



Making a difference...together

S-22-08, DP-08-11 - AMENDMENT

**REPORT TO THE JUAN DE FUCA LAND USE COMMITTEE
MEETING OF TUESDAY, JUNE 21, 2016**

SUBJECT **To Amend Development Permit (DP-08-11) With Frontage Exemption and Acquire Park Dedication for the Trans Canada Trail (S-22-08) – Block 352, Malahat District, Except Part In VIP84067 And Block 399, Malahat District**

ISSUE

To amend a development permit issued for a proposed 86-lot subdivision within the steep slopes, riparian and sensitive ecosystem development permit areas (DPAs); to exempt the requirement of Section 512 of the *Local Government Act* (*LGA*) that the minimum frontage of a lot shall be one tenth of the perimeter of the lot that fronts on the highway; and to acquire park dedication for the Trans Canada Trail (TCT) pursuant to Section 510 of the *LGA*.

BACKGROUND

The subject properties are situated in the Malahat area and are bordered to the west and south by the Sooke Hills Wilderness Park Reserve, to the east by the E&N Railway and to the north by properties in Goldstream Heights (Appendix A). Block 352 is approximately 105 ha and Block 399 is approximately 198 ha. Both properties are split-zoned Greenbelt 2 (Gb2) and Greenbelt 3 (Gb3) under the Malahat Zoning Bylaw No. 980. The properties are designated Steep Slopes, Sensitive Ecosystems, and the Watercourses, Wetlands and Riparian DPAs in the Malahat Official Community Plan (OCP), Bylaw No. 3721.

The applicant applied to subdivide the properties into 86 lots in 2008 (S-22-08). The Land Use Committee first considered a development permit with frontage exemption for the proposed subdivision in 2011, which was approved by the CRD Board on July 13, 2011 (DP-08-11). The permit was amended in December 2013 to reflect a revised subdivision layout with additional frontage exemptions and to accommodate a report addressing the sensitive ecosystem DPAs. DP-08-11 includes conditions for a geotechnical covenant, protection of riparian areas, and dedication of a route for the TCT.

Development of the subdivision is underway for the first phase of 55 lots. The applicant has been in communication with Ministry of Transportation and Infrastructure (MoTI) regarding subdivision requirements outlined in their Preliminary Layout Approval (PLA), such as road dedication and servicing requirements, and with CRD Regional Parks staff to identify an alternate alignment for the TCT. The applicant has revised the proposed subdivision layout for the 86 lots in order to accommodate a more suitable road alignment and lot configuration, and a re-aligned route for the TCT (Appendix B). The applicant has requested an amendment to DP-08-11 and has provided updated professional reports addressing the current subdivision layout. The new lot configuration results in 39 lots not meeting the lot frontage requirements specified by Section 512 of the *LGA* (Appendix C). An amended development permit with frontage exemption is included as Appendix E.

The revised subdivision layout now includes more than three lots that are less than 2 ha in size, which triggers consideration of up to 5% park dedication, which was recommended for acceptance by the Juan de Fuca Electoral Area Parks and Recreation Advisory Commission at their meeting on April 26, 2016.

ALTERNATIVES

That the Land Use Committee recommends to the CRD Board:

- 1) a. That amended Steep Slopes, Sensitive Ecosystems and Watercourses, Wetlands and Riparian Areas development permit DP-08-11, and frontage exemption for 39 lots, as specified in Appendix E, for Block 352, Malahat District, Except Part in VIP84067 and Block 399 Malahat District, for the purpose of permitting an 86-lot subdivision, be approved.
- b. That the parcel shown as park dedication on the Survey Plan, prepared by Bazett Land Surveying Inc., dated April 5, 2016, included in Appendix B, and a 0.8 ha viewpoint from proposed Lot 1, included in Appendix D, be accepted as park dedication pursuant to Section 510 of the *Local Government Act* and that a statutory right-of-way be secured for public trail access and maintenance purposes over the panhandle access to proposed Lot 55.

- 2) That DP-08-11 with frontage exemption not be amended and that the proposed park dedication not be accepted.
- 3) Refer the application back to staff for additional information.

LEGISLATIVE IMPLICATIONS

The Malahat OCP, Bylaw No. 3721, designates parts of the Plan area as DPAs and establishes development permit guidelines. The property is within the Steep Slopes, Sensitive Ecosystems, and Watercourses, Wetlands and Riparian Areas DPAs; therefore, a development permit is required before the land may be subdivided or altered.

Section 512 of the *LGA* establishes minimum frontage requirements for parcels created by subdivision. Where local government has not established a minimum frontage requirement, the statutory minimum frontage requirement is 10% of the lot perimeter. Section 512 allows that a local government may exempt a parcel from the statutory minimum frontage.

Section 510 of the *LGA* outlines requirements for the provision of parkland or payment for parks purposes. As the CRD provides a community parks service and the Malahat OCP contains policies and designations respecting the location and type of future parks, the local government may determine whether the owner must provide land or cash-in-lieu of up to 5% of the land being proposed for subdivision. The Juan de Fuca Electoral Area Parks and Recreation Advisory Commission considers community park issues for the Juan de Fuca Electoral Area.

PUBLIC CONSULTATION IMPLICATIONS

There is no requirement for public consultation if a local government is considering a statutory exemption pursuant to Section 512 of the *LGA*. There is also no requirement to notify residents/tenants under the Capital Regional District Bylaw No. 3110, Fees and Procedures Bylaw, for a statutory exemption or a development permit application. However, to ensure community interests are considered, each resident/tenant within 500 m of the subject property received notice of the requested development permit amendment with frontage exemption. Responses received from the public are included in the June 21, 2016 Land Use Committee supplementary agenda.

LAND USE IMPLICATIONS

Development Permit Areas

The current development permit DP-08-11 includes conditions related to recommendations outlined in reports prepared by Thurber Engineering Ltd., dated October 18, 2010 and April 18, 2011, to address the Steep Slope DPAs, and a Riparian Assessment report prepared by P. A. Harder & Associates Ltd., dated March 31, 2011, to address the Riparian DPAs in the proposed subdivision. A previous report received by P. A. Harder & Associates Ltd. indicated that no sensitive ecosystems were present, other than the riparian areas.

Geotechnical Report: A new report addressing the current subdivision configuration has been provided by Thurber Engineering Ltd., dated March 15, 2016, that replaces the previous reports. The methodology is consistent with the original report and is based on fieldwork conducted in 2010 that assumes the probability of occurrence of a geological hazard within a given area is less than 2% in 50 years. The eastern-most portion of the development, within proposed Lots 9 to R1-22, includes steep terrain, rolling to hummocky ridge tops and Arbutus Creek flowing southward through a main valley in the central portion of the lots. The northwestern part includes the highest elevation terrain with an upper stepped plateau. The report outlines a hazard rating system and identifies flood considerations around Arbutus Creek. The report confirms that each proposed lot has sufficient area within very low or low hazard rating that is suitable for residential construction. The PLA requires a restrictive covenant to be registered on title of the new lots securing the engineer's report and a covenant on those lots affected by flooding from Arbutus Creek.

Environmental Reports: A Riparian Assessment report was prepared by P. A Harder & Associates Ltd., dated March 31, 2011, and was included in DP-08-11. The report describes Arbutus Creek, which flows through the subject properties from the northerly outlet of Wrigglesworth Lake and eventually discharges into Finlayson Arm. Since Arbutus Creek supports cutthroat trout, the *Riparian Areas Regulation (RAR)* applies. The Streamside Protection and Enhancement Area (SPEA) width was calculated to be between 12 m and 30 m at various points along the creek. A supplementary report has been received from P.A.

Harder & Associates Ltd. Environmental Consultants, dated March 31, 2016. This report outlines the proposed changes to the subdivision layout, including a second crossing of Arbutus Creek. The report confirms that the proposed subdivision layout does not affect any of the environmental protection measures outlined in the original Riparian Assessment report and that environmental monitoring of the project is ongoing. Other than the Arbutus Creek riparian area, no other sensitive ecosystem areas were identified in the report.

Frontage Exemption

The CRD Board initially approved a frontage exemption for 21 lots identified in the first subdivision layout in 2011. A revised frontage exemption was granted by the Board in 2013 for the addition of 6 lots. Due to recent reconfiguration of the road layout, stream crossings, dedication for access to lands beyond and proposed park dedication, the applicant is now requesting a frontage exemption for 39 lots (Appendix C).

In cases where a frontage relaxation is acceptable to the local government, the Provincial Approving Officer must be advised of the approval before a subdivision can be finalized. In evaluating whether an exemption from Section 512 is justified, the following technical criteria are considered:

- Will reducing the frontage eliminate future subdivision potential of the lot and of lots beyond?
- Does the proposed reduction disturb existing residences or adjacent properties?
- Will reducing the frontage produce an awkward lot configuration?
- How does it relate to the topography of the area?
- Does it create any environmental impacts?
- Will the exemption reduce road network and access options?

The Langford Subdivision Bylaw No. 986 requires that panhandle lots in the Gb2 and Gb3 zones have a minimum width of 6 m where the lot has no further subdivision potential and 20 m where the parcel can be further subdivided. While existing properties along Goldstream Heights Drive north of the subject property will be generally impacted by the subdivision, there are no existing residences in the immediate vicinity of the proposed subdivision. The individual concerns of local residents may be determined as a result of public notification. The subdivision layout generally includes lots with side lot lines at right angles to the roadway, in accordance with Section 8.0.01 of Bylaw No. 986. Further, the proposed subdivision has been designed to address the topographical constraints, riparian areas, and stream crossings present on the site. In some instances, driveway accesses may be shared by way of easement over adjacent lots to minimize impacts; however, overall the road network design is acceptable to MoTI.

Park Dedication

The Trans Canada Trail project was initiated nationally in 1992 to celebrate Canada's 125th year and trail organizations across the country are developing trails that will provide the route. The TCT Charitable Organization has set a goal to have the main route of the TCT completed for Canada's 150th anniversary celebrations in 2017. The CRD portion of the TCT route will use the Galloping Goose Regional Trail, City of Langford roads and trail linkages, and a new Sooke Hills Wilderness Trail (SHWT), to be built from Humpback Reservoir in Sooke Hills Wilderness Regional Park Reserve, to the boundary between the CRD and Cowichan Valley Regional District. CRD Regional Parks Committee has directed staff to acquire a suitable route for the TCT SHWT in order to meet the 2017 deadline.

The PLA includes a requirement to secure a route for the TCT SHWT through the proposed subdivision. Discussions with the applicant regarding dedication of a route for the TCT SHWT through the subject properties have been ongoing. The applicant has incorporated CRD's desired trail alignment into the current subdivision layout and has also entered into a License of Occupation with CRD so that trail construction can commence prior to registration of phase 1. The proposed park dedication for the TCT SHWT includes 6.8 ha, as shown in the Appendix B, plus an additional 0.8 ha area that encompasses a potential viewpoint (Appendix D), which is approximately 2.5 % of the 305 ha area. In addition to accepting the proposed park dedication as a fee-simple parcel, CRD staff also request a statutory right-of-way over the access to proposed Lot 55 for public access and trail maintenance.

The revised 86-lot subdivision layout now triggers consideration of up to 5% park dedication, pursuant to Section 510 of the LGA. The Juan de Fuca Parks Electoral Area Parks and Recreation Advisory Commission considered the proposed park dedication at their meeting on April 26, 2016, and moved the following recommendation:

MOVED by Commissioner Sloan, **SECONDED** by Commissioner Bennett that the Juan de Fuca Electoral Area Parks & Recreation Advisory Commission recommend to the Land Use Committee that the 6.8 ha area proposed as parkland on the Survey Plan prepared by Bazett Land Surveying Inc., dated April 5, 2016, and a 0.8 ha area from proposed Lot 1 incorporating a viewpoint, be accepted and transferred to CRD Regional Parks for the Trans Canada Trail pursuant to Section 510 of the *Local Government Act* for the proposed subdivision of Block 359, Malahat District, Except Part in Plan VIP84067 and Block 399, Malahat District. **CARRIED**

Staff recommend approval of the amendment to the DP-08-11 to reflect the revised subdivision layout and updated professional reports, and recommend granting a frontage exemption for the 39 lots subject to public notification. A permit has been prepared and is included in Appendix E.

CONCLUSION

DP-08-11 was first issued for the 86-lot subdivision in 2011. An amendment was approved by the CRD Board in 2013 to accommodate a revised subdivision layout and additional frontage exemptions. Another revision to the subdivision plan has been received due to the re-alignment of roads and parcel configuration, and park dedication. The applicant is requesting an amendment to the development permit and has submitted updated professional reports to address the development permit guidelines. The applicant is also requesting an amendment to frontage exemption for 39 lots. The proposed park dedication for the TCT is supported by Juan de Fuca Community Parks and CRD Regional Parks. Staff recommend approval of the DP-08-11 amendment with frontage exemptions, subject to public notification, and acceptance of the park dedication.

RECOMMENDATIONS

That the Land Use Committee recommends to the CRD Board:

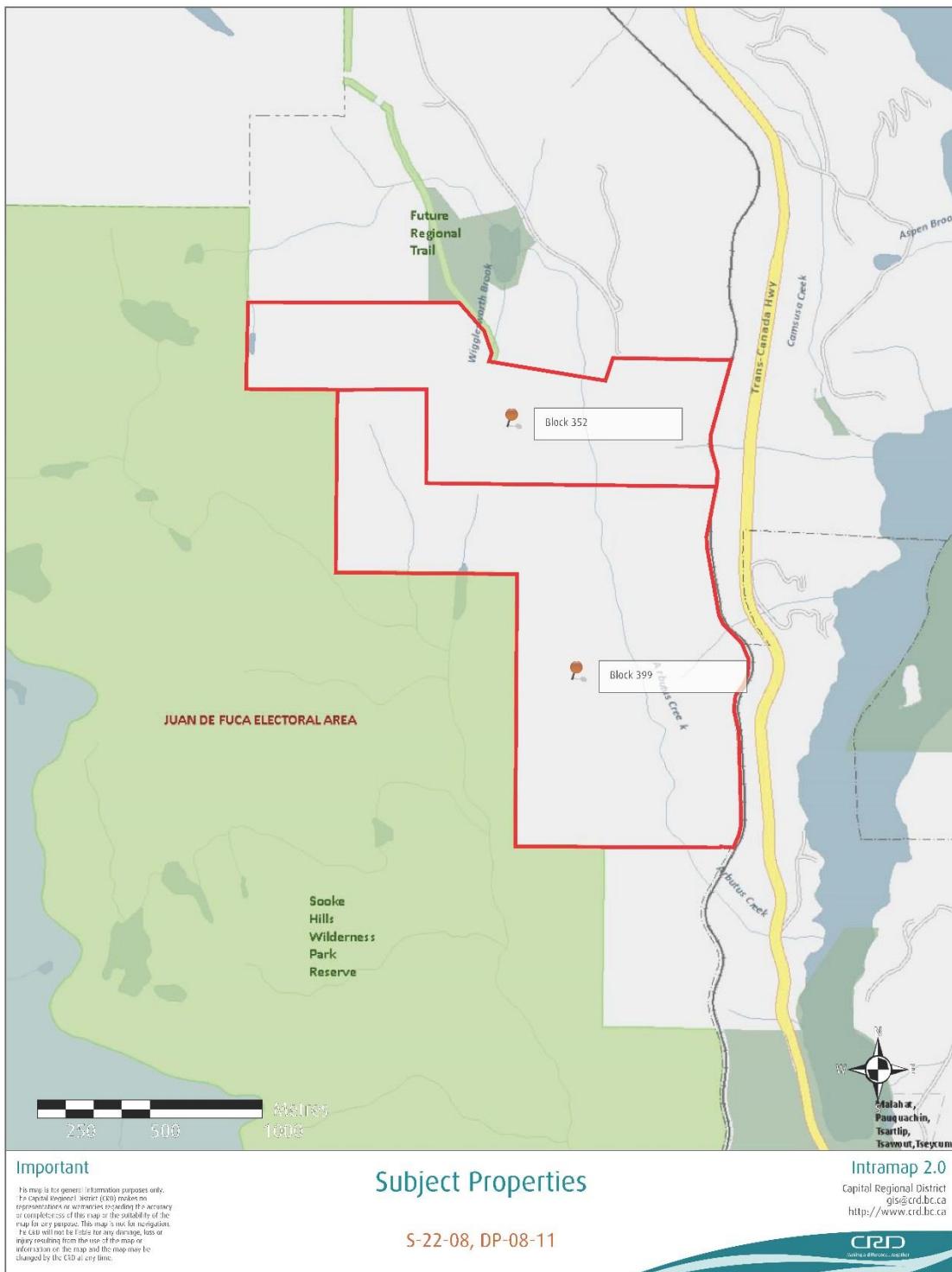
- a. That amended Steep Slopes, Sensitive Ecosystems and Watercourses, Wetlands and Riparian Areas development permit DP-08-11, and frontage exemption for 39 lots, as specified in Appendix E, for Block 352, Malahat District, Except Part in VIP84067 and Block 399 Malahat District, for the purpose of permitting an 86-lot subdivision, be approved.
- b. That the parcel shown as park dedication on the Survey Plan, prepared by Bazett Land Surveying Inc., dated April 5, 2016, included in Appendix B, and a 0.8 ha viewpoint from proposed Lot 1, included in Appendix D, be accepted as park dedication pursuant to Section 510 of the *Local Government Act* and that a statutory right-of-way be secured for public trail access and maintenance purposes over the panhandle access to proposed Lot 55.

Submitted by:	Emma Taylor, MA, MCIP, RPP, Planner
Concurrence:	Iain Lawrence, Supervisor, Local Area Planning
Concurrence:	Kevin Lorette, P.Eng., MBA, General Manager, Planning & Protective Services
Concurrence:	Robert Lapham, MCIP, RPP, Chief Administrative Officer

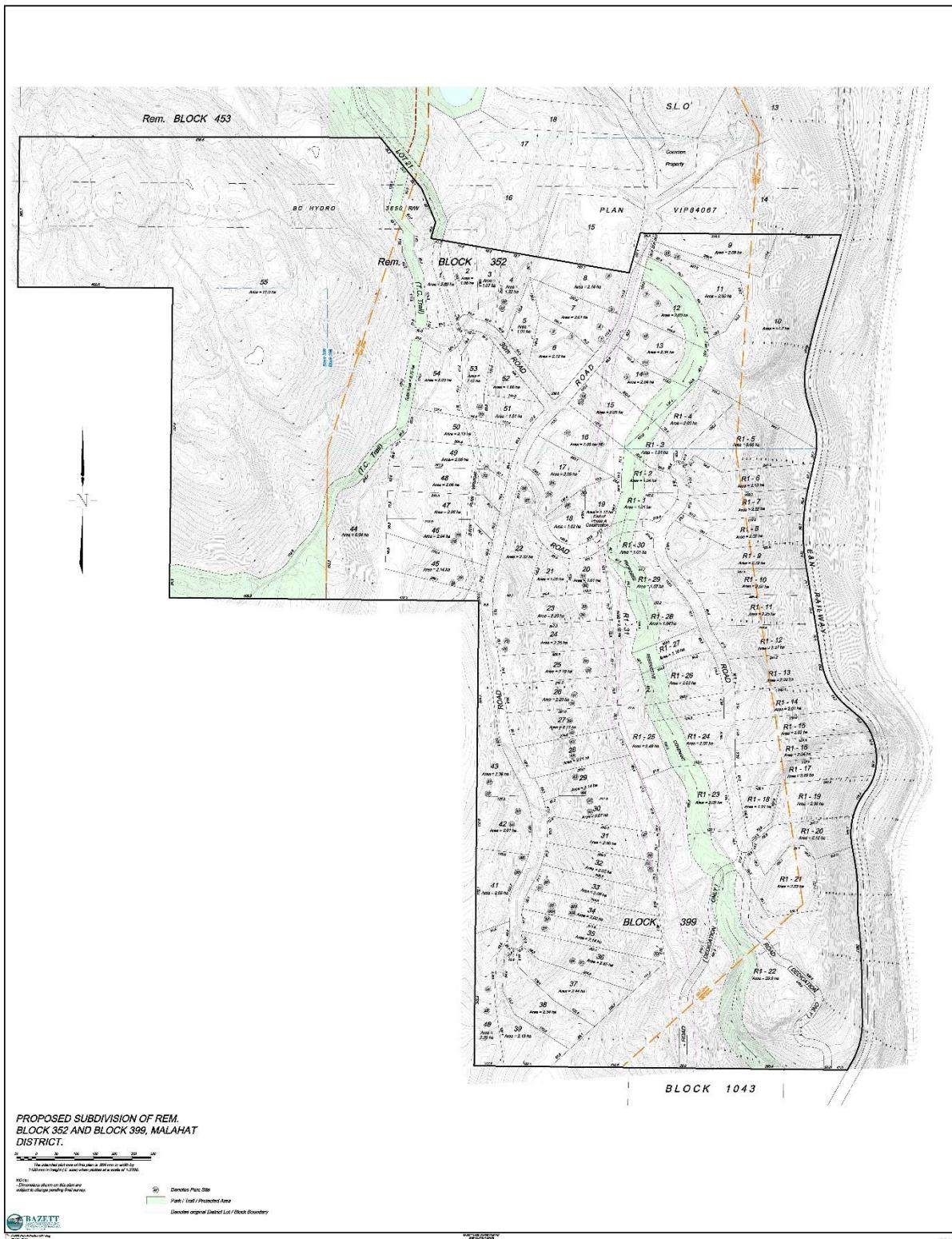
Appendices:

- A: Location Map
- B: Proposed Subdivision Plan 2016
- C: Frontage
- D: Additional 0.8 ha Parkland
- E: DP-08-11 - Amended

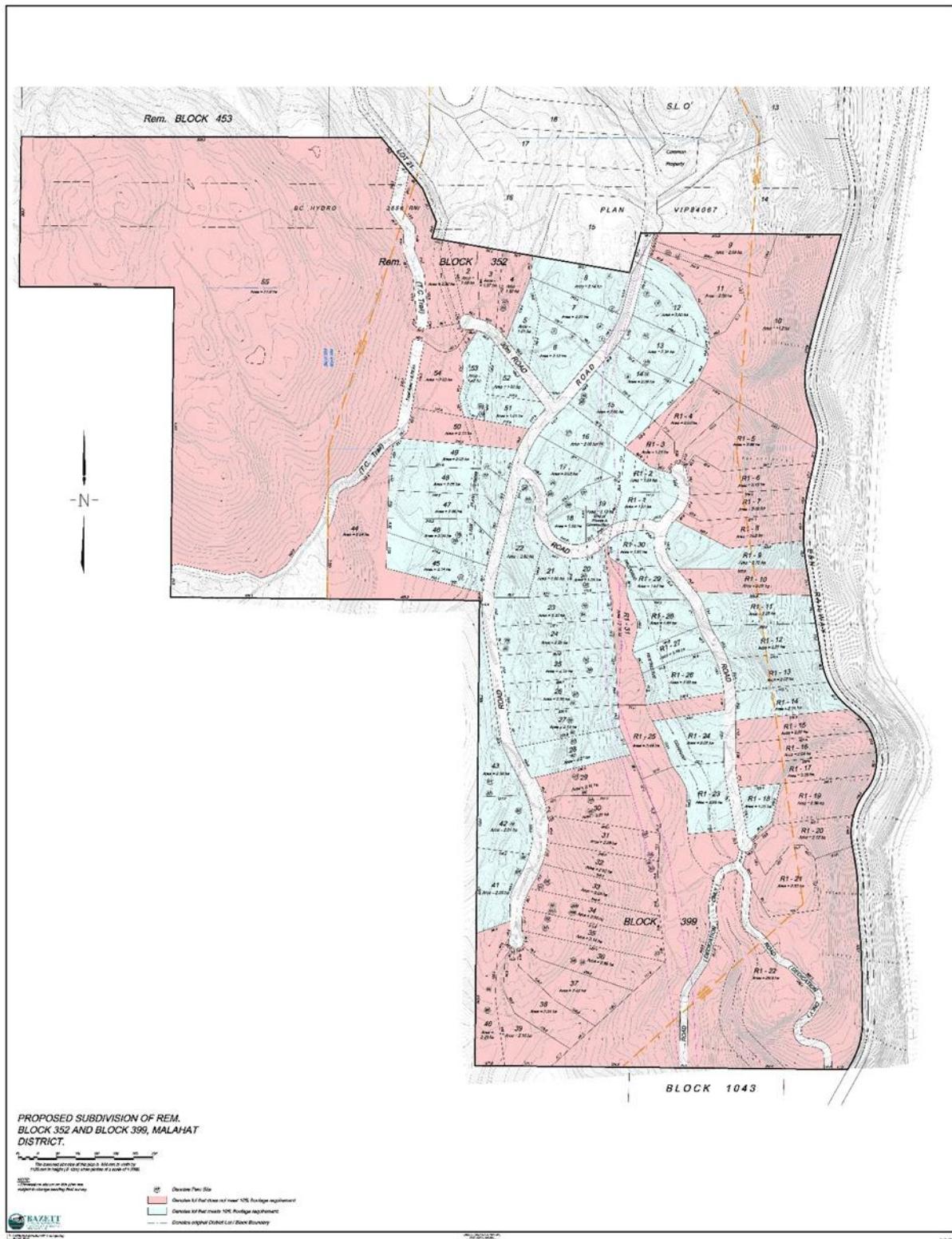
Appendix A: Location Map



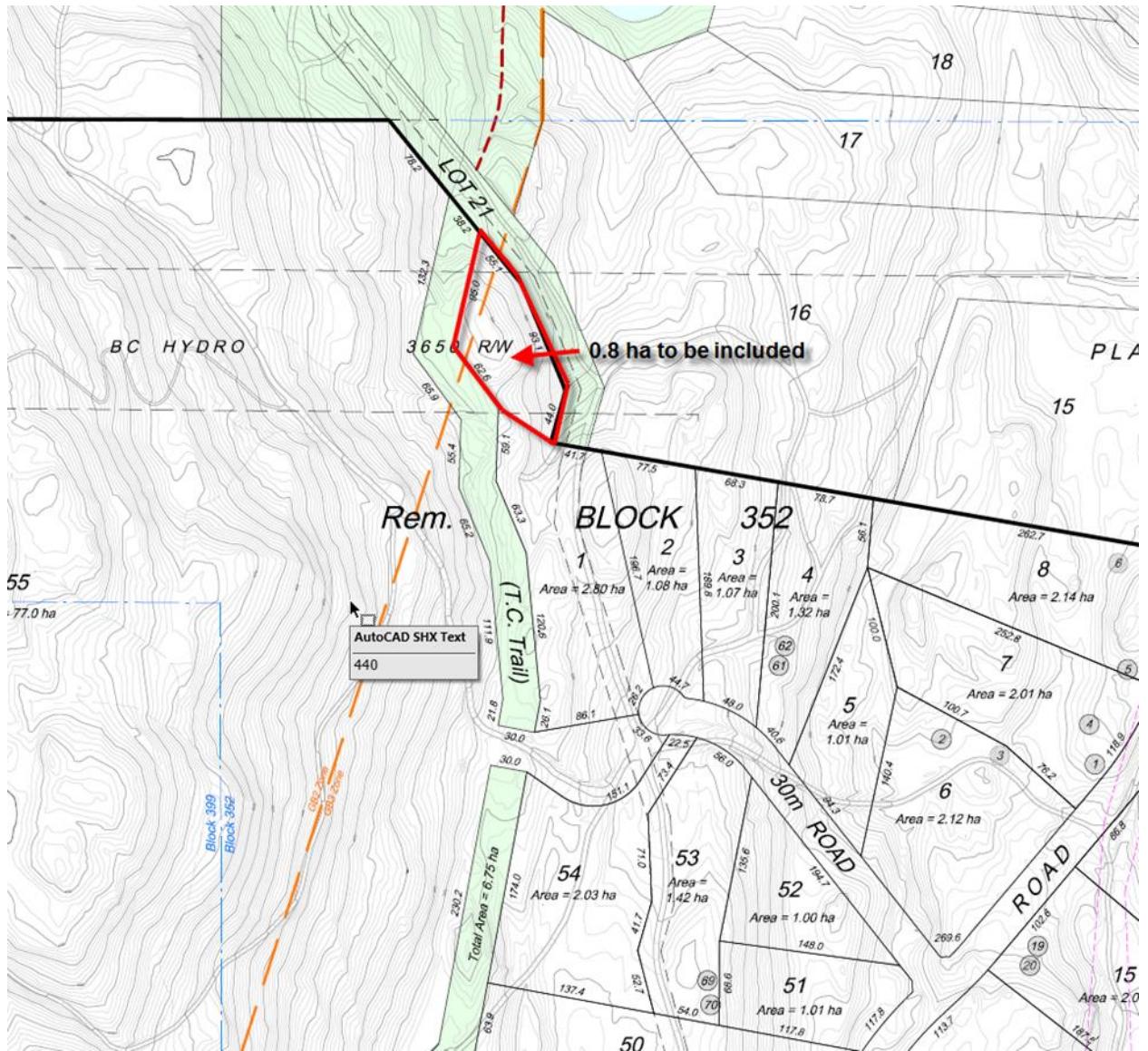
Appendix B: Proposed Subdivision Plan 2016



Appendix C: Frontage



Appendix D: Additional 0.8 ha Park Dedication



Appendix E: DP-08-11 – Amended



CAPITAL REGIONAL DISTRICT

DEVELOPMENT PERMIT WITH FRONTAGE EXEMPTION NO. DP-08-11 - AMENDED

1. This Development Permit with Frontage Exemption is issued subject to compliance with all of the bylaws of the Regional District applicable thereto, except as specifically authorized by this Permit.
2. This Development Permit with Frontage Exemption applies to and only to those lands within the Regional District described below (legal description), and any and all buildings, structures, and other development thereon:
PID: 009-368-736; Block 352, Malahat District, Except Part In Plan VIP84067;
PID: 009-368-710; Block 399, Malahat District
3. Pursuant to the Capital Regional District's **Bylaw No. 3721**, Section 4.4.4 (Steep Slopes), Section 4.4.6 (Watercourses, Wetlands and Riparian Areas) and Section 4.4.7 (Sensitive Ecosystems) and Sections 490 and 491 of the *Local Government Act*, this development permit for an 86-lot subdivision, is issued subject to the following requirements, terms and conditions:
 - a. That the proposed development of the property comply with the Proposed Subdivision Plan, prepared by Bazett Land Surveying Inc., dated April 5, 2016, included as Attachment 1.
 - b. That the proposed development comply with the recommendations outlined in the geological report prepared by Thurber Engineering Ltd., dated March 15, 2016, included as Attachment 2.
 - c. That the proposed development comply with the recommendations outlined in the Riparian Assessment Report, prepared by P.A. Harder & Associates Ltd., dated March 31, 2011, included as Attachment 3, and the supplementary letter prepared by P.A. Harder & Associates Ltd., dated March 31, 2016, included as Attachment 4.
4. Pursuant to Section 512 of the *Local Government Act*, a frontage exemption is granted as follows:
 - a. That the 39 proposed lots shown in red on the Proposed Subdivision Plan, prepared by Bazett Land Surveying Inc., dated April 5, 2016, included as Attachment 5, be exempted from the requirement that 10% of the perimeter of the lot fronts on a highway.
5. Notice of this Permit shall be filed in the Land Title Office at Victoria under Section 503 of the *Local Government Act*, and the terms of this Permit (DP-08-11) or any amendment hereto shall be binding upon all persons who acquire an interest in the land affected by this Permit.
6. If the holder of a permit does not substantially start any construction permitted by this Permit within 2 years of the date it is issued, the permit lapses.
7. The land described herein shall be developed strictly in accordance with the terms and conditions and provisions of this Permit, and any plans and specifications attached to this Permit which shall form a part hereof.
8. The following plans and specifications are attached to and form part of this Permit:
 - 1) Proposed Survey Plan, prepared by Bazett Land Surveying Ltd., dated April 5, 2016;
 - 2) Geological Report, prepared by Thurber Engineering Ltd., dated March 15, 2016;
 - 3) Riparian Assessment Report, prepared by P.A. Harder & Associates Ltd., dated March 31, 2011;
 - 4) Supplementary Letter, prepared by P.A. Harder & Associates Ltd., dated March 31, 2016;
 - 5) Proposed Subdivision Plan [Frontage], prepared by Bazett Land Surveying Inc., dated April 5, 2016.

9. This Permit is NOT a Building Permit.

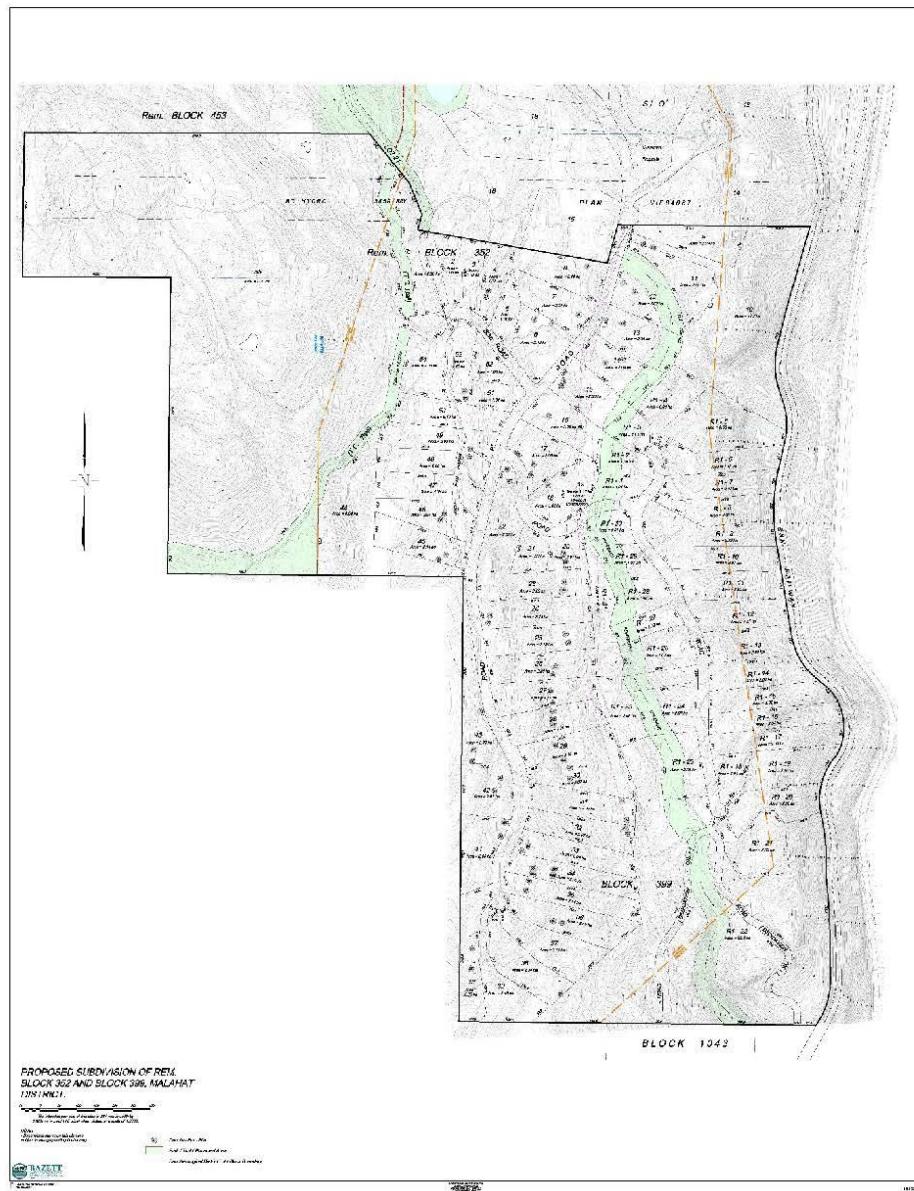
RESOLUTION PASSED BY THE BOARD, THE _____th day of July, 2016.

ISSUED this _____ day of _____, 2016

Corporate Officer

DP-08-11 - Amended

Attachment 1: Proposed Survey Plan



DP-08-11 - Amended

Attachment 2: Geological Report



March 15, 2016

File: 12285

[REDACTED]
[REDACTED]
Attention: [REDACTED]

**CRD SOUTH LAND DEVELOPMENT
PRELIMINARY GEOLOGICAL HAZARD ASSESSMENT**

Dear [REDACTED]

This letter presents the results of a preliminary geological hazard assessment carried out for the "CRD South" land development area (which is also known as "Goldstream Heights Phase 3"). The CRD South area consists of two phases with a total of 86 proposed lots and remainder areas. The development also includes two park / trail / protected areas. The purpose of the preliminary assessment is to assist with subdivision planning. This letter summarizes the work carried out and provides our assessment of the geological hazards associated with the proposed subdivision. This work follows our proposal dated August 24, 2010 but incorporates a revised subdivision layout that was proposed during February 2016. This version of our report replaces earlier versions dated October 18, 2010 and April 18th, 2011. The earlier versions were based on previous proposed lot layout configurations.

This report was conducted in general accordance with the Association of Professional Engineers and Geoscientists of British Columbia Guidelines for Legislated Landslide Assessments for Proposed Residential Development in British Columbia (2010). A completed Landslide Assessment Assurance Statement is included following the report text.

It is a condition of this report that Thurber's performance of its professional services is subject to the attached Statement of Limitations and Conditions. The CRD is an approved user of this report for the purpose of development application consideration.

1. SITE DESCRIPTION

The "CRD South" development area is located within the Capital Regional District about 10 km southeast of Shawnigan Lake and west of the southern portion of Saanich Inlet. The site covers a total of approximately 305 hectares as shown on the attached Drawing 12285-1. We understand that the proposed subdivision layout includes two phases of development, Phase A and Phase B. Phase A portion consists of 55 lots (1 to 55) with sizes ranging from 1 ha to 11.2 ha with one remainder lot (numbered 55) which is 77 ha. Phase B consists of 31 lots (R1-1 to R1-31) with lot sizes ranging from 1 ha to 3.66 ha with a remainder lot R1-22 which is 30.8 ha in size. The average lot size for both Phase A and B is 2.06 ha, excluding the larger remainder lots.

100, 4396 West Saanich Road, Victoria, BC V8Z 3E9 T: 250 727 2201 F: 250 727 3710
thurber.ca

DP-08-11 - Amended



The development area currently consists of two legal lots including:

- Block 399, Malahat District . PID 009-368-710
- Block 352, Malahat District, except part in plan VIP84067. PID 009-368-736

The site is currently accessed by gravel roads. However, the proposed development will include the construction of a new expanded network of paved roads. The proposed roads will be an extension of the existing Goldstream Heights Drive which currently ends to the north of the CRD South development area.

A small fish-bearing stream called "Arbutus Creek", flows southward through the eastern side of the development area. Arbutus Creek flows out of Wrigglesworth Lake, which is a small (3 ha) lake located several hundred meters north of the CRD South development area. A 60 m wide restrictive covenant is proposed for the riparian areas adjacent to Arbutus Creek (as shown on Drawing 12285-1).

Most of the accessible merchantable timber was harvested on the property during 2002 and therefore, most of the site consists of regenerating clear cuts with a few remaining stands in inaccessible areas and adjacent to Arbutus Creek.

Canadian Climate Normals for Shawnigan Lake, B.C. indicate the region receives about 1250 mm of precipitation per year of which 94% falls as rain. However, snowfall in the study area may be greater than that at Shawnigan Lake due its higher elevation. The "wet season" (i.e. >100 mm per month) extends from October to March.

The local geology mapping indicates that most of the central and eastern portions of the site consist of Leech River formation lithologies including low and medium grade meta-sedimentary rocks. The bedrock at the northwestern portion of the CRD South development area (Lot 55) is mapped as consisting of Wark and Colquitz Gneiss (high grade metamorphic rocks). The rocks in the study area generally appear to be strong and competent.

Additional details regarding the site's terrain conditions are discussed in Section 3.

2. STUDY PROCEDURE

This geological hazard assessment covers the full ~305 ha development area shown in Drawing 12285-1 and was conducted by Paul Wilson, M.Sc., P.Geo. of Thurber Engineering Ltd. This assessment is qualitative in nature where the hazard assessment and mapping was based on professional judgement using assessor's qualifications and experience working within the general study area (southern Vancouver Island) and in other areas of British Columbia. However, we did conduct one quantitative stability analysis on a "typical" theoretical slope section using moderate slopes and assumed soil strength parameters, soil depths and groundwater conditions etc. The qualitative analysis was only used to estimate

DP-08-11 - Amended



displacements and assist with "calibrating" our qualitative assessment for terrain conditions that could be considered as marginally "safe". The details and results of the quantitative analysis are not included in this report as they do not relate to any specific location within the study area and are theoretical only. The results of the quantitative analysis are reflected in our hazard assessment mapping.

Our assessment included a review of recent and historical air photographs (and other background information), preliminary mapping of terrain hazard levels based on 2003 air photographs, a limited theoretical quantitative analysis followed by on-the ground field checks of a selection of mapped polygons.

This work did not include detailed seismic analysis, specific flood hazard assessment or assessment of forest fire or windthrow hazards (or any other similar assessments) which all require a detailed knowledge of specific building layouts and design.

The office study consisted of examining available maps and aerial photographs including:

- 3Di LLC 1:10,000 scale air photographs 3-3 to 3-5 and 4-3 to 4-7 flown January 7, 2003 and supplied by Devin Hawes. The photos are clear and were taken soon after the area was logged so much of the terrain is readily visible on the photos with a minimum of vegetation cover.
- Muller, J.E. 1980. Geology Victoria, British Columbia. GSC Map 1553A. Scale 1:100,000.
- Bazett Land Surveying Inc. 1:3,000 scale map showing surface features, 1 m contours, proposed roads, driveways and lot locations. It is our understanding that the topography on the map is based on the 2003 air photos.
- CRD Natural Areas Atlas (now Webmap) including review of 1999, 2002, 2007 and 2015 orthophotos, stream information, contours and well locations.

The field assessment portion of this project was used to check on the air photo-based terrain interpretations, note general terrain characteristics and record instances of observed slope instability and other potential terrain hazards. The field work was conducted by Paul Wilson, P.Geo. on September 21, 2010. Additional site visits were not conducted in 2011 or 2016 with each successive change in the proposed lot layout. The 2010 field assessment was primarily conducted on foot and in a vehicle and focused on the steep terrain and potential building sites as determined from the air photo interpretation. The recent logging activity has left an arrangement of built gravel roads and skidder trails that provided excellent access to most areas of the site. Locations in the field were determined using detailed topographic maps, airphotos and a hand-held GPS unit. Proposed residential lot boundaries were not marked in the field. The surficial geology was observed along existing road cuts and other logging-related exposures.

DP-08-11 - Amended



3. TERRAIN CONDITIONS

The CRD South property is located between 200 m and 540 m elevation and can be roughly divided into three topographic/terrain zones including:

- The eastern-most portion of the site (including the eastern portions of Lots 9 to R1-22) includes generally steep uniform terrain with an eastern aspect. The soil conditions consist of well drained colluvial veneers and blankets and intermittent steep rocky bluffs.
- The central portion of the site (consisting of the western portions of Lots 9 to R1-22, the remainder of the R1 lots to the west and essentially all of lots 1 to 54) includes two north-south oriented, rolling to hummocky ridge tops with an intervening, generally low relief valley. The hillsides on the western side of the valley include narrow, continuous to discontinuous benches of more moderately sloping terrain. Arbutus Creek flows southward in the bottom of the main valley through Lots 12 to 15 and R1-3 to R1-1 and R1-30 to R1-22. The terrain within this area is mixed but includes intermittent colluvial and morainal veneers and blankets with a few steep rocky outcrops.
- The northwestern portion of the site (approximately the Lot 55 portion) includes the highest elevation terrain. This portion of the site generally consists of the eastern slopes of a higher elevation, generally rocky hill with an upper stepped plateau of generally undulating to hummocky terrain. The steeper eastern slopes of the hill (e.g. a band immediately west and north of the Trans-Canada Trail right-of-way) are dominated by moderate-sloping colluvial and morainal veneers and blankets with intermittent bedrock outcrops.

4. GEOLOGICAL HAZARDS AND RATINGS

The geological hazard ratings for the CRD South area are shown on the attached map, Drawing 12285-1. This assessment assumes that "safe" means that the probability of occurrence of a geological hazard (i.e. failure) within a given area is less than 2% in 50 years.

Potential geological hazards within the CRD South development area include rock falls from steep rocky terrain, open-slope debris slides initiating in areas of moderate or steeply-inclined terrain and run out impact by rockfall or a debris slide that initiated on higher elevation terrain. Run out impact could occur on gentle, moderate or steeply inclined terrain. These geological hazards could occur without an identifiable triggering mechanism but are more likely to be triggered by extreme weather events, seismic activity and/or poorly considered or constructed site development.

In general, the observed terrain conditions within the CRD South development area suggest that geological hazards are rare. No evidence of significant open-slope debris slides was

DP-08-11 - Amended



observed within the CRD south area or adjacent areas on the 2003 airphotos or during the 2010 field assessment work. It should be noted however, that site disturbances resulting from poorly situated, designed or constructed residential development could increase the hazard ratings presented below. Evidence of recent, small scale rockfall was observed in the field in several readily identifiable areas.

Arbutus Creek

While the flood potential of Arbutus Creek was not formally assessed, its position and proximity below Wrigglesworth Lake suggests that the flood hazard is likely low and Arbutus Creek does not represent a significant "geological" hazard. The base map provided to us includes a 30 m "riparian zone" buffer on either side of Arbutus Creek. This buffer is shown on Drawing 12285-1. Development should not occur within the riparian zone without the completion of a detailed Riparian Area Assessment conducted in accordance with the B.C. Riparian Area Regulation (2004). We also recommend that a site-specific flood hazard assessment be conducted for any proposed development within Arbutus Creek's riparian zone. Other unmapped riparian areas subject to the requirements of the Riparian Area Regulation (2004) may also be present elsewhere within the study area.

Snow Avalanche

While the "CRD South" area was not formally assessed for snow avalanche hazard, no indications of avalanche activity were observed on the air photos or during the field assessment. The relatively small snowfall amounts (as indicated by the Canadian Climate Normals) and presence of predominantly gentle and moderately sloping terrain suggests a very low avalanche hazard.

Very Low Hazard Areas

Low gradient and low and moderately sloping bedrock-controlled terrain within the assessment area (uncoloured on the map) has a Very Low hazard. Very Low hazard means that there are no noticeable geological hazards that could effect building development provided that the buildings are properly constructed. As such, the uncoloured portions of the map are interpreted to be "safe" for residential use with a probability of failure or occurrence of a hazardous event of less than 2% chance in 50 years. Additional geological hazard assessments are not required for standard residential development constructed within these areas.

Low Hazard Areas

A Low hazard rating (coloured yellow on the map) indicates that in our opinion, the hazard is likely less than 2% chance in 50 years however, depending on the specific development design, small-scale or rare hazards could occur. While these areas are likely to be "safe" for residential development, we recommend that a more detailed site investigation and seismic analysis be conducted once a specific building layout and design are proposed. These

DP-08-11 - Amended



assessments are recommended so that the site-specific hazard can be better defined and if necessary, an engineering solution developed. Potential hazards in these areas should be able to be mitigated by incorporating one or more of a range of commonly used engineering design elements.

Moderate Hazard Areas

A Moderate hazard rating (coloured orange on the map) indicates that there is moderately sloping or steep terrain that could affect buildings located within these areas, or failure run out from higher hazard areas could occur. These areas should generally be avoided if possible. However, within each Moderate hazard zone, there may be small areas where development could proceed. If development is proposed for these zones, a more detailed site investigation and engineering assessment is required to more accurately define the hazard, and if necessary, engineer a solution. Potential hazards in these areas may be able to be mitigated by incorporating special design elements.

High Hazard Areas

A High hazard rating (coloured red on the map) typically refers to steep rock bluffs and/or steep slopes where rockfall and/or debris slides are more likely to occur, or where failed materials originating from higher on the slope are likely to be deposited or traverse. No buildings should be constructed within these zones. However, if development is proposed within these zones, a detailed engineering assessment is required to more accurately define the extent of the hazard. Hazard mitigation within these zones, if practical, would likely require significant and extensive engineering design.

5. CONCLUSION

This report summarizes our preliminary geological hazard assessment for the proposed subdivision development. In general, the site is deemed suitable for the proposed subdivision. A review of the attached hazard map indicates that each proposed lot has sufficient area with a Very Low (white) and / or Low hazard (yellow) rating that should be suitable for residential construction. Some restrictive covenants will be required on almost all of the lots to address geologic hazards, but each lot appears to have a potentially developable area. Additional, detailed terrain and engineering assessments are recommended for any developments proposed in the coloured Low (yellow), Moderate (orange) and High (red) hazard zones shown on Drawing 12285-1.

Development should not occur within the riparian zone adjacent to Arbutus Creek without the completion of a detailed Riparian Area Assessment conducted in accordance with the B.C. Riparian Area Regulation (2004). We also recommend that a site-specific flood hazard assessment be conducted for any proposed development within a riparian zone. Other, unmapped riparian areas may be present within the proposed CRD South development area.

DP-08-11 - Amended



A completed Landslide Assessment Assurance Statement is attached following the report text.

6. CLOSING

We trust the information provided herein is of assistance with your planning requirements for this subdivision. If you have any questions concerning the assessment or our recommendations, please do not hesitate to contact us.

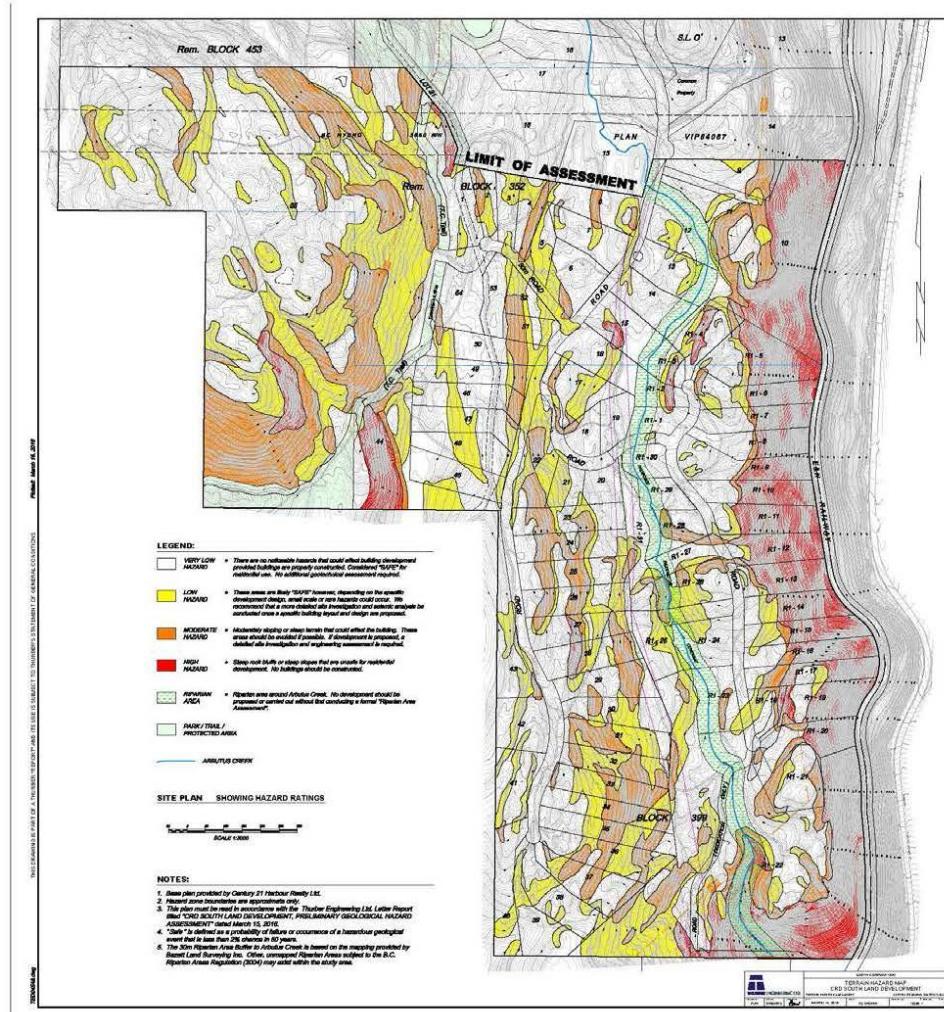
Yours truly;
Thurber Engineering Ltd.
Stephen Bean, P. Eng.
Review Principal


Paul Wilson, P.Geo.
Project Geoscientist



Attachments – Statement of Limitations and Conditions, Terrain Hazard Map, Landslide Assessment Assurance Statement form.

DP-08-11 - Amended



DP-08-11 - Amended

APPENDIX D: LANDSLIDE ASSESSMENT ASSURANCE STATEMENT

Note: This Statement is to be read and completed in conjunction with the "APEGBC Guidelines for Legislated Landslide Assessments for Proposed Residential Development in British Columbia", March 2006/Revised September 2008 ("APEGBC Guidelines") and the "2006 BC Building Code (BCBC 2006)" and is to be provided for landslide assessments (not floods or flood controls) for the purposes of the Land Title Act, Community Charter or the Local Government Act. Italicized words are defined in the APEGBC Guidelines.

To: The Approving Authority

CAPITAL REGIONAL DISTRICT
625 FISGARD ST. VICTORIA, BC

Date: MARCH 15/16

Jurisdiction and address

With reference to (check one):

- Land Title Act (Section 86) – Subdivision Approval
 Local Government Act (Sections 919.1 and 920) – Development Permit
 Community Charter (Section 56) – Building Permit
 Local Government Act (Section 910) – Flood Plain Bylaw Variance
 Local Government Act (Section 910) – Flood Plain Bylaw Exemption
 British Columbia Building Code 2006 sentences 4.1.8.16 (8) and 9.4.4.(2) (Refer to BC Building and Safety Policy Branch Information Bulletin B10-01 issued January 18, 2010)

For the Property:

Block 399 AND 352 MACKENZIE DISTRICT - PID 009-368-710 AND 009-368-736

Legal description and civic address of the Property

The undersigned hereby gives assurance that he/she is a *Qualified Professional* and is a *Professional Engineer or Professional Geoscientist*.

I have signed, sealed and dated, and thereby certified, the attached *landslide assessment* report on the Property in accordance with the *APEGBC Guidelines*. That report must be read in conjunction with this Statement. In preparing that report I have:

Check to the left of applicable items

1. Collected and reviewed appropriate background information
 2. Reviewed the proposed *residential development* on the Property
 3. Conducted field work on and, if required, beyond the Property
 4. Reported on the results of the field work on and, if required, beyond the Property
 5. Considered any changed conditions on and, if required, beyond the Property
6. For a *landslide hazard analysis* or *landslide risk analysis* I have:
 6.1 reviewed and characterized, if appropriate, any *landslide* that may affect the Property
 6.2 estimated the *landslide hazard*
 6.3 identified existing and anticipated future *elements at risk* on and, if required, beyond the Property
6.4 estimated the potential *consequences* to those *elements at risk*
7. Where the *Approving Authority* has adopted a *level of landslide safety* I have:
 7.1 compared the *level of landslide safety* adopted by the *Approving Authority* with the findings of my investigation
 7.2 made a finding on the *level of landslide safety* on the Property based on the comparison
 7.3 made recommendations to reduce *landslide hazards* and/or *landslide risks*

8. Where the *Approving Authority* has **not** adopted a *level of landslide safety* I have:

DP-08-11 - Amended

- 8.1 described the method of *landslide hazard analysis* or *landslide risk analysis* used
- 8.2 referred to an appropriate and identified provincial, national or international guideline for *level of landslide safety*
- 8.3 compared this guideline with the findings of my investigation
- 8.4 made a finding on the *level of landslide safety* on the Property based on the comparison
- 8.5 made recommendations to reduce *landslide hazards* and/or *landslide risks*
9. Reported on the requirements for future inspections of the Property and recommended who should conduct those inspections.

Based on my comparison between

- Check one
- the findings from the investigation and the adopted *level of landslide safety* (item 7.2 above)
- the appropriate and identified provincial, national or international guideline for *level of landslide safety* (item 8.4 above)

I hereby give my assurance that, based on the conditions¹¹ contained in the attached *landslide assessment report*,

- Check one
- for subdivision approval, as required by the Land Title Act (Section 86), "that the land may be used safely for the use intended"
- Check one
- with one or more recommended registered covenants.
- without any registered covenant.
- for a development permit, as required by the Local Government Act (Sections 919.1 and 920), my report will "assist the local government in determining what conditions or requirements under [Section 920] subsection (7.1) it will impose in the permit".
- for a building permit, as required by the Community Charter (Section 56), "the land may be used safely for the use intended"
- Check one
- with one or more recommended registered covenants.
- without any registered covenant.
- for flood plain bylaw variance, as required by the "Flood Hazard Area Land Use Management Guidelines" associated with the Local Government Act (Section 910), "the development may occur safely".
- for flood plain bylaw exemption, as required by the Local Government Act (Section 910), "the land may be used safely for the use intended".

PAUL WILSON
Name (print)


MARCH 15/16
Date

¹¹ When seismic slope stability assessments are involved, *level of landslide safety* is considered to be a "life safety" criteria as described in the National Building Code of Canada (NBCC 2005), Commentary on Design for Seismic Effects in the User's Guide, Structural Compartments, Part 4 of Division B. This states:

"The primary objective of seismic design is to provide an acceptable level of safety for building occupants and the general public as the building responds to strong ground motion; in other words, to minimize loss of life. This implies that, although there will likely be extensive structural and non-structural damage, during the DGM (design ground motion), there is a reasonable degree of confidence that the building will not collapse nor will its attachments break off and fall on people near the building. This performance level is termed 'extensive damage' because, although the structure may be heavily damaged and may have lost a substantial amount of its initial strength and stiffness, it retains some margin of resistance against collapse."

DP-08-11 - Amended

100-4396 WEST STANICH RD
Address
VICTORIA, BC V8Z 3E9
(250)727-2201
Telephone



(Affix Professional seal here)

If the Qualified Professional is a member of a firm, complete the following.

I am a member of the firm THURBER ENGINEERING LTD.
and I sign this letter on behalf of the firm. (Print name of firm)

DP-08-11 - Amended

Attachment 3: Riparian Assessment Report

Final

FORM 1

Riparian Areas Regulation - Qualified Environmental Professional - Assessment Report

Riparian Areas Regulation: Assessment Report

Please refer to submission instructions and assessment report guidelines when completing this report.

Date 2011-03-31

I. Primary QEP Information

First Name	Paul	Middle Name	A
Last Name	Harder		
Designation	RP Bio	Company	P. A. Harder and Associates Ltd.
Registration #	710	Email	paharder@shaw.ca
Address	612 Downey Road		
City	Victoria	Postal/Zip	V8L 5M6
Prov/state	BC	Country	Canada
	Phone #	250 656 7783	

II. Secondary QEP Information (use Form 2 for other QEPs)

First Name	Middle Name
Last Name	
Designation	Company
Registration #	Email
Address	
City	Postal/Zip
Prov/state	Country

III. Developer Information

First Name	
Last Name	
Company	
Phone #	
Address	
City	
Prov/state	

IV. Development Information

Development Type	New Residential Large Lot Subdivision		
Area of Development (ha)	305.1-32.8 = 272.30 ha	Riparian Length (m)	2500
Lot Area (ha)	2.0 ha min	Nature of Development	NEW
Proposed Start Date	Dec 2010	Proposed End Date	Dec 2020

V. Location of Proposed Development

Street Address (or nearest town)	SHAWNIGAN LAKE
Local Government	Capital Regional District
Stream Name	UNNAMED "Arbutus Creek"
Legal Description (PID)	Block 352 Malahat District, Except part in Plan V/P84067. PID 009-368-736. Block 399, Malahat District, PID 009-368-710
Stream/River Type	Unnamed Stream
	DFO Area VANCOUVER ISLAND

DP-08-11 - Amended

FORM 1
Riparian Area Regulation - Qualified Environmental Professional - Assessment Report

Watershed Code	920 235 700					
Latitude	48	30	55	Longitude	123	33

Table of Contents for Assessment Report Page Number

1. Description of Fisheries Resources Values
2. Results of Riparian Assessment (SPEA width)
3. Site Plan
4. Measures to Protect and Maintain the SPEA
(detailed methodology only).
 1. Danger Trees.....
 2. Windthrow.....
 3. Slope Stability.....
 4. Protection of Trees.....
 5. Encroachment
 6. Sediment and Erosion Control.....
 7. Floodplain.....
 8. Stormwater Management.....
5. Environmental Monitoring
6. Photos
7. Assessment Report Professional Opinion

DP-08-11 - Amended

FORM 1
Riparian Areas Regulation - Qualified Environmental Professional - Assessment Report
Section 1. Description of Fisheries Resources Values and a Description of the Development proposal

Site Description

The 305.1 ha property that is the subject of this assessment is located south of the existing Goldstream Heights development on a moderately steep slope located approximately 1 km east of the Trans Canada Highway and E&N Railroad corridor. Arbutus Creek flows south through the middle of the property starting at the northern boundary located near the hydro line crossing of Arbutus Creek. Approximately 85% of site has been clear cut; there is a narrow band of riparian buffer that has been left along the Arbutus Creek channel. The side slopes on either side of Arbutus Creek are well drained with numerous steep ridges, knolls and rock outcrops. The side slopes appear to be stable with no evidence of land slide activity or slope erosion. There are several small gullies leading down slope towards the Arbutus Creek channel. There are no culvert crossings on the existing roads that parallel Arbutus Creek; defined water courses were not present on the side slopes adjacent to Arbutus Creek. There is a network of old logging roads that traverse much of the site leading to former log landing sites. Most of these roads are overgrown and non-functional.

Land Use

The entire area within Phases A, B and C has been previously logged. The most recent logging activity occurred between 2000 and 2002.

There is a high voltage hydro transmission that crosses the northeast corner of the property on the east side of Arbutus Creek.

Access to the proposed development area is restricted by a locked gate located at the end of the paved road for the existing Goldstream Heights Development. Adjacent areas to the property are used for recreation including such activities as off road vehicle riding and hunting.

Surface Drainage Characteristics

There is one major stream drainage (Arbutus Creek) that flows south east from the outlet of Wigglesworth Lake before crossing underneath the hydro transmission line and onto the subject property. This creek channel flows south through the length of the subject property before turning south east and cascading down the slopes of the Malahat entering into Finlayson Arm near Halls' Boat Launch and Marina. No other significant drainage channels are present on the subject property.

Existing Vegetation Conditions

Riparian

A band of riparian vegetation has been retained along the creek channel throughout the project area. This stream side vegetation is dominated by mature fir and cedar with some young alder trees. Under storey vegetation includes salal, nine bark, bracken fern, salmon berry, stinging nettle and isolated patches of carex sedge growing adjacent to wider sections of the creek channel. The width of this undisturbed riparian band varies between approximately 30 and 100 m.

Upslope Valley Walls

A band of riparian vegetation has been retained along the creek channel throughout the project area. This stream side vegetation is dominated by mature fir and cedar with some young alder trees. Under storey vegetation includes salal, nine bark, bracken fern, salmon berry, stinging nettle and isolated patches of carex sedge growing adjacent to wider sections of the creek channel. The width of this undisturbed riparian band varies between approximately 30 and 100 m.

DP-08-11 - Amended

FORM 1
Riparian Areas Regulation - Qualified Environmental Professional - Assessment Report

Fish Habitat Values

There is no anadromous (sea going) fish access into Arbutus Creek. The lower reaches are extremely precipitous with gradients exceeding 20% and numerous large vertical water falls as the creek channel flows down the slopes of the Malahat into Finlayson Arm.

Cutthroat trout are found in the creek channel downstream of Wigglesworth lake and upstream of the Malahat cascades. These are likely resident fish from Wigglesworth Lake that have dropped down into the creek channel. Within the immediate study area, the highest fish habitat capabilities and habitat values occur in Reaches 1 and 2. These sections of the creek have a relatively low channel gradient with good levels of habitat diversity. Spawning habitat capabilities appear to be highest in Reach 1 downstream of the existing road crossing.

There are no fish habitat capabilities in Reach 4 and marginal habitat capabilities in Reach 3 due to stream channel gradient constraints.

Downstream Habitat Concerns

Arbutus Creek drains into Finlayson Arm immediately south of Halls Boat Launch and Marina near the Goldstream estuary. Any changes to water quality in the Goldstream estuary would be a significant concern for the diverse and rich fish and marine life resources associated with the estuary.

Wetland Habitats and Sensitive Ecosystem Areas

There were no wetland habitats identified on the upper slopes of the property (Phases A, B and C). There are some minor patches of wetland habitat, characterized by carex sedge growth, located in isolated patches along Reaches 1 and 2 of Arbutus Creek. These areas are typically less than 10 m² and have not been classified as significant wetland areas.

No sensitive ecosystem areas have been reported for the area in previous reports. Furthermore, sensitive ecosystem areas were not identified during our examination of recent aerial photograph coverage of the site or from our ground surveys.

There are a number of steep terrain bluffs and outcrops where clusters of trees, including some arbutus, have been preserved. These areas provide some refuge habitat for birds and wildlife and also contribute to the visual appeal of the area. It is recommended that these areas be preserved as much as possible during the course of subsequent development activities at the site.

Designation of SPEA Boundaries Along Arbutus Creek

Four stream reaches were identified and delineated on the section of Arbutus Creek that flows through the property. Reach 1 is located near the upstream end of the channel starting at the northern boundary of the property. The channel gradient is lowest in Reach 1 and increases through Reaches 2 and 3. The stream channel in Reach 4 becomes a highly confined channel with precipitous drops as the creek channel starts to flow down the side of the Malahat into Finlayson Arm.

A typical width of the active channel extending from the high water mark on the right and left banks of the creek channel was established for each of the four stream reaches. Following RAR methodologies the required SPEA was established for each stream reach. A summary of the active channel widths and required SPEA boundaries is provided below; additional detail is found on the accompanying site plan.

DP-08-11 - Amended

FORM 1
Riparian Areas Regulation - Qualified Environmental Professional - Assessment Report

• Reach 1: Active Channel Width of 7.0 m; Required SPEA of 21 m.
• Reach 2: Active Channel Width of 5.0 m; Required SPEA of 15 m.
• Reach 3: Active Channel Width of 4.0 m; Required SPEA of 12 m.
• Reach 4: Active Channel Width of 2.0m; Required SPEA of 30 m.

The 30 m SPEA boundary designated for Reach 4 was done due to the steep ravine like nature of the valley walls. Restricting any development activity within the 30 m SPEA will reduce the risk of slope instability in this area.

With the exception of permitted creek crossings, no development activity is permitted within the identified SPEA boundaries. Development activity can occur between the identified SPEA and the Riparian Assessment Area (RAA) boundaries provided that it has been reviewed and approved by a Qualified Environmental Professional following RAR guidelines and procedures.

Proposed Development Activities

1) Sub Division Approvals
The property developer is applying for Sub-Division Approval for 79 lots. The lots vary in size from 2.0 to 47 ha. The proposed schedule for subdivision application is in 2011.

2) Road Construction
Following sub-division approval, the property developer will proceed with road development work to service the proposed lots coinciding with Development Phases A, B and C. This work will likely be completed between 2011 and 2013. All final RAR survey and boundary delineation work will need to be completed prior to the start of any road construction work.

3) Land Sales and House Construction
Land sales may commence in tandem with the road development work as identified for Phases A, B and C of the development plan. The timing of individual house construction work will occur at the discretion of the new owners. All house construction will be governed under building permits issued by the CRD. The house developers will be subject to the terms and conditions of the Riparian Areas Regulation as specified in this report. Additional RAR assessment and reporting will be required of the property owner if the proposed house and driveway construction plans affect the area within the Riparian Assessment Area (RAA).

Property Developer Obligations

- The property developer (Isis Land Corp) is obligated to hire a land surveyor and a QEP and instruct them to clearly identify the high water mark and establish and mark the location of the SPEA boundary in the field for each of the four stream reaches within the proposed development site. The SPEA boundary needs to be delineated with permanent markings for each of the sub-divided lots, prior to the sale of these lots.
- The property developer must ensure that all road drainage is adequately controlled and treated as required prior to entering the SPEA.
- The property developer is responsible for obtaining the required approvals under the Section 9 of the BC Water Act for any stream crossing structures required for public roads. Subsequent lot owners will be responsible for obtaining approvals under the BC Water Act for any driveway creek crossings on their individual lots.

Property Owner Guidelines for Environmental Protection and RAR Compliance
The property owner has the following obligations under the Riparian Area Regulation:

DP-08-11 - Amended

FORM 1
Riparian Areas Regulation - Qualified Environmental Professional - Assessment Report

<ul style="list-style-type: none">• The delineation of the SPEA boundary needs to be established on both sides of the creek channel.• No development activity can occur within the SPEA boundary unless it has been authorized by the Department of Fisheries and Oceans or through an Approval under the BC Water Act.• A property owner may be able to construct a residential driveway crossing of the creek IF the appropriate approvals are received from the BC Ministry of environment under the BC Water Act. The property owner is responsible for filing a "Notification" or "Approval" under Section 9.0 the BC Water Act before any stream crossing work can be considered.• The property owner may be able to have trees that are deemed to be a Danger removed from the SPEA if they first obtain the opinion of a Qualified Arborist and approval from the local government (CRD).• No materials can be deposited in or removed from within the SPEA boundary.• The property owner is obligated to retain the services of a Qualified Environmental Professional prior to any development work within the Riparian Area Assessment Boundary (30 m from the high water mark).• The property owner is obligate to comply with all conditions as specified in Section 4 of this RAR report.

DP-08-11 - Amended

FORM 1
 Riparian Areas Regulation - Qualified Environmental Professional - Assessment Report

2. Results of Detailed Riparian Assessment																																																			
Refer to Chapter 3 of Assessment Methodology																																																			
Description of Water bodies involved (number, type)																																																			
Stream Wetland Lake Ditch Number of reaches Reach #	<input type="checkbox"/> Stream <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> FOUR <input type="checkbox"/> One																																																		
Date: <input type="text" value="Nov 9, 2010"/>																																																			
<input type="checkbox"/> One Unnamed Stream "Goldstream Heights Creek"																																																			
Channel width and slope and Channel Type (use only if water body is a stream or a ditch, and only provide widths if a ditch) <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 30%;">Channel Width(m)</th> <th style="width: 30%;">Gradient (%)</th> </tr> <tr> <td style="text-align: center;">starting point</td> <td style="text-align: center;">6.0</td> </tr> <tr> <td style="text-align: center;">upstream</td> <td style="text-align: center;">7.0</td> </tr> <tr> <td></td> <td style="text-align: center;">7.8</td> </tr> <tr> <td></td> <td style="text-align: center;">7.5</td> </tr> <tr> <td></td> <td style="text-align: center;">6.5</td> </tr> <tr> <td style="text-align: center;">downstream</td> <td style="text-align: center;">5.5</td> </tr> <tr> <td></td> <td style="text-align: center;">7.0</td> </tr> <tr> <td></td> <td style="text-align: center;">7.0</td> </tr> <tr> <td></td> <td style="text-align: center;">7.1</td> </tr> <tr> <td></td> <td style="text-align: center;">7.2</td> </tr> <tr> <td></td> <td style="text-align: center;">7.2</td> </tr> <tr> <td>Total: minus high /low</td> <td style="text-align: center;">63</td> </tr> <tr> <td>mean</td> <td style="text-align: center;">6.94</td> </tr> <tr> <td>R/P</td> <td style="text-align: center;">C/P</td> </tr> <tr> <td></td> <td style="text-align: center;">S/P</td> </tr> <tr> <td>Channel Type</td> <td style="text-align: center;">R/P</td> </tr> </table>		Channel Width(m)	Gradient (%)	starting point	6.0	upstream	7.0		7.8		7.5		6.5	downstream	5.5		7.0		7.0		7.1		7.2		7.2	Total: minus high /low	63	mean	6.94	R/P	C/P		S/P	Channel Type	R/P																
Channel Width(m)	Gradient (%)																																																		
starting point	6.0																																																		
upstream	7.0																																																		
	7.8																																																		
	7.5																																																		
	6.5																																																		
downstream	5.5																																																		
	7.0																																																		
	7.0																																																		
	7.1																																																		
	7.2																																																		
	7.2																																																		
Total: minus high /low	63																																																		
mean	6.94																																																		
R/P	C/P																																																		
	S/P																																																		
Channel Type	R/P																																																		
Site Potential Vegetation Type (SPVT) <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%;">Yes</td> <td style="width: 10%;">No</td> <td colspan="3">Tick yes only if multiple polygons, if No then fill in one set of SPVT data boxes</td> </tr> <tr> <td colspan="2"></td> <td colspan="3"> <input type="checkbox"/> I, Paul Harder, (name of qualified environmental professional), hereby certify that: a) I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the Fish Protection Act; b) I am qualified to carry out this part of the assessment of the development proposal made by the developer, [REDACTED] Land Corp. (name of developer); c) I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and d) In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation. </td> </tr> <tr> <td colspan="2"> <input type="checkbox"/> SPVT Polygons </td> <td style="text-align: center;"> <input type="checkbox"/> LC </td> <td style="text-align: center;"> <input type="checkbox"/> SH </td> <td style="text-align: center;"> <input type="checkbox"/> TR </td> </tr> <tr> <td colspan="2"></td> <td colspan="3" style="text-align: center;">Method employed if other than TR</td> </tr> <tr> <td colspan="2"> <input type="checkbox"/> Polygon No: </td> <td style="text-align: center;"> <input type="checkbox"/> </td> <td style="text-align: center;"> <input type="checkbox"/> </td> <td style="text-align: center;"> <input type="checkbox"/> </td> </tr> <tr> <td colspan="2"></td> <td colspan="3" style="text-align: center;">Method employed if other than TR</td> </tr> <tr> <td colspan="2"> <input type="checkbox"/> SPVT Type </td> <td style="text-align: center;"> <input type="checkbox"/> </td> <td style="text-align: center;"> <input type="checkbox"/> </td> <td style="text-align: center;"> <input type="checkbox"/> TR </td> </tr> <tr> <td colspan="2"></td> <td colspan="3" style="text-align: center;">Method employed if other than TR</td> </tr> <tr> <td colspan="2"> <input type="checkbox"/> Polygon No: </td> <td style="text-align: center;"> <input type="checkbox"/> </td> <td style="text-align: center;"> <input type="checkbox"/> </td> <td style="text-align: center;"> <input type="checkbox"/> </td> </tr> <tr> <td colspan="2"></td> <td colspan="3" style="text-align: center;">Method employed if other than TR</td> </tr> </table>		Yes	No	Tick yes only if multiple polygons, if No then fill in one set of SPVT data boxes					<input type="checkbox"/> I, Paul Harder, (name of qualified environmental professional), hereby certify that: a) I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the Fish Protection Act; b) I am qualified to carry out this part of the assessment of the development proposal made by the developer, [REDACTED] Land Corp. (name of developer); c) I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and d) In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation.			<input type="checkbox"/> SPVT Polygons		<input type="checkbox"/> LC	<input type="checkbox"/> SH	<input type="checkbox"/> TR			Method employed if other than TR			<input type="checkbox"/> Polygon No:		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			Method employed if other than TR			<input type="checkbox"/> SPVT Type		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> TR			Method employed if other than TR			<input type="checkbox"/> Polygon No:		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			Method employed if other than TR		
Yes	No	Tick yes only if multiple polygons, if No then fill in one set of SPVT data boxes																																																	
		<input type="checkbox"/> I, Paul Harder, (name of qualified environmental professional), hereby certify that: a) I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the Fish Protection Act; b) I am qualified to carry out this part of the assessment of the development proposal made by the developer, [REDACTED] Land Corp. (name of developer); c) I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and d) In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation.																																																	
<input type="checkbox"/> SPVT Polygons		<input type="checkbox"/> LC	<input type="checkbox"/> SH	<input type="checkbox"/> TR																																															
		Method employed if other than TR																																																	
<input type="checkbox"/> Polygon No:		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																																															
		Method employed if other than TR																																																	
<input type="checkbox"/> SPVT Type		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> TR																																															
		Method employed if other than TR																																																	
<input type="checkbox"/> Polygon No:		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																																															
		Method employed if other than TR																																																	

DP-08-11 - Amended

FORM 1
Riparian Areas Regulation - Qualified Environmental Professional - Assessment Report

Polygo*n No:		Method employed if other than TR	
SPVT Type			
Zone of Sensitivity (ZOS) and resultant SPEA			
Segment	Left	If two sides of a stream involved, each side is a separate segment. For all water bodies multiple segments occur where there are multiple SPVT polygons	
No:			
LWD, Bank and Channel	21		
Stability ZOS (m)			
Litter fall and insect drop	21		
ZOS (m)			
Shade ZOS (m) max	21	South bank	Yes
Ditch	Justification description for classifying as a ditch (manmade, no significant headwaters or springs, seasonal flow)		
Ditch Fish Bearing	Yes	No	If non-fish bearing insert no fish bearing status report
SPEA maximum	21	(For ditch use table3-7)	
Segment	Right	If two sides of a stream involved, each side is a separate segment. For all water bodies multiple segments occur where there are multiple SPVT polygons	
No:			
LWD, Bank and Channel	21		
Stability ZOS (m)			
Litter fall and insect drop	21		
ZOS (m)			
Shade ZOS (m) max	21	South bank	Yes
SPEA maximum	21	(For ditch use table3-7)	
Segment		If two sides of a stream involved, each side is a separate segment. For all water bodies multiple segments occur where there are multiple SPVT polygons	
No:			
LWD, Bank and Channel			
Stability ZOS (m)			
Litter fall and insect drop			
ZOS (m)			
Shade ZOS (m) max		South bank	Yes
SPEA maximum		(For ditch use table3-7)	
Certification			
I, Paul Harder (name of qualified environmental professional), hereby certify that:			
a) I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the Fish Protection Act;			
b) I am qualified to carry out this part of the assessment of the development proposal made by the developer (sis Land Corp (name of developer);			
c) I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and			
d) In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation.			
Comments			
Reach One extends 650 m downstream from the bridge/culvert crossing at the end of the Goldstream Heights Road (2010) just downstream of the hydro-line crossing.. The average width of the active channel (HW to HW) is 7.0 m. The creek has a buffer of mature conifer trees with some alder growing along both banks. The adjacent hillsides have been clear cut logged. There are no signs of bank or slope instability in this reach.			

DP-08-11 - Amended

FORM 1
 Riparian Areas Regulation - Qualified Environmental Professional - Assessment Report

Number of reaches	FOUR			
Reach #	TWO			
Channel width and slope and Channel Type (use only if water body is a stream or a ditch, and only provide widths if a ditch)				
Channel Width(m) starting point upstream 5.0 5.0 5.0 5.0 5.0 downstream 5.0 5.0 6.6 5.0 5.0 Total: minus high flow mean 5.1 45 5.0 R/P C/P S/P Channel Type R/P	Gradient (%) 3.0 3.5 R/P C/P S/P	I, Paul Harder, (name of qualified environmental professional), hereby certify that: e) I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the Fish Protection Act; f) I am qualified to carry out this part of the assessment of the development proposal made by the developer Isla Land Corp (name of developer); g) I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and h) In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation.		
Site Potential Vegetation Type (SPVT)				
SPVT Polygons	Yes	No	Tick yes only if multiple polygons, if No then fill in one set of SPVT data boxes	
			I, Paul Harder, (name of qualified environmental professional), hereby certify that: e) I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the Fish Protection Act; f) I am qualified to carry out this part of the assessment of the development proposal made by the developer Isla Land Corp (name of developer); g) I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and h) In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation.	
Polygon No:	LC	SH	TR	Method employed if other than TR
SPVT Type			TR	
Polygon No:	LC	SH	TR	Method employed if other than TR
SPVT Type				
Polygon No:	LC	SH	TR	Method employed if other than TR
SPVT Type				
Zone of Sensitivity (ZOS) and resultant SPEA				
Segment No:	Left	If two sides of a stream involved, each side is a separate segment. For all water bodies multiple segments occur where there are multiple SPVT polygons		

DP-08-11 - Amended

FORM 1
Riparian Areas Regulation - Qualified Environmental Professional - Assessment Report

LWD, Bank and Channel Stability ZOS (m)	15			
Litter fall and insect drop ZOS (m)	15			
Shade ZOS (m) max	15			
Ditch	Justification description for classifying as a ditch (manmade, no significant headwaters or springs, seasonal flow)			
Ditch Fish Bearing	Yes	No	If non-fish bearing insert no fish bearing status report	NA
SPEA maximum	15	(For ditch use table3-7)		
Segment No:	Right	If two sides of a stream involved, each side is a separate segment. For all water bodies multiple segments occur where there are multiple SPVT polygons		
LWD, Bank and Channel Stability ZOS (m)	15			
Litter fall and insect drop ZOS (m)	15			
Shade ZOS (m) max	15			
SPEA maximum	15	(For ditch use table3-7)		
Segment No:	Left	If two sides of a stream involved, each side is a separate segment. For all water bodies multiple segments occur where there are multiple SPVT polygons		
LWD, Bank and Channel Stability ZOS (m)				
Litter fall and insect drop ZOS (m)				
Shade ZOS (m) max				
SPEA maximum		South bank	Yes	No
(For ditch use table3-7)				
<p>I, <u>Paul Harder</u>, (name of qualified environmental professional), hereby certify that:</p> <p>e) I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the Fish Protection Act;</p> <p>f) I am qualified to carry out this part of the assessment of the development proposal made by the developer <u>Isis Land Corp</u> (name of developer);</p> <p>g) I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and</p> <p>h) In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation.</p>				
Comments				
<p>Reach TWO has an increased stream channel gradient and extends for 304 m downstream to the existing stream ford crossing. This ford crossing has created a minor impoundment in the channel back flooding the area immediately upstream of the ford crossing. The average width of the active channel (HW to HW) is 5.0 m. The creek has a buffer of mature conifer trees along both banks; there is a high amount of fallen log debris in the channel. The adjacent hillsides have been clear cut logged. There are no signs of bank or slope instability in this reach.</p>				

DP-08-11 - Amended

FORM 1
 Riparian Areas Regulation - Qualified Environmental Professional - Assessment Report

Number of reaches	FOUR	
Reach #	THREE	
Channel width and slope and Channel Type (use only if water body is a stream or a ditch, and only provide widths if a ditch)		
Channel Width(m) starting point upstream 3.6 3.6 4.2 4.0 4.0 downstream 4.3 3.7 4.0 4.3 4.1 4.1 Total: minus high flow mean 36 4.0 R/P C/P S/P Channel Type R/P	Gradient (%) 3.0 3.0 3.5 R/P C/P S/P	<small>I, Paul Harder, (name of qualified environmental professional), hereby certify that:</small> i) I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the Fish Protection Act; ii) I am qualified to carry out this part of the assessment of the development proposal made by the developer Iss Land Corp (name of developer); iii) I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and iv) In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation.
Site Potential Vegetation Type (SPVT)		
SPVT Polygons Yes No <input type="checkbox"/> <input type="checkbox"/>	<small>Tick yes only if multiple polygons. If No then fill in one set of SPVT data boxes</small>	
<small>I, Paul Harder, (name of qualified environmental professional), hereby certify that:</small> i) I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the Fish Protection Act; ii) I am qualified to carry out this part of the assessment of the development proposal made by the developer Iss Land Corp (name of developer); iii) I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and iv) In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation.		
Polygon No: <input type="checkbox"/> LC <input type="checkbox"/> SH <input type="checkbox"/> TR SPVT Type <input type="checkbox"/> <input type="checkbox"/> TR	<small>Method employed if other than TR</small>	
Polygon No: <input type="checkbox"/> LC <input type="checkbox"/> SH <input type="checkbox"/> TR SPVT Type <input type="checkbox"/> <input type="checkbox"/>	<small>Method employed if other than TR</small>	
Polygon No: <input type="checkbox"/> <input type="checkbox"/> SPVT Type	<small>Method employed if other than TR</small>	
Zone of Sensitivity (ZOS) and resultant SPEA		
Segment: Left No: LWD, Bank and Channel	<small>If two sides of a stream involved, each side is a separate segment. For all water bodies multiple segments occur where there are multiple SPVT polygons</small>	
12		

DP-08-11 - Amended

FORM 1
Riparian Areas Regulation - Qualified Environmental Professional - Assessment Report

Stability ZOS (m)	12			
Litter fall and insect drop ZOS (m)				
Shade ZOS (m) max	12	South bank	Yes	No
Ditch	Justification description for classifying as a ditch (manmade, no significant headwaters or springs, seasonal flow)			
Ditch Fish Bearing	Yes	No	If non-fish bearing insert no fish bearing status report	NA
SPEA maximum	12	(For ditch use table3-7)		
Segment No:	If two sides of a stream involved, each side is a separate segment. For all water bodies multiple segments occur where there are multiple SPVT polygons			
LWD, Bank and Channel Stability ZOS (m)	12			
Litter fall and insect drop ZOS (m)	12			
Shade ZOS (m) max	12	South bank	Yes	No
SPEA maximum	12	(For ditch use table3-7)		
Segment No:	If two sides of a stream involved, each side is a separate segment. For all water bodies multiple segments occur where there are multiple SPVT polygons			
LWD, Bank and Channel Stability ZOS (m)				
Litter fall and insect drop ZOS (m)				
Shade ZOS (m) max		South bank	Yes	No
SPEA maximum		(For ditch use table3-7)		
<p>I, <u>Paul Harder</u> (name of qualified environmental professional), hereby certify that: i) I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the <i>Fish Protection Act</i>; j) I am qualified to carry out that part of the assessment of the development proposal made by the developer <u>[sic Land Corp]</u> (name of developer); k) I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and l) In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation.</p>				
<p>Comments Reach THREE is characterized by a steep confined channel with an average active channel width of 4.0 m. The creek has a buffer of mature conifer trees along both banks; there is a high amount of fallen log debris in the channel. The adjacent hillsides have been clear cut logged. There are no signs of bank or slope instability in this reach.</p>				

DP-08-11 - Amended

FORM 1
 Riparian Areas Regulation - Qualified Environmental Professional - Assessment Report

Number of reaches	FOUR			
Reach #	FOUR			
Channel width and slope and Channel Type (use only if water body is a stream or a ditch, and only provide widths if a ditch)				
Channel Width(m) starting point upstream 2.0 2.0 2.0 2.0 2.0 downstream 2.0 2.0 2.0 2.0 2.0 2.0 Total: minus high flow mean 18 2.0 R/P C/P S/P Channel Type	Gradient (%) 15.0 15.0 15.0 S/P	I, Paul Harder (name of qualified environmental professional), hereby certify that: m) I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the Fish Protection Act; n) I am qualified to carry out this part of the assessment of the development proposal made by the developer, [s]s Land Corp (name of developer); o) I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and p) In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation.		
Site Potential Vegetation Type (SPVT)				
SPVT Polygons <input type="checkbox"/> Yes <input type="checkbox"/> No	Tick yes only if multiple polygons, if No then fill in one set of SPVT data boxes			
I, Paul Harder (name of qualified environmental professional), hereby certify that: m) I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the Fish Protection Act; n) I am qualified to carry out this part of the assessment of the development proposal made by the developer, [s]s Land Corp (name of developer); o) I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and p) In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation.				
Polygon No: <input type="checkbox"/> LC <input type="checkbox"/> SH <input type="checkbox"/> TR SPVT Type	Method employed if other than TR			
Polygon No: <input type="checkbox"/> LC <input type="checkbox"/> SH <input type="checkbox"/> TR SPVT Type	Method employed if other than TR			
Polygon No: <input type="checkbox"/> LC <input type="checkbox"/> SH <input type="checkbox"/> TR SPVT Type	Method employed if other than TR			
Zone of Sensitivity (ZOS) and resultant SPEA				
Segment No: <input type="checkbox"/> Left <input type="checkbox"/> Right LWD, Bank and Channel	If two sides of a stream involved, each side is a separate segment. For all water bodies multiple segments occur where there are multiple SPVT polygons 30			

DP-08-11 - Amended

FORM 1
Riparian Areas Regulation - Qualified Environmental Professional - Assessment Report

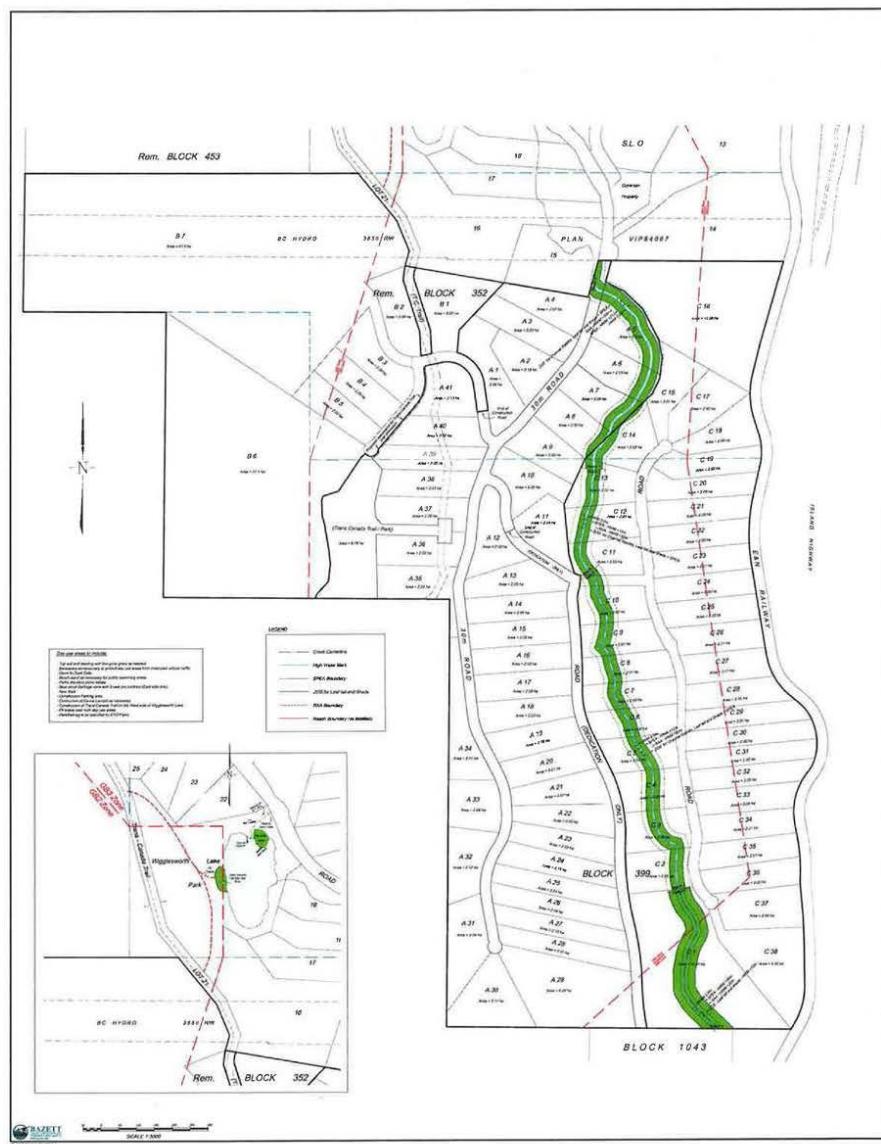
Stability ZOS (m)	10				
Litter fall and insect drop ZOS (m)					
Shade ZOS (m) max	10	South bank	Yes	No	
Ditch	Justification description for classifying as a ditch (manmade, no significant headwaters or springs, seasonal flow)				NA
Ditch Fish Bearing	Yes	No	If non-fish bearing insert no fish bearing status report		NA
SPEA maximum	30	(For ditch use table3-7)			
Segment No:	If two sides of a stream involved, each side is a separate segment. For all water bodies multiple segments occur where there are multiple SPVT polygons				
LWD, Bank and Channel Stability ZOS (m)	30				
Litter fall and insect drop ZOS (m)	10				
Shade ZOS (m) max	10	South bank	Yes	No	
SPEA maximum	30	(For ditch use table3-7)			
Segment No:	If two sides of a stream involved, each side is a separate segment. For all water bodies multiple segments occur where there are multiple SPVT polygons				
LWD, Bank and Channel Stability ZOS (m)					
Litter fall and insect drop ZOS (m)					
Shade ZOS (m) max		South bank	Yes	No	
SPEA maximum		(For ditch use table3-7)			
<p>I, Paul Harder, (name of qualified environmental professional), hereby certify that:</p> <p>(i) I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the Fish Protection Act;</p> <p>(ii) I am qualified to carry out this part of the assessment of the development proposal made by the developer, (i.e. Land Corp. (name of developer);</p> <p>(o) I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and</p> <p>(p) In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation.</p>					
Comments					
Reach FOUR is an extremely steep section of stream channel that cascades down a steep mountainous valley. The lower valley walls are vegetated with mature coniferous growth. There are no signs of valley wall instability under existing conditions; however there is concern that any development on the valley walls close to the creek could result in unstable slopes. This reach has been treated as a ravine and a 30 m SPEA on both sides of the channel has been prescribed from the edge of the high water mark. The property owner is advised to consult a slope stability expert if the proposed construction envelope is characterized by steep slope areas with numerous rock outcrops.					

DP-08-11 - Amended

FORM 1
Riparian Areas Regulation - Qualified Environmental Professional - Assessment Report

Section 3. Site Plan

DP-08-11 - Amended



DP-08-11 - Amended

FORM 1
Riparian Areas Regulation - Qualified Environmental Professional - Assessment Report

Section 4. Measures to Protect and Maintain the SPEA

1. Danger Trees	<p>Site specific danger trees have not been identified at this site. All existing trees appear to be healthy and vibrant and exhibit no leaning tendencies.</p> <p>If danger trees within the SPEA are identified in the future (post construction) the property owner will need to obtain a professional opinion on the danger tree status before any trees located within the boundaries of the SPEA can be cut or fallen (refer to Section on Protection of Trees in SPEA below).</p> <p>The correct procedure for removing danger trees from within the SPEA is to obtain the Arborist report, notify CRD of the plan and then proceed once CRD has given their approval using appropriate BMP to ensure that no siltation or erosion occurs as a result of the tree removal work.</p> <p>I, <u>Paul Harder</u>, hereby certify that:</p> <ul style="list-style-type: none">a) I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the Fish Protection Act;b) I am qualified to carry out this part of the assessment of the development proposal made by the developer <u>Isis Land Corp. (name of developer)</u>;c) I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and in carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation
2. Windthrow	<p>There is moderate windthrow potential at the site due to the windy nature of the valley and exposed reaches. However, there has been no indication of large scale blow down in the area covered by this report over the past several years since the time that the area was originally logged.</p> <p>Since the proposed house sites will be located in areas that have been previously logged there is no concern that house construction outside of the SPEA will contribute to increased windthrow potential in the area. Further assessment of windthrow potential at this site is not warranted</p> <p>I, <u>Paul Harder</u>, hereby certify that:</p> <ul style="list-style-type: none">a. I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the Fish Protection Act;b. I am qualified to carry out this part of the assessment of the development proposal made by the developer <u>Isis Land Corp. (name of developer)</u>;

DP-08-11 - Amended

FORM 1
Riparian Areas Regulation - Qualified Environmental Professional - Assessment Report

<p>c. I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and in carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation</p>	
d. Slope Stability	<p>Terrain characteristics within the riparian assessment area (RAA) for Reaches 1, 2 and 3 are stable. The existing stream banks are low (less than 0.3 m high) and are typically vegetated with well established riparian trees and shrubs. There are no indications of bank failures or erosion along the creek channel throughout Reaches 1 to 3. Upland terrain conditions within the 30 m RAA in Reaches 1 to 3 are gentle with little potential for slope failure.</p> <p>As a cautionary measure a 30 m SPEA has been prescribed for both sides of the channel in Reach 4 due to the steep and potentially unstable nature of the valley walls in this section of the drainage.</p> <p>It is my opinion that further assessment of slope stability issues within the RAA are not warranted at this site.</p>
<p>I, <u>Paul Harder</u>, hereby certify that:</p> <p>a. I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the Fish Protection Act;</p> <p>b. I am qualified to carry out this part of the assessment of the development proposal made by the developer <u>Isis Land Corp (name of developer)</u>;</p> <p>c. I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and in carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation</p>	
e. Protection of Trees	<p>A) With the exception of stream crossings and roadway/driveway development work permitted under the Section Approval of the BC Water Act, all trees within the SPEA boundary need to be fully protected during and following construction. The first step towards ensuring SPEA tree protection is to clearly identify the SPEA boundary at each construction site prior to the start of construction. Secure snow fencing is required along the SPEA boundary prior to the start of any construction work. The snow fencing needs to be placed along the drip line for the trees located within the SPEA boundary in accordance to the directions provided by the monitoring QEP. This fence needs to be maintained until construction is completed. Other</p>

DP-08-11 - Amended

FORM 1 Riparian Areas Regulation - Qualified Environmental Professional - Assessment Report	
	<p>trees located near the SPEA boundary need to be protected with fencing around the stem if they are not being removed as part of the road, driveway and/or house development plan.</p> <p>B) Excavation work within the RAA needs to be planned in such a manner that the root system of trees within the SPEA boundary are not adversely affected.</p> <p>C) No trees or vegetation can be cut, trimmed, damaged or destroyed within the SPEA boundary.</p> <p>D) In the event that there is a hazard tree that presents a threat to property, the owner may remove that tree providing that the correct procedure is followed. The procedure for removing a danger tree is to 1) Notify the local government 2) obtain a certified report from a QEP/arborist stating that the tree is in fact a danger tree and needs to be removed to protect property and/or improve safety; and Obtain DFO approval for any planned tree removal within the SPEA.</p> <p>E) For approved construction work occurring within the SPEA under Section 9 of the BC Water Act all work must be done in accordance with the terms of the Water Act Approval/Notification following Best Management Practices (BMP's) for work in or about a stream.</p> <p>I, <u>Paul Harder</u>, hereby certify that:</p> <ul style="list-style-type: none">a. I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the Fish Protection Act;b. I am qualified to carry out this part of the assessment of the development proposal made by the developer <u>Leis Land Corporation (name of developer)</u>;c. I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and in carrying out my assessment of the development proposal I have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation <p>d. Encroachment Preventing potential encroachment into the SPEA is a critical consideration during and following construction. The following measures are required to ensure that the integrity of the SPEA is not compromised by potential encroachment. 1) Construction Phase</p>

DP-08-11 - Amended

FORM 1
Riparian Areas Regulation - Qualified Environmental Professional - Assessment Report

	<p>No construction is permitted inside the SPEA boundary unless a Section 9 Notification or Approval under the BC Water Act has been obtained for the construction of a driveway or road stream crossing.</p> <p>2) Post Construction Phase Clear and permanent signage is required along the SPEA boundary to prevent potential encroachment into the SPEA following construction. MOE has requested that the SPEA boundary be marked at 25 m intervals throughout the property. The SPEA boundary needs to be clearly identified and marked along the length of stream channel that interfaces with the proposed development activity.</p> <p>3) Landscaping plans undertaken by the lot owners adjacent to the SPEA boundary need to be developed to further differentiate the SPEA boundary using native shrub species and or physical barriers.</p>
<p>I, <u>Paul Harder</u>, hereby certify that:</p> <ul style="list-style-type: none">a. I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the <i>Fish Protection Act</i>;b. I am qualified to carry out this part of the assessment of the development proposal made by the developer <u>Iris Land Corp. (name of developer)</u>;c. I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report, and in carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation	
e. Sediment and Erosion Control	<p>The potential for surface erosion and sediment generation at the site is low to moderate. Potential concern is highest during the excavation of house foundations. Excavation spoil needs to be stored away from the SPEA boundary and managed in such a way that there is no erosion or sediment generation from the excavation waste piles.</p> <p>Effective management of site drainage is required during construction to ensure that no sediment deposition occurs within the SPEA. Appropriate silt traps will be installed prior to the release of surface waters from the construction site.</p> <p>Any excavation work occurring within the RAA</p>

DP-08-11 - Amended

FORM 1
Riparian Areas Regulation - Qualified Environmental Professional - Assessment Report

must be reviewed and approved by a Qualified Environmental Professional (QEP) before work begins. Any approved excavation work within the RAA (HWM + 30m) needs to be scheduled during the dry summer months.	
<p>I, Paul Harder, hereby certify that:</p> <ul style="list-style-type: none">a. I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the <i>Fish Protection Act</i>;b. I am qualified to carry out this part of the assessment of the development proposal made by the developer <u>isis Land Corp. (name of developer)</u>;c. I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation	
E Stormwater Management	Stormwater management for these lots is not a concern given the size of the lots proposed and the nature of the proposed developments. Other than appropriate drainage control on all access roads, no additional special measures for stormwater control on the property are required.
<p>I, Paul Harder, hereby certify that:</p> <ul style="list-style-type: none">a. I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the <i>Fish Protection Act</i>;b. I am qualified to carry out this part of the assessment of the development proposal made by the developer <u>isis Land Corp. (name of developer)</u>;c. I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation	
d. Floodplain Concerns (highly mobile channel)	Any building sites located outside of the indicated SPEA boundary will have no affect on floodplain areas at this site. Floodplain habitats are confined with in the high water marks at this site for Reaches 1 through 4.
<p>I, Paul Harder, hereby certify that:</p> <ul style="list-style-type: none">e. I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the <i>Fish Protection Act</i>;f. I am qualified to carry out this part of the assessment of the development proposal made by the developer <u>isis Land Corporation. (name of developer)</u>;g. I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation	

DP-08-11 - Amended

FORM 1

Riparian Areas Regulation - Qualified Environmental Professional - Assessment Report

Section 5. Environmental Monitoring

Attach text or document files explaining the monitoring regimen. Use your "return" button on your keyboard after each line. It is suggested that all document be converted to PDF before inserting into the PDF version of the assessment report. Include actions required, monitoring schedule, communications plan, and requirement for a post development report.

This section outlines the Environmental Monitoring obligations of the Property Developer for those activities that are undertaken in association with the subdivision including SPEA demarcation, road construction, stream crossings and any land clearing within the RAA. Lot Specific Environmental Monitoring will also be required by individual lot owners if their proposed construction activity affects areas within the RAA zone. These potential requirements will need to be identified in separate lot specific RAR reports.

Actions Required(Property Developer)

- Snow fencing to be maintained along SPEA border adjacent to active construction areas throughout construction period
- Effective surface flow and sediment control measures during excavation and construction to ensure water quality in SPEA is not adversely affected.
- Post construction assessment following any construction work within the RAA
- Erection of permanent signage along SPEA boundary, post construction and before the sale of any lots.
- Post-construction reporting

Monitoring Schedule

Environmental monitoring inspection will be required at the start and end for any construction work occurring within the Riparian Assessment Area (RAA) including road construction, lot servicing and/or any tree and vegetation clearing within the RAA.

Communications Plan

The project owner needs to contact an Environmental Monitor whenever any construction work is proposed within the RAA boundary to ensure the post construction monitoring required by the RAR administrators is undertaken. This includes road construction, stream crossing, site clearing, excavation and or surface grading

The CRD and BC Ministry of Environment need to be contacted immediately if there are any activities on the site that threaten the integrity of the SPEA.

Any accidental spills on the site must be reported to appropriate authorities immediately.

DP-08-11 - Amended

FORM 1

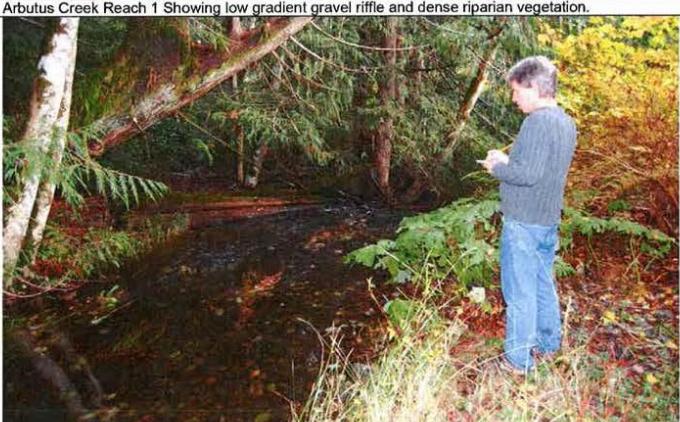
Riparian Areas Regulation - Qualified Environmental Professional - Assessment Report

Post Development Report

The Property Developer is obligated to have a QEP file a post construction monitoring report at the conclusion of all construction work that has affected areas within the RAA. This includes road construction, stream crossing and or vegetation clearing and removal.

This report needs to assess the adequacy of environmental protection measures put in place during construction and verify SPEA integrity and protection. Results of the post construction assessment work need to be filed through the RAR electronic filing system with reference to the original RAR report Number

DP-08-11 - Amended

FORM 1 Riparian Areas Regulation - Qualified Environmental Professional - Assessment Report	
Section 6. Photos	
Label	Arbutus Creek Reach 1 Showing good spawning habitat potential for cutthroat trout. 
Label	Arbutus Creek Reach 1 Showing low gradient gravel riffle and dense riparian vegetation. 

DP-08-11 - Amended

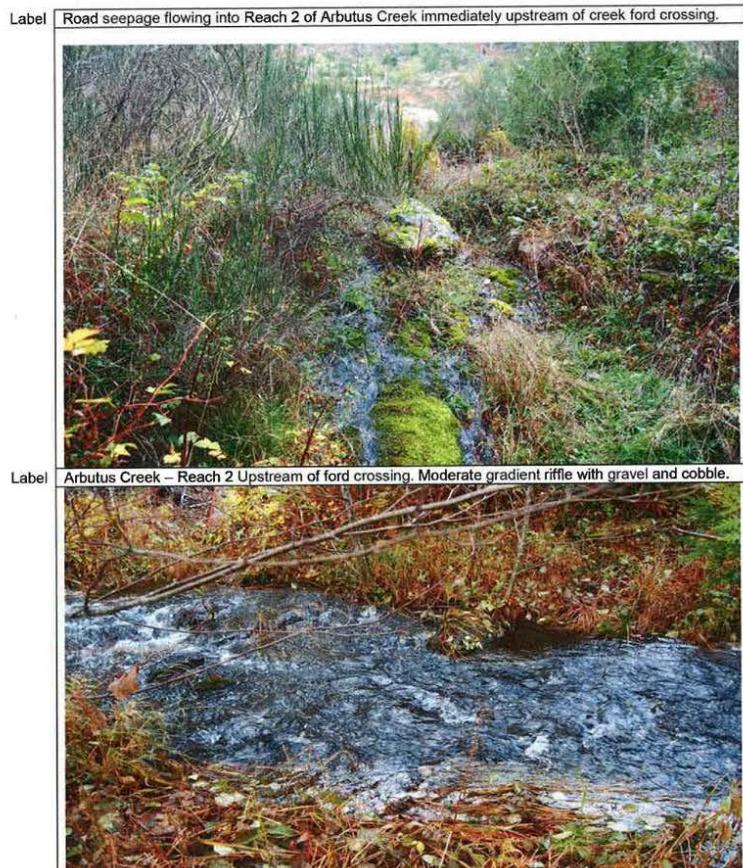
FORM 1

Riparian Areas Regulation - Qualified Environmental Professional - Assessment Report



DP-08-11 - Amended

FORM 1
Riparian Areas Regulation - Qualified Environmental Professional - Assessment Report



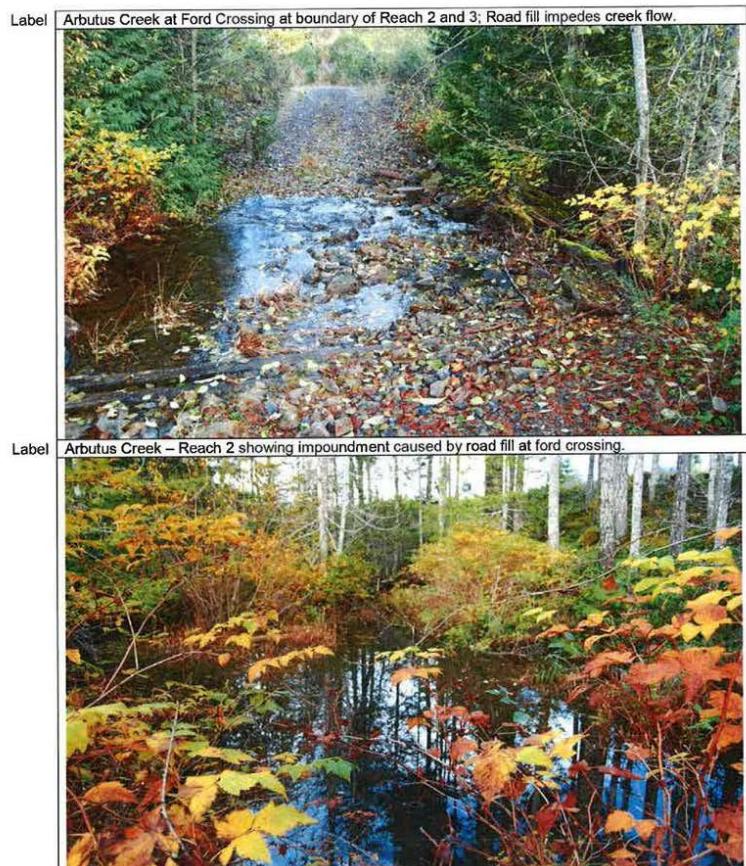
DP-08-11 - Amended

FORM 1
Riparian Areas Regulation - Qualified Environmental Professional - Assessment Report



DP-08-11 - Amended

FORM 1
Riparian Areas Regulation - Qualified Environmental Professional - Assessment Report



DP-08-11 - Amended



DP-08-11 - Amended

FORM 1
Riparian Areas Regulation - Qualified Environmental Professional - Assessment Report

Section 7. Professional Opinion

Assessment Report Professional Opinion on the Development Proposal's riparian area.

Date December 30,
2010

1.i. Paul Harder

Please list name(s) of qualified environmental professional(s) and their professional designation that are involved in assessment.)

hereby certify that:

- a) I am/We are qualified environmental professional(s), as defined in the Riparian Areas Regulation made under the *Fish Protection Act*;
- b) I am/We are qualified to carry out the assessment of the proposal made by the developer Isis Land Corporation (*name of developer*), which proposal is described in section 3 of this Assessment Report (the "development proposal");
- c) I have/We have carried out an assessment of the development proposal and my/our assessment is set out in this Assessment Report; and
- d) In carrying out my/our assessment of the development proposal, I have/We have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation; AND

2. As qualified environmental professional(s), I/we hereby provide my/our professional opinion that:

- a) if the development is implemented as proposed by the development proposal there will be no harmful alteration, disruption or destruction of natural features, functions and conditions that support fish life processes in the riparian assessment area in which the development is proposed. OR
(Note: include local government flex letter, DFO Letter of Advice, or description of how DFO local variance protocol is being addressed)

- b) if the streamside protection and enhancement areas identified in this Assessment Report are protected from the development proposed by the development proposal and the measures identified in this Assessment Report as necessary to protect the integrity of those areas from the effects of the development are implemented by the developer, there will be no harmful alteration, disruption or destruction of natural features, functions and conditions that support fish life processes in the riparian assessment area in which the development is proposed.

[NOTE: "qualified environmental professional" means an applied scientist or technologist, acting alone or together with another qualified environmental professional, if

- (a) the individual is registered and in good standing in British Columbia with an appropriate professional organization constituted under an Act, acting under that association's code of ethics and subject to disciplinary action by that association;
- (b) the individual's area of expertise is recognized in the assessment methods as one that is acceptable for the purpose of providing all or part of an assessment report in respect of that development proposal; and
- (c) the individual is acting within that individual's area of expertise.]

DP-08-11 - Amended

FORM 1
Riparian Area Regulation - Qualified Environmental Professional - Assessment Report

DP-08-11 - Amended

Attachment 4: Supplementary Letter

P.A. Harder and Associates Ltd.
Environmental Consultants
612 Downey Road, North Saanich, BC V8L 5 M6
7783 (250) 656-

March 31, 2016

Ms. June Klassen
Capital Regional District
#3 – 7450 Butler Road
Sooke, B.C.
V9Z 1N1

Dear Ms Klassen:

RE: Environmental Review of Proposed Subdivision Plans for the
Goldstream Heights Project [REDACTED]

The original environmental assessment and RAR report for the proposed Goldstream Heights Project was completed in September 2013. The project owner is currently proposing to modify the original subdivision plan. We have been asked to review these proposed changes and assess if there are any environmental implications associated with the proposed subdivision changes.

Proposed Subdivision Changes

The original subdivision plan identified a total 86 lots. The total number of lots in the amended plan does not change. Some of the lot sizes have been reduced from 2 ha to 1 ha. The proposed amendments will result in 55 lots for Phase A and 31 lots for Phase B of the development. Phase A will now include two side roads; one west towards the existing natural gas line and a second road to the east of the main road starting approximately 600m south east of the existing Arbutus Creek culvert (completed in 2014). This second access road will provide access to Phase B of the project and will require a new crossing of Arbutus Creek approximately 750m downstream of the existing Arbutus Creek culvert.

Potential Environmental Implications

The proposed changes to the lot sizes and lay out for Phases A and B do not affect any of the environmental protection measures as outlined in the original RAR report. The newly proposed side road up the existing gas line does not have any environmental impact on sensitive ecosystem habitats or stream drainages in this area. Potential environmental impacts of the proposed new road crossing on lower Arbutus Creek have been mitigated by using an arch culvert design with a natural stream bed.

DP-08-11 - Amended

All road construction work completed to date has been supervised by the Environmental Monitor for the project and there has been no impact to water quality or disruption of existing surface water drainage patterns in the affected areas.

Concluding Remarks

The proposed modifications to the subdivision plans for Phases A and B of the Goldstream Heights Project do not have any material affect on the original environmental impact assessment for the project. All of the proposed road alignments, lot lines and proposed building sites comply with the environmental protection measures set out in the original RAR report for the project. The proposed changes in lot sizes and layouts do not have any impact on established SPEA boundaries.

The proposed second road crossing of Arbutus Creek has been designed with a high standard for environmental protection and ensures that there will be no net loss to wetted stream habitats. The proposed creek crossing complies with all aspects of the RAR and the BC Water Act.

Please let me know if you have any questions or would like additional information on the proposed changes to the PLA and associated environmental matters.

Sincerely,

P.A. Harder and Associates Ltd.

Paul Harder

Paul Harder, R.P. Bio
Consulting Biologist

cc. [REDACTED]

DP-08-11 - Amended

Attachment 5: Proposed Subdivision Plan [Frontage]

