Appendix D: Environmental Assessment

Environmental Assessment and Protection Plan for the Lot Subdivision of Lot 2 Anderson Road

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1 INTRODUCTION

Landowners, [redacted] have applied for the subdivision of Lot 2 Anderson Road (the property) into two separate lots. The property, Plan VIP23012, currently consists of one lot. The division would be to have one on either side of Anderson Road, with zoning for a single family dwelling on each. There are currently no buildings on the property.

On the left (west) side of the property, a portion is designated as a Sensitive Ecosystem Development Permit Area (DPA) in the Otter Point Official Community Plan, Bylaw No. 3819. More specifically, the mapped DPA on the property is Mature Forest (coniferous dominated). A condition of subdivision will be issuance of a development permit. As part of the application, a site plan and a report by a Qualified Environmental Professional (QEP) that addresses the guidelines outlined in Section 6.6.4 of Bylaw No. 3819 is required. To that end, the [redacted] have contracted the services of Corvidae Environmental Consulting Inc. (Corvidae) to compete an environmental assessment of the property. This document addresses the requirements in Section 6.6.4 of Bylaw No. 3819, provides an assessment on the environmental conditions on the property, potential impacts of subdividing and developing, and recommendations on the suitability of the site for the proposed development.

1.1 Regulatory framework

This environmental assessment is designed to comply with the provisions set out in the Otter Point Official Community Plan (OCP) for development permit areas and for compliance with the provisions for environmental protection contained in the following relevant legislation:

Municipal

- Capital Regional District OCP, Bylaw No. 3819

  Development Permit Area No. 4: *Sensitive Ecosystems Areas as outlined on Schedule A of the OCP are properties within the boundaries of areas marked "Cliffs", "Seasonally Flooded Agricultural Fields", "Herbaceaous", "Mature Forest", "Sparsely Vegetated" and "Woodland" on Map 5d… is designates as a Development Permit Area, the "Sensitive Ecosystems DPA" under that "contain areas designated under Local Government Act Section 919.1(1) (a) for protection of the natural environment, its ecosystems and biological diversity.*

The guiding principle for the use of Development Permits is found within the Local Government Act. Development Permit Areas can be designated for purposes such as, but not limited to the following:

- Protection of the natural environment, its ecosystems and biological diversity

Federal

- Migratory Birds Act (1994)

Provincial

- British Columbia Wildlife Act (1996)

- Invasive Species Council of British Columbia
- BC Weed Control Act (1996, current as of October 2016)

2 ENVIRONMENTAL SITE ASSESSMENT

Corvidae completed a site visit on March 7th and 16th, 2018 as part of the environmental assessment. During the site assessment it was determined that there are some areas that were previously disturbed and have over-grown with invasive species (see Table 1 and Figure 1). There is a Mature Forest area to the west side of the lot (see Figure 1), which is bordered by a berm that appears to be man-made and a recently upgraded road to the west of that, on Lot 81. Appendix A shows photos of the recently upgraded road.

In the location of the blackberry bramble there was previously a structure used during the logging operations, which has since collapsed or been removed. (This information was anecdotal, provided by a long-time neighbour, during the site visit on March 7th, 2018.) There is a section along the border of the property on the west side that is infested with English ivy. The ivy is strangling some of the trees, and the health of the trees has been compromised. There is an area with standing water, which appears to have been man-made (due to the irregular shape, depth and dimensions). From the standing water (pond), there is a ditch running north-south. The ditch and the pond are well vegetated, but not with emergent hydrophilic vegetation. They are vegetated with the ferns and grasses typical of the understory in that forested area.

The section of the lot on the right side (east) of Anderson Road has been recently logged (Appendix A – Photos).

2.1 Vegetation

The project is located within the Coastal Western Hemlock (CWH) biogeoclimatic zone, and specifically in the western variant of the Very Dry Maritime subzone (classified as CWHxm2). Drier subzones of the CWH are typically dominated by components of western hemlock (*Tsuga heterophylla*), Douglas-fir (*Pseudotsuga menziesii*) and western red cedar (*Thuja plicata*) (Pojar et al. 1991). Salal (*Gaultheria shallon*), dull Oregon-grape (*Mahonia nervosa*), and red huckleberry (*Vaccinium parvifolium*) typify the poorly to moderately developed shrub layer. Oregon beaked moss (*Kindbergia oregana*), step moss (*Hylocomium splenden*), lanky moss (*Rhytidiadelphus loreus*), and flat moss (*Plagiothecium undulatum*) dominate the well-developed moss layer (Pojar et al. 1991).

A query of the B.C. Conservation Data Centre (CDC) IMap tool yielded no occurrences of vegetation species or ecosystems at risk within a one- kilometer radius of the project site (B.C. CDC 2018). Notably, an absence of occurrences does not illicit a confirmation that vegetation species or ecosystems at risk do not occur in the project area, and rather, the result may be due to the lack of previous biological survey of the area.

During the site assessment the species in Table 1 and 2 were found on the site. Figure 1 identifies the areas where the majority of the invasive species are located.

Table 1. Invasive Species on Lot 2, Anderson Road

Common Name	Scientific Name
Spurge-laurel	*Daphne laureola*
English Ivy	*Hedera helix*
Himalayan blackberry	*Rubus armeniacus*
Holly	*Ilex aquifolium*
Scotch broom	*Cytisus scoparius*

Table 2. Native Species on Lot 2, Anderson Road

Common Name	Scientific Name
red cedar	*Thuja plicata*
Douglas-fir	*Pseudotsuga menziesii*
western hemlock	*Tsuga heterophylla*
salal	*Gaultheria shallon*
dull Oregon-grape	*Mahonia nervosa*
red huckleberry	*Vaccinium parvifolium*
Sword fern	*Polystichum munitum*
Salmon berry	*Rubus spectabilis*
Red alder	*Alnus rubra*
Willow	*Salix*

2.2 Wildlife

The forested habitat is found in the Coastal Western Hemlock biogeoclimatic zone is home to many wildlife species. Black-tailed deer, black bear, marten and gray wolf are the most common large mammals in this zone on Vancouver Island. For bird species in this zone, the following typically occur: great horned owl, barred owl, ruffed grouse, band-tailed pigeon, northern flicker, hairy woodpecker, common raven, Steller's jay, chestnut-backed chickadee, red-breasted nuthatch, varied thrush, red-tailed hawk, Townsend's warbler. For amphibians, the following can occur: western toad, Pacific treefrog, western redbacked salamander. (Pojar et al. 1991) A query of the B.C. Conservation Data Centre (CDC) IMap tool yielded no occurrences of sensitive species (red or blue listed or species at risk).

The habitat found in the project comprised of the native Mature Forest stand, a salmon berry stand, a red alder stand and invasive species infestations. No wildlife species of concern were observed in the project area during the site visit and in the CDC search. No dens, nests or burrows were found. There were deer pellets observed. There were several birds heard, including the varied thrush, chestnut-backed chickadee, Townsend's warbler and the northern flicker. No bird nests were found during the assessment, however it would be hard to see the nests in the tall trees of the Mature Forest area. The wildlife habitat value of the property was deemed moderate due to the Mature Forest with native plants (good habitat); newly upgraded

road (poor habitat); recently cleared lot (poor habitat) and invasive species infestation (poor to moderate habitat).

2.3 Landscape and Soils

Soils in the Biogeoclimatic zone are typically moderately deep Orthic Humo-Ferric Podzols with Hemimor humus forms (Pojar et al. 1991). The soils on the site were a sandy clay loam. They were light-brown in colour. The clay properties are evident in the standing water in the ponded area. From the vegetation types it was evident that the standing water is seasonal and the site is typically dry in the summer/fall (depending on rainfall). There were other low areas with some water pooling on site. Due to the east side of the lot being completely logged and cleared of understory vegetation, it was difficult to tell what the surface landscape used to be there. On the west side there were signs of an altered landscape including the long berm (see photos in Appendix A) and signs of ditch and pond excavations; as well as the personal communication regarding the previous building on site where the blackberries are currently. The area of the building location was not accessible due to the blackberries.

The natural landscape is a gently sloping terrain, with small undulations but mostly flat in this area. It is the upper slope adjacent to Muir Creek, with fluvial soil processes from the dendritic drainage patterns in the area. The location of the lot is on an upper slope, approximately 74 m above Muir Creek (in elevation).

3 POTENTIAL ENVIRONMENTAL IMPACTS

The potential impacts from the project on the environment will be loss of existing vegetation and disturbance of soils, with sediment movement in the project area. There will be heavy equipment and loud noise for the duration of project construction. This has already been occurring on the east area of the property. If there is a dwelling constructed on the west area there will be the same disturbances.

On the west side, Corvidae recommends removing the invasive species, specifically the blackberry bramble and English ivy; and removing the trees that are a hazard from the ivy damage.

The environmental disturbance in this urban community will be short-term and is considered a moderate impact because of the removal of the vegetation (invasive and otherwise).

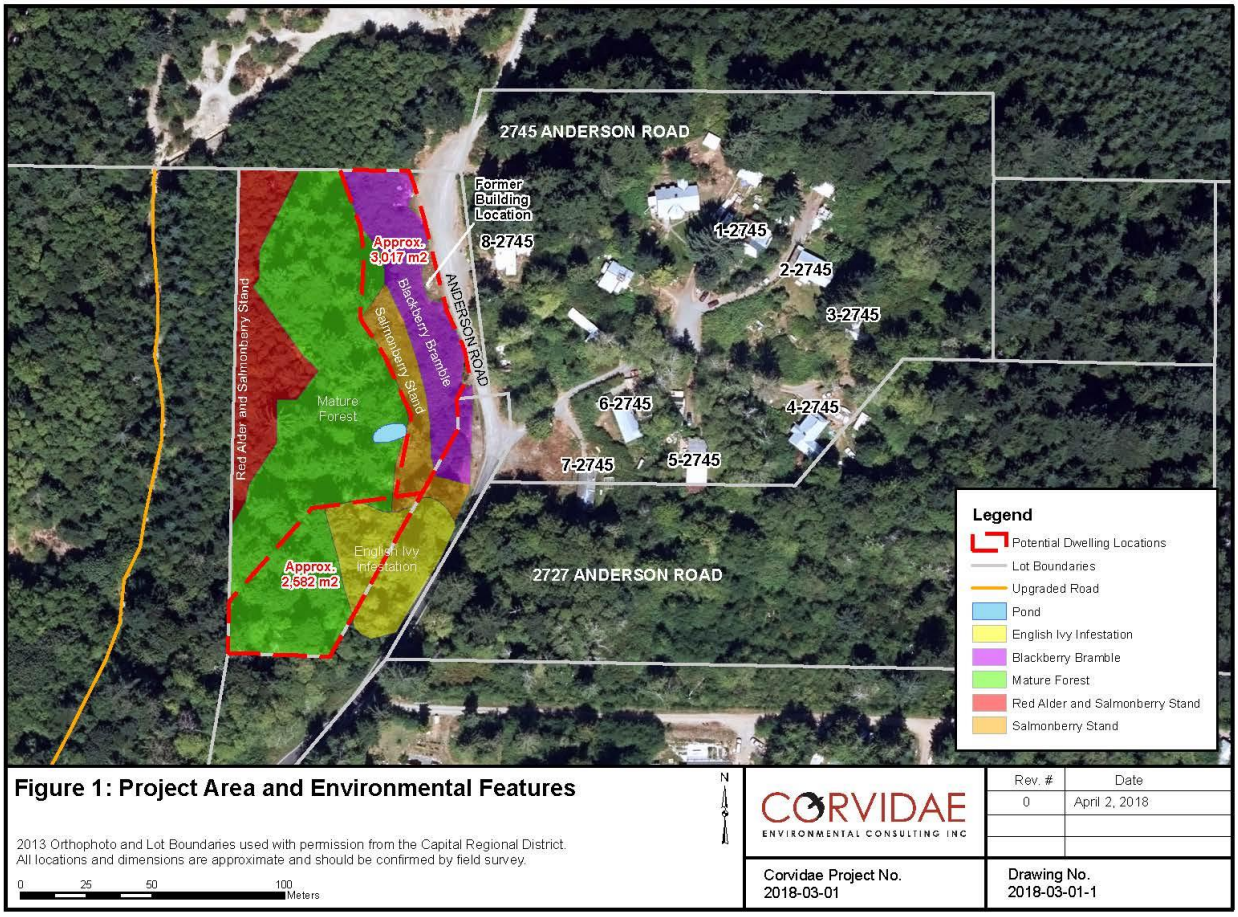

Figure 1: Project Area and Environmental Features

2013 Orthophoto and Lot Boundaries used with permission from the Capital Regional District.
All locations and dimensions are approximate and should be confirmed by field survey.

4 RECOMMENDED ENVIRONMENTAL PROTECTION MEASURES

Corvidae recommends protecting the Mature Forest area that has been ground truthed and identified in Figure 1, with the exception of the 2,582 m^2 area. This area (southern end of the forest) and also has ivy on the trees.

It is recommended that the blackberry bramble be removed and planted with native species. If there are to be any dwellings built, in the location of the blackberry bramble would be the best suited due to it being the former building site and the building of the structure would facilitate blackberry removal. And/or located in the ivy infested area, and other area identified on Figure 1. Corvidae recommends ringing the ivy on the trees that are infested and completely removing the trees that are dead/dying from the ivy. Ringing the ivy from the trees consists of cutting the ivy away 6 feet (2 m) up on the tree and all the way to the ground. With the gap in the ivy, the ivy up in the tree will die. The ivy on the ground should also be removed to minimize spreading and further infestation.

Activities that have the potential to impact the environment are removal of vegetation, disturbance activities that release deleterious substances into the soil and ditches, and construction debris being improperly disposed of or left in vegetated areas. The following sections provide environmental protection measures for any building in the area.

4.1 Site Access

Access to the construction sites will be via Anderson Road. The road bisects the property and makes both sides of the property easily accessible. There has been an access area added on the east side, at the south end of the lot, for equipment access and to remove the felled trees.

4.2 Protection of the Mature Forest

It is recommended that as much of the Mature Forest remain protected as feasible. This area should be clearly marked prior to any construction, to ensure no extra clearing within this sensitive ecosystem. The large trees on site that are in good health and not a safety hazard, should be left in place. The trees in the Mature Forest range from 60 cm to 130 cm diameter at breast height (DBH). See Figure 1 for the recommended area to be protected.

4.3 Pollution Control, Fueling and Spill Response

All equipment accessing the property should be in good working order. Any leaks should be repaired prior to commencing work. Any fueling of equipment will be done with drip-trays underneath on site, on the road or set staging area.

All fuel containers and other potentially deleterious substance containers will be secured so that they may not be emptied or upset by vandals when left overnight in the area.

A large, labeled mobile spill kit capable of mitigating spills of 100 litres of fuel is recommended to be kept on site adjacent. The kit should contain the following materials or equivalent:

- absorbent pads (hydrocarbons and antifreeze)

- absorbent socks (oil, gas & diesel)
- a jar of plug n dike (leak stop compound)
- 1 spill instruction sheet

4.4 Revegetation

Damage or degradation of soil surfaces during construction can include loss of soil structure, increased erosion, and soil compaction, which can negatively affect post-construction reclamation efforts. Measures taken to minimize such effects will include:

- Maintaining soil structure by excavating the soil layers separately and storing covered with tarps.
- Re-applying the separated topsoil as the surface layer prior to commencing with reclamation and landscaping efforts.
- Revegetating exposed soil as soon as possible following construction.
- Implementing weed management measures as required under the *Weed Control Act*. This includes:
    - Removing all noxious invasive species. In addition, Corvidae recommends removing all species listed in Table 1.
    - Disposing of invasive species at the landfill or burning on site.
    - Cleaning all equipment prior to leaving the site to avoid spreading of invasive species.

Corvidae recommends landscaping all areas with native vegetation to compete with invasive species, reduce irrigation requirements and provide wildlife habitat.

4.5 Erosion and Sediment Control Measures

The primary focus of erosion and sediment control planning is erosion control; if there is no erosion then there is no sediment. Erosion control is far more cost effective to implement and manage than sediment control.

Site specific controls have been developed based on a site visit and experience from past projects. Erosion controls, listed in Table 3, are recommended to be maintained for the duration of building any dwellings and removed completely following landscaping.

Table 3. Erosion and Sediment Control Measures

Construction Activity	Potential Impacts	Mitigations
Clearing of existing vegetation	Exposure of underlying soils to erosion during heavy rainfall events.	Minimize amount of time soils are exposed, plant native vegetation and landscaping materials within the growing season following removal of non-native vegetation and landscaping.
General construction	Sediment laden runoff.	Store soils away from ditches and in dry areas.
Native Vegetation	Plant deep rooting natives	Planting of native species of grasses, shrubs and trees in the green space areas, which naturally have deep roots to aid in soil stabilization, compete against weeds and do not require irrigation.

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APPENDIX A – PHOTOS

Photo 1. East side of property, vegetated ditch and logged area

Photo 2. East side of property.

Photo 1. North edge of property, with blackberry infestation

Photo 4. West side of property, salmon berry and alder stand

Photo 6. Ponded area from previous excavation.

Photo 5. Red alder and salmon berry stand.

Photo 7. Steep berm at western edge of west side of property, directly beside the new road (Lot 81).

Photo 8. Newly upgraded road (Lot 81).

Photo 9. Trees being strangled by English ivy.

Photo 10. English ivy infestation.