

June 29, 2010

File No.:NP-OCP-2010.1

To: North Pender Island Local Trust Committee
For the meeting of July 29, 2010

From: Robert Kojima
Island Planner
Local Planning Services

CC: David Marlor, RPM
Andrea Pickard, Island Planner

Re: Steep Slope Hazard Mapping Project

The LTC has identified geotechnical hazard mapping as a top priority work program item. This item was last on the LTC's agenda in January 2010. The purpose of this report is to update the LTC on the status of the project and to provide recommendations on the next steps.

BACKGROUND:

In 2007, Islands Trust engaged a geotechnical consulting firm (C.N. Ryzuk and Associates Ltd.) with extensive experience working on the southern Gulf Islands to review the hazard mapping undertaken as part of the OCP review. Subsequently, Islands Trust contracted with the consultant to work with Islands Trust staff to develop a map and methodology for geological hazard identification. The consultant recommended mapping that utilizes the Digital Elevation Model (DEM) contour mapping to create categories of geological hazard based on slope gradient. At a meeting in 2009, the consultant presented a preliminary report and the LTC directed staff to undertake consultation with agencies with overlapping jurisdiction (CRD Building Inspection and Ministry of Transportation and Infrastructure). Staff and the consultant met with CRD Building Inspection and with MoTI staff and have presented the methodology and mapping to those agencies. The consultant's final report in December 2009¹ outlined the background, including the geology of North Pender, the common geo-hazards, the derivation of the three designations currently recommended in the report, the data limitations, and provides some recommendations for implementation. The report classified three slope classes:

¹ C.N. Ryzuk and Associates Ltd. Geological Hazard Mapping Project, North Pender Island, BC. December 11, 2009. <http://www.islandstrust.bc.ca/ltc/np/pdf/nphazmapryzukrptdec2009.pdf>

- Low Hazard Areas (15 to 22.5 degrees slope): areas of low to moderate slope which may be subject to limited geohazard and slope failure under extremely adverse conditions having a relatively low probability of occurrence, such as a high magnitude earthquake.
- Moderate Hazard Areas (22.5 to 45 degrees of slope): areas considered as possible hazard areas that may exhibit a geologic risk.
- High Hazard Areas (greater than 45 degree slope): geologic processes in this area result in hazards to development relatively regularly, and can be unpredictable. These areas should be considered to be at a high probability of failure at some point in time.

The report made a number of recommendations relating to assessment of land development within the three hazard classifications:

1. Land development within **Low Hazard** areas is unlikely to have significant implications; consequently the report recommended that a development permit area designation would not be necessary.
2. Land development within **Moderate Hazard** areas that involves extensive land clearing, construction of retaining structures greater than 1.2 metres in height, blasting, and excavation and placement of fill exceeding 0.5 metres in vertical thickness should be professionally assessed.
3. Any land development within **High Hazard** areas that results in ground disturbance should be professionally assessed. In addition to the activities discussed in the Moderate Hazard Area recommendations, this would extend to all driveway construction, septic field installation, and tree removal.

The report discussed in some detail the data limitations and risk probabilities associated with an analysis such as this, including degree of acceptable risk, the uncertainty inherent in the scale and variance of the DEM, the use of filtering, the possibility of localized hazards not being included in the model, and the lack of consensus with respect to the impact of land clearing and tree removal on geohazards in the absence of a site-specific assessment.

The scope of the project and the report recognized the separate jurisdiction of building inspection in assessing hazards related to structures and buildings and of the Approving Officer to review hazards relating to subdivision. The consultant's recommendations focused on land development activities that could currently take place without Building Inspection review or without review as part of a subdivision application.

At the January meeting the LTC requested that staff:

1. Follow-up with CRD Building Inspection and Ministry of Transportation staff, and

2. Prepare draft development permit area provisions that could implement the hazard mapping.

Staff have forwarded copies of the mapping and consultant's report to MoTI staff and subsequently met a second time with MoTI staff, who indicated that they have no concerns with the mapping, the content or recommendations of the consultant's report. Building Inspection staff have also been provided with copies of the report and have indicated that they have no concerns.

A draft 'Steep Slope Hazard' DPA and a draft map have been prepared, the draft DPA guidelines are attached and the draft map has been distributed separately to the LTC.

A copy of the draft DPA guidelines was also forwarded to the consultant, who was asked to review the correctness and appropriateness of the language and terminology (a copy of the consultant's letter is attached).

ISSUE SUMMARY:

The LTC is required by section 877(1)(d) of the *Local Government Act* to include in its OCP, statements and map designations with respect to restrictions on the use of land that is subject to hazardous conditions. In order to achieve this, the LTC has the authority under Section 919.1(b) of the *Local Government Act* to designate development permit areas for the protection of development from hazardous conditions. It also has the authority under Section 923 of the *Local Government Act* to designate areas of land that it considers may be subject to flooding, erosion, land slip or avalanche as tree cutting permit areas. Both sections authorize the LTC to require that owners obtain permits prior to undertaking development or tree cutting within the designated areas and also authorize the LTC to require professional reports to support permit conditions or to certify that proposed tree cutting will not create a flooding or erosion danger. The recently adopted Development Approval Information Bylaw also contains requirements for a DPA for hazardous conditions.

Draft Development Permit Area Map

A draft development permit area map has been prepared based on the recommendations of the consultant's report (copy distributed under separate cover). This schedule would designate lands within the Moderate and High hazard classes as a Development Permit Area for protection of development from hazardous conditions. Not designated on the map would be lands that are parks or protected areas, and lands within the highway dedication. These lands would fall outside the jurisdiction of the LTC or, in the case of protected areas, no development and no significant land alteration would be anticipated.

Draft Development Permit Area Guidelines

The development permit area provisions have been drafted based on the recommendations of the consultant's report (copy attached). They have been reviewed by legal counsel and by the consultant to confirm legal validity and terminology respectively. The provisions would include:

1. Special Conditions and Objectives: these include reference to the Object, Islands Trust Policy Statement, the consultant's report, and the general intent of the designation.
2. Designation of the two slope classes (Moderate and High Hazard Slope).
3. Exemption from the need for a permit for the following activities:
 - Work subject to a building permit (the building and associated work would be assessed under the authority of the building inspector).
 - subdivision applications not involving alterations within the DPA (the approving officer would assess the proposed layout); any work such as significant land clearing or driveway construction before, during or after the subdivision within the DPA could still require a permit.
 - Where a qualified professional has provided an outright written exemption for the work, based on the accepted probability.
 - Work within 5 metres of a structure for which a building permit has been obtained (this would allow for construction-related land clearing and assessment of hazards would be addressed by the report obtained by the building inspector).
 - Activities that are exempted from permits by legislation, including forest management and farming activities.
 - Minor activities such as gardening, tree limbing, and impermanent structures.
 - Construction of trails and fences, provided no trees are removed.
 - Removal of certified hazard trees.
 - Repair and maintenance of existing structures.
 - For lands within the moderate hazard slope class only, activities which the consultant has concluded would not require assessment: septic fields, low retaining walls, and minor land alteration, including vegetation removal (other than trees), and "localized tree removal", established as a maximum of 5 trees per lot not upslope of an existing building or structure.
4. The DPA Guidelines would:
 - Establish an acceptable probability of geological failure of less than 10% is 50 years (1 in 475 years).

- Establish that a permit should only allow development to occur in a manner consistent with recommendations of a qualified professional's report.
- Allow for a permit to include monitoring and reporting to the Islands Trust as a condition.
- Establish that a permit should not allow development in an unsafe area.
- Allow the permit to require updates where the nature of the project changes.
- Allow a permit to require re-planting and maintenance and that a security may be obtained for the re-planting.
- Authorize referral to the Fire Chief of applications involving new accesses.
- Allow for variances within the permit.

In summary:

- In the **High Hazard Areas**, a development permit would be required for any land alteration or vegetation removal that does not require a building permit or for which an exemption letter cannot be provided by a geo-technical professional.
- In the **Moderate Hazard Areas**, major land alteration such as extensive tree removal or significant cut and fill would require a development permit where the work is not subject to a building permit or a geo-technical professional cannot provide an outright exemption letter.

In both slope classes, where a professional assessment recommends that the work should only proceed subject to conditions, a development permit would be required. The permit would be drafted to incorporate the recommendations of the geo-technical professional as conditions; examples of conditions to be included in a development permit could include stabilization measures, protective works, specified areas to remain free of development and planting or restoration.

STAFF COMMENTS:

The consultant's report identified 'localized tree removal' within the moderate slope class as an activity which would not create a potential hazard within the moderate slope class, but the report did not provide any specific recommendations based on the literature. The issue of the specific determination of permitted tree and vegetation removal was discussed further with the consultant, who was able to provide the following comments:

- Removal of low vegetation would not, based on his knowledge, result in a geotechnical concern on North Pender.
- Removing some trees would not result in a concern, except upslope of an existing structure where there may be existing potential for movement
- A safe number of trees that could be removed is difficult to determine, and would be dependant upon the slope, the size of the tree and whether the stumps are removed

- He would consider that removing 5 trees or less in a 10 metre radius is unlikely to cause concern within this slope class on North Pender.

Based on the report recommendations, and the consultant's additional advice, exemptions, within the moderate slope class only, are included in the draft DPA guidelines that would exempt the following activities from requiring a permit:

- Tree removal necessary for septic fields, small retaining walls, and minor excavation.
- Vegetation removal (other than trees).
- Removal of up to 5 trees per year per lot (except upslope of an existing structure)

These exemptions are intended to ensure that tree removal that would have the potential to cause a slope instability hazard are professionally assessed, while vegetation removal that cannot reasonably be considered to cause a potential hazard to development is exempted.

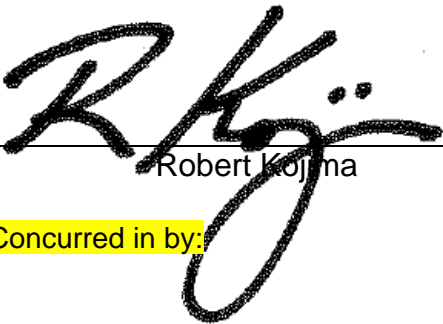
The LTC should review the draft DPA and if additional information or options are required direct staff to report back accordingly.

Successful implementation of a development permit area such as the proposed steep slope hazard one depends, in part, on communication with stakeholders, including affected landowners. Consultation, including information sessions and preparation of materials should be undertaken prior to the formal public hearing, specifically explaining the intention of the development permit area and the implications of designation as a development permit area.

RECOMMENDATIONS:

1. THAT the North Pender Island Local Trust Committee request that staff report back with an outline of a community consultation process on the implementation of a Steep Slope Hazard Development Permit Area.

Prepared and Submitted by:



Robert Kojima

June 29, 2010

Date

Concurred in by:

David Marlor, MCIP
Regional Planning Manager

June 29, 2010
Date

Attachments: Correspondence from Shane Moore, P. Geo, C.N. Ryzuk and Associates, June 23, 2010.
Draft Steep Slopes Hazard Development Permit Area
Draft Steep Slopes Hazard DPA Map – distributed under separate cover.