

7.3. Hillside Hazard Development Permit Area

7.3.1. Category

The Hillside Hazard Development Permit Area is designated under Section 488 (1) (b) (protection of development from hazardous conditions) of the *Local Government Act*.

7.3.2. Area

Unless exempted, the areas designated Hillside Hazard Development Permit Area as illustrated on Schedule E4.

7.3.3. Justification

The City of Quesnel has been, and continues to be, affected by sensitive building areas with hazardous conditions, one of which consists of moderately-sloped hillsides subject to gradual ground movement. Subsurface ground movement on hillsides may pose hazardous to buildings, structures, and other development located on or near these sites. Disturbed hillside areas may also be subject to erosion if not properly rehabilitated. In addition to protecting development from hazardous conditions, the following guidelines establish impact mitigation objectives of development. Due to the hazardous nature of hillside development in the City of Quesnel, a development permit is required.

In response to known geotechnical issues in the community, as in many areas of B.C, the City amended the Building Bylaw utilizing geotechnical mapping from the province to identify areas that require a geotechnical report and professional foundation design. Added to this area was the West Quesnel Land Stability Study Area.

West Quesnel Uplands Stability Study Area

The West Quesnel area has been a focus of concern for almost 20 years. It has been subject to ongoing ground movement that effects buildings and civic infrastructure, which in some cases can be significant.

The area of West Quesnel impacted by the ground movement includes an attractive, established residential community. About 940 parcels of land, 750 homes, one elementary school and several businesses are included in the study area.

The total value of the land, improvements, services and infrastructure in the West Quesnel study area exceeds \$100 million. West Quesnel is important to the economic and social viability of the City of Quesnel and is home to almost 25% of the City's population. Since 2006, the Provincial, Federal and local governments have committed vast financial resources to the West Quesnel Stability Program. Numerous studies/reports and associated documents are available from the City of Quesnel to provide background to this matter in West Quesnel. Detailed information is also available to inform potential building in this hazard area, especially where extensions or additions to existing structures are being considered. Information on building in West Quesnel can be found on the City's website.

These following guidelines are therefore general in nature, but they provide legal sanction for the municipality to require adherence by all property owners and developers to use qualified professionals and undertake geotechnical and geohazard assessments for any consideration of construction or development in this area of Quesnel, or wherever the Hillside Hazard DPA is applied through the Official Community Plan in the City of Quesnel.

www.quesnel.ca/sites/default/files/docs/building-development/preparation_geotechnical_report.pdf

7.3.4. Objective

The following guidelines are necessary to protect future development from gradual ground movement and to preserve existing buildings and infrastructure. These guidelines can also help ensure the preservation of the natural landscape of hillsides through appropriate design and consideration for the visible landscape. While development is still possible in the Hillside Hazard Development Permit Area, future development will be subject to strict guidelines and the results of professional study as noted above.

7.3.5. Application

A development permit is required prior to the following activities:

- (a) Subdivision (as defined in section 455 of the *Local Government Act*);
- (b) Construction of, addition to, or alteration of a building or other structure; and,
- (c) Alteration of land, such as the removal, disruption, or destruction of vegetation or soils.

7.3.6. Exemptions

A Hillside Hazard Development Permit will not be required for:

- (a) The cutting of hazardous trees that present an immediate danger to the safety of persons or are likely to damage public or private property, as determined by a certified Arborist;
- (b) Actions and activities that are necessary to prevent immediate threats to life or property;
- (c) Projects where geotechnical and geohazard assessments are not required by the Chief Building Official due to the site having no signs of differential movement on or near that site and include only:
 - i) renovation of existing buildings where there is no expansion of the footprint of the existing principle building;
 - ii) accessory buildings where there is no human occupation; or
 - iii) mobile homes as long as they are built to CSA-Z240 mobile home specifications, subject to Z240.10.1-08 site preparation and foundation requirements, and include flexible utility connections.

7.3.7. Guidelines

Development permits issued in this area shall be in accordance with the following guidelines:

Assessing the Site

An assessment of the site for development must include:

1. A Topographic Survey to assess and plan the site in a manner that respects the slope and special features. If land is located in the Hillside Hazard Development Permit Area LiDAR must be flown and recorded, if LiDAR is not already provided for that area.
2. A Geotechnical Assessment to identify and avoid hazardous areas, to make the site safe for human use, and to maintain environmental quality. The City of Quesnel must be contacted to gain a complete understanding of what is required in the preparation of a Geotechnical

Report. (See "Preparation of Geotechnical Report", City of Quesnel Development Services Department). Also reference *Guideline #40 and #41 – Geotechnical*.

3. An Environmental Assessment to identify existing ecosystems and special natural and cultural features of a site.
4. The soil and rock characteristics that can enable re-use for construction as well as their depths and stability.

Site Design

Planning and development:

5. Show native slope, depth of topsoil/depth to rock, soil type on a Grading and Subdivision Development Plan.
6. Develop a land clearing and Tree Retention and Removal Plan.
7. Obtain a Soil Removal and Deposit Permit unless otherwise specifically permitted under the most current Soil Removal and Deposit Bylaw.
8. The municipality may place a covenant against any property within the Hillside Hazard Development Permit Area with a copy of an Engineer's Report indicating the conditions and limitations of building design allowable for that site. The covenant must save the City harmless should the development be damaged by the hazard identified.

Earthworks and Grading

Grading:

9. Avoid grading or alteration of key topographic features (e.g., knolls, ridgelines, talus slopes, bedrock outcrops, cliffs, and ravines) determined in the Geotechnical and Environmental Assessments.
10. Preserve any slopes greater than 30% as undisturbed unless roads are required to access developments.
11. Avoid grading that results in terrain forms that are not characteristic of the natural topography (i.e. flat, linear terraced benches with no undulations or irregularities).
12. Position driveways to minimize lot grading requirements and reduce the impact on adjoining properties.
13. Avoid significant or mass grading of hillsides for development (see Erosion Control below).

Erosion control:

14. An Erosion Control Plan is required for development within the Hillside Hazard Development Permit Area.
15. Re-vegetate exposed slopes as quickly as possible to prevent erosion and slope stability problems, even for temporary topsoil stockpiles.

Works and Services

Storm Water Management and Drainage:

16. Depending on the size, location, and complexity of the development site conditions, a Storm Water/ Drainage Management Plan may be required for the entire site and downstream drainage areas.
17. Water and Storm services are to be located under the street wherever possible and directed to City infrastructure.

Services and Utilities

18. Provide municipal services and utilities that minimize redundancy and provide cost efficient maintenance and future replacement through common trenching (where appropriate).
19. Services and utilities requiring underground piping must use of alternative and flexible piping materials to avoid leaks or cracking caused by gradual ground movements.

Aesthetics and Landscape Design

Although the priority intent of these Hillside DPA Guidelines is to protect development from unnecessary risk of hazards, an integral component of controlling quality development on hillsides can involve matters associated with how development is integrated into the natural environment. The following guidelines may be complementary to existing Bylaws of the City.

Vegetation removal and replacement:

20. Removal of trees and vegetation should be done in keeping with development construction phases.
21. Only clear necessary trees and vegetation to install services, meet site design as well as for the deployment of FireSmart principles.
22. Replace trees in a manner that helps to restore the natural character of the hillside site.
23. Arrange trees in natural groupings or clusters rather than in lines or formal arrangements.
24. Where vegetation has been removed from dry or south facing slopes, replant with appropriate vegetation (e.g. drought tolerant and fire-resistant species).

Landscaping:

25. Incorporate landscaping that is natural (native species) and blends in with any existing vegetation, minimizing large areas of formal landscaping.
26. Buildings and roads should be sited to preserve trees and natural vegetation where possible.
27. If removal of trees and other vegetation is necessary, plan revegetation that will not encroach on viewscales.
28. Incorporate landscaping that enhances the building design and its architectural elements.
29. Incorporate landscaping that meets the intent of FireSmart guidelines in section 5.14.2.3.
30. Minimize the impact of development by screening structures through the effective use of landscaping materials.

Building aesthetic:

31. Buildings must have a pitched roof, horizontal siding and be a minimum of 24 feet wide.

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