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December 20, 2021

Che Hawkes
4461 Riverside Road
Duncan, BC V9L 6M7

By email to: chehawkes@googlemail.com

cc: David Coulson info@davidcoulsondesign.com

Dear Mr. Hawkes,

RE: 4461 Riverside Road, Duncan, BC – Preliminary Riparian Assessment – Proposed Design Revisions

Background and Objectives

Madrone Environmental Services Ltd. (Madrone) was retained by Mr. Che Hawkes (the 'Client') in the summer of 2021 to gain further insight on watercourses that are mapped on, and/or adjacent to the property at 4461 Riverside Road (PID: 009-533-141), Duncan, BC (hereafter referred to as the 'subject property'). You also endeavored to determine implications of riparian regulations as they relate to proposed renovations on the single-family dwelling located on the subject property. The subject property is under jurisdiction of the Cowichan Valley Regional District (CVRD) and is zoned as A-1 (Primary Agricultural Zone) as per the CVRD's Electoral Area E (Cowichan Station/Sahtlam/Glenora) Zoning Bylaw No. 1840.

The subject property is also under the jurisdiction of the CVRD's Official Community Plan (OCP) No. 1490, specifically Policy 3.1.5, which describes a 30 m development setback measured from the top of bank from all rivers which have a 200-year flood volume of 80 m³ or greater, including the Cowichan, Koksilah, and Chemainus Rivers. Another section of note in this OCP is *Section 14.7 – Riparian Areas Regulation Development Permit Area*. Guidelines under this subsection apply to all development activities occurring within 30 m of a watercourse and are therefore subject to the provincial Riparian Areas Protection Regulation (RAPR)¹.

¹<https://www.canlii.org/en/bc/laws/regu/bc-reg-178-2019/latest/bc-reg-178-2019.html> [Accessed April 16th, 2021]

A Preliminary Riparian Assessment Summary Letter was delivered on August 21, 2021, describing applicable riparian regulations and parameters for the proposed renovation of the existing single-family dwelling. In December of 2021, the proposed design was submitted to the CVRD as part of a Development Permit (DP) application. Certain features in the design did not comply with provincial or municipal regulations as they did not follow riparian related parameters described in the initial Summary Letter. The CVRD recognized this discrepancy and requested further review by a Qualified Environmental Professional (QEP) prior to obtaining DP approval. During this secondary review, the final designs have been revised appropriately to meet riparian regulations. This letter is a revision of the original Summary Letter and provides descriptions of design changes made during this secondary QEP review/consultation. The final designs are provided in Appendix A.

Initial Riparian Assessment – Summer 2021

The preliminary assessment was conducted in August 2021 using definitions and methodologies referred to in the RAPR, which use the best scientific knowledge available to account for several factors influencing riparian health. RAPR methodology is enacted prior to completion of any development activities within 30 m of a watercourse as part of the local government's Development Permit Area (DPA) process and is tied to a specific development proposal. In this case, RAPR methodology was used as a means to provide you with the knowledge of whether there are any applicable watercourses on the subject property, and if so, what the minimum riparian setbacks would be.

On July 6th, 2021, following a desktop review of documented sensitive features, Madrone visited the subject property to confirm locations of mapped watercourse(s) under RAPR guidelines. Based on surrounding private property, assessment scope was limited to the subject property, and rights-of-way for Riverside Road and Koksilah Road.

Desktop Assessment

Habitat Wizard²

The government of B.C. maintains a database (HabitatWizard) used to document detailed fish, wildlife, and ecosystem information online. This database (using the mapping function) was checked to determine the occurrence of any waterbodies relevant to the subject property. The Koksilah River (Watershed Code 920-257700-02300) was documented along the eastern property boundary. The Koksilah River represents important fish habitat, providing residence to salmonids and other fish species. A second un-named watercourse (Watershed Code 920-252823-022807-147084) was shown to enter the subject property from underneath Riverside Road, traversing across the property and into the Koksilah River.

² <http://maps.gov.bc.ca/ess/hm/habwiz/>

It is sometimes the case that local governments have a greater level of detail in mapping information for their respective regions. The Koksilah River is documented on the CVRD Webmap similar to HabitatWizard. A second watercourse (CVRD Stream ID: 1023489) shown on the CVRD WebMap is interpreted as the unnamed second stream documented on HabitatWizard, as similar linework was observed.

Field Assessment

While the desktop assessment of known watercourses provided a background level of information, the assessed databases by no means represent exhaustive lists of all features and sometimes mapping can be inaccurate. The site visit conducted on July 6th, 2021, represented a follow-up to desktop research. Photos are provided at the end of this document.

Site Description

The subject property has been historically developed for either residential or agricultural purposes. The property is topographically split into two portions: a higher elevation southern portion, and a lower elevation northern portion. The southern portion is at a level gradient with Riverside Road, and consists of a single-family dwelling, a shed, garden, and graded lawn landscape. There is a steep drop-off at the eastern property boundary down to the Koksilah River. Mature Douglas-fir (*Pseudotsuga menziesii*) trees and native shrubs (e.g., ocean spray [*Holodiscus discolor*]) are located along the top of bank. There is a small bypass road connecting the northern and southern portions along the eastern boundary of the subject property, paralleling the Koksilah River bank. This road has created an eastward shift in gradient break from the Koksilah River to the higher elevation northern portion, resulting in the top of bank being set east of (above) a section of the bypass road at the upper plateau edge.

The lower elevation northern portion is cleared land, the majority of which is covered by tall grasses and small portions of shrubs. The decreased elevation results in a reduced gradient from the Koksilah River top of bank down to the channel. More riparian vegetation is observed along the eastern property boundary of this northern portion relative to the southern portion. Species include bigleaf maple (*Acer macrophyllum*), ocean spray, red elderberry (*Sambucus racemosa*), western redcedar (*Thuja plicata*) and Douglas-fir. The height from top of bank to the Koksilah River is decreased compared to the southern portion but is offset on the west side of the property by a steep drop off from Riverside Road into the northern portion. This steeper drop-off from Riverside Road suggested the potential for a stream runoff via culvert outlets; however, no culvert outlets were observed to be flowing from this slope. Drainage for Riverside Road was observed to flow into a ditch on the west side of the road with no crossdrains/culverts observed under the asphalt towards the subject property.

During the field assessment, the secondary un-named watercourse observed in the desktop assessment was determined not to exist on the subject property. The area where WebMap linework specified a stream location was visited and surveyed for any sign of scouring or defined channels but resulted in no confirmation of watercourses. The constructed ditch on the west side of Riverside Road, opposite the subject property,

had no observed opportunity (i.e., culvert crossing) to cross on to the subject property. No standing water, or hydrophytic vegetation was observed crossing the northern section of the subject property to suggest presence of a watercourse.

The Koksilah River was assessed during the field assessment, where top of bank and Stream Boundary (1 in 5-year active floodplain) were flagged with blue flagging tape. This section of the Koksilah River is low gradient (not exceeding 5%), and characteristic of a riffle-pool morphology. The average channel width determined in the assessment using methods in the RAPR Technical Assessment Manual was 27.22 m.

Policy Considerations – Updated for Revised Designs

Riparian Areas Protection Regulation (RAPR)

Meeting the definition of a ‘Stream’

The standards outlined in the RAPR Technical Assessment Manual were implemented during the preliminary riparian assessment by a QEP. The reasoning for this was to demonstrate whether or not there were any watercourses on the subject property where RAPR applied. To be applicable under RAPR, a watercourse must first meet the definition of a Stream defined in section 1.5.2 of the RAPR Technical Assessment Manual³ as:

“...any watercourse providing fish habitat, natural or human-made that contains water on a perennial or seasonal basis and is scoured by water or contains observable deposits of mineral alluvium; or has a continuous channel bed including a watercourse that is obscured by overhanging or bridging vegetation or soil mats. A stream may not be currently inhabited by fish, but may provide water, food and nutrients to other streams that do support fish.”

By this definition, the Koksilah River adjacent to the subject property is considered a Stream under the RAPR. The setback from the Koksilah River that would be implemented for RAPR-applicable developments is 30 m measured from the Stream Boundary. Based on results of the field assessment, there are no other RAPR-applicable watercourses on the subject property.

Applicability to Development

Section 3 – *Application to developments* in the RAPR specifies criteria to determine whether or not a development requires an assessment pursuant to the RAPR. Section 3(3) of the RAPR states:

³ [https://www2.gov.bc.ca/assets/gov/environment/plants-animals-and-ecosystems/fish-fish-habitat/riparian-areas-regulations/rapr_assessment_methods_manual_for_web_11.pdf?bcgovtm=b1f70ab670-Newsletter October2019_COPY_01](https://www2.gov.bc.ca/assets/gov/environment/plants-animals-and-ecosystems/fish-fish-habitat/riparian-areas-regulations/rapr_assessment_methods_manual_for_web_11.pdf?bcgovtm=b1f70ab670-Newsletter%20October2019_COPY_01) [Accessed April 16th, 2021]

“This regulation does not apply in relation to a development that consists only of

- (a) repairs or other non-structural alterations or additions to a building or other structure, if the structure*
- (i) will remain on its existing foundation and within its existing footprint, and*
 - (ii) is not damaged or destroyed to the extent described in section 532 (1) [repair or reconstruction if damage or destruction \geq 75% of value above foundation] of the Local Government Act”*

The proposed renovation, designed by David Coulson Design Ltd., involves repairs to the house foundation so as to satisfy current building codes and construction of a second-floor addition. It was unclear if repairs to the foundation met the criteria for an exemption, therefore, provincial Riparian Area Biologist Nicholas Schwetz was contacted to confirm interpretations of this section of the RAPR. It was determined that repairs to the foundation itself are permitted if the foundation remains *on the existing footprint* as per section 3(3a - i).

The final designs, submitted as part of the DP application, contained the following issues with regards to meeting exemption criteria specified in *Section 3* of the RAPR:

1. The mud room crawlspace

- The proposed design included a crawlspace addition under the mudroom footprint, which was to be built on the existing porch footprint. Currently, the porch area contains no crawlspace under it. Proposing to excavate under the porch and extend the crawlspace (i.e., foundation) footprint would trigger the RAPR and require a Detailed Assessment report. This crawlspace addition has now been removed from the proposed designs to meet RAPR-exemption criteria.
- The larger ‘new crawl space’ area proposed under what is currently the ‘utility room’ occurs within the existing footprint and would be considered a repair of an existing foundation, and would therefore, not trigger the RAPR.

2. The patio

- The proposed ‘patio’ outside of the mudroom was originally depicted in the designs as a new instalment, and would result in an increased footprint. An increased footprint as a result of development would trigger the RAPR. It has since been confirmed that an existing flagstone patio occurs in this area. The designs have been altered to reflect an existing patio. No concrete slabs will be poured on this ‘patio footprint’ as part of the development, rather, repairs will be made to the existing flagstones as necessary. The patio will remain on its existing footprint, and therefore, does not trigger the RAPR.

3. Overhanging second-floor addition

- The proposed second floor addition was interpreted to extend beyond the current footprint of the house. Overhanging structures also count towards encroachment beyond the existing footprint. Since the designs have been revised to include the existing flagstone patio, the

overhang from the second-floor addition would not encroach beyond the currently developed footprint, and therefore, not trigger the RAPR.

4. Value of the proposed renovation

- The proposed designs involve reconstruction of the above-ground structure in costly areas (e.g., kitchen, bathroom). The RAPR states “...repair or reconstruction if damage or destruction >75% of value above foundation” occurs, RAPR is triggered. If the proposed renovations breached the 75% above-ground value threshold, RAPR would be triggered. David Coulson has provided assurance that this 75% threshold would not be breached from activities involved with the proposed renovation, therefore, the RAPR is not triggered.

The proposed renovation will remain on the existing footprint and foundation and will not exceed the threshold of damaging or destructing >75% of value above foundation. With the latest revisions to the proposed renovation design, this development meets criteria specified in Section 3 of the RAPR. Therefore, the RAPR does not apply to the proposed renovations, and an assessment report submitted to the provincial government is not required.

CVRD Bylaws – OCP No. 1490 and Zoning Bylaw No. 1840

RAPR QEP Assessment

Section 14.7 – Riparian Areas Regulation DPA of the CVRD’s OCP No. 1490 describes the requirement of a QEP assessment pursuant to the RAPR for watercourses on, or adjacent to, a proposed development. This QEP assessment has determined that the RAPR is not applicable to the subject property on the basis that the proposed renovations communicated by David Coulson of David Coulson Designs Ltd. meet the exemption criteria described in Section 3(3) of the regulation. The submission of a formal RAPR assessment to the province is not required in the case of this proposed renovation.

Watercourse Setbacks

Two CVRD watercourse setbacks apply to the Koksilah River, adjacent to the subject property. First, Policy 3.1.5 of OCP No. 1490 describes a 30 m development setback measured from the top of bank of all rivers which have a 200-year flood volume of 80 m³ or greater, including the Cowichan, Koksilah, and Chemainus Rivers. Second, Zoning Bylaw No. 1490, *Section 5.18 – Setbacks from a Watercourse and Streamside Protection and Enhancement Area (SPEA)* states:

“Setback from a Watercourse and Streamside Protection and Enhancement Area (SPEA)

(a) The watercourse setback is as follows: no building, structure, lane or highway, nor driveway shall be located:

- i) within 30 metres of the top of bank of the Cowichan, Chemainus or Koksilah Rivers or;*
- ii) within 20 metres of the natural boundary of any other watercourse, or a lake.*

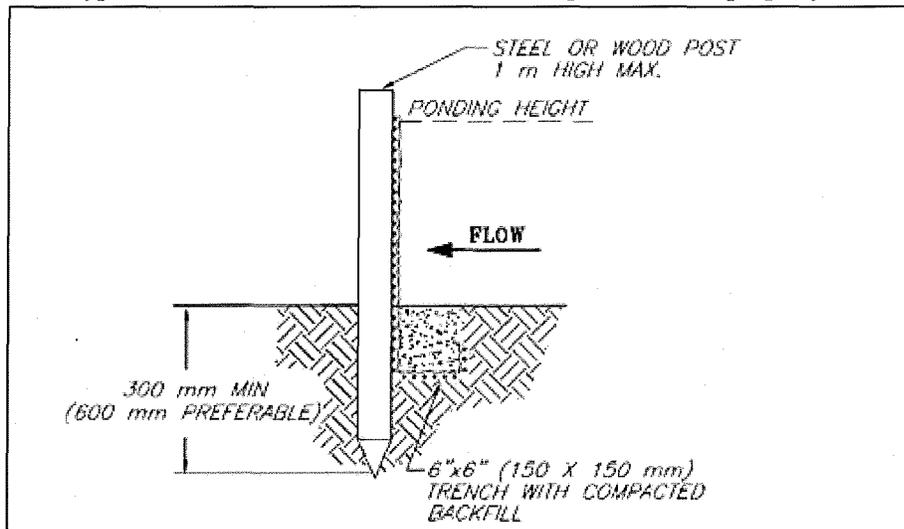
If a SPEA setback would be larger than the watercourse setback, the larger of the two setbacks applies."

The location of the current dwelling falls within these setbacks; however, floodplain concerns for the location of the dwelling are not applicable due to its location on the southern portion of the subject property, which is on a plateau significantly higher than the floodplain boundary of the Koksilah River, contrary to the lower elevation in the northern portion. Impacts to the Koksilah River riparian area will not occur as the activities required for the proposed renovations are limited to historically developed footprints; therefore, no vegetation clearing/disturbance or increased soil compaction will occur in Koksilah River riparian areas. Despite non-applicability of RAPR, it may still be necessary to obtain a Variance from the default CVRD watercourse setback.

Although the development proposal is low risk, the following mitigation measures are recommended:

Implementation of erosion and sediment control measures

- Install sediment fencing to the specifications shown below along the east and north side of the dwelling before the upper plateau drops off to either the Koksilah River top of bank, the small bypass road, or the northern lower elevation portion of the property.



- Ensure that all heavy machinery used in the proposed construction contains a storable emergency spill containment kit with at least a 30-litre sorbent capacity. The spill kit must (at least) contain the following:
 - 20 absorbent pads (for oil, gas and diesel);
 - 2 x 3"x 4' absorbent socks;
 - 2 disposal bags; and
 - 1 pair of Nitrile gloves.

Protection of native vegetation

- Ensure that all native vegetation along the bank of the Koksilah River is physically guarded by installed barriers (i.e., orange snow fencing) in areas where fencing has not already been installed.
- Limit use of machinery and parking of vehicles to areas of the property that have already been disturbed.
- If significant dust is occurring on the site as a result of dry conditions and increased ground disturbance, watering of the ground to mitigate dust must occur at intervals deemed appropriate by the site superintendent.

Conclusion

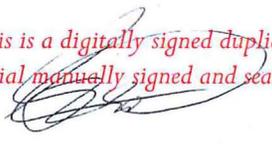
In closing, a Preliminary Riparian Assessment has been conducted on the subject property by a QEP using standards specified in the RAPR. This provides the Client, and the CVRD with validation on whether provincial and/or local government riparian regulations are applicable to the subject property and this particular renovation project. Based on observations made in a desktop assessment, two watercourses mapped as flowing through the subject property required field verification to determine regulatory implications. However, during the field assessment, only one watercourse (the Koksilah River) was confirmed to occur on, or adjacent to, the subject property. The secondary un-named watercourse observed in the desktop assessment was confirmed not to occur on the subject property.

The applicability of the RAPR to the proposed renovation was re-assessed considering new proposed designs. After revisions were made to the designs regarding foundation and footprint encroachment, it was determined that the renovation does not require submission of a formal assessment pursuant to the RAPR as per *Section 3* of the RAPR. Policy 3.1.5 of the CVRD OCP No. 1490 and *Section 5.18* of the CVRD Zoning Bylaw No. 1490 specify watercourse setbacks, which could influence the development proposal by potentially requiring a Variance. The activities required to complete this renovation, however, are limited to areas that have already been developed and will not cause negative impacts to fish or fish habitat if the appropriate mitigation measured specified in this letter are followed.

Please do not hesitate in contacting the undersigned should you have any questions or concerns.

Yours sincerely,

**This is a digitally signed duplicate of the official manually signed and sealed document.*



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