



COUNCIL AGENDA
Date: November 16, 2020 Item: 5.



DISTRICT OF WEST VANCOUVER
750 17TH STREET, WEST VANCOUVER BC V7V 3T3

5.

COUNCIL REPORT

Attachments for Item 5 provided under separate cover.

Date:	October 28, 2020
From:	Heather Keith, Manager, Environmental Protection
Subject:	Coastal Planning and Preparation of a Foreshore Development Permit Area
File:	0332-04

RECOMMENDATION

THAT the report dated October 28, 2020 titled “Coastal Planning and Preparation of a Foreshore Development Permit Area” be received for information.

RECOMMENDATION

THAT staff prepare and introduce for Council’s consideration a Foreshore Development Permit Area.

1.0 Purpose

The purpose of this report is to provide Council the findings of coastal planning work that has been completed by staff in the Planning and Development Services Department. This report outlines possible adaption measures for sea level rise and recommends the preparation of a Foreshore Development Permit Area (DPA).

2.0 Legislation/Bylaw/Policy

2.1 Legislation

Section 488 of the *Local Government Act* (LGA) indicates that: (1) An official community plan may designate development permit areas for the: (b) protection of development from hazardous conditions.

2.2 Bylaw

The “Parks Regulation Bylaw No. 4867, 2015” is a bylaw to regulate the use of parks. The definition of parks includes “the land held under any lease granted to the Municipality by Her Majesty the Queen, the foreshore, and land covered by water”.

The “Zoning Bylaw No. 4662, 2010” is a bylaw to regulate permissions, restrictions and conditions of land use in the municipality. The use of the public foreshore area adjacent to private property is regulated by the Zoning Bylaw.

3.0 Council Strategic Objective(s)/Official Community Plan

The District's Official Community Plan (OCP) is a statement of objectives and policies to guide decisions on planning and land use. It includes the identification of development controls and restrictions based on hazardous conditions or environmentally sensitive areas (i.e., DPAs). The following sections of the OCP provide policy direction to enable the community and associated infrastructure to adapt to, and manage the risk of, coastal flooding and sea level rise:

- Policy 2.6.10 Protect the shoreline and its significant environmental and cultural features through:
 - a. Seeking strategic land acquisition where appropriate;
 - b. Restricting private encroachment except where required for access; and
 - c. Regulating existing structures to minimize impact.
- Policy 2.6.11 Update shoreline protection strategies and flood construction level requirements to further increase protection from sea level rise, reduce shoreline erosion, preserve and enhance habitat and improve public access.
- Policy 2.6.12 Establish a foreshore development permit area to guide development and construction on or near the foreshore to protect and enhance foreshore habitats.

In addition, objective 3.2 of Council's 2020-2021 Strategic plan is to "Address the threats of [...] floods".

4.0 Financial Implications

There are no financial implications associated with this report. The proposed future establishment of a DPA would include associated permit fee requirements, to be specified at that time pending Council's direction to proceed (as recommended in this report).

5.0 Background

5.1 Previous Decisions

At its July 8, 2019 regular meeting, Council recognized that climate change constitutes an emergency for West Vancouver and directed staff to prepare a "comprehensive climate adaptation strategy". Over the course of five subsequent Council meetings (2019-2020) an omnibus suite of bylaw and policy amendments were approved to address climate change mitigation (i.e. the reduction of greenhouse gases). The current report provides an overview of potential adaptation measures for sea level rise to support climate change adaptation (i.e., resiliency to the impacts of climate change).

5.2 History

As of January 1, 2018, the Province amended Sections 3.5 & 3.6 of the *Flood Hazard Area Land Use Management Guidelines* (the “Provincial Guidelines”) to address Flood Construction Levels (FCL) for habitable structures in the context of development and projected sea level rise due to climate change. The current projection for sea level rise is a 1.0 m increase by the year 2100. For long-term planning initiatives, the guidelines indicate to use a 2.0 m sea level rise by the year 2200.

There are four principle measures available in order to adapt to sea level rise, with respect to upland property and development:

- Avoid (e.g., setbacks);
- Protect (e.g., seawall, breakwater, storm surge barrier, berm to elevate foreshore land);
- Accommodate (e.g., elevate upland structures); and
- Retreat (e.g., relocation of structures away from coastal areas)

In response to the Provincial Guidelines, the policies in the OCP, as well as Professional Practice Guidelines, the Planning and Development Services Department has been applying the principle of “Accommodate” for consideration of private property development within the coastal floodplain area by enacting Section 56 of the Community Charter. This allows the Chief Building Inspector to require a report by a qualified professional to certify that the land may be used safely for the intended use (i.e., the proposed development). The report required in these circumstances needs to be:

1. prepared consistent with Section 3.5 of the Provincial Guidelines, including the calculated FCL, recommendations, and proposed plans;
2. prepared in accordance with the most recent edition of the *Professional Practice Guidelines—Legislated Flood Assessments in a Changing Climate in BC* published by the Association of Professional Engineers and Geoscientists of BC (EGBC);
3. prepared by an engineer who, as required by the EGBC Guidelines, has appropriate training and experience to prepare the report in view of the terrain characteristics, the type of potential flood hazard, and the type of mitigative works potentially needed; and
4. accompanied by the *Flood Hazard and Risk Assurance Statement* that is included in the EGBC Guidelines, certified by the engineer.

There are, however, limitations to relying on the Community Charter for this work and staff have looked into a better mechanism to ensure re-development in the coastal floodplain is built for “safe use”, responds to

site-specific conditions and environments, while being situated in a consistent regulatory framework for all impacted properties.

To help inform the development of this policy mechanism, as well as evaluate other possible adaptation measures for protection against sea level rise for consideration by the District, the Planning and Development Services Department commissioned two pieces of work that were completed by the consulting firm, WSP Canada. The project team members were an interdisciplinary team with professional engineering experience in the areas of coastal and marine works engineering, drainage and flood risk assessment, intertidal habitat assessments, and coastal hydraulics.

6.0 Analysis

6.1 Discussion

The scope of work completed by WSP Canada consisted of the following:

1. The calculation of interim FCLs for the District of West Vancouver coastline from Horseshoe Bay to Ambleside Park and an assessment of potential future sea level rise planning areas for the District. The methodology used to calculate the FCLs was consistent with the Provincial Guidelines.
2. Application and technical guidance in the development of long-term flood management and protection strategies for planning areas as well as identification and an evaluation of available larger-scale solutions to address coastal flooding. This extended to include considerations of environmental impacts and potential permitting requirements, as well as order of magnitude of costs. This broader piece of work has considered solutions to address coastal flooding in both the short-term and the long-term.

Flood Mapping and Interim Flood Construction Levels

WSP determined interim FCLs for 17 planning area transects along the District's coastline, which were representative of each area. These are intended to be used for planning purposes and as a guidance tool in evaluating future proposed coastal development. Following the Provincial Guidelines, the analysis for determination of FCLs for this study applied a simplified empirical approach yielding a slightly more conservative result than would be generated if a detailed site-specific analysis were carried out for a property and re-development design. This was an exercise to produce flood maps for the purpose of flood risk management, providing input towards the development of a foreshore DPA, and guidance for determination of when a flood hazard assessment would be required for re-development.

Appendix A provides the report outlining the methodology to calculate the FCLs and resulting flood maps.

Coastal Planning Adaptation Measures

WSP then considered the effectiveness of various available mitigation measures to “Protect” three specific Planning Areas in the District, including: (i) the Ambleside Area, (ii) the 2800 Block of Bellevue Avenue, and (iii) the Stearman Beach area, as they are representative of the low-lying areas in the District vulnerable to sea level rise and coastal processes and hazards.

Although available mitigation measures are often dependant on natural site conditions and constraints, in general a contiguous area of a coastline should be considered as a unit to apply more innovative solutions. This component of the scope of work looked at the pros and cons of various mitigation measures and how they could best be applied to these Planning Areas of the District. Considerations for available measures included both area-wide measures as well as site-specific measures.

Area-Wide Measures

The study completed by WSP provided examples of larger-scale adaptation measures, specifically berm structures along the public foreshore or offshore breakwater structures, which would be intended to protect upland property from sea level rise and coastal flooding. The study also then included benefits and consequences to these measures. The benefit of these types of measures is that they are a proactive approach to addressing sea level rise that accounts for an area’s conditions in its entirety. In addition, this may allow development on private property at a lower FCL, as well as alleviate some issues raised by residents regarding the elevation differences that building to the FCL could introduce across neighbouring properties. However, there are potential issues when evaluating the implementation of this type of adaptation measure, including:

- the significant costs associated with the installation of a berm structure;
- the potential impacts to the intertidal habitat and whether support from the federal government would be received;
- the impact on upland private properties with respect to blockage of views; and
- how to determine priority areas for application of these measures.

These larger-scale measures may be considered and integrated into long-term planning efforts; but in the short-term, site-specific measures, such as a DPA policy mechanism, could be implemented to initiate Council’s priority to protect against the threat of coastal flooding.

Site-Specific Measures

A Foreshore DPA is a policy tool used to guide redevelopment of a property, while accounting for certain regulations as required by a Local Government. A DPA would make property owners aware that they are within the coastal floodplain and ensure that new development is suitably designed to respond to climate threats so that, as buildings are replaced over time, the resiliency of District neighbourhoods increases. A DPA for the foreshore area would require a development permit for any property within that area proposed to be subdivided, altered, or developed, as per section 489 of the LGA. There will always be the requirement to build to the FCL if a property is subject to coastal flooding. However, the DPA would allow flexibility for a property owner and their qualified professional(s) to propose variances, flood-proofing strategies, and setback measures to achieve the FCL. In addition, the DPA would allow for other considerations such as environmental protection measures to mitigate impacts to the intertidal habitat and upper riparian habitat of the foreshore through site restoration requirements.

Some limitations of site-specific adaptation measures include:

1. the incremental elevation of land as properties re-develop, which will address sea level rise at a slower rate;
2. the potential impacts to neighbouring properties that are not elevated to the same grade; and
3. the absence of coordination in adaptation measures in a contiguous area.

The DPA guidelines will help to address item 2; however, the other two items cannot be resolved through site-specific measures.

Appendix B provides the report outlining the available area-wide and site-specific adaptation measures for further evaluation.

Next Steps

Based on the work that was completed with WSP Canada and recognizing the need for the implementation of a policy mechanism to address sea level rise that provides residents with clear direction to protect against coastal flooding, staff propose to develop guidelines for a foreshore DPA that incorporate requirements with respect to:

- determining the FCL, using consistent methodology;
- exemptions to FCL requirements;
- setback distances from the natural boundary;

- permitted uses below the FCL;
- environmental considerations for the protection of the intertidal habitat (e.g., “Green Shores” approach);
- shoreline protection projects;
- protection of utility infrastructure on the foreshore;
- foreshore encroachments from adjacent upland property;
- adherence to regulations of senior levels of government; and
- compliance with the District’s Head Lease with the Province to manage the public foreshore.

A foreshore DPA would allow for a “science-based, best-practice” approach to development regulations in areas at risk of coastal hazard and flooding. In addition, it will create an application process for proposed development within the coastal floodplain, which will alleviate confusion for applicants. The guidelines will address the OCP policies, incorporate the District’s obligations under the Head Lease with the Province for the management of the public foreshore, and ensure that any regulations from senior levels of government are addressed.

A Foreshore DPA can be implemented in the short-term while the District continues to evaluate other adaptation measures outlined in this report.

6.2 Sustainability

With sea level rise occurring, it is important to establish adaptation measures to protect the community from coastal hazards. Planning for sea level rise will help to reduce shoreline erosion, preserve and enhance intertidal habitat, improve public access, and protect infrastructure and upland development.

6.3 Public Engagement and Outreach

The preparation of a Foreshore DPA is recommended in the District’s OCP. Broad public engagement was completed during the 2017-2018 OCP review. In addition, the Coastal Marine Management Plan Working Group is an ongoing citizen-led District initiative to develop a Coastal Marine Management Plan that will provide guidance on District-specific coastal management issues.

Staff from the Planning and Development Services Department have met with the Working Group to gain a better understanding of their emerging recommendations on key issues; most specifically with respect to the public/private interface at the foreshore. The Working Group has a comprehensive understanding of the complexity of sea level rise as it relates to West Vancouver, and the establishment of a potential Foreshore Development Permit Area is aligned with the Working Group’s process to date. Pending Council’s direction to prepare a DPA, staff would reconnect with the Working Group to present and discuss a draft DPA for feedback.

and refinement, before returning to Council with a proposed DPA for formal consideration of adoption into the OCP.

6.4 Other Communication, Consultation, and Research

The North Shore Sea Level Rise (NSSLR) Strategy is a collaborative initiative to develop an increased understanding of sea level rise risk and establish a set of coordinated action areas to build adaptability and resiliency across the North Shore. Part of this study was to complete flood mapping (and calculation of the FCLs) for the North Shore coastline. The modelling work for this study, however, did not account for wave effects due a lack of updated numerical wave modelling. Wave effects are an important factor in the calculation of the FCL, particularly for West Vancouver where the shoreline is more exposed to ocean waves than the rest of the North Shore. The commissioned study completed by WSP addressed this modelling gap in the NSSLR project, thereby building upon the work completed for the entire North Shore coastline. A public engagement process on coastal hazards and sea level rise was completed as part of the Northshore Sea Level Rise Strategy (<https://www.dnv.org/sea-level-rise-strategy>). This included an online survey to gain a better understanding of concerns from residents.

The strategy report (<https://westvancouver.ca/environment/major-projects/north-shore-sea-level-rise-strategy>) outlines recommendations to address sea level rise and coastal flooding, which includes establishing a foreshore DPA for private property development.

7.0 Options

7.1 Recommended Option

Council receive this report for information and direct staff to prepare and introduce a Foreshore DPA.

7.2 Considered Options

Defer the preparation of a Foreshore DPA pending receipt of additional information (to be specified).

8.0 Conclusion

The coastal planning study identified potential mitigation measures for sea level rise and coastal flooding with respect to protection of upland development. Options for consideration for sea level rise planning for the District include (i) area-wide measures, located on the public foreshore and addressed primarily by the District; and (ii) site-specific measures, located primarily on private property with potential for public foreshore work, addressed by upland private property owners. The preparation of a Foreshore DPA is recommended as a site-specific measure to adapt to

sea level rise and climate change. This recommendation to proceed with preparing and establishing a Foreshore DPA does not preclude the District from ongoing or future consideration of area-wide measures.



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Concurrence: _____ Jenn Moller, Director, Engineering and Transportation Services



Concurrence: _____ David Hawkins, Manager, Community Planning and Sustainability

Appendices:

Appendix A - Flood Control for West Vancouver Water Front Buildings Interim Planning for Coastal Flooding & Sea Level Rise, prepared by WSP Canada, October 15, 2019

Appendix B - Sea level Rise/Exploration of Adaptive Opportunities – West Vancouver Coastal Adaptation Study, prepared by WSP Canada, April 9, 2020

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