the Flood Response Plan (including dyking and mitigation)."

BUDGET/RESOURCE IMPLICATIONS:

N/A

Prepared by:



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Laurie Cordell
Manager, Long Range Planning and Sustainability

Kim Flick
Director, Community Infrastructure and Development

Approved for submission to Council:



Will Pearce, CAO

Date: 08 JUNE 2022

REVIEWED WITH

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| <input type="checkbox"/> Corporate Services | <input type="checkbox"/> Operations | <input checked="" type="checkbox"/> Current Planning |
| <input type="checkbox"/> Bylaw Compliance | <input type="checkbox"/> Public Works/Airport | <input checked="" type="checkbox"/> Long Range Planning & Sustainability |
| <input type="checkbox"/> Real Estate | <input type="checkbox"/> Facilities | <input checked="" type="checkbox"/> Building & Licensing |
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G:\6400-6999 PLANNING AND DEVELOPMENT\6480 COMMUNITY PLANNING - OFFICIAL COMMUNITY PLAN\07 Flood DPA OCP Amendment\10 Reports\220530_bd_lc_Rpt_Flood Hazard DPA and Floodplain Bylaw.docx

WORDING FOR FLOOD HAZARD OCP AMENDMENT

Insert as Section 26.1

1.0 Goals

1. To minimize the risk to people and property from flood hazards and mitigate and/or avoid increasing the impacts of flooding within areas already developed;
2. To encourage safety in the construction, location and manner of development;
3. To avoid increasing the hazard to or vulnerability of others on the floodplain; and
4. To promote a natural floodplain regime.

2.0 Guiding Principles Met

Foster prosperity for people, business and government
 Protect and preserve green spaces and sensitive areas
 Create a culture of sustainability

3.0 Special Conditions or Objectives that Justify Designation

The creeks and lakes that are key features of the physical environment, combined with occasional extreme weather activity, make some areas of Vernon susceptible to potential hazards from flooding.

Pursuant to sections 488 through 490 of the *Local Government Act*, the City of Vernon seeks to protect development from natural hazards in these areas by designating them as Development Permit Areas. This allows for taking appropriate precautionary measures through professional studies and assessments in order to guide safe development, building design, construction and long-term maintenance and monitoring.

The City of Vernon has created the **Flood Hazard Development Permit Map Schedule XXX**, for the purposes of identifying areas susceptible to potential hazards from flooding.

These Development Permit Area guidelines work with the City of Vernon's **Floodplain Management Bylaw XXX**, which provides the detailed requirements on development activities within floodplain areas.

4.0 Definitions

For the purposes of this Bylaw, the following definitions apply:

BUILDING means any structure used or intended for supporting or sheltering any use or occupancy.

CITY means The City of Vernon.

FLOOD means an overflowing or pooling of water on land that is normally dry.

FLOOD CONSTRUCTION LEVEL means the Flood Construction Level as referenced in the City of Vernon **Floodplain Management Bylaw XXX**.

FLOODPLAIN SETBACK means the distance from the Natural Boundary of a water body or existing dike in which development should be prohibited or restricted to limit local flood risk, limit transfer of risk to adjacent properties, and provide sufficient space for existing or future flood protection (e.g. dikes).

FLOODWAY means an area at risk from a flood event that is expected to substantially contribute to flow conveyance and or experience high velocity or large depth of inundation or during a flood. The Floodway generally encompasses all active channels plus overbank areas and relic channels where velocities are estimated to be greater than 1 m/s and /or depths greater than 1m.

FLOOD-PROOFING means the alteration of land or buildings to reduce or eliminate the potential for flood damage and may include the use of increased elevation and/or construction methods that allow for occasional wetting and drying.

HABITABLE AREA means any room or space within a Building or structure, to the underside of the floor system, that is or can be used for human occupancy, commercial sales, or storage of goods, possessions or equipment (including furnaces) which would be subject to damage if flooded.

NATURAL BOUNDARY means the visible high watermark of any lake, river, stream or other body of water where the presence and action of the water are so common and usual and so long continued in all ordinary years as to mark upon the soil of the bed of the lake, river, stream or other body of water a character distinct from that of the banks, in vegetation, as well as in the nature of the soil itself.

SELF-SUPPORTING DECK is a structure that does not contain a residential occupancy and is built independently from another Building.

STRUCTURE means a construction or portion thereof of any kind, whether fixed to, supported by or sunk into the land or water, specifically including retaining structures of any size directly connected to a Building or other structure but specifically excluding landscaping, fences, signs and paving.

TOP OF BANK means the Natural Boundary.

5.0 Scope of Application

The **Flood Hazard Development Permit Map Schedule XXX** denotes areas susceptible to potential hazards from flooding. Parcels located wholly or partially within areas identified on the Flood Hazard Development Permit Map are subject to a requirement for a Development Permit, unless they meet one or more of the Exemption criteria in Section 6.0 of this bylaw.

6.0 Exemptions

The following are exempt from the requirement to obtain a Floodplain Development Permit:

1. development outside of the Floodplain Setback area, that meets Flood Construction Levels;
2. public works and services and maintenance activities carried out by, or on behalf of the City;
3. development meeting the “Criteria for General Exemptions”, as outlined in Section 7 of **Floodplain Management Bylaw #xxxx**;
4. minor alterations or repairs to existing roads, paths or driveways, provided that there is no further disturbance of land or vegetation; and
5. planting of vegetation, habitat creation, restoration or enhancement works or removal of trees or vegetation in accordance with City and provincial enactments.

7.0 Guidelines

The following guidelines apply to all development applications for parcels wholly or in part in areas susceptible to potential hazards from flooding as designated in the **Flood Hazard Development Permit Map Schedule XXX**:

1. A new building or part of a building sheltering a use may not be located within the Floodplain Setback area or where the development may impede a floodway. Despite this, if development must be considered in this area, due to the parcel being primarily in the hazard area, a site specific exemption, in accordance with the **Floodplain Management Bylaw XXX** is required. In addition, the owner **is to** register a restrictive covenant under section 219 of the LTA in favour of the City of Vernon specifying conditions that will certify that the land is safe for the intended use; acknowledging that no municipal disaster financial assistance funding is available for the building or its contents; and releasing and indemnifying the City from liability in the event of damage caused by flood or erosion.
2. For all parcels outside of the Floodplain Setback, but within the Flood Hazard DPA, that do not meet the flood protection requirements or the exemption criteria as set out in the City of Vernon’s **Floodplain Management Bylaw XXX**, a site specific exemption, in accordance with the **Floodplain Management Bylaw XXX** is required.
3. Every new building or part of a building and related structure must:
 - a) be constructed in a location and manner that will maximize the safety of residents and property;
 - b) not increase the risk or hazard to, or vulnerability of, other properties or structures;
 - c) be located in the least hazardous part of the subject parcel;
 - d) in connection with renovations to any existing permanent Structure, where reasonable,
 - i. reduce flood hazard to the existing permanent structure by raising the habitable area to Flood Construction Levels;

- ii. reduce or eliminate the potential for flood damage by using construction methods that allow for occasional wetting and drying;
- e) consider additional structural and/or non-structural flood protection measures to mitigate the impacts of flooding within areas already developed;
- f) maintain and/or restore vegetation along all creek banks and Floodplain Setback areas to minimize erosion and protect slope stability; and
- g) preserve natural floodplain regimes. Development should be sited so as to allow normal creek processes (erosion and channel migration) and anticipated flooding to occur. Where appropriate, this should include actions, such as grading of the site, to deflect flood water and to allow for floodways or pooling of floodwater.

A bylaw to regulate development in and around floodplain areas.

WHEREAS the City of Vernon may enact a floodplain management bylaw pursuant to Section 910 of the Local Government Act where it considers that flooding may occur on land;

AND WHEREAS the City of Vernon is in possession of or has access to Provincial Guidelines, as well as the maps, reports and studies defined as the "Flood Mapping" that identify areas which may be subject to flooding;

NOW THEREFORE, the Municipal Council of the City of Vernon enacts as follows:

1.0 TITLE

This Bylaw may be cited as the "City of Vernon Floodplain Management Bylaw No. xxxx, 202x"

2.0 APPLICATION

- 2.1 This Bylaw shall apply to all persons who
 - (a) construct, reconstruct, move, extend or locate a Building, manufactured home or unit, modular home or Structure, or any part of them on land within the areas specified as 'Floodplain' in Section 5.1 of this Bylaw; or
 - (b) subdivide land within the floodplain.
- 2.2 Nothing in this Bylaw shall preclude anyone from complying with the provisions of any other local, provincial, or federal enactment.
- 2.3 An enactment referred to in this Bylaw is a reference to a statute of British Columbia or Canada, and the regulations thereto, and any bylaw referred to herein is a reference to an enactment of the Council of the City of Vernon, as amended, revised, consolidated, or replaced from time to time.

3.0 ADMINISTRATION

- 3.1 No Building or Structure or part of a Building or Structure shall be constructed, reconstructed, altered, moved or extended by the owner, occupier or other person so that it contravenes the requirements of this Bylaw.
- 3.2 No parcel shall be created through subdivision unless it can be proven to the satisfaction of the City Representative that the lot can be developed in accordance with this Bylaw.
- 3.3 The City Representative, Building Inspector, Bylaw Enforcement Officer or other persons appointed by the City may enter at all reasonable times on any property to which this Bylaw applies to inspect and determine whether the regulations, prohibitions and requirements of this Bylaw are being met.

- 3.4 A City Representative, Building Inspector or Bylaw Enforcement Officer who observes a contravention of this Bylaw may issue applicable notices and orders to any owner, occupier or other person who appears to have committed or allowed the contravention.
- 3.5 No person shall prevent or obstruct a City Representative, Building Inspector or Bylaw Enforcement Officer from performing his or her duties under this Bylaw.
- 3.6 A person who contravenes a regulation or requirement of this Bylaw commits an offense, is punishable on summary conviction, and is liable to a fine not exceeding \$50,000.00, and not less than \$200.00, plus the costs of prosecution.
- 3.7 Each day during which a violation is continued shall be deemed to constitute a new and separate offense.
- 3.8 If any section, subsection, sentence, clause or phrase of this Bylaw is for any reason held to be invalid by the decision of any court of competent jurisdiction, the invalid portion shall be severed and the decision that it is invalid shall not affect the validity of the remainder.
- 3.9 By the enactment, administration or enforcement of this Bylaw, the City of Vernon does not represent to any person that any Building or Structure, including a mobile home, located, constructed or used in accordance with the regulations and requirements of this Bylaw or in accordance with any advice, information, direction and guidance provided by the City in the course of the administration of this Bylaw will not be damaged by flooding.

4.0 DEFINITIONS

For the purposes of this Bylaw, the following definitions apply:

BUILDING means any structure used or intended for supporting or sheltering any use or occupancy.

BUILDING INSPECTOR means a person appointed, employed or contracted from time to time by the City of Vernon in the capacity of a Building Official. The terms "Building Inspector" and "Building Official" can be considered interchangeable within this document.

BYLAW ENFORCEMENT OFFICER means a person appointed, employed or contracted from time to time by the City of Vernon in the capacity of a bylaw enforcement officer.

CITY means The City of Vernon.

CITY REPRESENTATIVE means a person given the authority by the Director of Community Infrastructure & Development Services to administer the terms of this bylaw.

DESIGN FLOOD means a flood event selected for establishing design criteria and defined by some form of magnitude (generally including flow or water level) and often associated

probability of occurrence. The specific design flood events used for Vernon Creek, B.X. Creek and Okanagan Lake are further defined within the Flood Mapping.

DESIGN FLOOD LEVEL means the observed or calculated elevation for the Design Flood and other relevant factors such as climate change effect and/or wave effect which is used in the calculation of the Flood Construction Level.

EGBC means the Engineers & Geoscientists of British Columbia.

FLOOD CONSTRUCTION LEVEL means the Design Flood Level plus the allowance for freeboard.

FLOOD MAPPING means the following reports, documents, and maps in their entirety:

- “City of Vernon: Detailed Flood Mapping, Risk Analysis, and Mitigation, Part 1,” prepared by Northwest Hydraulic Consultants Ltd., dated August 25, 2020;
- “City of Vernon: Detailed Flood Mapping, Risk Analysis, and Mitigation, Part 2,” prepared by Northwest Hydraulic Consultants Ltd., dated October 29, 2021;
- “Okanagan Mainstem Flood Mapping”, prepared by Northwest Hydraulic Consultants Ltd., dated March 31, 2020; and
- “Flood Hazard Development Permit Map”, prepared by the City of Vernon, dated May, 2022.

FLOODPLAIN means the land adjacent to a waterbody that may be submerged by floodwaters, in this case during the Design Flood. The Floodplain as it relates to this document is designated according to Section 5.1 Floodplain Designation.

FLOODPLAIN SETBACK means the distance from the Natural Boundary of a water body or existing dike in which development should be prohibited or restricted to limit local flood risk, limit transfer of risk to adjacent properties, and provide sufficient space for existing or future flood protection (e.g. dikes).

FLOODWAY means an area at risk from a flood event that is expected to substantially contribute to flow conveyance and or experience high velocity or large depth of inundation or during a flood. The Floodway generally encompasses all active channels plus overbank areas and relic channels where velocities are estimated to be greater than 1 m/s and /or depths greater than 1m.

FREEBOARD means a vertical offset from the water surface calculated for the Design Flood event to account for local variations in water level and uncertainty in the underlying data and analysis.

HABITABLE AREA means any room or space within a Building or Structure, to the underside

of the floor system, that is or can be used for human occupancy, commercial sales, or storage of goods, possessions or equipment (including furnaces) which would be subject to damage if flooded.

INUNDATION EXTENT means the area submerged when water level is at the Flood Construction Level.

NATURAL BOUNDARY means the visible high watermark of any lake, river, stream or other body of water where the presence and action of the water are so common and usual and so long continued in all ordinary years as to mark upon the soil of the bed of the lake, river, stream or other body of water a character distinct from that of the banks, in vegetation, as well as in the nature of the soil itself.

NATURAL GROUND ELEVATION means the undisturbed ground elevation prior to site preparation.

PAD means a graveled or paved surface on which blocks, posts, runners or strip footings are placed for the purpose of supporting a mobile home or unit or a concrete pad for supporting a Habitable Area.

PROFESSIONAL PRACTICE GUIDELINES mean the *Professional Practice Guidelines, Natural Hazards, Legislated Flood Assessments in a Changing Climate in BC, using the latest version* by the Engineers & Geoscientists of British Columbia.

QUALIFIED PROFESSIONAL means a person who is registered or licensed under the provisions of the Professional Governance Act and is qualified to operate in the applicable field of study.

SELF SUPPORTING DECK is a structure that does not contain a residential occupancy and is built independently from another Building.

STANDARD DIKE means a dike built to a minimum crest elevation equal to the flood construction level and meeting standards of design and construction approved by the Province and maintained by an ongoing authority such as a local government body or a diking authority under the Dike Maintenance Act or successor legislation.

STRUCTURE means a construction or portion thereof of any kind, whether fixed to, supported by or sunk into the land or water, specifically including retaining structures of any size directly connected to a Building or other structure but specifically excluding landscaping, fences, signs and paving.

TOP OF BANK: means the Natural Boundary. When referenced in the Flood Mapping, Top of Bank will be interpreted as the Natural Boundary.

5.0 FLOODPLAIN DESIGNATION

5.1 The Floodplain is designated as any land shown within the Inundation Extent, Floodway, Flood Fringe, or recommended Floodplain Setback within the Flood Mapping. Figure 1 depicts a typical floodplain cross-section.

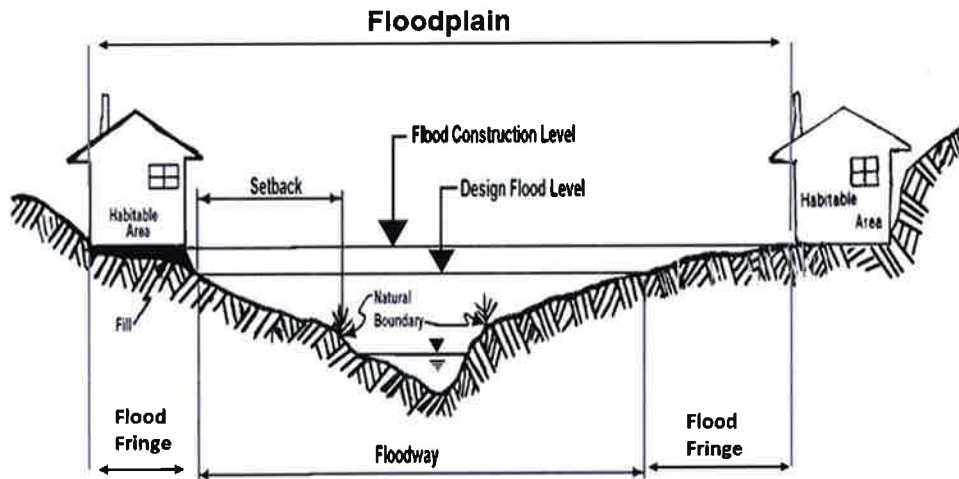


Figure 1- Cross-Section of a Typical Floodplain

Note: This diagram is provided for illustrative purposes only (source: adapted from British Columbia Ministry of Environment)

6.0 FLOOD CONSTRUCTION LEVELS AND FLOODPLAIN SETBACKS

6.1 Flood Construction Levels are specified in the Flood Mapping with the following conditions:

- a. where more than one Flood Construction Level is applicable, the higher elevation shall be the specified Flood Construction Level;
- b. the Flood Construction Level for a specific parcel shall be determined as the highest upstream Flood Construction Level.

6.2 Floodplain Setbacks for Vernon Creek and B.X. Creek shall be applied as follows:

- a. where more than one Floodplain Setback is applicable, the greater distance shall apply;
- b. the Floodplain Setback will be measured from the Natural Boundary.

7.0 FLOOD PROTECTION REQUIREMENTS

7.1 Development of any lands within the designated Floodplain must conform to the following requirements:

- a. No Building, manufactured home or unit, modular home or structure or any part thereof shall be constructed, reconstructed, moved, extended or located with the underside of a wooden floor system or top of concrete slab of any area used for habitation, business, or storage of goods damageable by floodwaters, or in the case of a manufactured home or unit the ground level or top of Pad on which it is located, lower than the Flood Construction Level specified in Section 6.1 of this Bylaw.
- b. Any enclosed space below the FCL must have safe egress to a location above the FCL or to ground level with flooding up to the FCL. Safe egress must be possible without relying on electrical power.
- c. No landfill, or structural support required to support a floor system or Pad, shall be constructed, reconstructed, moved, extended or located within the Floodplain Setback or Floodway as specified in the Flood Mapping.
- d. Unless specifically provided for elsewhere in this Bylaw, no area below the Flood Construction Level shall be used for the installation of furnaces, major electrical switchgear, or other fixed equipment susceptible to damage by floodwater.
- e. Structural support or compacted fill or a combination of both may be used to elevate the underside of the floor system or the top of the Pad above the Flood Construction Level. The structural support and/or fill shall be protected against scour and erosion from flood flows, wave action, ice and other debris.
- f. Unless a Building is situated on lands with a Natural Ground Elevation above that as the specified Flood Construction Level or greater, basements shall be prohibited and crawl spaces shall not exceed 1.2 metres (4 feet) in height to the underside of the floor joists.
- g. The Building foundation shall be constructed to withstand the hydrostatic forces during inundation up to the Flood Construction Level.
- h. When a building permit is applied for on a parcel with frontage on Okanagan Lake, the Building Official shall request a structurally engineered foundation or geotechnical report if any part of a footing up to and including the level of a slab, or portion of the foundation is intended by its design to be submersible or subject to water fluctuation or wave action. A covenant shall be placed on Title noting such structure may be subject to damage by water.
- i. The Building Inspector may require, at the cost of the owner of a parcel for which a building permit is applied for, a British Columbia Land Surveyor's certificate to verify compliance with the Flood Construction Levels and Floodplain Setbacks as specified in this Bylaw.
- j. Where any portion of a parcel to be developed contains areas designated by the

Reference Documents to be within the Floodway, Floodplain, Floodplain Setback, or Inundation Extent, the Building Inspector may require, at the cost of the owner of a parcel for which a building permit is applied for, that a Qualified Professional complete a flood hazard assessment in accordance with the Professional Practice Guidelines.

8.0 GENERAL EXEMPTIONS

- 8.1 The following types of Buildings, Structures or developments are exempted from the Flood Construction Levels specified in this bylaw, subject to conditions specified as follows (Note: these types of developments are not exempted from the Floodplain Setbacks):
- a. A renovation of an existing Building or Structure that does not involve an addition thereto, or that involves an addition that increases the building footprint at the original non-conforming elevation by no more than 25% of the surface area existing as of (the date of bylaw adoption).
 - b. That portion of a Building or structure to be used as a carport, garage or entrance foyer, porches, domestic greenhouses and storage buildings not used for the storage of goods damageable by floodwaters, provided there is an unobstructed means of ingress and egress above the Flood Construction Level.
 - c. Parking areas, including enclosed underground parking areas, except that in the case of an enclosed underground parking area, an unobstructed means of pedestrian ingress and egress must be provided above the flood level, and a sign must be posted at all points of entry notifying users that the parking area is not protected from inundation by floodwaters.
 - d. Recreation shelters, stands, campsite washhouses and other outdoor facilities susceptible to only marginal damage by floodwaters.
 - e. Farm buildings other than dwelling units, closed-sided livestock housing and buildings containing hazardous commodities such as herbicides, pesticides, fuel and products with similar negative environmental impacts.
 - f. On-loading and off-loading facilities associated with water-oriented Industry and portable sawmills.
- 8.2 The following development is exempt from both the Floodplain Setbacks and the Flood Construction Levels specified in this bylaw:
- a. Self-Supporting Deck or Boathouse that is not:
 - i. used for Habitable Area and the land owner has registered a covenant in favour of the Province and the City of Vernon restricting the deck or

Boathouse from being used as a Habitable Area;

- ii. structurally attached to a Building, manufactured home or other Structure.

9.0 SITE SPECIFIC EXEMPTIONS

9.1 Notwithstanding the above, the Director of Community Infrastructure and Development Services, or their authorized designate, may grant a site-specific exemption with respect to the setback requirements or elevation requirements elsewhere in this Bylaw where:

- a. a Qualified Professional has submitted a site-specific Flood Assessment Report, consistent with Provincial Guidelines and EGBC Professional Practice Guidelines, and supplemented with a Flood Assurance Statement as specified in EGBC Professional Practice Guidelines, that certifies that the property can be safely used for the intended use and that protection from the corresponding Design Event can be achieved through an engineered design without reliance on a dike; and
- b. the owner enters into a Section 219 Covenant absolving the City of Vernon of any liability with respect to the flooding of the property or flood damage to land, structures and contents thereof.

10.0 SEVERABILITY

10.1 If any section or lesser portion of this Bylaw is held invalid, it shall be severed and the validity of the remaining provisions shall not be affected.

