DEVELOPMENT PERMIT AREA GUIDELINES

DPA 9

GEOTECHNICAL, STEEP SLOPE AND MINING HAZARDS

General Regulations

12.9.1 Category

DPA 9 is designated under the following categories of Section 488 (1) of the *Local Government Act*:

(b) Protection of development from hazardous conditions.

12.9.2 Area of Applicability

- DPA 9 guidelines apply to all development within DPA 9, as shown on Appendix K.

12.9.3 Justification

Merritt is situated in a confluence of 3 valleys which were historically carved by glaciers and subsequently infilled to varying degrees with a wide range of soil deposits. There are areas silt deposits that are prone to collapse, high plastic clay deposits are prone to expansion, and thick organic soils that are highly compressible, unevenly distributed around the valley. While a large area of the city is located at the valley bottom, the City also includes valley slopes, some of which have been prone to instability. Merritt has a history of commercial coal mining dating back to the early 1900's. The mines are now abandoned leaving certain areas of Merritt with legacy issues including a range potential mining induced geological hazard.

As the city grows, development may occur in areas that include geotechnically problematic soils, steep slopes, or historical mine workings. These potential hazards present a danger to people and property. Precautions are needed to ensure development activity or resulting structures do not create hazardous conditions nor are they subjected to them.

12.9.4 Objectives

The following guidelines are intended to manage and regulate development so as to protect residents and property from the potential risk of geotechnical problematic soils, steep slopes, and abandoned mines hazards.

12.9.5 Exemptions

Notwithstanding the following exemptions, the Community Charter enables a building inspector to require a geotechnical report to certify that the land may be used safely for the use intended and/or to require one or more registered covenants restricting the use of the land.

The following exemptions to DPA 9 may be applied:

- Interior Renovations not resulting in any change to the footprint of the building.
- Construction, addition, or alteration not exceeding 10m^2.
- Parcels within the Agricultural Land Reserve that are designated for agriculture.
- Parcel consolidation.
- A restrictive covenant which effectively protects the property from the hazardous condition(s) is (are) already registered on the subject property, all the conditions in the covenant are met, and the proposed activity will not affect any portion of the hazardous conditions.
- Emergency circumstances to remove any immediate danger.
- Buildings that have been destroyed by fire and/or natural disaster less than 75%, as determined by the Building Official, provided the building's massing, siting and general appearance are as prior to destruction and the use conforms to the City's Zoning Bylaw, as amended from time to time.
- Any servicing work undertaken by or on behalf of the City of Merritt.

Guidelines

The following guidelines may be applied when setting Development Permit conditions.

HAZARDOUS CONDITIONS

To identity areas of a parcel that require consideration for hazards in the determining the feasibility of the Development Permit application.

12.9.6 Soils

Identify areas of potentially problematic soils, including but not limited to expanding clays, collapsing silts and thick organic soils. If present, demonstrate appropriate mitigation measures to avoid or deal with the hazardous conditions, and the necessary restrictive covenant(s) restricting the use of the land .

12.9.7 Slope

A number of the remaining undeveloped lands in Merritt are on steep slopes and hillsides. These lands present special challenges in terms of erosion problems, stormwater drainage, groundwater management and other environmental and visual impacts. Protecting these slopes in the course of development is important to both the environment and the natural beauty of Merritt. As such, conventional detached dwelling and duplex developments should be avoided on land with slopes over 30%. Development may be considered on slopes greater than 30% where it can be demonstrated that the proposed development will not create environmental, geotechnical or visual impacts, can be sensitively integrated with terrain, and presents no hazards to persons or property.

12.9.8 Abandoned Mines

Identify abandoned mine entrances and workings beneath and adjacent to the property with the potential to impact the normal functionality of the development. If present, demonstrate appropriate mitigation measures to avoid or deal with the hazardous conditions and the necessary restrictive covenant(s) restricting the use of the land.

DEVELOPMENT CONDITIONS

To establish general conditions and expectations of development in areas with potential geotechnical, steep slopes, or abandoned mines hazards.

12.9.9 Geotechnical Assessment Report

A Geotechnical Assessment Report is required in support of Development Permit for all properties in DPA 9, as shown on Appendix K. The intent of the report will be to determine any risks from hazards and any required mitigation measures that are necessary to confirm that the land may be used safely for the use intended, to the satisfaction of the City. All areas of the subject property, and off-site lands with the potential to impact the subject property, should be assessed as part of a Geotechnical Assessment Report, regardless of whether development or site alteration activity will occur on a particular area. The City may require subsequent geotechnical reports to support applications for development variance, subdivision and/or building permits. A third party peer review of a Geotechnical Assessment Report may be required at the expense of the applicant.

It is expected that the geotechnical report will follow standard geotechnical practice. Certain specific expectations are provided below:

- In the case of steep slopes, the City expects that the assessment will follow the most recent version of the EGBC Guidelines for Legislated Landslide Assessment for Residential Developments in BC. The City may require the Qualified Professional to fully execute the Landslide Assessment Assurance Statement in Appendix D of that guideline.
- For developments that require retaining walls greater than 1.5 m in height, the most recent version of the EGBC Professional Practice Guidelines for Retaining Wall Design shall be used in wall design and in defining minimum performance requirements. The City may require the Geotechnical Engineer of Record to complete the Appendix A: Engineer of Record Retaining Wall Assurance Statement.
- For developments involving buildings, the City expects that the assessment and any subsequent activities will follow the most recent version of the EGBC Guidelines for Geotechnical Engineering Services for Building Projects.

The geotechnical assessment report will include one of the following statements on safety and suitability:

- "The land identified as (insert property legal address) may be used safely for the use intended." or
- "The land identified as (insert property legal address) may be used safely for the use intended, provided that the recommendations presented herein are followed." or
- "The land identified as (insert property legal address) is not safe nor suitable for the use intended."
- The City of Merritt need to be authorized to rely on the geotechnical assessment report as part of the approval process. As such, the report must include the following wording:
- This report may be relied upon by the City of Merritt in considering a development permit application under section (insert section) of the Local Government Act for lands within DPA 9."

12.9.10 Hazardous Areas Protection

Protect hazardous areas identified as unsuitable for development by a Geotechnical Assessment Report through measures such as dedication to the City, establishing a restrictive covenant, or rezoning.

12.9.11 Mitigation and Conditions

Do not develop in areas with a potential for hazard, unless a qualified geotechnical professional provides recommendations for:

- Mitigation measures to reduce risk of hazards for both the subject site and any adjacent and/or other potentially affected areas to an acceptable level during all stages of development; and
- Conditions (i.e. conditions relating to the permitted uses, density or scale of building) necessary to reduce risk of potential hazards to levels considered to be acceptable by the City.

12.9.12 Maintenance and Monitoring

Maintain and monitor mitigation measures to ensure that the works are completed in accordance with the Development Permit.

SITE DESIGN AND ALTERATION

To guide the alteration of lands to reduce the risk of potential hazards to the property and its surroundings.

12.9.13 Site Design

Design a project to fit the site rather than altering the site to fit the project.

12.9.14 Cluster Development on Steep Slopes

Conventional detached dwelling and duplex developments are typically too site disruptive on steep slopes for the densities they achieve, and vegetation retention is difficult. For this reason, the City encourages housing forms that "cluster" or concentrate development in less sensitive parts of steeply sloped areas, leaving a significant proportion of the land in a relatively undisturbed state.

12.9.15 Parcel Configuration

Use variation in parcel sizes and subdivision layout to reflect the natural site contours, minimize cuts and fills, and maximize developable areas. Avoid the use of large flat terraces and retaining walls on hillsides to expand developable area.

12.9.16 Minimum Setback from Steep Slopes

Ensure all development, in addition to septic fields, swimming pools, hot tubs, ponds, or other uses at or near the top or base of steep slopes is set back a minimum of 10 metres from the top or base of any steep slope except as otherwise recommended by a qualified professional. Where development is near steep slopes greater than 30%, increase setback to a minimum of 15 metres except as otherwise recommended by a qualified professional.

12.9.17 Road Alignment

Align roads to follow natural site contours, conforming to existing topographic conditions rather than cutting across contours.

12.9.18 Site Grading

Provide site grading that is smooth and stable. Finished slopes of all cuts and fills should not exceed a three-to-one (3:1) grade unless the applicant can demonstrate that steeper slopes can be stabilized and maintained adequately.

12.9.19 Undercutting

Avoid undercutting the base of steep slopes for building, landscaping or other purposes except in accordance with the recommendations of a qualified professional.

12.9.20 Retaining Walls

When designing retaining walls, respect the natural characteristics of the site, follow regulations outlined in the City's Zoning Bylaw, and terrace walls to avoid overpowering the site with a large uniform wall face. Terrace retaining walls with sufficient width to allow plantings and maintenance. The City's design expectations are defined in Section 14.9.9.

12.9.21 Massing

On sloped sites, step and articulate building forms to integrate and reflect the natural site contours and slope conditions. Avoid large unbroken building masses unsuitable for sloped conditions.

LANDSCAPING

To guide the design of landscaping for the mitigation of hazardous conditions.

12.9.22 Site Drainage

Design and maintain property, roof drainage and landscaping to avoid concentration and shed water away from slopes. Avoid ponding near slopes.

12.9.23 Erosion and Sediment Control

Development frequently creates increased soil erosion in the course of construction and site manipulation. Erosion is often a long-term effect of a developed site as well. Soil exposed during clearing, grading and stockpiling can be easily transported into nearby watercourses and onto roads and neighbouring properties. After development, the area's ability to absorb and retain surface runoff may be greatly reduced, increasing the erosion potential both on-site and downstream.

In order to mitigate potential erosion and sediment control problems follow erosion and sediment control plans and implement prescribed measures as directed by qualified professionals and in accordance with the Earthworks Bylaw, as amended from time to time. Erosion and sediment control plans may be required as part of subdivision approval, development permits, building permits and permits issued under the Earthworks Bylaw.

12.9.24 Vegetation Maintenance and Replacement

Maintain and/or reinstall vegetation on slopes and within any required setback above the slopes to absorb water and minimize erosion.

12.9.25 Slope Reinforcement

Reinforce and revegetate disturbed slopes, especially where gullied or where bare soil is exposed, as soon as possible. Plant in accordance with the recommendations of a qualified professional. Ensure monitoring and maintenance of restored areas by qualified professionals until such time as the vegetation is established.

12.9.26 Tree Removal

Avoid tree removal on steep slopes, and if trees must be removed for site grading or other works, replant the slopes after the works are completed.

12.9.27 Tree Species

When revegetating steep slopes, plant drought tolerant and native species, preferably that are wildfire resistant, such as Ponderosa Pine or deciduous trees.