REGIONAL DISTRICT OF CENTRAL KOOTENAY

DEVELOPMENT PERMIT

D1907D-03042.200-PEETERS-DP000091 (D1907D)

Date: October 11, 2019

Issued pursuant to Section 490 and 491 of the *Local Government Act*

1. This Development Permit is issued to Jeannie Peeters and Chris Campbell as the registered Crown Land Leassees (hereinafter called the "Permittee") and shall only apply to those lands within the Regional District of Central Kootenay, in the Province of British Columbia legally described as Lot A, District Lot 819, Kootenay District, Plan EPP83669 (PID 030-731-542) as shown on the attached Schedules 1, 2 and 3, forming part of this Permit, referred to hereafter as the "said lands".

2. This Development Permit is issued subject to compliance with all of the bylaws of the Regional District of Central Kootenay applicable thereto, except as specifically varied or supplemented by this Permit.

3. This Development Permit shall not have the effect of varying the use or density of land as specified in the applicable Zoning Bylaw of the Regional District of Central Kootenay, nor a Floodplain Specification under Section 524 of the Local Government Act.

4. The said lands have been designated 'Rural Residential' and are located within the Watercourse Development Permit Area pursuant to the Electoral Area 'D' Official Community Plan Bylaw No. 2435, 2016 as amended.

5. The Permittee has applied to the Regional District of Central Kootenay to permit an existing 69.0 m^2 dry cabin, 6.0 m^2 outbuilding and 4.0 m^2 lined outhouse constructed previously situated on the said lands for personal recreation purposes. Additional proposed uses under this permit include an 8.9 m^2 deck off the south facing door of the cabin to connect a staircase that has been built, and a staircase from the upper access road down to the south door of the cabin. Pursuant to this Development Permit and subject to the terms and conditions herein contained, as well as all other applicable Regional District Bylaws, the Regional District of Central Kootenay hereby authorizes the use of the said lands for this purpose.

6. The Permittee is required to obtain approval in writing from the Regional District of Central Kootenay prior to the construction any new buildings, external additions to existing buildings or for any deviation from the development authorized under Section 5 of this Development Permit. Furthermore, the Permittee is hereby advised of the following requirements:

    6.1 Development is authorized in accordance with the terms described in the report titled. "10182, Highway 31 Shutty Bench, BC Riparian Assessment" prepared by Masse Environmental Consultants Ltd., dated October 19, 2018, attached to this permit as Schedule 2, including:

        i. A SPEA of 15 m shall be retained, and no additional vegetation removal or construction is permitted in this area with the exemption of minor clearing during the installation of a 8.9 m^2 deck off the south facing door of the cabin to connect a staircase that has been built, and a staircase from the upper access road down to the south door of the cabin;

ii. No placement of retaining wall, rock or fill should be placed in front of the cabin or within the 15 m SPEA;

iii. No works are authorized on the Foreshore;

iv. No parking or vehicle storage, including Recreational Vehicles, shall take place in the 15 m SPEA;

v. If future vegetation clearing is required to accommodate the deck or staircase, vegetation disturbance/removal shall be kept to the minimum possible area required for access, staging, construction works, and safety considerations;

vi. No vegetation disturbance or removal should occur outside the least risk work window period for nesting birds/roosting bats (August 1- March 31) and raptors (August 15-January 30). If removal of vegetation is scheduled otherwise, a nesting bird survey/bat roost survey is required prior to vegetation clearing;

vii. Existing vegetation shall be protected past the drip line of the plant;

viii. Trees located on the steep slope above the cabin shall be retained to maintain the integrity of the steep slope;

ix. Avoid parking equipment or storing materials in areas with invasive species infested locations. If necessary to use or disturb the area, treat the invasive species prior to disturbance;

x. All equipment and materials (i.e. fill) shall be thoroughly washed and inspected before entering the project site to prevent the import of new invasive plant seeds and root fragments;

xi. Vegetation clearing and soil disturbance shall be minimized;

xii. All exposed soils shall be stabilized and revegetated as soon as possible following completion of the project;

xiii. After construction, property owners shall monitor areas of disturbed soils for the establishment of invasive plant species;

xiv. New and known species of invasive plants found colonizing disturbed areas shall be removed by hand, and disposed of;

xv. The English Ivy shall be controlled by hand pulling and cutting of vines in late summer or fall, when plants are easier to remove. Above ground vines shall be cut and pulled so no rooted portions re-grow. Mechanically removed plants should be bagged and disposed of properly in a landfill, where plants cannot set new roots;

xvi. Other invasive species noted on site shall be removed to encourage native ground cover to re-establish;

xvii. Avoid disturbance of the ground on the steep slope behind the cabin;

xviii. Keep amount of vegetation removal, soil disturbance and soil compaction to a minimum;

xix. Storm water runoff shall be controlled and redirected away from exposed soils;

xx. Avoid stockpiling soil on the property and revegetate exposed soils as soon as possible; and,

xxi. All construction waste generated from future development plans on site shall be stored separately from household garbage and must be taken off site and re-used, recycled or disposed of accordingly.

xxii. Documentation from Interior Health Authority is required to confirm the lined pit toilet meets the Sewerage System Regulation; and,

xxiii. The unlined pit toilet shall not be used and shall be removed if determined by Interior Health Authority to be causing a health hazard.

6.2 A building permit shall be required prior to any construction involving land in this location at which time the Permittee shall be required to address sewage disposal issues to the satisfaction of the Interior Health Authority and Regional District of Central Kootenay Senior Building Official.

7. As a condition of the issuance of this Permit, the Regional District shall hold an irrevocable Letter of Credit submitted by the Permittee in the amount of $500 to ensure the conditions set forth in Section 6 are completed and in accordance with the following provisions:

7.1. The security shall be returned once the permitted works are completed and the QEP has provided in writing that no damage to the environment has occurred.

7.2. A condition of the posting of the Letter of Credit is that should the Permittee fail to carry out the works and services as herein above stated, according to terms and conditions of this permit within the time provided, the Regional District may use the Letter of Credit to complete these works or services by servants, agents or contractors, and any surplus shall be paid over to the Permittee. If the amount of funds is insufficient to cover the actual cost of completing the works, then the Permittee shall pay such deficiency to the Regional District immediately upon receipt of the Regional District's bill for same.

8. The said lands shall be developed strictly in accordance with the terms and conditions of this Development Permit and the requirements of all applicable Regional District Bylaws as well as any plans and specifications which may, from time to time, be attached to this Permit shall form a part thereof.

9. In accordance with the Local Government Act, if the development authorized by this Development Permit is not commenced within two years of the date of this Permit, this Permit shall lapse.

10. In accordance with the Local Government Act, 'Notice' shall be filed in the Land Title Office that the said lands are subject to this Development Permit.

11. The terms of this Development Permit including subsequent amendments, are binding on all persons who acquire an interest in the said lands associated with this Permit.

12. It is understood and agreed that the Regional District has made no representations, covenants, warranties, guarantees, promises, or agreement (verbal or otherwise) with the Permittee other than those in this Development Permit. It is solely the responsibility of the Permittee to ensure that the requirements of all other applicable government agencies are satisfied.

13. This Development Permit does not constitute a building permit.

14. This Development Permit shall come into force and effect 14 days after the date of issuance unless a Waiver of Appeal is received from the Permittee at which time the Development Permit shall be

deemed to be issued upon receipt of the Waiver of Appeal. OR If a Notice of Appeal is received the Development Permit shall be suspended until such time as the Board of the Regional District of Central Kootenay has decided the Appeal.

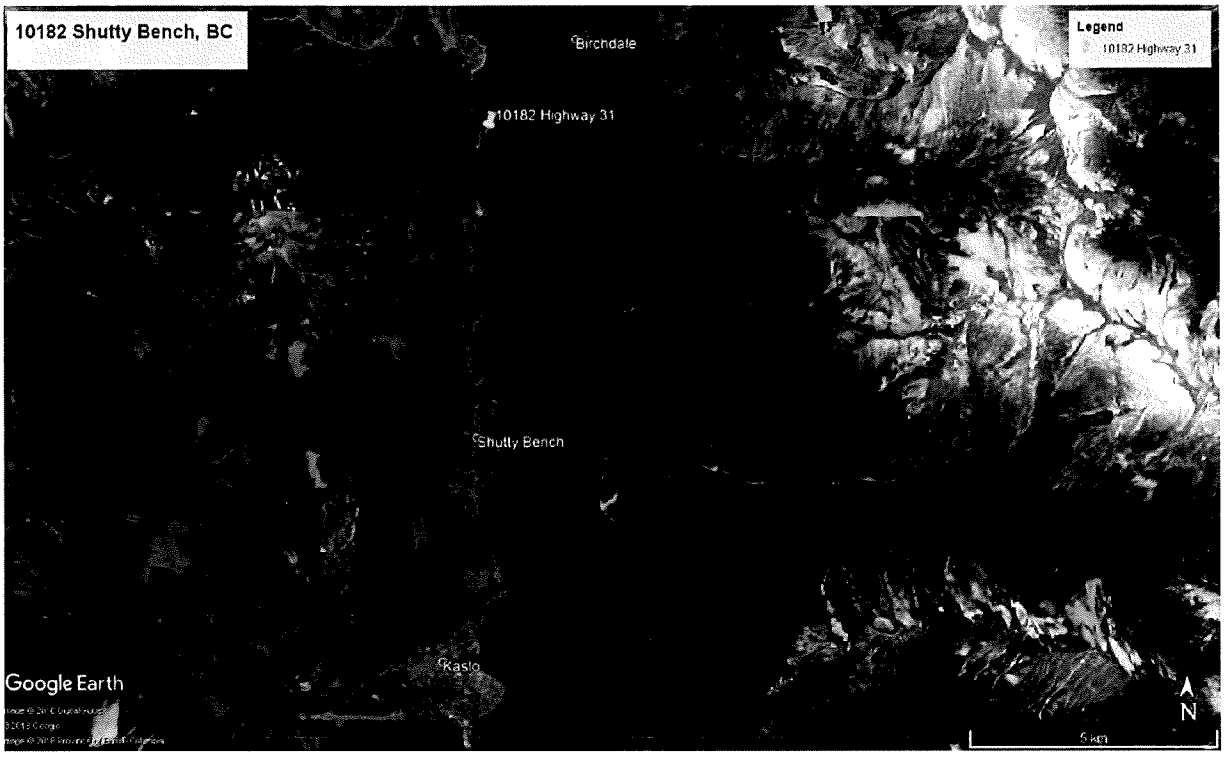
Sangita Sudan, General Manager of Development Services

October 11, 2019
Date of Approval (date of review and approval)

November 4, 2019 OA
Date of Issuance (pending receipt of securities)

Schedule 1: Location Map
Schedule 2: 10182, Highway 31 Shutty Bench, BC Riparian Assessment, dated October 19, 2018 by Masse Environmental Consultants Ltd.
Schedule 3: Site Plan

Schedule 1: Location Map



Schedule 2: 10182, Highway 31 Shutty Bench, BC Riparian Assessment, dated October 19, 2018 by Masse Environmental Consultants Ltd.

MASSE ENVIRONMENTAL
CONSULTANTS LTD.

Schedule 2
10182, Highway 31 Shutty Bench, BC Riparian Assessment, dated October 19, 2018 by Masse Environmental Consultants Ltd
(28 pages)

10182, HIGHWAY 31
SHUTTY BENCH, BC
Riparian Assessment

Prepared for:
Regional District of Central Kootenay
202 Lakeside Drive,
Nelson BC, V1L 5R4

Prepared by:
Masse Environmental Consultants Ltd.
812 Vernon St.
Nelson, BC, V1L 4G4

October 19, 2018

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1 INTRODUCTION

Masse Environmental Consultants Ltd. (MEC) was retained by Jeannie Peeters Campbell and Christian Campbell, crownland leaseholders of 10182 Highway 31, Shutty Bench, BC, to conduct an environmental assessment as required for a Waterfront Development Permit (WDP) pertaining to a waterfront cabin that was constructed in 2016. The property is located within Electoral Area 'D' of the Regional District of Central Kootenay (RDCK) where a WDP is required for all developments within 30 m of a watercourse, including Kootenay Lake.

A site visit was conducted on April 12, 2017 by Fiona Lau, BTech; and Tyson Ehlers, RPBio., to assess the habitat values of the site, and the potential impacts of the development on riparian and foreshore areas.

This assessment evaluates the existing conditions of the foreshore and riparian areas, identifies important habitat values, records the existing environmental impacts, and recommends measures to protect environmentally sensitive areas for on-going and future development. It is based on the following regulatory framework and best management practices documents:

- Electoral Area 'D' Comprehensive Land Use Bylaw No. 2435, 2016
- British Columbia Riparian Areas Regulation
- Provincial Water Sustainability Act
- General BMPs and Standard Project Considerations (Ministry of Environment)
- On the Living Edge: Your Handbook for Waterfront Living
- Develop with Care. Environmental Guidelines for Urban and Rural Land Development in British Columbia
- Kootenay Lake Partnership Shoreline Management Guidelines
- Foreshore Inventory, Mapping and Aquatic Habitat Index – Kootenay Lake

This report has been prepared by Rachel Pennell, A.Ag, and reviewed by Sylvie Masse, MSc, RPBio.

I, Sylvie Masse, hereby certify that:

a) I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the Fish Protection Act;
b) I am qualified to carry out this part of the assessment of the development proposal made by the developer;
c) I have carried out my assessment of the development proposal, and my assessment is set out in this Assessment Report; and
d) In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation.

This report is prepared for the Regional District of Central Kootenay (RDCK) as a pre-condition of the issuance of a Building Permit. The submitted report shall be included in a Development Permit under section 920 of the Local Government Act and filed on title of the subject property.

The report has been prepared for and at the expense of the owner of the subject property. The Qualified Environmental Professionals (QEP) who prepared this report have not acted for, or as an agent(s) of the RDCK.

1.1 Background

A land accretion application was submitted to the BC Provincial Government by Ward Engineering and Land Surveying proposing to change the present natural boundary from ~536 m to ~533.5 m elevation. In spring 2018, the accretion application was approved and an official survey was created showing the new boundaries (PLAN EPP83669).

1.2 Location

The subject property, Lot 2, District Lot 819, Kootenay District Plan 8063, is located approximately 15 km north of the community of Kaslo, BC (Appendix 1). The property is bordered by crown lease properties to the north and south, Highway 31 to the west, and Kootenay Lake to the east.

The property is within the Interior Cedar Hemlock moist warm (ICHmw2) biogeoclimatic subzone/variant. This climatic region is characterized by warm, moist summers and cool to mild, moist winters with moderate snowfall (MacKillop and Ehman 2016). Forests are dominated by western hemlock, western redcedar, Douglas-fir and western larch, with varying amounts of other species forming complex mixes. The cabin is situated on steep rocky shoreline typical of the area, with shallow soils and characteristically drier forest types.

1.3 Streamside Protection and Enhancement Area (SPEA)

The high water mark (HWM) indicated on the site drawings from plan 8063 is located at ~536.6 m elevation (Photos 1 & 2). An application for an accretion of crown land was successful and the re-surveyed present natural boundary is at 533.5 m, as shown on the attached site plan (Appendix 2). The riparian setbacks were measured from the surveyed present natural boundary (Appendix 4).

Photo 1. Kootenay Lake high water mark and water level April 12, 2017.

Photo 2. Kootenay Lake high water mark between the beach and the building, April 12, 2017.

"**High Water Mark**" means the visible high water mark of a stream where the presence and action of the water are so common and usual, and so long continued in all ordinary years, as to mark on the soil of the bed of the stream a character distinct from that of its banks, in vegetation, as well as in the nature of the soil itself, and includes the active floodplain"

"Stream" includes any of the following that provides fish habitat:
(a) a watercourse, whether it usually contains water or not;
(b) a pond, lake, river, creek or brook;
(c) a ditch, spring or wetland that is connected by surface flow to something referred to in paragraph (a) or (b);

To determine whether the WDP area of 30 m from high water mark of the lake aligns with the criteria in the Riparian Area Regulation (RAR), a detailed assessment of the site was conducted to calculate the Streamside Protection and Enhancement Area (SPEA) for Kootenay Lake on the proposed site. Results for the Zones of Sensitivity (ZOS) and SPEA are presented in Table 1 below and on the setback map (Appendix 4).

As per the RAR, the large woody debris (LWD), and litter ZOS were plotted 15 m perpendicular from the HWM, while the shade ZOS was 0 m due to the southeastern exposure of the property. The SPEA was determined to be 15 m based on the ZOS with the greatest setback.

Table 1. SPEA result of detailed assessment.

Feature Type	SPVT[1]	Zones of Sensitivity			SPEA[3]
		LWD[2]	Litter fall	Shade	

Lake	TR	15 m	15 m	0 m	**15 m**

[1] SPVT: site potential vegetation type (TR-tree)

[2] LWD: large woody debris

[3] SPEA: Streamside Protection Area

2 PROJECT OVERVIEW

2.1 Existing Development

Existing development on the property consists of a 69.0 m^2 cabin, 6.0 m^2 outbuilding and ~4.0 m^2 outhouse constructed on a flat bench at the east end of the property that borders Kootenay Lake. The existing cabin was constructed in 2016 and is sited 4 m from the present natural boundary and completely within the 30 m WDP area and the 15 m SPEA. The cabin sits on concrete footings and posts and is located on one of the few benched areas of the property. A shared access road descends steeply from the highway to the four leasehold properties along the lakeshore. Currently the leaseholder has permission to use the driveway fronting the neighbouring property to the south to access a parking area (Photo 5). In addition, a small parking spot is located above the cabin. A wood staircase (~2 m^2) is located on the south side of the cabin (Photo 3), providing access to the parking and foreshore area. Development within the foreshore includes an existing groyne to the south of the cabin (Photos 10 and 12). The remaining property is largely undeveloped.

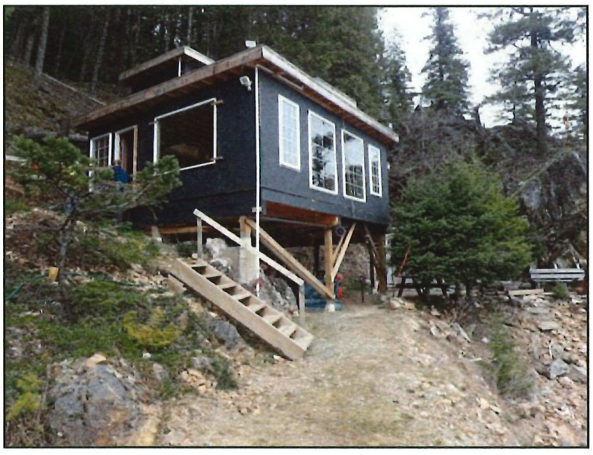

Photo 3. Existing cabin constructed on bench within the 30 m WDP and 15 m SPEA.

Photo 4. Looking west towards the cabin and outbuilding.

Photo 5. Parking area to the south of the cabin.

Photo 6. Looking east towards Kootenay Lake at outbuilding, cabin, and outhouse.

2.2 Proposed Development

The leaseholder is considering building a deck off the south facing door of the cabin to connect a staircase that has been built on bedrock (Photo 7). There are also preliminary plans for a staircase to be constructed from the upper access road down to the south door of the cabin (Photo 8). The property leaseholder has informal plans to build this staircase with minimal ground disturbance or vegetation removal other than a top landing at the upper property access road (C. Campbell, pers. com, September 22, 2018). See Appendix 3 for proposed development plans provided by the property leaseholder.

Photo 7. Approximate location of proposed deck off south door of cabin to connect existing staircase down to foreshore area, April 14, 2017.

Photo 8. Approximate location of proposed staircase development (marked up in red) from top parking area down to cabin south side. Photo provided by the property leaseholder.

2.3 Services and Site Drainage

The cabin was designed and constructed as a "dry" cabin as per the lease agreement. There are no plumbing or sewerage systems and potable water is brought into the property by the leaseholders as required. The cabin has a lined pit toilet approximately 10 m from the present natural boundary that is ~1.5 m deep. This toilet is designed to be serviced by a sewage pumping vehicle, however access may be limited. As this facility is not expected to be used frequently, the capacity of the receiving pit is not anticipated to be an issue and may never require pumping. There is also an unlined pit toilet located on the property by the parking area that was dug by the previous leaseholders that is used periodically.

3 RESOURCES

3.1 Fish and Fish Habitat

Typically, Kootenay Lake experiences two seasonal water level increases annually. The first increase is observed in April during low elevation snowmelt followed by a more substantial secondary rise in water levels due to high elevation snowmelt in June. Lake levels can vary by up to 4 m throughout the year affecting the extent of exposed shoreline.

The foreshore of the property consists of a rocky shoreline with exposed bedrock, a small cobble beach area and overlying angular boulders and cobble (Photo 10 and 11). The south section of foreshore is moderately sloped (~50%), while the upper north section consists of large angular boulders and a steep rocky cliff with >80% gradient. The beach area directly in front of the cabin consists of angular gravel and cobble (Photo 9) and has a gradient of ~12%, which graduates to a steeper embankment (~55%). There are four groynes constructed from boulders along the shoreline in the area, with one (3 m x 10 m) directly in front of the subject property (Photo 10 and 12). Pieces of large woody debris were present at the south end of the property along the shoreline. The shallow water along the beach area provides

potential rearing habitat for fry and juvenile fish, while the rocky shoreline provides potential rearing and cover habitat for juvenile and adult fish.

According to the Kootenay Lake Shoreline Inventory Mapping tool, this section of rocky shoreline provides potential fish staging, migration, and spawning habitat and is rated as *high* for juvenile fish rearing habitat. The Aquatic Habitat Index Rating is also *high*, indicating that this segment of shoreline is estimated to have important habitat value for juvenile and adult fish. The Aquatic Habitat Index uses many different criteria (such as substrate information, known salmonid shore spawning locations, important sturgeon areas, etc.) to estimate the habitat value of a shoreline segment. No aquatic vegetation or emergent aquatic vegetation was observed within the shoreline area of this property, although emergent aquatic vegetation has been reported in the surrounding area.

Kootenay Lake supports a variety of fish species (Table 2), including several species of regional interest, such as rainbow trout (*Oncorhynchus mykiss*), bull trout (*Salvelinus confluentus*), kokanee (*O. nerka*), white sturgeon (*Acipenser transmontanus*), Westslope cutthroat trout (*O. clarki lewisi*), and burbot (*Lota lota*).

Table 2. Fish species present in Kootenay Lake.

Species	Scientific Name	Comments
Burbot	*Lota lota*	Kootenay Lake population is red listed
Bull Trout	*Salvelinus confluentus*	Blue-listed species
Brook Trout	*Salvelinus fontinalis*	Introduced species
Kokanee	*Oncorhynchus nerka*	
Largemouth Bass	*Micropterus salmoides*	Introduced species
Largescale Sucker	*Catostomus macrocheilus*	
Longnose Dace	*Rhinichthys cataractae*	
Longnose Sucker	*Catostomus catostomus*	
Lake Whitefish	*Coregonus clupeaformis*	
Mountain Whitefish	*Prosopium williamsoni*	
Northern Pikeminnow	*Ptychocheilus oregonensis*	
Peamouth Chub	*Mylocheilus caurinus*	
Pumpkinseed	*Lepomis gibbosus*	Introduced species
Prickly Sculpin	*Cottus asper*	
Pygmy Whitefish	*Prosopium coulteri*	
Rainbow Trout	*Oncorhynchus mykiss*	
Redside Shiner	*Richardsonius balteatus*	
Slimy Sculpin	*Cottus cognatus*	
Torrent Sculpin	*Cottus rhotheus*	
Westslope Cutthroat Trout	*Oncorhynchus clarki lewisi*	Blue-listed species
White Sturgeon	*Acipenser transmontanus*	Kootenay Lake population is red-listed
Yellow Perch	*Perca flavescens*	Introduced species

(Habitat Wizard 2017)

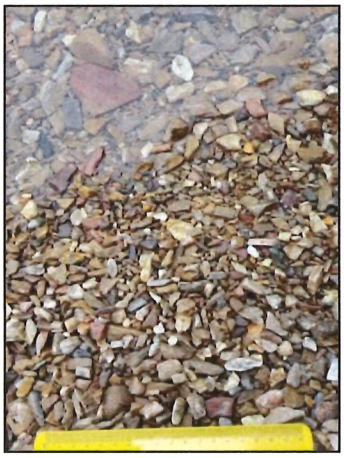

Photo 9. Beach substrate composed of angular gravel and cobble.

Photo 10. Shoreline looking south towards adjacent properties. Note presence of small and large cobble, boulders, and large woody debris.

Photo 11. Shoreline composed of rocky cliffs and boulders on the north edge of the property.

Photo 12. South view of rock groyne in front of subject property.

3.2 Riparian Vegetation

The riparian shoreline is composed of rocky cliffs, exposed bedrock and boulders interspersed with patches of riparian vegetation. The rocky foreshore is sparsely vegetated with stunted trees and shrubs due to wind exposure and lack of growing substrate (Photo 10, 11, and 13). The forest behind the cabin consists of a mature conifer forest dominated by Douglas-fir and western red cedar with an understory of shrubs, moss, forbs, and lichens. No significant coarse woody debris (CWD) was observed within the riparian area above the natural boundary.

The cabin site and the driveway are located on previously disturbed areas that have seen minor to moderate earthwork to accommodate buildings and to create a level area for vehicle access. No trees were removed to build the cabin or to provide vehicle access by the current property leaseholders. The building site and access were established by previous property leaseholders, and the current building site was unlikely to have supported mature trees due to sparse soils and underlying bedrock.

Invasive species noted on the site include great mullein, spotted knapweed, English ivy, and bull thistle (Photo 14 and 15). The leaseholder also mentioned burdock growing along the road (C. Campbell, pers. com, August 30, 2018). According to the Central Kootenay Invasive Species Society, English ivy is prioritized to contain to gardens so it doesn't spread into natural areas, transportation corridors, or other "natural" lands. As the English ivy noted on site is climbing up the bedrock cliffs on the north edge of the property, this could be a candidate species for control. A list of plant species encountered within the 30 m WDP area and on the slope above the cabin site is presented in Table 3.

Table 3. Plant species list from 30 m WDP area and slope above cabin at 10182 Highway 31, April 12, 2017.

Common Name	Latin Name	Common Name	Latin Name
Trees		**Shrubs (cont'd)**	
Douglas-fir	*Pseudotsuga menziesii*	prince's pine	*Chimaphila umbellata*
western redcedar	*Thuja plicata*	tall Oregon-grape	*Mahonia aquifolium*
paper birch	*Betula papyrifera*	thimbleberry	*Rubus parviflorus*
western yew	*Taxus brevifolia*	**Herbaceous**	
Douglas maple	*Acer glabrum*	yarrow	*Achillea millefolium*
western larch	*Larix occidentalis*	racemose pussytoes	*Antennaria racemosa*
Shrubs		round-leaved alumroot	*Heuchera cylindrica*
soopolallie	*Shepherdia canadensis*	rattlesnake-plantain	*Goodyera oblongifolia*
twinflower	*Linnaea borealis*	**Mosses and Lichens**	
prickly rose	*Rosa acicularis*	reindeer lichens	*Cladina sp.*
kinnikinnick	*Arctostaphylos uva-ursi*	pelt lichens	*Peltigera sp.*
willow	*Salix* sp.	step moss	*Hylocomium splendens*
wormwood	*Artemisia absinthium*	**Invasive Plants**	
common juniper	*Juniperus communis*	great mullein	*Verbascum thapsus*
falsebox	*Paxistima myrsinites*	bull thistle	*Cirsium vulgare*
red-osier dogwood	*Cornus stolonifera*	English ivy	*Hedera helix*
birch-leaved spirea	*Spiraea betulifolia*	spotted knapweed	*Centaurea maculosa*
cherry	*Prunus* sp.	common burdock	*Arctium minus*

Photo 13. Driveway access showing small trees that appear immature or stunted from growing conditions.

Photo 14. Bull thistle noted on property.

Photo 15. English ivy on bedrock cliffs on the north edge of the property.

3.3 Wildlife

3.3.1 Reptiles and Amphibians

The rocky outcrops, boulders and large woody debris along the foreshore provide good habitat for reptiles, though none were observed during the survey.

3.3.2 Birds

A visual survey of the forest and riparian area surrounding the development conducted by a QEP found no active or inactive nest sites or wildlife habitat features that indicate regular use by birds (i.e. night roosts, perches, snags), however, riparian areas are conducive to support bird activities and various species are likely present in the vicinity of the project area.

3.3.3 Mammals

The riparian area has some suitable habitat for mammals with palatable vegetation including shrubs and young saplings. Ungulates may occasionally use the area to access the water and browse on vegetation, however no signs of droppings or browse were observed. South facing rocky crevices and cracks on the cliffs on the north end of the property could provide bat roosting habitat. Although no bats were noted during the site visit, their presence has been reported in the area (Habitat Wizard on iMap BC; accessed August 30, 2018). According to the BC Wildlife Habitat Features Guidance document, rock crevices used for day, maternity or hibernation roosting sites are usually in warm, inaccessible sites on south-facing aspects (MOE, 2017).

3.3.4 Species at Risk

A species at risk inventory search was conducted to identify any publicly available known occurrences within a 10 km radius of the project area using Habitat Wizard on iMap BC (Table 4). White Sturgeon (*Acipenser transmontanus*) is the only known species at risk identified within the search area on Habitat Wizard and there was no sign, or occurrence of any species at risk during the site survey. Although a helpful tool, the lack of documented species at risk identified on Habitat Wizard does not preclude the presence of a species at risk from an area.

Table 4. Species at Risk.

Common Name	Latin Name	Comments
White sturgeon- Kootenay River Population	*Acipenser transmontanus*	Red listed Kootenay lake population.

(CDC, 2018)

4 ENVIRONMENTAL CONSIDERATIONS

4.1 Impacts to the WDP and SPEA

The existing development includes the following infrastructure within the 30 m WDP and 15 m SPEA area:

- An existing 69 m^2 cabin on wooden posts and concrete footings (approximately 4m from the present natural boundary);
- An existing 6 m^2 outbuilding (approximately 7m from the present natural boundary);
- Plans for a deck to the south of the cabin from the existing door to connect existing stairs down to the foreshore; and
- Future (tentative) plans for a staircase extending up the slope to the west from the cabin to the upper access road.

Riparian vegetation contributes to a healthy and productive aquatic ecosystem through the provision of functions including: large woody debris recruitment, insect drop, buffering of terrestrial pollution from roads, and erosion control. As such, the cumulative removal of vegetation within the SPEA has an impact on the health of aquatic ecosystems in Kootenay Lake. The existing cabin was constructed 4 m from the

natural present boundary within the 30 m WDP and 15 m SPEA setbacks due to property constraints. This construction has resulted in the permanent removal of riparian vegetation within the footprint of the cabin and appurtenances; however, this was likely the only viable option for a building site on the property. The selected building site was a previously leveled trailer pad and was the only flat bench available, as the remaining property slopes steeply up to the highway.

Impacts were kept to a minimum by building a modest cabin with a small footprint and by elevating the cabin and staircase on wooden posts, reducing vegetation removal and ground disturbance. In addition, the cabin was mainly constructed on bedrock with limited vegetation potential and water absorption and retention capacity. Development of the cabin on the steep slopes above would have resulted in greater impacts to the well-established forested area and to slope stability. There is no landscaping or additional clearing anticipated with future developments aside from the potential for a staircase landing to be constructed at the top of the access road, well out of the 15 m SPEA.

4.2 Aquatic Impacts

Aquatic impacts present at this property include one 10 m long x 3 m wide rock groyne constructed of boulders extending into the water from the shoreline (Photo 10 and 12). There are no plans for installation of temporary or permanent docks at this site.

Aside from some loss of riparian vegetation within the WDP and SPEA, there are no anticipated direct aquatic impacts foreseen from the current development. The pit outhouse is located approximately 10 m from the natural property boundary and is not expected to affect water quality in Kootenay Lake. When installed, the outhouse pit was lined with a sealed plastic vault that could conceptually be pumped, but is used infrequently enough by the owners that this is not likely to be necessary. As long as waste volumes within the vault stay at a level that will not breach the vault, there are likely no direct aquatic impacts expected from this outhouse.

5 Measures to Protect the Integrity of SPEA

An overview assessment was conducted to determine the potential for hazards within the SPEA, including windthrow, slope stability, and hazard trees. General environmental procedures recommended to protect the integrity of the SPEA include invasive plant management, appropriate scheduling of environmentally sensitive activities as required, protection of trees and vegetation in the SPEA during future construction, erosion and sediment control during future construction, and construction waste management as required.

The cabin, as constructed, and proposed future development activities on the building site should not pose a threat to the ecological integrity of adjacent areas of the WDP and SPEA, provided environmental best management practices outlined in this section are followed during construction activities.

5.1 Windthrow

A Registered Professional Forester (RPF) was not retained to assess potential windthrow. The cabin was built on the previously cleared trailer pad site, so no trees were removed at the time of cabin construction. Further tree clearing activities are not planned at this time so no increased risk of windthrow on the property is expected.

5.2 Slope Stability

A geotechnical assessment was completed by Norm Deverney, P.Eng on April 12, 2017 in conjunction with the environmental assessment. Please refer to his report for assessment findings and recommendations. There are minor signs of long term slope mobility, as evidenced by curved trees with a sweeping trunk shape (Photo 16) that have adjusted to slope movement over their growing life (as per Table 3.8 of the RAR, BC, 2015).

The Kootenay Lakeshore Inventory mapping tool ranks this area as *moderate* for erosion potential, and due to the size and durability of much of the property substrate (gravel, cobble, boulders, bedrock), there is little material that can be easily mobilized by wind or water. However any future clearing for additional development could expose forest topsoils and sub-soils, which can erode and contribute sediment to the lake without proper site management.

Photo 16. Slope mobility over a longer time period evidenced by sweeping/curved tree trunks growing on the slopes to the north and west of the cabin

5.3 Hazard Trees

A RPF was not retained to assess hazard trees; however, a quick assessment for potential hazard trees was conducted by the QEP within the property. No hazard trees were identified by the QEP at the time of the survey.

5.4 Scheduling of Environmentally Sensitive Activities

Environmentally sensitive activities that have already taken place include cabin development and minor construction work within the riparian area (outbuilding, outhouse). If further vegetation or tree clearing were required to accommodate future development plans, any vegetation disturbance or removal should occur within the least risk work window period for nesting birds/roosting bats (August 1- March 31) and raptors (August 15-January 30). If removal of vegetation is scheduled otherwise, a nesting bird survey/bat roost survey is recommended prior to vegetation clearing.

5.5 Protection of Trees and Vegetation in the SPEA

The existing cabin was constructed on concrete posts instead of a foundation, and stairs are elevated to allow for maximum retention of existing vegetation. Future plans for deck construction and a staircase up to the upper parking area are planned to have minimal impacts to the vegetation and preliminary plans show proposed above ground engineering to avoid impacting the steep slopes behind the cabin (Appendix 3).

The current development has resulted in the removal of some riparian vegetation, however no trees were removed to accommodate the cabin or vehicle access by the current property leaseholders. If future vegetation clearing is required to accommodate the deck or staircase, vegetation disturbance/removal should be kept to the minimum possible area required for access, staging, construction works, and safety considerations. Trees located on the steep slope above the cabin should be retained to maintain the integrity of the steep slope.

5.6 Sediment and Erosion Control

Any land clearing activities to accommodate further development carries the risk of erosion and associated sediment releases into Kootenay Lake. The following mitigation measures should be implemented to reduce the risk of sediment input to the Kootenay Lake:

- Avoid disturbance of the ground on the steep slope behind the cabin.
- Keep amount of vegetation removal, soil disturbance and soil compaction to a minimum.
- Stormwater runoff, if present, should be controlled and redirected away from exposed soils.
- Avoid stockpiling soil on the property and revegetate exposed soils as soon as possible.

5.7 Construction Waste Management

All construction waste generated from future development plans on site should be stored separately from household garbage and must be taken off site and re-used, recycled or disposed of accordingly.

5.8 Invasive Plant Management

Activities on the property, including future construction activities, can potentially increase dispersal of invasive plant species which can out-compete native riparian vegetation, causing damage to habitat and ecosystem function. Invasive species observed onsite include spotted knapweed, mullein, English ivy and

bull thistle. The following mitigation measures are recommended in order to reduce the establishment and proliferation of invasive plant species on site:

- Avoid parking equipment or storing materials in actively infested locations. If necessary to use or disturb the area, treat the invasive species prior to disturbance.
- All equipment and materials (i.e. fill) should be thoroughly washed and inspected before entering the project site to prevent the import of new invasive plant seeds and root fragments.
- Vegetation clearing and soil disturbance should be minimized.
- All exposed soils should be stabilized and revegetated as soon as possible following completion of the project.
- After construction, property owners should monitor areas of disturbed soils for the establishment of invasive plant species. New and known species of invasive plants found colonizing disturbed areas should be removed by hand, and disposed of.
- Further information regarding management of invasive species by homeowners is available through the Central Kootenay Invasive Species Society (https://ckiss.ca/).

In addition, it is recommended that the English ivy be controlled by hand pulling and cutting of vines in late summer or fall, when plants are easier to remove. Above ground vines should be cut and pulled so no rooted portions re-grow. Mechanically removed plants should be bagged and disposed of properly in a landfill, where plants cannot set new roots. Other species noted on site, although not prioritized regionally or provincially for immediate eradication, should be removed to encourage native ground cover to re-establish.

6 MITIGATION PLAN

Other than the current development, the property is relatively undisturbed and offers very few opportunities to offset the impacts of 80 m^2 of riparian habitat removal on site. The area of impact consists mainly of bedrock and shallow soils with limited vegetated potential. As such, the most appropriate strategy to manage for the loss of riparian vegetation, other than offsite compensation, is to minimize further vegetation removal within the SPEA, and to retain native trees and shrubs elsewhere on the property. In addition, the property owners are strongly encouraged to remove invasive species present on the property. BC invasive Species Council (https://bcinvasives.ca/) has excellent guidance on species identification, natural history traits, and control methods for each species identified in this report.

7 CONCLUSION

Due to the configuration of natural and surveyed boundaries and the development that has occurred on the subject lot, encroachment into the SPEA and the WDP has occurred. Although development within this area has resulted in the permanent conversion of land which may have otherwise provided riparian habitat, in constructing the cabin within the SPEA and WDP, the leaseholders likely used the most logical building site with the least environmental impacts available on the property. By constructing the buildings on the flat rocky bench closer to the water, they avoided impacting the steep vegetated slopes located directly behind the building site. In avoiding the development of these slopes, important riparian trees,

shrubs, lichens, forbs, and herbs were retained on the site, slope stability was maintained, forest top soils and sub-soils were not disturbed, and the risk of erosion and sedimentation into Kootenay Lake was likely very low. In addition, the cabin and staircases were elevated or constructed on concrete posts which reduced the amount of vegetation removal necessary for the construction of these structures. Maintenance of the remaining land in a natural state will retain remaining riparian function of the plant community and continue to perform important ecosystem processes. The impacts resulting from the relatively modest development on this property can be sufficiently mitigated if the recommendations provided in the mitigation plan are fully implemented.

8 CLOSURE

I, Sylvie Masse, certify that I am qualified to carry out this assessment; and that the assessment methods under the Regulation have been followed; and that, in my professional opinion:

(i) if the development is implemented as proposed, or

(ii) if the streamside protection and enhancement areas identified in the report are protected from the development, and

(iii) if the developer implements the measures identified in the report to protect the integrity of those areas from the effects of the development,

then there will be no harmful alteration, disruption or destruction of natural features, functions and conditions that support fish life processes in the riparian assessment area.

Prepared by:

Rachel Pennell, BSc., A.Ag

Reviewed by:

Sylvie Masse, M.Sc., R.P.Bio.
College of Applied Biology: R.P.Bio. #834

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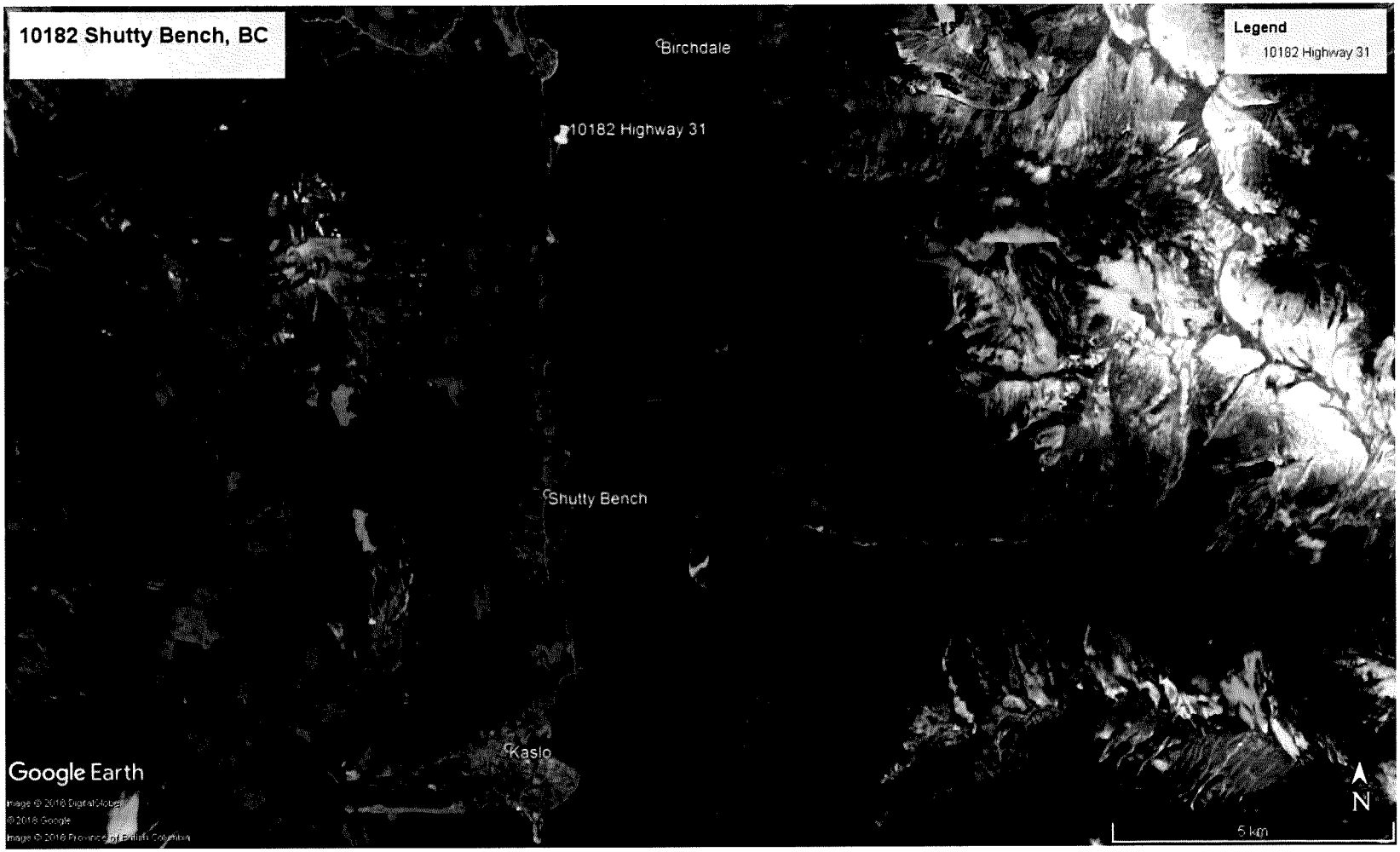
APPENDIX 1

LOCATION MAP


10182 Shutty Bench, BC
Birchdale
10182 Highway 31
Shutty Bench
Kaslo
Legend
10182 Highway 31
Google Earth
N
5 km

APPENDIX 2

SITE SURVEY OF PROPERTY AND ACCRETED NATURAL BOUNDARY

SITE PLAN SHOWING HOUSE LOCATION ON LOT A, DISTRICT LOT 819, KOOTENAY DISTRICT, PLAN EPP83669 (PENDING).

SCALE: 1:250

0 5 10 15 20 25

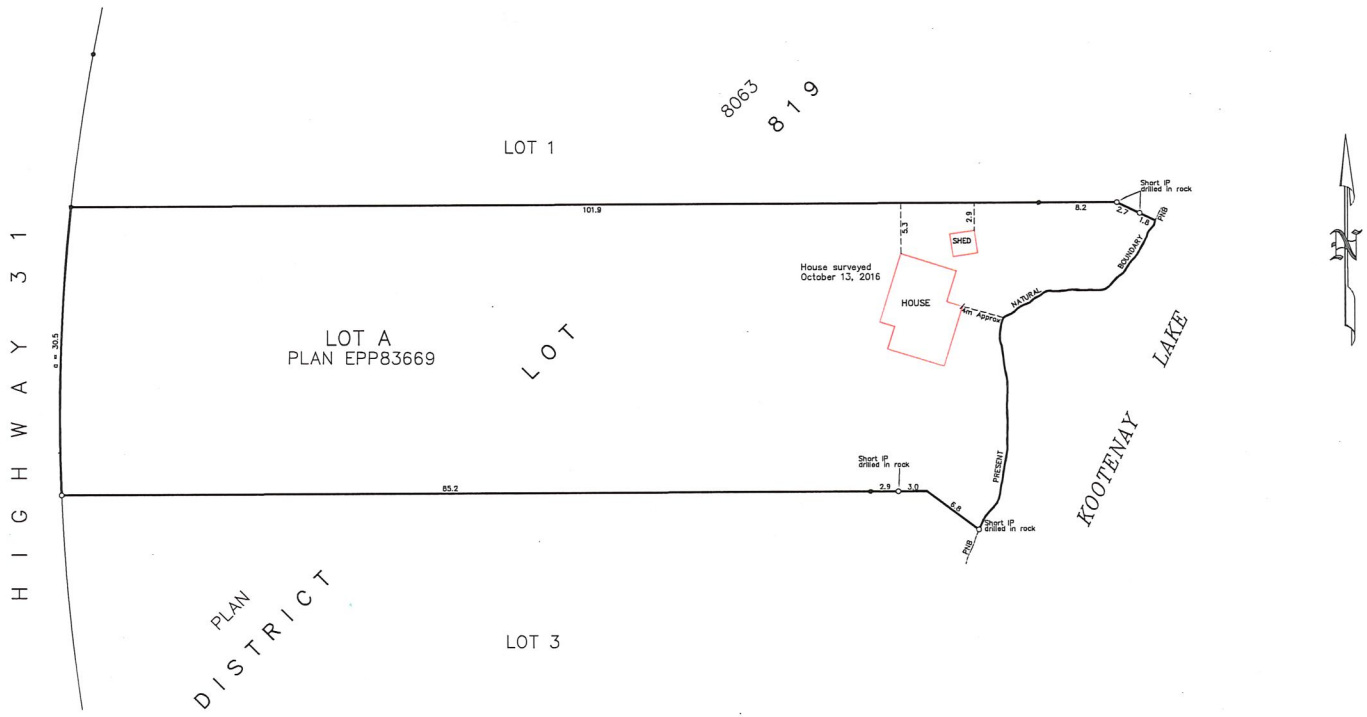
This plan shows horizontal ground-level distances in metres.
Bearings shown on this plan are Grid Bearings

The intended plot size of this plan is 864 mm in width by 560 mm in height (D size) when plotted at a scale of 1:250.

LEGEND

- DENOTES STANDARD IRON POST FOUND.
- DENOTES STANDARD IRON POST PLACED.
- PNB DENOTES PRESENT NATURAL BOUNDARY

Note: As of September 24, 2018 Plan EPP83669 has not been registered.



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This is not a legal survey plan and should not be used for the re-establishment of legal boundaries.

No structures should be positioned based on information shown on this plan.

WARD ENGINEERING AND LAND SURVEYING LTD.
1014 Seventh Street Tel: (250) 354-1660 FILE: 16-141
Nelson, British Columbia Web: www.wels.ca DRAWING: 16-141 SITE PLAN
V1L 7C2

THIS PLAN LIES WITHIN THE REGIONAL DISTRICT OF CENTRAL KOOTENAY

APPENDIX 3

PROPERTY SITE PLAN

SKETCH PLAN TO ACCOMPANY ACCRETION APPLICATION FOR LOT 2, DISTRICT LOT 879, KOOTENAY DISTRICT PLAN 8063.
(SEE PID: 013-794-493)

SCALE 1:200 BCGS 82F.044

0 2 4 8 12 16 20

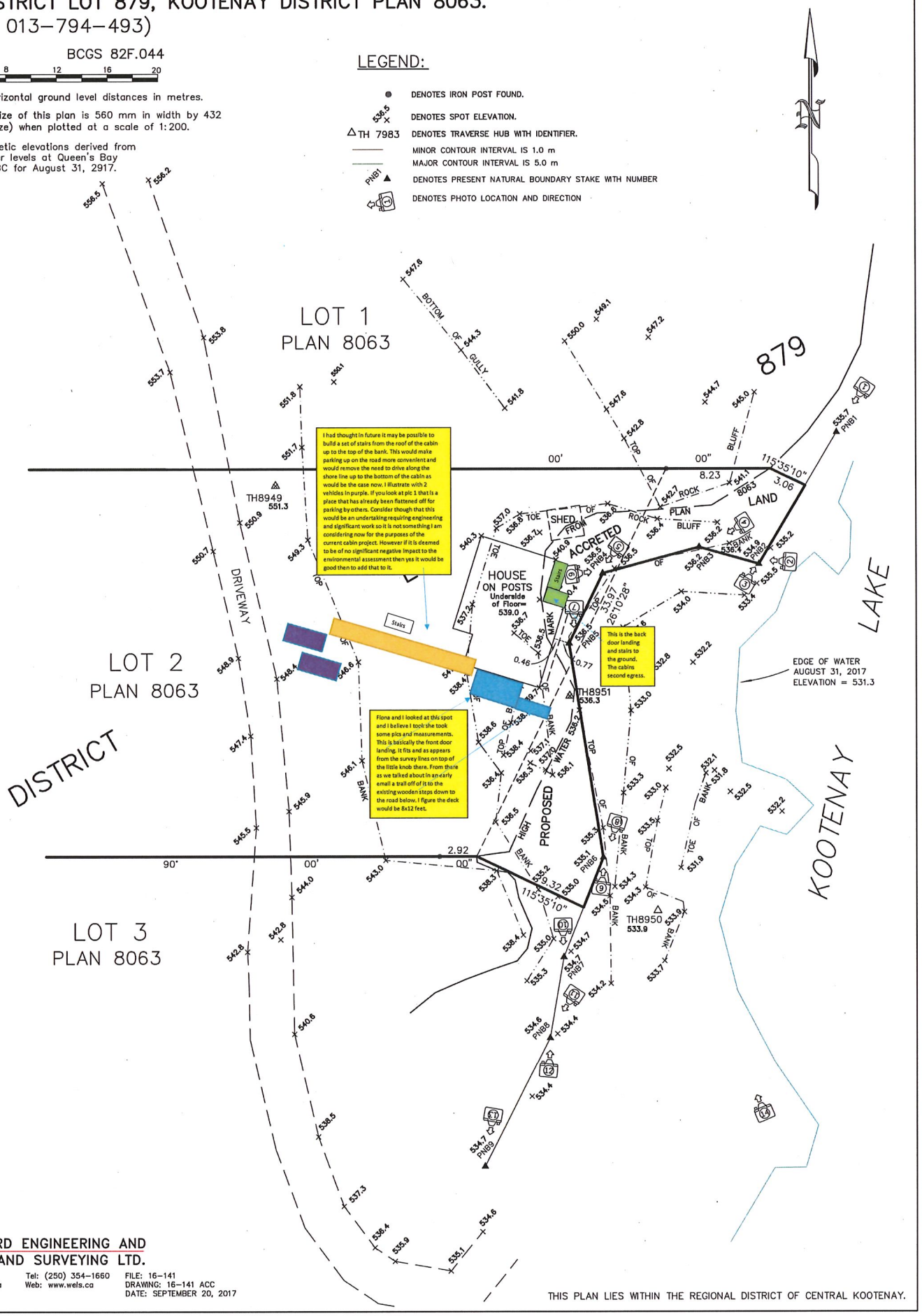
This plan shows horizontal ground level distances in metres.

The intended plot size of this plan is 560 mm in width by 432 mm in height (C size) when plotted at a scale of 1:200.

Elevations are geodetic elevations derived from Kootenay Lake water levels at Queen's Bay published by FortisBC for August 31, 2917.

LEGEND:

- DENOTES IRON POST FOUND.
- 536.5 DENOTES SPOT ELEVATION.
- TH 7983 DENOTES TRAVERSE HUB WITH IDENTIFIER.
- MINOR CONTOUR INTERVAL IS 1.0 m
- MAJOR CONTOUR INTERVAL IS 5.0 m
- PNB1 DENOTES PRESENT NATURAL BOUNDARY STAKE WITH NUMBER
- DENOTES PHOTO LOCATION AND DIRECTION



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DRAWING: 16-141 ACC
DATE: SEPTEMBER 20, 2017

THIS PLAN LIES WITHIN THE REGIONAL DISTRICT OF CENTRAL KOOTENAY.

APPENDIX 4

PROPERTY WDP AND SPEA SETBACK MAP

SITE PLAN SHOWING HOUSE LOCATION ON LOT A, DISTRICT LOT 819, KOOTENAY DISTRICT, PLAN EPP83669 (PENDING).

SCALE: 1:250

0 5 10 15 20 25

This plan shows horizontal ground-level distances in metres. Bearings shown on this plan are Grid Bearings

The intended plot size of this plan is 864 mm in width by 560 mm in height (D size) when plotted at a scale of 1:250.

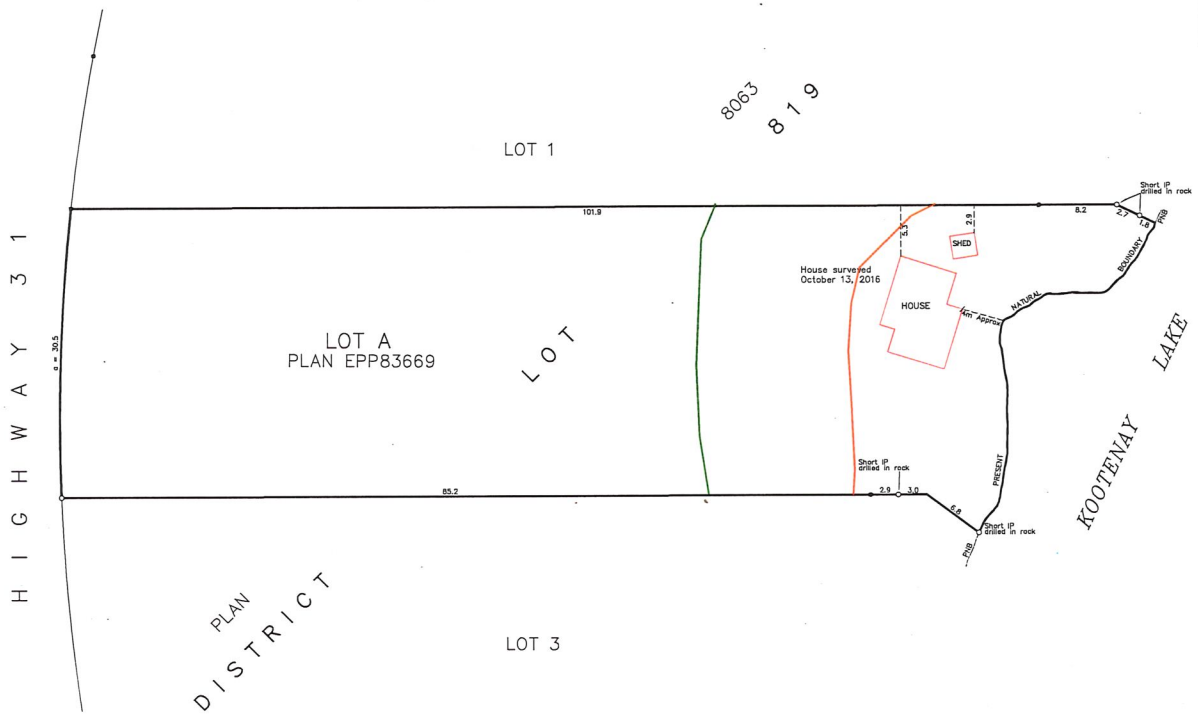
LEGEND

- ● DENOTES STANDARD IRON POST FOUND.
- ○ DENOTES STANDARD IRON POST PLACED.
- PNB DENOTES PRESENT NATURAL BOUNDARY

Note: As of September 24, 2018 Plan EPP83669 has not been registered.

LEGEND

- 15 m Litterfall and Large Woody Debris ZOS
  15 m Streamside Protection and Enhancement Area
- 30m Watercourse Development Permit area



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Schedule 3: Site Plan