



CASCADE ENVIRONMENTAL
RESOURCE GROUP LTD

Initial Environmental Review

2037, 2039 & 2043 Sea to Sky Highway (Hwy 99), Mount Currie, BC



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Acknowledgement

In honour of the Lil'wat7ul, we acknowledge that we are within the unceded territory of the Lil'wat Nation.

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This Document should not be construed to be:

- A Phase 1 - Environmental Site Assessment
- A Stage 1 – Preliminary Site Investigation (as per the Contaminated Sites Regulations of the Waste Mgt. Act)
- An Environmental Impact Assessment



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1 Introduction

Cascade Environmental Resource Group Ltd. (Cascade) was retained by Tom Laviolette, Director of Infrastructure for the Lil'wat Nation, to conduct an Initial Environmental Review (IER) of the Mount Currie site containing two parcels with the street addresses 2037, 2039 and 2043 Highway 99. The Lil'wat Nation intends to use the findings of this report to make land use decisions for development of the properties that respond to the environmental opportunities and constraints identified in the IER. The IER will form part of a rezoning and development permit package to be submitted to the Squamish Lillooet Regional District (SLRD) by the Lil'wat Nation.

The purpose of an IER is to assist members of the SLRD staff in the evaluation of Official Community Plan (OCP) amendments, rezoning or development permit applications against environmental values.

SLRD guide to zoning Amendments (SLRD 2019a) lists the rezoning application requirements to include an environmental review with the following conditions:

- *All applications must be accompanied by an initial environmental review that should specify any "riparian assessment areas"*
- *If any portion of a proposed "development" is within a "riparian assessment area" then a "qualified environmental professional" is to prepare a report*
- *If deemed appropriate by the planning department, a more extensive environmental assessment may be required*
- *An arborist report and tree survey may be required if any mature trees are located on the site. Applicants should ensure that the landscape architect and designer/architect incorporate tree retention and protection measures in the design*

This report will review and assess the condition, ecosystem integrity, habitat potential, species present (plant and animal), and aquatic features on or adjacent to a development parcel. It includes a discussion of the environmental regulatory framework that may affect development activities and provide alternatives for mitigation or resolution. Potential constraints and recommendations are provided to inform and facilitate the environmental review and approval process.

Field investigations were conducted by Simon Fry, B.Sc., P.Biol., Margot Webster, B.I.T., B.Sc. Mapping support was provided by Todd Hellinga, B.Sc., GIS-AS, Nicola Church, B.A., M.Sc. (G.I.S.). Dave Williamson, B.E.S., Q.E.P., Certified Terrestrial Ecosystem Mapper, provided a review for the assessment. All project team members have extensive experience in conducting environmental inventories, reviews and assessments.

1.1 Location

The subject lots are located within the village of Mount Currie, British Columbia, adjacent to the Mount Currie 10 Reserve lands. Mount Currie village is located approximately 6 km east of Pemberton on Highway 99.



1.1.1 Lot Descriptions

The information of the lot descriptions were analyzed from the SLRD Public Web Map (SLRD 2019b)

Lot A

PID: 013-105-698

Area: 0.81 ha

Legal: BLOCK A (PLAN B4086) SOUTH WEST 1/4 DISTRICT LOT 209 LILLOOET DISTRICT EXCEPT PLANS 5959, 7170, 8847 AND 9639

Lot B:

PID: 002-165-724

Area: 0.31 ha

Legal: LOT B DISTRICT LOT 209 LILLOOET DISTRICT PLAN 35172

1.2 SLRD Zoning

The subject sites are within the Electoral Area C of the SLRD held as private fee simple lands.

Land zoning is directed by the SLRD Official community Plan (OCP) for Electoral Area C zoning and SLRD Bylaw Zoning. Zoning Bylaws are very specific about land use e.g. (density lot coverage regulations) where as the OCP is more strategic and less perspective with policies and defines policies for current land use, development and addresses needs of the future. Zoning Bylaws falls under the umbrella of the OCP and therefore must be consistent with it.

1.2.1 SLRD Bylaw Zoning

The lot is currently zoned as Community Commercial under the *SLRD zoning Electoral Area C Zoning Bylaw No. 765, 2002* (SLRD, 2002)

Permitted Uses

9.1 Land, buildings and structures in the C1 Zone shall be used for the following purposes

only:

- (a) retail and rental stores;*
- (b) business and professional offices;*
- (c) banks;*
- (d) post office;*
- (e) medical and dental clinics;*
- (f) hotels and motels;*
- (g) restaurants;*
- (h) bakeshop or confectionery, whose products are sold retail on the premises;*
- (i) personal service establishments as defined under Health Act regulations, shoe*



repair shops, electric and electronic shops, launderette, laundry and dry cleaning shops, florist shops, tailor or dressmaking shops;
(j) printing and publishing;
(k) undertaking parlours;
(l) community halls, fraternal lodges, churches, libraries and other similar uses;
(m) theatres;
(n) recreation and places of amusement;
(o) bus terminal for the loading and unloading of passengers;
(p) gasoline service stations;
(q) retail auto sales;
(r) combined commercial use and residential dwelling unit;
(s) single family dwelling;
(t) uses permitted in section 3.2.

1.2.2 SLRD OCP Zoning

The subject lots are within the OCP land use category of **COMMERCIAL** within *Electoral Area C Official Community Plan Bylaw No. 689, 1999 (SLRD 1999)*.

Objectives

- *To support the viability of the Village of Pemberton's downtown core.*
- *To ensure adequate goods and services are locally available to residents of and visitors to Area C.*
- *To encourage the location of urban development forms, such as intensive forms of commercial/industrial activity, within the Village of Pemberton's core area.*
- *To ensure the planning, design, and construction of energy efficient buildings to minimize greenhouse gas emissions, maximize energy conservation and improve air and water quality.*

The subject lots are also in Development Permit Area 1: Mount Currie Commercial. The following section details the development permit area details (SLRD, 2019)

Development Permit Area 1: Mount Currie Commercial

7.11. Pursuant to Section 919.1(a) of the Local Government Act, Development Permit Area 1 is designated as a development permit area for Establishing the form and character of commercial development. Development Permit Area 1 includes the all parcels designated as Commercial in Mount Currie, as identified on Map 1. The following guidelines shall apply to new development or redevelopment of properties within Development Permit Area 1:

- a. Wherever possible, parking lots that are designed to accommodate space for more than 10 vehicles should be located to the rear of the commercial building;*
- b. The construction of sidewalks for the entire frontage of the commercial property is encouraged;*
- c. The use of natural building materials is encouraged, such as the use of logs, wood and brick; and,*
- d. No free-standing signs are permitted.*

1.3 Methodology

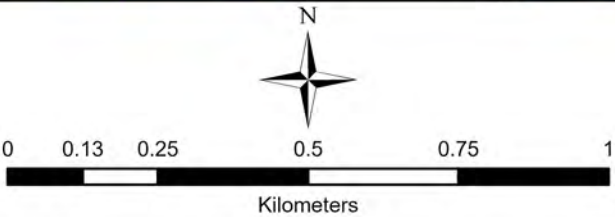
Prior to visiting the subject property, SLRD online Mapping for the site was reviewed as were Habitat Wizard mapping for aquatic resources and CDC iMap for rare and endangered species information and terrestrial mapping. The Li'wat Nation Sensitive Ecosystem Inventory Mapping (Cascade, 2019a) and the Lil'wat Nation Environmental Protection Report and Recommendations (Cascade, 2019b) were used for reference and contexts on adjacent lands. On-site reconnaissance of the study area was conducted on December 13, 2019. The ecosystem units present on the subject site were investigated in the field (ground-truthed). Terrestrial Ecosystem Mapping (TEM) standards (RISC, 1998) were employed to identify and delineate the ecosystem units and define their distribution within the study area.

Vegetation existing on the site was documented and wildlife presence was identified through visual observations, scat, bird songs and feeding signs where present. Potential wildlife for the area's habitats that were not observed during the site visit is described using the BC Conservation Data Centre (CDC), a centralized BC government database of information on species and ecological communities (BC MOE, 2019). Valued ecosystem components such as large woody debris and wildlife trees were also recorded during the survey.



Sources: Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap and the GIS user community, Sources: NRCan, Esri Canada, and Canadian Community Maps contributors., Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

GIS Cartographer: Oliver Chew
Date: 1/9/2020
CERG File#: 467-06-02
Projection: NAD 1983 UTM Zone 10N



Map 1 - Location Map
Mount Currie Band Lands
Mt Currie
British Columbia



2 Existing Environmental Conditions

2.1 Physical Environment

2.1.1 Climate

The study area lies within the Eastern Pacific Ranges Ecosection, within the Coast Mountains Ecoprovince in southern British Columbia (Demarchi, 1996). This Ecosection is comprised of a rugged inland area that has a transitional climate, located between the rain shadowed Southern Interior Ecoprovince to the east, and the high rainfall associated with the Southern Pacific Ranges Ecosection to the west (Demarchi, 1996). The climate is principally influenced by frontal systems moving in from the Pacific Ocean and over the Coast Mountains to the Interior (Green and Klinka 1994). This transitional climate is characteristically moist and cool in the winter. The climate is also associated with heavy snowfall at higher elevations (Campbell et al., 1990; Green and Klinka, 1994). Summers are relatively cool, although hot dry spells are frequent. Mean annual precipitation for Pemberton is 1034 mm of a mix of rainfall and snowfall (1981 to 2010 Climate Normals, Environment Canada, 2019).

2.1.2 Geology

The subject lands lie within the Southern Coast Mountains and are underlain by granitic rock of the Coast Plutonic Complex. This Complex is characterized by gneisses and granitoid rocks with pendents and septae of metavolcanic and metamorphosed rocks. These reflect a complex history of volcanic activity, magmatic intrusion and uplift (Monger and Journeay, 1994; Schiefer et. Al, 2010).

2.1.3 Geomorphology

The existing landforms in the Sea to Sky region were formed during Pleistocene epoch glaciations and subsequent glacial-fluvial action and mass-wasting in the form of rock and debris flow released by frost heaving, erosion, and seismic activity. The resulting surficial features of the upland terrain consist of glacial till, glycologenic colluvial soils overlying morainal materials or bedrock.

The study area is located along the flood plains of the Lillooet River, Birkenhead River and the Green River. The soil mapping of the CDC iMapBC displays the subject site parent material as fluvial. The acidic soils are poorly drained due to seasonally high ground water tables and occur on level slope. Sangster soils are non-stony and composed of sandy loam to silty clay loam layers. Ronayne soils are non-stony sand or loamy sand that overlie moderately stony to gravelly sandy loam (Roxanna L. Beale Kuurne 1980).

2.1.4 Hydrology

The subject sites does not contain any watercourses or wetlands. A fish bearing ditch exists to the south of the properties titled Grandmother Slough, however this watercourse is greater than 30 m from the property boundary and does not require a Riparian Areas Assessment (RAA) (Map 2). There is a depression along the western boundary of the property in a vegetated area that may fill with water during high water events. The subject site is located on the flood plains of the Lillooet River, the Green River and the Birkenhead River. The headwaters of the Lillooet River occur in the glacier ice and snow fields of



the Coast Mountains whereas the Green and Birkenhead Rivers rise in annual snow fields. The regional climate of the area exerts a strong influence on the hydrological regime of the major streams as these rivers react rapidly to heavy rainstorms and warm temperatures in the spring and summer. Warm rains can cause accelerated melting of the glacier ice and snow and thus maintain the spring runoff for extended periods. Heavy, early fall rains may cause extremely high discharges, especially following heavy, wet snowfall (Roxanna L. Beale Kuurne 1980).

2.2 Terrestrial Environment

2.2.1 Soils

The soil type for the Coast Mountain and Islands physiographic region is of the Podzolic Order, residing in the Ferro-Humic Great Group (Luttmerding 1971). These soils overlay igneous intrusive rock which is resistant to weathering, thus retarding soil development. Over time, however, physical and chemical weathering has produced a coarse-textured acidic soil (Luttmerding 1971). Ferro-Humic Podzols are characterized by the prominent grey (Ae) layer of eluviation beneath the organic surface layer and overlaying a reddish-brown iron-rich B horizon.

The soil mapping of the iMapBC (2019) displays the subject site classified as Rego Gleysol with 70% Sangster Series and 30% Ronayne Series and parent material as fluvial. Ronayne series soils have formed in stream channels within a flood plain and are periodically inundated. These soils consist of 20 to 50 cm on non-stony or loamy sandy with occasional silty layers that overlie moderately stony, gravelly and very gravelly sand. Roots occur to about 25 cm depth. Vegetation is sparse and commonly with willow, shrub black cottonwood and sedge. Sangster series have formed from interbedded silty and sandy flood plain deposits of the Lillooet River. This is non-stony and composed of alternating layers of sandy loam to silty clay loam, with 20 to 35 cm of fine sandy loam or sandy loam at the surface. Where not cultivated the vegetation includes black cottonwood, western redcedar, common paper birch, red alder, willow and grasses (Roxanna L. Beale Kuurne 1980).

A soil pit dug by Cascade staff within the subject lot confirmed these soil classifications, however a high coarse fragment of 70% suggested anthropogenic influence (Photo 2). It is likely the subject site has been filled historically. Soils were found to have no humic organic top layer (fibric) with a silty clay composition and a gleying layer at 10 cm depth. Soil drainage is poor and the ground water table was high with seepage measured at 9 cm depth (Photo 1).



Photo 1: Soil pit near the middle of the subject site displaying a high water table. December 13, 2019.



Photo 2: View looking east at the north end of the property. Anthropogenic gravel fill is present. December 13, 2019.

2.3 Vegetation

2.3.1 Vegetation Associations

During the ecological survey conducted on December 13, 2019, it was determined that the subject lands had been entirely cleared historically with vegetation now growing back throughout. There is a dirt road through the center of the property that is unvegetated, a dirt driveway connecting to Hwy 99 and three house structures along the eastern boundary. Existing native vegetation is classified as tall shrub (Structural Stage 3b) and young seral deciduous vegetation and is estimated as less than 40 years old. A description of this structural stage is provided in Table 1. Vegetation identified in the subject area is listed in Table 2. The survey vegetation identified was limited by the time of the season the fieldwork was conducted.

Table 1: Vegetation Age Class Descriptions

Structural Stage Code	Interpretation
1 Sparse/Bryoid	- Community is in initial stages of primary and secondary development - Bryophytes and lichens often dominant - Times since disturbance typically <20 years but may be 50-100 + years in areas with little or no soil - Shrub and herb cover <20 % of total area - Tree cover < 10 % of total area
2a/b/c/d Herb	- Early successional stage or edaphic herb community - 2a forb dominated - 2b graminoid dominated, including grasses, sedges, reeds and rushes - 2c aquatic plant dominated, but not 2b plants - 2d dwarf shrub dominated, low growing woody shrubs
3a/b Shrub	- Shrub dominated communities maintained by environmental conditions or disturbance - 3a low shrub < 2 metres tall - 3b tall shrub < 10 metres tall - Tree cover <10 %
4	- Densely stocked trees



Structural Stage Code	Interpretation
Pole/Sapling	- Self-thinning not yet evident - Time since disturbance usually < 40 years
5 Young Forest	- Stocking density persists - Self-thinning not yet evident - Time since disturbance usually 40-80 years
6 Mature Forest	- Trees established after the last disturbance have matured - The second cycle of shade-tolerant trees may have become established - Time since disturbance generally 80–250 years
7 Old Forest	- Structurally complex stands composed mainly of shade-tolerant and regenerating tree species - Snags and coarse woody debris in all stages of decomposition typical - Time since disturbance >250 years
Modifiers: B – Broadleaf C – Coniferous M – Mixed	- Broadleaf stands composed of > 75 % broadleaf tree cover - Coniferous stands composed of > 75 % coniferous tree cover - Mixed stands neither coniferous nor broadleaf compose > 75 % of the total tree cover

Table 2: Vegetation identified within the subject property

Common Name	Scientific Name
Trees	
black cottonwood	<i>Populus trichocarpa</i>
big leaf maple	<i>Acer macrophyllum</i>
Shrubs	
red alder	<i>Alnus rubra</i>
western redcedar	<i>Thuja plicata</i>
hardhack	<i>Spiraea douglasii</i>
thimbleberry	<i>Rubus parviflorus</i>
bladhip rose	<i>Rosa gymnocarpa</i>
burdock	<i>Arctium</i>
Forbs	
dune tansy	<i>Tanacetum camphoratum</i>
yarrow	<i>Achillea millefolium</i>

clover	<i>Trifolium</i>
Perennial ryegrass	<i>Lolium perenne</i>
Columbia Brome	<i>Bromus vulgaris</i>

2.3.1.1 Biogeoclimatic Zone Classification (CWMms1)

The subject site is part of the Coastal Western Hemlock (CWH) Dry Submaritime (ds) Southern (1) – CWHms1 – Variant (Green & Klinka 1994). The CWH zone occurs in subarctic areas of the Coast Mountains at elevations ranging from approximately 650 to 1,350 meters. Within the ds1 subzone and variant, a number of different site series exist. The site series classification represents subtle changes in microclimate, soil conditions and associated vegetation. The different site series are further classified into Terrestrial Ecosystem Units based on the structural stage of the vegetation and the terrain of the site.

2.3.1.2 Terrestrial Ecosystem Mapping

During the site visit conducted on December 13, 2019 ground survey plots of the subject property were carried out, collecting soil and vegetation attributes for the area. TEM codes for the polygon areas were identified based on the vegetation and soil attributes.

The subject lands were classified into one vegetated TEM polygon for the vegetated area and one non-vegetated TEM polygon for the existing development. Polygon 1 urban (UR) code was given to the area consisting of the dirt road, driveway and three house structures Polygon 2 CWHds1 (Site Series 07) given to the vegetated area (Map 2). The polygon TEM codes are described in the following sections.

Polygon 1 UR

Polygon 1 UR has been designated an urban (UR) code. This non vegetated anthropogenic site designation is representative of an anthropogenic site series and is not considered a natural site. This polygon encompasses the two small house structures and one larger house structure along the south eastern boundary of the subject site, with a total area of 0.16 ha (Map 2) (Photo 3 and Photo 4).



Photo 3: View looking north of Polygon 1 UR at the two small house structures. December 13, 2019.



Photo 4: View looking east of Polygon 1 UR at the larger house structure and paved driveway. December 13, 2019.

Polygon 2 RDac3biB

Polygon 2 - TEM Code RD –Site Series 07 (Cw – Devil's club)

POLYGON 2 TEM CODE DERIVATION					
Decile	Active floodplain, coarse fragment			Irregular	
10	RD	a, c	3b	i	B
	Cw – Devil's club		Tall Shrub		Broadleaf stand

Polygon 2 **RDac3biB** consists of the vegetated area covering the majority of the subject site and is located in the south and north sections of the site, with a total area of 0.99 ha. This is an anthropogenic disturbed site that has been cleared in the past. The topography features a level slope and soils with a high percentage of coarse fragments and gullying (at the western boundary of the property). Soils have a fluvial parent material and are poorly drained with a high ground water table prone to seepage. These conditions produce a 07 site series (Cw Devil's club) association at the site level.

There is forested vegetation outside the boundary of the property, however there are few and irregularly spaced trees with a tree coverage of 3%. Trees included common black cottonwood and big leaf maple. Shrub coverage is 13% of the polygon and contains red alder, western redcedar, baldhip rose, hardhack, common black cottonwood, big leaf maple, thimbleberry and burdock. The polygon is dominantly covered by the herb layer at 95% which contains mostly grass species and in lesser amounts dune tansy, yarrow and clover. Moss and lichens were present in trace amounts.

Vegetation is estimated to be younger than 40 years old with an average stand height of 6 m. An average red alder shrub of the property was measured to have a diameter at breast height (DBH) of 6 cm with an estimated height of 6 m. One of the largest trees on site is a big leaf maple with a DBH of 25 cm

and an estimated height of 10 m. On site observations noted few coarse woody debris (CWD), several boulders in grassed areas, several piles of rock material and some anthropogenic waste.



Photo 5: Typical Vegetation Association within Polygon 2 RDac3biB. December 13, 2019.



Photo 6: Typical tall shrubs and grasses within Polygon 2 RDac3biB. December 13, 2019.

2.3.1.3 Rare and Endangered Plant Species and Ecological Communities

In BC, there are two governing bodies involved with the ranking of species and/or ecological communities at risk. At the national level, the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) provides advice to the *Species at Risk Act* (SARA), and at the provincial level, the Conservation Data Centre (CDC) manages the BC Status List.

The Canadian government created SARA in 2002 to complement the Accord for the Protection of Species at Risk (a national effort to identify and protect threatened and endangered wildlife and their associated habitats across the country). COSEWIC is the scientific body responsible for assigning the status of species at risk under SARA. This system uses the following terminology:

- Extinct (XX)
- Extirpated (XT)
- Endangered (E)
- Threatened (T)
- Special concern (SC)
- Not at risk (NAR)
- Data deficient (DD)

A species that is listed as Endangered, Extirpated or Threatened is included on the legal list under Schedule 1 of the *Act* and is legally protected under the *Act* with Federal measures to protect and recover these species in effect.

The BC CDC designates provincial red or blue list status to animal and plant species, and ecological communities of concerns (BC MOE, 2019). The red list includes indigenous species or subspecies considered to be endangered or threatened. Endangered species are facing imminent extirpation / extinction, whereas threatened groups or species are likely to become endangered if limiting factors are

not reversed. The blue list includes taxa considered to be vulnerable because of characteristics that make them particularly sensitive to human activities or natural events. Although blue listed species are at risk, they are not considered endangered or threatened. Yellow listed species are all others not included on the red or blue list and may be species which are declining, increasing, common, or uncommon.

Table 3 to

CDC iMap listed one occurrence of the species at risk invertebrate Dun Skipper in the adjacent property of the Hitching Post Motel, this occurrence is detailed further in 3.4.2. CDC explorer was used to produce a list of potential wildlife species at risk based on habitat present on the subject site which is presented in Table 5.

Table 5 below include CDC listed (i.e. rare and threatened) species that have the potential to occur on the subject site; species designated as SARA Schedule 1 are also noted. This potential is based on broad habitat preferences delineated by forest district and biogeoclimatic zone and refined by habitat type available in the subject site. Forest and anthropogenic habitat type were selected to identify potential listed species for the purposes of this report.

Potential occurrences are then designated as unlikely or possible based upon species specific habitat requirements and an on-site assessment of those habitats. Note that a comprehensive evaluation of the study area for each species was not possible due to time constraints, seasonal migration patterns, and the transient nature of some species. A comprehensive field survey for rare and endangered species should be undertaken prior to clearing for those specific species identified as 'possible' from the Potential Occurrence column in the tables below.

The CDC iMap (2019) lists no occurrences of rare and endangered plant species on the subject property. The results of the CDC explorer search found two potentially occurring rare and endangered plant species within the region of the subject site, however, neither were observed during the site visit and it unlikely for them to occur at this property. The following table is a list of the potential plant species a risk that could be present on the subject site.

Table 3: Plant species at risk potentially occurring on the site

Common Name <i>Scientific name</i>	Status		Habitat Requirements	Potential Occurrence
	BC List	SARA Status		
Roell's brotherella <i>Brotherella roellii</i>	Red	1 - E	Forms mats on rotten logs, stumps, and bases of trees in cool to moist mixed deciduous and conifer forest, usually at low elevations along valley margins.	Unlikely – site does not contain many logs, stumps or forested areas.
Whitebark pine <i>Pinus albicaulis</i>	Blue	1 - E	Montane forests and on thin, rocky, cold soils at or near timberline at an elevation of 1300-3700 m in the sub-alpine to alpine zones.	Unlikely- subject site on elevations of 210 m.

Source: BC Ecosystems Explorer, Ministry of Environment (2019)

Rare and Endangered Ecological Communities



The term "ecological" is a direct reference to the integration of biological conditions and non-biological features such as soil, landform and climate, including disturbance factors. The term "community" reflects the interactions of living organisms (plants, animals, fungi, bacteria, etc.), and the relationships that exist between the living and non-living components of the community. Currently, the most common ecological communities that are known in BC are based on the Vegetation Classification component of the Ministry of Forests and Range Biogeoclimatic Ecosystem Classification, which focuses on the terrestrial plant associations of BC's native plants.

Large tracts of undisturbed plant communities are considered ecologically more important than disturbed/fragmented or second growth communities.

Vegetation on the subject lands consists of a tall shrub structural stage. The subject lands have been disturbed and cleared entirely in the past however there is tall shrub and grasses present in the majority of the property. One blue listed, second growth forest ecological community exists within the subject lands and are described in Table 4 in a recently disturbed state.

Table 4: Ecological Communities at Risk Occurring on the Subject Site

Site Series Name Common Name <i>Scientific name</i>	TEM Code	Status BC List	BCG Zone	Polygons	Structural stage	Size of polygon (ha)
western redcedar / devil's club <i>Thuja plicata</i> / <i>Oplopanax horridus</i>	RDac3biB	Blue	CWHds1	2	3b	0.99

2.4 Wildlife and Wildlife Habitats

Observation of wildlife and wildlife signs were recorded as part of the ecological site survey conducted on the subject lot on December 13, 2019. The subject site contains potential wildlife habitat due to the presence of:

- Coarse woody debris (Photo 8)
- Available forage (e.g. berries)

2.4.1 Mammals

Coastal western hemlock zone is a common habitat for black bear (*Ursus americanus*), which could use the site for foraging. Bear scat was identified at the subject site (Photo 7). Other mammals that are commonly found in the CWH and potentially use the site include black-tailed deer (*Odocoileus hemionus columbianus*), snowshoe hare (*Lepus americanus*), deer mouse (*Peromyscus maniculatus*), coyote (*Canis latrans*), bobcat (*Lynx rufus*), raccoon (*Procyon lotor*), pine marten (*Martes americana*), pika (*Ochotona princeps*) and yellow-pine chipmunk (*Tamias amoenus*).



Photo 7: Bear scat observed on site. December 13, 2019.



Photo 8: Coarse woody debris found along the forested western property boundary. December 13, 2019.

2.4.2 Birds

The Coastal Western Hemlock ecosystem surrounding the Sea to Sky area is considered to have the greatest diversity and abundance of habitat elements in British Columbia. This habitat diversity results in a broad diversity of bird species. The tall shrub vegetation of the subject site could provide habitat for a number of avian species and birds were audibly and visually observed during the site visit, however, a nest survey was not undertaken as part of this report. A song sparrow (*Melospiza melodia*) was visually observed within Polygon 2 RDac3biB of the subject site.

2.4.3 Amphibians and Reptiles

A comprehensive survey for amphibians and reptiles (herpetiles) was not conducted as part of this report. No amphibians or reptiles were observed during the site visit and which could be partly due to the season of the visit and lack of aquatic habitat on the subject site.

Amphibians typically found in the CWH biogeoclimatic zone include the Northern Pacific treefrog (*Hyla regilla*), northwestern salamander (*Ambystoma gracile*), rough-skinned newt (*Taricha granulose*), and the long-toed salamander (*Ambystoma macrodactylum*). Garter snakes (*Thamnophis* spp.) and alligator lizards (*Elgaria coerulea*) are reptiles commonly found in the region and may use the subject lands for foraging.



2.4.4 Wildlife Species at Risk

CDC iMap listed one occurrence of the species at risk invertebrate Dun Skipper in the adjacent property of the Hitching Post Motel, this occurrence is detailed further in 3.4.2. CDC explorer was used to produce a list of potential wildlife species at risk based on habitat present on the subject site which is presented in Table 5.

Table 5: Wildlife Species at Risk Potentially Occurring on the Subject Site

Common Name Scientific name	Status		Habitat Requirements	Potential Occurrence
	BC List	SARA		
Northern Goshawk <i>Accipiter gentilis laingi</i>	Red	Threatened	Coastal forests of BC, especially central and northern coastal islands. Closest known occurrence is the Gulf Islands	Unlikely-not on the coast
Great Blue Heron <i>Ardea herodias fannini</i>	Blue	Special Concern	Aquatic areas <0.5 m deep, fish bearing streams and rivers, undisturbed nesting in tall trees. Closest known occurrence is Lost Lake.	Unlikely- no suitable aquatic areas on site
Vivid Dancer <i>Argia vivida</i>	Blue	Special Concern	Associated with cool or hot springs. Larvae live in pools and outflow streams.	Unlikely – no suitable aquatic areas on site.
Marbled Murrelet <i>Brachyramphus marmoratus</i>	Blue	Threatened	Coastal areas within 2 km of shore, occasionally on rivers and lakes within 20 km of the ocean in old growth forest. Closest known occurrence is Toba River.	Unlikely- no old growth forest
Green Heron <i>Butorides virescens</i>	Blue	-	Aquatic areas, especially slow moving, shallow waters with good riparian cover.	Unlikely-no suitable aquatic areas on site
Hairy-necked Tiger Beetle <i>Cicindela hirticollis</i>	Blue	-	**The beetle occurs on sandy beaches associated with large lakes and the ocean.	Unlikely – no sandy areas on site
Sharp-tailed Snake <i>Contia tenuis</i>	Red	Endangered	In British Columbia, the Sharp-tailed Snake occurs in low-elevation woodland habitats dominated by Douglas-fir, arbutus and/or Garry oak. The snakes are often found in small openings on talus rocky outcrops and on warm hillsides	Unlikely-no south facing warm rocky slopes.
Olive-sided Flycatcher <i>Contopus cooperi</i>	Blue	Threatened	Mixed coniferous-deciduous forest with old growth snags along forest edges.	Unlikely-no snags or forest on site
Black Swift <i>Cypseloides niger</i>	Blue	-	Nests behind or next to waterfalls and wet cliffs, on sea cliffs and in sea caves.	Unlikely- not near ocean or suitable cliff nesting habitat.



Common Name Scientific name	Status		Habitat Requirements	Potential Occurrence
	BC List	SARA		
Propertius Duskywing <i>Erynnis propertius</i>	Red	-	Butterfly; Open oak or mixed woodlands with the foodplant oaks.	Unlikely- No oak on site.
Dun Skipper <i>Euphyes vestris</i>	Red	Threatened	Range in BC is in the Chilcotin region. Preferred food is sedges. Known to occur in the Mount Currie area***.	Possible - dun skipper observed at adjacent property***
Peregrine Falcon <i>Falco peregrinus anatum</i>	Red	Special Concern	Cliff edges near water, interior rivers and wetlands.	Unlikely- no cliff edges near water
Wolverine <i>Gulo gulo luscus</i>	Blue	Special Concern	A range of habitat types from valley bottoms to alpine meadows, strongly associated with the presence of large ungulate prey.	Unlikely- highly disturbed area close to other development
Barn Swallow <i>Hirundo rustica</i>	Blue	Threatened	Open areas, fields, ponds with vertical nesting habitat, especially buildings. *Known to occur in Mt. Currie and Pemberton.	Possible -existing hostel structures on subject site. No nests observed
Sinuous Snaketail <i>Hirundo rustica</i>	Blue	-	Fly along clear streams and lakeshores and are uncommon in settled areas.	Unlikely – no aquatic areas on site
Mountain goat <i>Oreamnos americanus</i>	Blue	-	Alpine and subalpine habitat; steep grassy talus slopes, grassy ledges of cliffs, or alpine meadows. Usually at timberline or above. May seek shelter and food in stands of spruce or hemlock in winter.	Unlikely-not above timberline
Clodius Parnassian <i>Parnassius clodius</i>	Blue	-	Occur in moist riparian habitats along low-elevation streams and wet subalpine meadows and subalpine riparian habitats.	Unlikely – no riparian areas on site
Band-tailed pigeon <i>Patagioenas fasciata</i>	Blue	Special Concern	Coniferous and mixed deciduous lowland forests. ***Known occurrences adjacent subject site along the northern boundary.	Possible – known occurrences adjacent property
Fisher <i>Pekania pennanti</i>	Blue	-	It is mostly found in forest habitat, primarily older coniferous forests, preferably with closed canopy.	Unlikely – no old growth forest on site
Northern Red-legged Frog <i>Rana aurora</i>	Blue	Special Concern	Wetlands, pools, and riparian areas of upland forests	Unlikely- no suitable aquatic habitat on site



Common Name Scientific name	Status		Habitat Requirements	Potential Occurrence
	BC List	SARA		
Pacific Water Shrew <i>Sorex bendirii</i>	Red	Endangered	Occurs in moist riparian habitats with stream sides and marshes. Typically found in forests of red alder, bigleaf maple, western hemlock or western redcedar.	Unlikely – no suitable aquatic or forested habitat on site.
Spotted Owl <i>Strix occidentalis</i>	Red	Endangered	Strongly associated with old growth forest and prefer habitat with many large wildlife trees and coarse woody debris. *Observed in Mount Currie area.	Unlikely – No suitable old growth forest within or near site
Grizzly bear <i>Ursus arctos</i>	Blue	Special Concern	Non-forested or partially forested sites with a wide range of foraging opportunities and choice of habitats.	Unlikely- site is close to other development with limited foraging.

All references from CDC explorer (BC MOE 2019). *Data from E-Fauna BC interactive maps (E-Fauna BC 2018). **Data from New York Heritage Program (NYNHP 2012). ***Data from CDC iMap (BC CDC iMap 2020)

2.5 Valued Ecosystem Components

2.5.1 Wildlife Trees

Wildlife trees include significant standing snags, veteran trees, and trees with broken tops, holes or cavities. These trees are important as perching, foraging, and nesting sites for birds and mammals. The vegetation within Polygon 2 RDac3biB is a young age class so not enough time has passed within the forest life cycle to allow for production of snags or tree decay for significant wildlife trees to develop. One black cottonwood wildlife tree was observed at the southern boundary of the property adjacent highway 99 (Photo 9). A Danger Tree Assessment was not conducted during the site visit of December 13, 2019, however it was observed that the wildlife tree is rated as a low wildlife value, as per wildlife/danger tree assessment workbook, due to size and lack of several wildlife characteristics (BC MOE 2017).



Photo 9: One wildlife tree was observed along the southern property boundary adjacent Hwy 99. December 13, 2019.



Photo 10: A black cottonwood wildlife tree is present with a few remaining perches. December 13, 2019.

2.5.2 Coarse Woody Debris

Coarse Woody Debris (CWD) on the forest floor is an indicator of potential species richness in forested areas. Microhabitats, decay, and nutrient cycling provide a range of life-cycle opportunities for smaller ground-dwelling wildlife (e.g. squirrels, shrews, and voles) and vegetation. Limited CWD was observed within the site due to forest age. CWD was observed mainly from past harvesting and was only present along the western property boundary within Polygon 2 RDac3biB (Photo 11 and Photo 12).



Photo 11: CWD present in Polygon 2 RDac3biB. December 13, 2019.



Photo 12: CWD present in Polygon 2 RDac3biB along the western property boundary. December 13, 2019.

2.5.3 Wildlife Movement Corridor

Wildlife tend to use routes with particular features when moving across the landscape to forage for food, disperse, find mates, or locate breeding sites. These features can include such things as cover, shade, vegetation, water or surface characteristics.

Scale is also a significant factor in determining the suitability of a landscape; larger animals with home ranges covering hundreds of kilometres (e.g. grizzly bear) have far different movement corridor requirements than some amphibians (e.g. Western toad), whose corridor requirements are measured in metres.

Any wildlife corridors within the subject site are limited due to the disturbed condition of the site, as well as the surrounding Mount Currie residential and commercial development. The vegetated area within Polygon 2 RDac3biB does provide cover and small-scale wildlife corridors for smaller species that prefer fringe habitat to human communities. The presence of bear scat suggests this area is utilized by black bears.

2.6 Aquatic Environment

No aquatic habitat was observed on the subject site. However, typical of floodplains, ground water is at or near the surface seasonally.

A small depression was observed on the western boundary of the subject site. It collects water from seepage and precipitation. The depression was dry during the site visit during a time of snow melt and is not connected to other ditches or watercourses. Nearby is the Grandmother Slough, south of the property. This is a fish bearing watercourse that connects to the Birkenhead River. This watercourse is greater than 30 m from the property and will not within the Riparian Assessment Area (RAA).



Photo 13: Depression along the southwestern property boundary. December 13, 2019



Photo 14: Depression along the mid western property boundary. December 13, 2019.

2.7 Socio-Economic Conditions

2.7.1 Cultural and Heritage Resources

The subject site is within the traditional territories of the Lil'wat Nation, as mapped within their respective Community Land Use Plan. They have current and long historical ties (Pre-European contact) to the land that include utilization of the natural resources of the Pemberton Valley area (Lil'wat Nation, 2015).



An archeological investigation was not conducted as part of this study; however an archaeological data request was made to the Archaeology Branch of the Ministry of Forests, Lands and Natural Resource Operations on December 19, 2019. According to Provincial records, there are no known archaeological sites recorded on the subject property.

2.7.2 Other Undertakings in the Area

2.7.2.1 Water Use

An aquifer (Aquifer number 0326) overlaps the subject lots and is comprised of a large polygon that encompasses the lower valley areas of Pemberton Meadows, Pemberton and Mount Currie (iMap BC, 2019).

2.7.2.2 Mining

Under the Mineral Tenure Act and Mineral Tenure Act Regulation. A free miner holding a Free Miner Certificate has the right to acquire and hold mineral titles, which acquire the subsurface rights that are available at the time of acquisition (BC Gov, 2019).

No current or historical coal, mineral and placer claims exist on the subject property (iMap, 2019).

2.7.2.3 Recreation and Tourism

The site contains no recreation or tourism features

2.7.2.4 Anthropogenic Features

Lot A contains fill piles and a levelled open graveled area. A graveled access road allows access to Block A in the north of the site from highway 99 roadway and is orientated north to south where it crosses into Lot B and back to highway 99. Lot B contains a asphalt paved parking area a vacant 2 story duplex building and two small vacant wooden cabins.



Photo 15: Block A graveled area and entrance to site, with Church in background, across the road. December 13, 2019



Photo 16: Lot B vacant 2 story dwelling and asphalt paving. December 13, 2019.



Photo 17: Lot B small vacant residential buildings. December 13, 2019.



2.7.2.5 Adjacent Land Use

The subject lots is located at 2037, 2039 and 2043 Main Street / Hwy 99, Mount Currie. The property is bounded by:

- Lil'wat Nation IR 10 to the north.
- Highway 99 roadway, One parcel containing property's addresses 2066 and 2062 hwy 99 containing St. Christopher's Parish and another community commercial parcel containing addresses 2036, 2040 and 2044 Hwy 99 including residences and the Hitching Post Motel and Aboriginal Skills and Employment Centre.
- 2021 Hwy 99 containing the restaurant Barn Nork and a light industrial parcel containing a utilities access building to the south.
- 2015 Hwy 99 agricultural residences and lands held under a agricultural reserve.

 Subject Site

 Cadastre

 Watercourses

 30m Buffer

 TEM

Species at Risk - Potential Habitat

 Band Tailed Pigeon

 Dun Skipper - Public Occurance Record - imap CDC

Main St

Mount Currie

Polygon
#1
UR

Polygon #2
RDac3biB

2037
2039
2043

Polygon
#1
UR

Polygon #2
RDac3biB

Sea to Sky Hwy

Main St

Grandmother Slough

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

GIS Cartographer: Oliver Chew
Date: 1/10/2020
CERG File#: 467-06-02
Projection: NAD 1983 UTM Zone 10N

 **CASCADE ENVIRONMENTAL**
RESOURCE GROUP LTD



0 25 50 100 150 200
Meters

**Map 2 - Existing Environmental Conditions
and Constraints**

Mount Currie Band Lands
Mt Currie
British Columbia



3 Environmental Constraints

3.1 SLRD Area C OCP Natural Environment Biodiversity Policy (Section 16)

The SLRD Area C OCP lists protection of natural environment and Biodiversity section 16 as an important factor in regards to rezoning and development proposals. This section lists the relevant policies from this section and addresses the policies from the results found from the existing environmental conditions.

Context

16.1. "Other species within the Plan Area that are known to be sensitive to human disturbance and require consideration in future developments include the rubber boa, great blue heron, coastal tailed frog, Townsend's big-eared bat, peregrine falcon, wolverine, fisher, bull and cutthroat trout, and trumpeter swans. These species have specific habitat requirements that can be used to inform appropriate development in Electoral Area C".

A rare and endangered species search was conducted for the site and no occurrences or possibility of the listed species are likely to be found on the subject site

Aquatic Habitats

16.2. The Regional District considers environmental protection of all natural watercourses, water bodies, and wetlands to be of high importance and is therefore a primary consideration in the evaluation of any new development.

16.3. The cumulative impact of development on water quality shall be considered in the evaluation of any new development

No aquatic habitat exists on the subject site, however depression with remnant floodplain conditions was observed on the borders of the subject site all future development and construction should be developed with a sediment and erosion plan to prevent disturbance of this adjacent area.

Development Permit Area 2: Riparian Assessment Areas

16.6. Development Permit Area 2 includes fish bearing streams, wetlands and the associated riparian habitat approximately as indicated on Map 6. Development Permit Area 2 includes the following areas within and adjacent to all streams that provide fish habitat or flow into a stream that provides fish habitat

The subject site is outside of all Riparian Area Assessments (RAA). The closest waterbody is the Grandmother Slough to the south of the subject site, however, the subject site is outside of the 30 m RAA.

Referrals

16.14. Pertaining to applications for subdivision or development, the SLRD shall not support proposals unless they demonstrate that:

a. Wildlife movement between key habitat areas is ensured;



As the subject site is highly fragmented by the Mount Currie village development, no wildlife movement areas for key habitat exist on the site. Maintaining the forested area to the west of the development will allow for continue use of the forested area for habitat between developments

b. Information on areas adjacent to or within the application area that support rare, threatened or culturally important plant and animal species is provided and access to and development in these areas is minimized; and,

A rare and endangered plant and wildlife species was conducted for the subject site. No species occurrences were listed for the subject site. A species occurrence for the invertebrate dun skipper was identified adjacent to the property to the east. It is possible this red-listed species will occur in the grasses on the subject site between late-June to August, therefore it is recommended to clear vegetation on the subject site before or after this window.

c. All old growth forest stands that are 40 hectares or greater in size are protected.

No old growth forest stands present on site

3.2 Physical Environment

3.2.1 Climate

The climate in the study area presents no obvious constraints or concerns with respect to rezoning or development.

3.2.2 Geology

Assessment of geological conditions of the site is outside the scope of this IER; soils on the subject site will be addressed under a separate geotechnical report if required.

3.2.3 Geomorphology

The geomorphology of the subject site poses no obvious constraints to rezoning or development.

3.2.4 Hydrology

Hydrology of the site does not pose a constraint to rezoning or development of the site.

A stormwater plan should be developed for the subject site to reduce impermeable surfaces and encourage groundwater recharge within site design to retain natural hydrology within the site (BC MOE 2016).



3.3 Terrestrial Environment

3.3.1 Soils

Assessment of geological conditions of the site is outside the scope of this IER; soils on the subject site will be addressed under a separate geotechnical report if required

3.3.2 Vegetation

The vegetation on the subject property does not present any obvious constraints or concerns to rezoning or development. The tall shrub vegetation within Polygon 2 RDac3biB of the subject property, however, does have some ecological value. Site design has been discussed with the client to retain vegetation where possible and choose native plants including grass and sedges during post development landscaping.

3.3.2.1 Rare and Endangered Plant Species

There are no known occurrences of any plant species at risk in the subject property, nor were any observed during the site investigations. No plant species at risk were listed of having the potential to be present on the site due to elevation and site habitat conditions.

3.3.2.2 Rare and Endangered Ecological Communities

The subject lot contains one blue listed ecological community within Polygon 2 RDac3biB. However, with regards to ecological communities, large tracts of undisturbed plant communities are considered ecologically more important than disturbed / fragmented second growth communities. The value of the ecological communities on the subject property is reduced by habitat fragmentation from surrounding Mount Currie properties and from past harvesting and clearing of the subject site.

The ecological communities on the subject site do not pose a constraint to rezoning or development..

3.4 Wildlife and Wildlife Habitat

All trees on the subject property provide potential nesting sites for a range of bird species. The BC *Wildlife Act* states:

A person commits an offence if the person, except as provided by regulation, possesses, takes, injures, molests or destroys

- (a) A bird or its egg,
- (b) The nest of an eagle, peregrine falcon, gyrfalcon, osprey, heron or burrowing owl or,
- (c) The nest of a bird not referred to in paragraph (b) when the nest is occupied by a bird or its egg.

Development on the subject property may be constrained by the Wildlife Act if tree removal occurs during the nesting bird season of April 1 to September 1, or if any raptor nests are found on the site. Should tree



removal occur within the nesting bird season, a songbird nesting survey should be conducted in the proposed clearing area to avoid contravention of the Wildlife Act.

3.4.1 Black Bear and Grizzly Bear

The subject site exists within bear habitat. Mount Currie and surrounding areas is within grizzly bear habitat (CDC iMap) and black bear habitat (MOE, 2001). Due to the presence of bear scat found on the subject lands during the site visit, it can be assumed there is bear movement through the general area. During development, any human waste or other odorous materials must be stored in wildlife-proof containers or locations at anytime the site is unattended.

3.4.2 Rare and Endangered Wildlife Species

There are no known occurrences of any wildlife species at risk in the subject property, nor were any observed during the site investigations. However, the barn swallow was identified as potentially occurring on the subject property and observations of the Dun Skipper were previously identified in close proximity to the subject site:

- Barn swallow (threatened)
- Band-tailed pigeon (special concern)
- Dun Skipper (threatened)

Barn Swallow and Band-tailed Pigeon

Both bird species are migratory birds that winter in the south and can occur in Mount Currie during summer. Barn swallow has the possibility of occurring on site because they utilize housing structures of roofs and overhangs and has been observed in the Mount Currie area (E-Fauna BC, 2018). The Barn swallow is a medium-sized songbird that lays eggs in early May. They have shifted to nesting in artificial structures from the presence and availability of human development. The band-tailed pigeon has a known occurrence in the Pemberton and Mount Currie area (CDC iMap). It arrives in its northern habitat between March-May and leaves between August-October. Nesting habitat tends to occur in low elevation coniferous and mixed forests and woodlands. Foraging can occur in cultivated areas, suburban gardens and parks. The band-tailed pigeon has the possibility of nesting in trees on or near the subject site and foraging on site.

If development is to occur and the current structures are demolished or destroyed from April to September, a search should be conducted for new nests or roosts of this species. If tree or wood debris is cleared during the nesting window of April to September, a bird nest survey should be conducted by a QEP.

Dun Skipper

The Dun Skipper is a small skipper (wingspan 23 – 32 mm) with uniform chocolate-brown wings with a purplish hue and tan fringes on the outer margins. Adults sit with their hindwings laid flat and their forewings held upright. The head and thorax of adults (both sexes) are yellowish-orange. Eggs are pale green, crescent-shaped, globular and smooth when first laid, but prior to hatching change to a reddish



colour on top. Larvae have a shiny, palegreen body with many fine, wavy, silvery lines. Pupae are various shades of yellow, brown and light green, with a blunt, ridged edge at one end (COSEWIC 2013).

The Dun Skipper is listed as threatened under Schedule 1 of the SARA and is offered legal protection under this act. As part of the effort to protect the species a recovery strategy for the species is produced by COSEWIC to produce strategies in the management and recovery of this species and includes the formation of critical habitat.

The 2017 SARA *Recovery Strategy for the Dun Skipper vestris subspecies (Euphyes vestris vestris) in Canada* lists that a species population of dun skipper was observed in 2001 (Env. and Climate Change Canada, 2017) in the Mount Currie area as listed on the CDC iMap. The CDC report detailed the dun skipper has been observed in the mowed grass at the Hitching Post Hotel adjacent to the subject site. Two male dun skippers have been collected near Pemberton (Shepard 2000). The recovery strategy lists the last observation as 2001 and the species as extant as they were observed in the last 20 years (Env. and Climate Change Canada, 2017).

As part of the federal recovery strategy (MOE, 2013), critical habitat for the dun skipper was identified for the extant species populations. The Critical habitat polygon includes the subject site (iMap BC 2019). The critical habitat map can be found in Appendix A.

The recovery strategy lists biophysical critical habitat as:

- Open areas without developed tree or shrub layer that are natural or anthropogenic in origin, e.g., open sparsely vegetated cliffs; gently sloping hillsides, grasslands, or meadows; roadsides, ditches, utility right-of-ways.
- Permanent or seasonally wet areas (i.e., areas with wet and moist ground throughout the spring/summer) that are natural or anthropogenic in origin, e.g., wetlands; seasonally wet grasslands or meadows; areas with spring floods; natural hot springs; seeps; seasonally wet areas; stream banks; ditches; roadside banks, swamps; marshes; bogs (Env. and Climate Change Canada, 2017).

Polygon 2 RDac3bB contains a cleared anthropogenic shrub and grass cover which could provide habitat to the dun skipper. The undisturbed wetland east of the site adjacent to the hitching post motel likely provides a higher value habitat although the dun skipper still may utilize the habitat on site.

The recovery strategy lists the conversion of the natural landscape for natural development that will result in the destruction of habitat of the dun skipper. Any clearing of vegetation and development of Polygon 2 RDac3bB may result in destruction of dun skipper critical habitat. The strategy also lists any areas of habitat within this critical habitat polygon that have clearly unsuitable habitats including existing permanent anthropogenic infrastructure (buildings) and/or running surfaces of paved roads or other artificial surfaces do not possess biophysical attributes required by Dun Skipper (Env. and Climate Change Canada, 2017). Therefore, any area within Polygon 1 UR of the site would not contain critical habitat for this species.

In terms of legal policy of the SARA designated critical habitat for the protection of non-federal lands the following is listed:



Subsection 61(1) of SARA provides that no person shall destroy any part of the critical habitat of a listed endangered or threatened terrestrial species at risk that is on nonfederal lands. Subsection 61(2) states that this prohibition applies only to the portions of the critical habitat that the Governor in Council, on the recommendation of the Minister of the Environment (the Minister), specifies by Order (Env. And Climate Change Canada, 2016).

As there is no order specified for the critical habitat on the subject site (non federal land), the critical habitat is not legally protected by SARA and does not legally constrain development on subject property. The species itself is legally protected by the *Wildlife Act*.

In BC the dun skipper will fly from late May to mid-August within its lifecycle, fly time coincides with mating and oviposition. Females will lay eggs on host plants and eggs hatch after a week and will start feeding and form tubular silk shelters. Throughout winter months, larvae diapause within these tubular silken rolls likely at the base of the plant, emerging the following spring (COSEWIC 2013).

If vegetation is to be cleared, specifically grass and shrub clearing, Cascade recommends it to be conducted outside of the dun skipper flying window and mating season to mitigate any harm of individuals present. Vegetation clearing should occur before late May or after late August and must be accompanied by a survey to check for the presence of larvae and silken rolls prior to clearing.

Post development landscaping should prioritize grass, sedge and shrub planting to provide dun skipper habitat.

Site design has also been discussed with the client and grass and shrub species present on site will be retained where possible between hard landscaping.

3.5 Valued Ecosystem Components

3.5.1 Wildlife Trees

No nests were observed on the subject site. Unless wildlife trees on the property contain nesting birds or nests of raptors, as described under the *Wildlife Act*, they are not a constraint to development. The wildlife trees identified provide low wildlife value characteristics, however they should be retained if possible, during development.

3.5.2 Coarse Woody Debris

CWD on the subject site was limited. The CWD does not pose a constraint to the property. The CWD present will be retained if possible or moved to forest area on the west of the property.

3.5.3 Wildlife Movement Corridor

Rezoning and development in the subject site poses no concerns to wildlife movement corridors as it is fragmented by surrounding Mount Currie properties.

3.6 Aquatic Environment



There is no aquatic environment on the subject site and therefore, does not pose a constraint to development.

The subject site is outside the 30 m RAA from the Grandmother Slough to the south of the subject property.

3.7 Socio-Economic Conditions

3.7.1 Cultural and Heritage Resources

An archaeological data request was made to the Archaeology Branch of the Ministry of Forests, Lands and Natural Resource Operations on December 19, 2019. The results found no known archeological sites to exist within the subject lands. If an archaeological site is encountered during any future development, activities must be immediately halted and the Archaeology Branch must be consulted as archaeological sites are protected under the *Heritage Conservation Act*.

3.7.2 Other Undertakings in the Area

3.7.2.1 Timber Harvesting

Timber harvesting presents no obvious constraints or concerns for the rezoning or development of the subject property.

3.7.2.2 Mining

Mining presents no obvious constraints or concerns for rezoning or development of the subject property.

3.7.2.3 Recreation and Tourism

Recreation and tourism presents no obvious constraints or concerns for rezoning or development of the subject property.

3.7.2.4 Anthropogenic Features

No anthropogenic features pose constraints to rezoning or development of the subject property.

3.7.2.5 Adjacent Land Users

Adjacent land use does not restrict development or rezoning within the subject property.

4 Conclusions and Recommendations

This report details the baseline conditions and identifies potential environmental constraints for the rezoning and development for 2037, 2039 and 2043 Sea to Sky Hwy (Hwy 99) of Mount Currie, BC. Based on the conditions observed on the site and the information reviewed the site appears to be suitable for the proposed rezoning and suitable for development subject to the following recommendations:



1. The subject site has potential for critical habitat classification for the invertebrate dun skipper species, listed as threatened on Schedule 1 of the SARA and designated in the federal recovery strategy. If vegetation, particularly grass and shrubs, are scheduled for removal it should be conducted outside of the months of late May to mid August which is the fly-time and mating time of the dun skipper. A survey must be conducted by a Qualified Environmental Professional outside of this time window prior to the vegetation clearing of grass and shrub to search for and identify any overwintering silken larvae of the dun skipper.
2. Post development landscaping should prioritize grass, sedge and shrub planting to provide dun skipper habitat in areas not developed on the property by hard surfaces.
3. Raptor nests found during clearing are protected year-round. In addition, land clearing activity conducted during the nesting bird season of April 1 to September 1, must comply with Section 35 of the *Wildlife Act*, which forbids the destruction of nests occupied by a bird, its eggs, or its young. If vegetation clearing or demolition of buildings is to occur between April 1st and September 1st, a raptor and song bird nesting survey of the trees to be cleared must be conducted by a Qualified Environmental Professional (QEP).

The survey will identify the location of any raptor or active bird nests including that of the barn swallow. Raptor nests and any active birds' nests found during clearing must be adequately protected by a forested buffer as per Section 34 of the *Wildlife Act*.

4. If the existing structures are planned to be demolished for any new development between April 1st and September 1st, a survey should be conducted to search for any roosts or nests belonging to barn swallow. This at-risk species was identified as potentially occurring within the existing structures.

Based on the information reviewed and the site conditions observed, the following should minimize potential negative impacts on the site arising from development:

1. Future development and construction on the property should follow guidelines and recommendations outlined in: *Develop with Care: Environmental Guidelines for Urban and Rural Land Development in British Columbia* (MOE, 2014) and *Land Development Guidelines for the Protection of Aquatic Habitat* (DFO, 1992). This includes best management recommendations for stormwater, pollution prevention and wildlife and ecosystem management.
2. Retain CWD if possible for use in landscaped areas to provide habitat for smaller mammals and invertebrates on the site.
3. All wildlife attractants, including food and other odorous materials, must not be left at the worksite and must be secured in wildlife-proof locations anytime the site is unattended.
4. Site preparation and construction works associated with any of the aforementioned mitigation measures should be monitored by a qualified environmental monitor.

5 References

- BC Ministry of Environment. BC Conservation Data Centre: BC Species and Ecosystems Explorer. <http://a100.gov.bc.ca/pub/eswp/>. Website accessed December 19, 2019.
- B.C. Ministry of Environment. 2013. Recovery plan for Dun Skipper (*Euphyes vestris*) in British Columbia. Prepared for the B.C. Ministry of Environment, Victoria, BC. 36 pp.



- BC Ministry of Environment, 2014. Develop with Care 2014 Environmental Guidelines for Urban and Rural Development in British Columbia.
- BC Ministry of Environment 2017, Wildlife/Danger Tree Assessor's Course Workbook Parks and Recreation Sites Course Module.
- British Columbia, Province of. 1998. Field Manual for Describing Terrestrial Ecosystems. BC Min. Env. Land Prot., and BC Min. For. Land Manage. Handb. No. 25.
- Cascade Environmental Resource Group Ltd. (Cascade). 2019a. Lil'wat Nation Sensitive Ecosystem Inventory. Whistler, BC, 62 pp.
- Cascade Environmental Resource Group Ltd. (Cascade). 2019b. Lil'wat Nation Environmental Protection Report and Recommendations. Whistler, BC. 50 pp.
- COSEWIC. 2013. COSEWIC assessment and status report on the Dun Skipper (*vestris* subspecies), *Euphyes vestris vestris* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xi + 69 pp. (www.registrelep-sararegistry.gc.ca/default_e.cfm).
- Demarchi, D.A. 1996. Ecoregions of British Columbia. Fourth Edition. British Columbia Wildlife Branch, Ministry of Environment, Lands and Parks, Victoria BC. Map (1:2,000,000).
- DFO 1992. Land Development Guideline for the protection of Aquatic Habitat <http://www.dfo-mpo.gc.ca/Library/165353.pdf> Accessed on January 2, 2020.
- E-Fauna BC 2018. Electronic Atlas of the Wildlife of British Columbia. <https://ibis.geog.ubc.ca/biodiversity/efauna/> Accessed January 2, 2020.
- Environment and Climate Change Canada. 2016. Policy on Critical Habitat Protection on Non-federal Lands [Proposed]. *Species at Risk Act: Policies and Guidelines Series*. Environment and Climate Change Canada, Ottawa. 9 pp.
- Environment and Climate Change Canada. 2017. Recovery Strategy for the Dun Skipper *vestris* subspecies (*Euphyes vestris vestris*) in Canada [Proposed]. *Species at Risk Act Recovery Strategy Series*. Environment and Climate Change Canada, Ottawa. 2 parts, 24 pp. + 36 pp.
- Environment Canada. Climate Normals 1981 – 2010. Website: http://climate.weather.gc.ca/climate_normals/index_e.html. Accessed December 18, 2019.
- Green, R.N. and K. Klinka, 1994. Field guide to site identification and interpretation for the Vancouver Forest Region. Land management handbook number 28. BC Ministry of Forests, Victoria, BC
- iMapBC. <http://www2.gov.bc.ca/gov/content/governments/about-the-bc-government/databc/geographic-data-and-services/imapbc>. Website accessed December 19, 2019.
- Lil'wat Nation, 2015. Lil'wat Nation Community Land Use Plan. <http://lilwat.ca/wp-content/uploads/2016/01/LIL-LUP15.pdf> Accessed on December 17, 2019.

Monger, J.W.H. and J.M. Journeay. 1994. Guide to geology and tectonic evolution of the Southern Coast Mountains. Geological Survey of Canada. OpenFile, 2490, Vancouver, Canada.

NYNHP, 2012. New York Natural Heritage Program: Hairy-necked Tiger Beetle.
<https://guides.nynhp.org/hairy-necked-tiger-beetle/> Accessed January 2, 2020.

Roxanna L. Beale Kurne 1980. Soil Survey of the Pemberton Valley, British Columbia. RAB Bulletin 16.
http://www.env.gov.bc.ca/esd/distdata/ecosystems/Soils_Reports/bc62_report.pdf Accessed December 18, 2019.

Schiefer, E., M.A. Hassan, B. Menounos, C.P., Pelpola, and O. Slaymaker 2010. Interdecadal patterns of total sediment yield from a montane catchment, southern Coast Mountains, British Columbia, Canada. Geomorphology. 1881, 207-212.

Jon H. Shepard, 2000. BC Environment: Status of Five Butterflies and Skippers in British Columbia.
<http://www.llbc.leg.bc.ca/public/pubdocs/bcdocs/338930/wr101.pdf>. Accessed January 7, 2020.

Squamish Lillooet Regional District 2018a. A Guide to Zoning Amendments.
https://www.slrd.bc.ca/sites/default/files/pdfs/planning/guides/Zoning%20Amendments%20Guide_0.pdf Accessed on December 17, 2019.

Appendix A: Mount Currie Critical Habitat for dun skipper

Recovery Strategy for the Dun Skipper *vestris* subspecies
Part 1: Federal Addition

2017

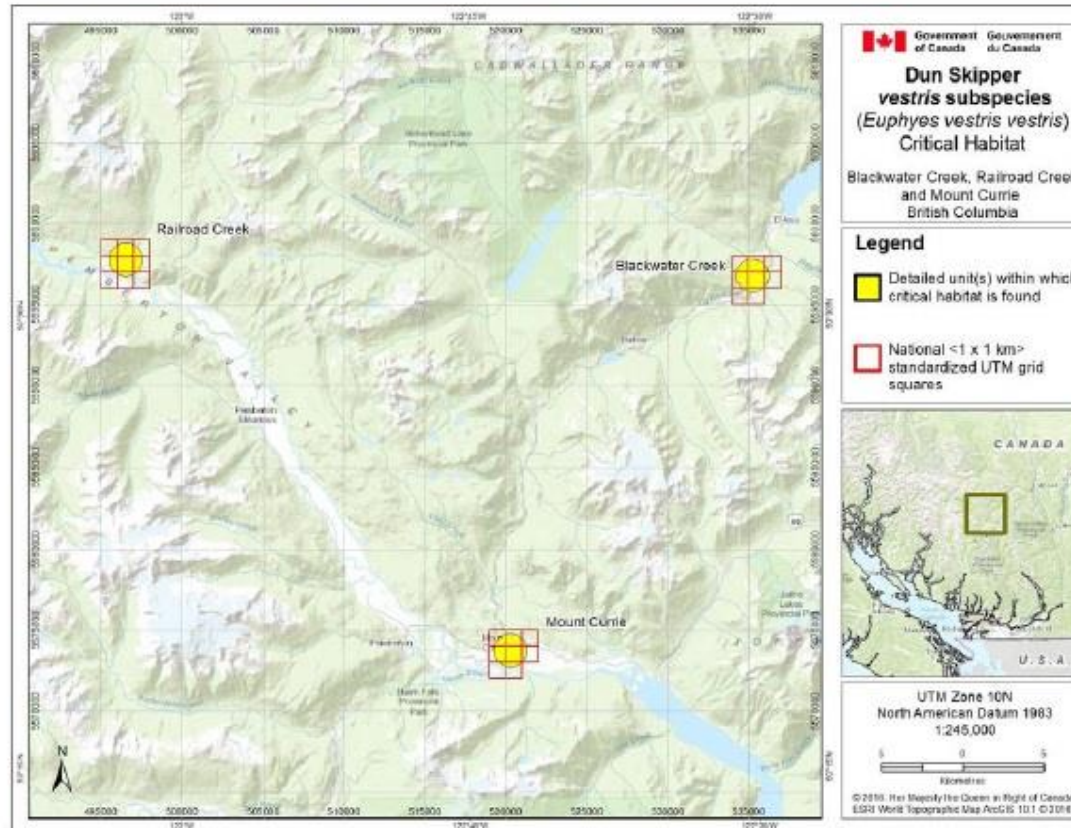


Figure 4. Critical habitat for Dun Skipper *vestris* subspecies at Mount Currie (Population 8; 329.6 ha), Blackwater Creek (Population 26; 329.6 ha), and Railroad Creek (Population 27; 329.6 ha), B.C. is represented by the yellow shaded polygons (units) where the criteria and methodology set out in Section 1.1 are met. The 1 km x 1 km UTM grid overlay shown on this figure is a standardized national grid system that indicates the general geographic area within which critical habitat is found in Canada. Areas outside of the shaded yellow polygons do not contain critical habitat.