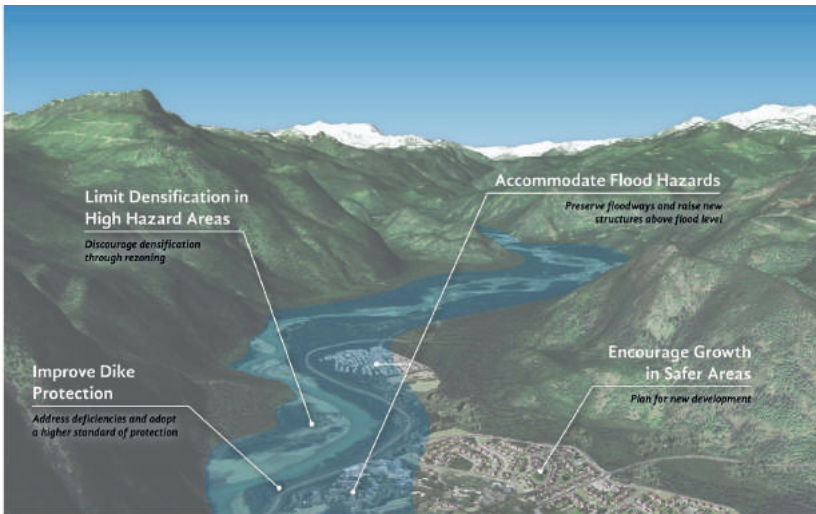


Flood Management Guide for Developers

A Guide to the District of Squamish's
Flood Management Policies in Relation
to Land Development



Introduction

The District of Squamish has extensive development in the floodplains of the Squamish, Mamquam, Stawamus and Cheakamus rivers, several alluvial fans including the Cheekeye Fan and the low-lying margins of Howe Sound. The community's location exposes it to a number of flood and geological hazards that require careful consideration for community planning.

The District is responsible for making land-use management decisions within the community. Accordingly, in 2017 the District completed a comprehensive *Integrated Flood Hazard Management Plan* (IFHMP) that assessed flood hazards and prepared a detailed strategy, including land-use policy framework in order to manage community flood risk. This leaflet is intended as a guide to the District's policies and approach to flood hazard management for land development applications.

Policy Overview

IFHMP land use management policy recommendations are summarized in three (3) legislative policies: (1) Official Community Plan, (2) Development Permit Area and (3) Floodplain Bylaw as illustrated in Figure 1 below. Each policy is described in further detail below.

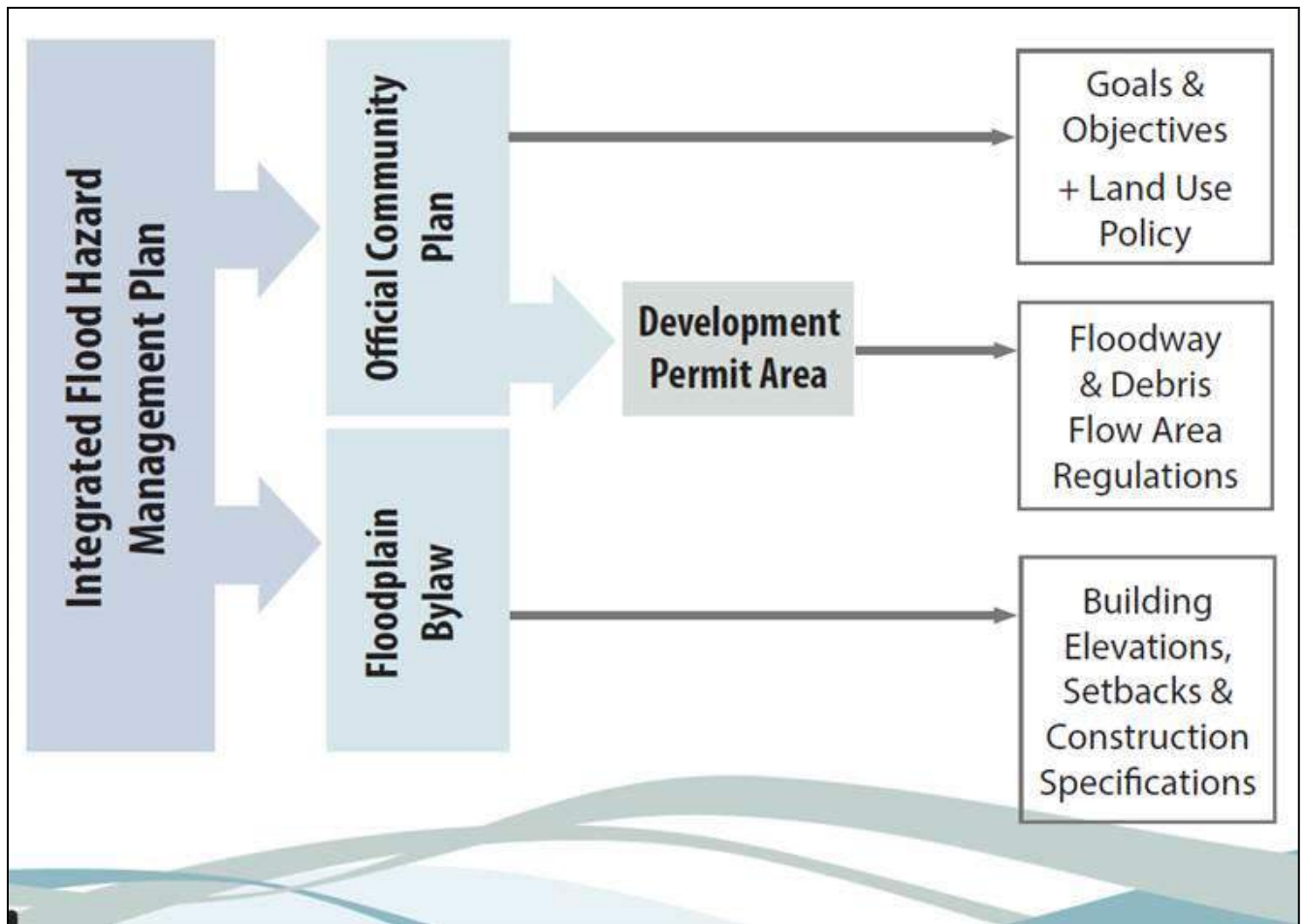


Figure 1 - IFHMP Policy Framework

Official Community Plan (OCP)

The OCP identifies flood hazard areas, lays out broad objectives with respect to flood hazard management and establishes a land use management plan and policies to manage community flood risk within acceptable levels. Specific relevant policies include:

- All land development applications within natural hazard areas (shown in OCP Schedule D-1 and Squamish WebMap) are required to complete a hazard and/or risk assessment to ensure the safety of the development in accordance with the District's Terms of Reference (see below).
- The District will require a 'save harmless' restrictive covenant to be registered on the title of a property prior to any land development application approval.
- Land use will be controlled in the highest hazard areas. Three (3) types of Controlled Densification Areas (shown in OCP Schedule D-2 and the Squamish WebMap) have been designated where restrictions and conditions apply prior to allowing a change of land use (i.e rezoning or OCP amendment) that would increase the consequences in the event of a flood (i.e increased number of people and/or value of development). The areas and associated policies are as follows:
 - **Restricted Densification Areas** - The District will not support change of land use that would increase the consequences of a flood in these areas.
 - **Conditional Densification Areas** - The District will not support change of land use that would increase the consequences of a flood in these areas unless the conditions laid out in OCP Section 11.5d are met. The criteria have been established to provide appropriate public safety, avoid transfer of risk to other properties and maintain flood conveyance capacity of the floodplain.
 - **Limited Densification Areas** - The District will not support change of land use that would increase the consequences of a flood in these areas unless the criteria for Conditional Densification Areas are met and a density cap of 29 units/hectare (equivalent to duplex zoning) has been applied.
- Detailed policy has been established for the Cheekeye Fan including establishing risk tolerance criteria and mitigation objectives.

Development Permit Area 2 – Protection from Flood Hazards (DPA2)

DPA2 regulates development within and abutting areas designated as Primary Floodway, Secondary Floodway and Debris Flow Hazard Area (shown in OCP Schedule L-1 and Squamish WebMap). DPA2 has been developed to ensure that future development is safe and preserves the flood conveyance capacity of Primary Floodways (major river systems) and Secondary Floodways (critical flood conveyance corridors within the dike-protected floodplain) in order to maintain flood levels and avoid increasing risk over time.

Specific policies included in DPA2 include:

- **Primary Floodways** - Development is restricted within any Primary Floodway other than the Cheakamus River and coastal areas. Buildings and fill may only be placed within the Primary Floodway of the Cheakamus River in accordance with specific conditions laid out in DPA2.

- **Secondary Floodways** - Development within or abutting Secondary Floodways is subject to regulations including a requirement for a Qualified Professional (QP) to certify the development, regulations on placement of fill and maintaining watercourse setbacks.
- **Debris Flow Hazard Areas** - Development within Debris Flow Hazard Areas is subject to regulations including avoidance of hazard where possible, requirement for a QP to certify the development and policy regarding off-site protective works.

Floodplain Bylaw

The District has adopted a Floodplain Bylaw in order to regulate building development within designated floodplains. The Floodplain Bylaw designates floodplains that the bylaw applies to and establishes requirements for new construction within those floodplains. The primary aspects that the bylaw regulates are:

- Establishing Flood Construction Levels (FCLs) that habitable areas must be raised above based on the criteria laid out in the bylaw. FCL's will vary from property to property based on the flood hazard and local topography.
- Establishing building setbacks from watercourses and dikes. Setbacks will vary on a site by site basis depending on the type of hazard, type of watercourse and/or dike that the development is located within or adjacent to.
- Establishing construction specifications including the need for erosion protection for foundations and fill, elevating major electrical and mechanical equipment above FCL, and use of flood resistant materials below FCL.
- Establishing exemption criteria for specific types of building areas and construction, non-residential development with the downtown core and in cases of hardship.

Terms of Reference for Natural Hazard and/or Risk Assessments

In accordance with both Provincial and Local Legislation, the District requires natural hazard and/or risk assessments for many types of development applications. The District has prepared a *Terms of Reference for Natural Hazard and/or Risk Assessments* in order to establish expectations and requirements that QPs must fulfill when completing these reports. The terms of reference are based on Engineers and Geoscientists British Columbia (EGBC) guidelines. Ensure that your QP is familiar with the guidelines when preparing quotes to complete the work. A link to the guidelines is provided in the Resources section below.

Squamish WebMap Flood Information

The District's WebMap (<https://maps.squamish.ca/html5viewer/?viewer=webmap>) provides a useful tool for residents to view flood information and policy areas that may apply to their property. Residents can view applicable flood hazard information by selecting 'IFHMP Layers' within the 'Explore' tab of the Squamish WebMap. Available layers include flood and debris flow hazard areas, Controlled Densification Areas, DPA2 policy areas, flood construction levels, flood velocity and the downtown FCL Exemption Area.

Land Development Application Process

Flood mitigation requirements and policy can significantly affect development potential and site design requirements for floodplain properties. It is recommended that applicants engage a QP where required and book a pre-application meeting at the earliest stages of preparing a development application in order to incorporate flood mitigation requirements into site design.

Type of Application

If you are seeking approval of a land development application within a designated floodplain, the following is a quick reference to regulations that will apply. Check the Squamish WebMap to determine which policy areas will apply.

Rezoning

The District's OCP policy requires that a flood hazard assessment be submitted with all rezoning applications in flood hazard areas to establish the suitability of the land use in relation to hazard exposure. The assessment will be registered as a restrictive covenant on title prior to approval.

If the property is located within a Controlled Densification Area (shown in OCP Schedule D-2 and the Squamish WebMap), the applicable OCP land use guidelines will apply.

If the property is within or abutting a Secondary Floodway shown in OCP Schedule L-1, DPA2 regulations will apply at a later stage of development, but should be considered in site design at rezoning stage and in the flood hazard assessment.

The Floodplain Bylaw does not specifically apply to rezoning, however it is critical to ensure that Floodplain Bylaw requirements are reviewed and incorporated into the flood hazard assessment and site design to avoid challenges at the Building Permit stage.

Subdivision

The District's OCP policy requires that a flood hazard assessment be submitted with all subdivision applications in flood hazard areas to establish the suitability of the land use in relation to hazard exposure. The assessment will be registered as a restrictive covenant on title prior to approval.

If a property is located within or abutting a Secondary Floodway, DPA2 regulations will apply.

The Floodplain Bylaw does not specifically apply to subdivision, however it is critical to ensure that Floodplain Bylaw requirements are reviewed and incorporated into the flood hazard assessment and site design to avoid challenges at the Building Permit stage.

Building Permit

All building permit applications in flood hazard areas are required to meet the regulations contained within the Floodplain Bylaw. Typical applications will not require a flood hazard assessment report unless specifically required by the Floodplain Bylaw, DPA2 or deemed necessary by the Building Inspector. A restrictive covenant will be registered on title prior to approval.

If a property is located within or abutting a Secondary Floodway, DPA2 regulations will apply.

Development Permit

The District's OCP policy requires that a flood hazard assessment be submitted with all development permit applications in flood hazard areas to establish the suitability of the land use in relation to the hazards a site is exposed to. The assessment will be registered as a restrictive covenant on title prior to approval.

If a property is located within or abutting a Secondary Floodway, DPA2 regulations will apply at the Building Permit stage but should be considered in the flood hazard assessment at DP stage to ensure consistency throughout the application process.

The Floodplain Bylaw does not specifically apply to Development Permits, however it is critical to ensure that Floodplain Bylaw requirements are reviewed and incorporated into the flood hazard assessment and site design to avoid challenges at the Building Permit stage.

Site Alteration Permit moving more than 30 cubic metres of soil

If a property is located within or abutting a Secondary Floodway, DPA2 regulations will apply including that a QP must certify the location, form and orientation of the fill placement.

Resources

Information on the District's Application Guides, Forms and Resources is provided at:

<https://squamish.ca/business-and-development/home-land-and-property-development/application-guides-and-forms/>

The Integrated Flood Hazard Management Plan and relevant Provincial Policy documents are available at:

<https://squamish.ca/yourgovernment/projects-and-initiatives/floodhazard/resources/>

Official Community Plan (including DPA2):

<http://squamish.cc/extranet/officialcommunityplan/2017-11-17%20S2040%20OCP%20Preview%20for%20Council%20CAC.pdf>

Floodplain Bylaw:

[https://squamish.civicweb.net/filepro/document/150517/Floodplain%20Management%20Bylaw%20\(Bylaw%202526\).pdf](https://squamish.civicweb.net/filepro/document/150517/Floodplain%20Management%20Bylaw%20(Bylaw%202526).pdf)

Terms of Reference for Natural Hazard and/or Risk Assessments:

<https://squamish.ca/assets/Uploads/20171129-Terms-of-reference-flood-hazard-assessments.pdf>

District of Squamish – Geographic Information System

<https://maps.squamish.ca/html5viewer/?viewer=webmap>