

PHTR01

Stand Management Plan

Original: 12/03/2019 (mm/dd/yyyy)
 Amendment # (mm/dd/yyyy)

A. Tenure Information

Forest Region	Forest District	License	Cutblock or Road ID	
Coast	Haida Gwaii	TFL60	PHTR01	
CP #	Timbermark(s)	Operating Area	Geographic Location	
N/A	N/A	Skidegate	Phantom Creek	
Authorizing FSP	Approval Date	Expiry Date	Amended Date	FDU
Haida Gwaii	May 22, 2018	May 21, 2023	September 27, 2018	A
Watershed ID		Phantom Creek		
Sub Unit ID		329		
Landscape Unit:	Yakoun Lake	Treatment Area	7.3 ha	
SU	TREATMENT AREA (TA) IDENTIFIER (General Location, Licensee, Stream Reaches, Other – e.g., GPS coordinates., photo number)		TA	TREATMENT AREA (Net) (to the nearest 1 or 0.1 ha)
1	The polygon is accessible on Queen Charlotte South Mainline (QCS) adjacent to km 21 mark at N 53°22'46.8"; W132°17'12.5" coordinates. This polygon lies between Rennell Sound Main and Phantom Creek to the north.		PHT R01	7.3 Treatment 1.0 No Treatment strips
Total				8.3 Ha
Tree Height Method				
<input checked="" type="checkbox"/> Site series <input type="checkbox"/> Tallest tree				

B. Objectives

Stand Treatment Regime for Treatment Unit (TU)		
TU ID	TU (ha)	TU Description and Management Objectives
1	5.6	<p>The Treatment Unit has been classified as an over dense conifer stand within the CWHwh1 01 (95) 05 (5) site series. The Pre-stand Tending survey completed in the summer of 2019 found the stand to be roughly 30 years old having a density of ~5,800 stems per ha (TSPH) and a species composition of Hw70Ss26Dr4. The stand is currently limited for growth because of the high density. Natural thinning processes are occurring. The stand is impenetrable for raptors including goshawk and owls. Treatment is expected to advance stand development towards old growth attributes in a shorter time frame.</p> <p>The TU stand is primarily comprised of Western Hemlock, Sitka Spruce and Red Alder (Dr) with a low and random occurrence of Cedar (Cw and Yc)</p>
2	1.7	<p>The Treatment Unit has been classified as an over dense conifer stand within the CWHwh1 01 (95) 05 (5) site series. The Pre-stand Tending survey completed in the summer of 2019 found the stand to be roughly 30 years old having a density of ~2,600 stems per ha (TSPH) and a species composition of Dr47Ss45Hw8. The stand is currently limited for growth because of the high density. Natural thinning processes are occurring. The stand is impenetrable for raptors including goshawk and owls. Treatment is expected to advance stand development towards old growth attributes in a shorter time frame.</p> <p>The TU stand is primarily comprised of Red Alder (Dr), Sitka Spruce and Western Hemlock and with a low and random occurrence of Cedar (Cw and Yc).</p>
1 and 2	7.3 ha	<p>Riparian Objectives</p> <p>Emulating and accelerating the natural thinning process by creating stands with a heterogenous vertical and horizontal complexity typical of old-growth forests. This project will completely be within the riparian area and therefore subject to Aquatic Objectives as per Type I and II Fish Habitat. The treatment proposed is intended to accelerate the development of riparian old growth characteristics as the stand matures, thereby enhancing the terrestrial habitat functionality in the short term, and aquatic habitat in the long term. Treatment being conducted as per FSP section 6.144 (HGLUOO s. 10, 11). Post treatment tree growth including rooting structure and canopy structure is anticipated to increase significantly. Along riparian areas the rooting structure of spruce is required for bank stability.</p> <p>Wildlife Objectives</p> <p>Wildlife objectives are implicit in the treatment the riparian areas will receive. A much more open stand will facilitate easier wildlife movement both on the ground and in flight. Eventually the standing dead trees will provide habitat for cavity makers such as woodpeckers, and cavity dwellers, such as Keen's Myotis (<i>Peromyscus Keenii</i>) and Northern Saw Whet Owl (<i>Aegolius acadicus</i>) Live trees will create larger canopies and branch structure for nesting by Northern Goshawk (<i>Accipiter gentilis</i>) and Marbled Murrelet (<i>Brachyramphus marmoratus</i>). The course woody debris will provide sheltered habitat for various small mammals. Opening the stand will also encourage shrub and herbaceous plants which in turn will provide forage for black bears (<i>Ursus americanus</i>), deer* (<i>Odocoileus hemionus, sitkensis</i>), and elk (<i>Cervus elaphus, nelson</i>). As this is a potential Marbled Murrelet (<i>Brachyramphus marmoratus</i>) and the Northern Goshawk (<i>Accipiter gentilis</i>) habitat and the Northern Saw-whet Owl (<i>Aegolius acadicus</i>) nesting habitat, (LUO Part5: 18-22 and Schedules 9,11,12) accelerating the development of old growth conditions will be beneficial to the survival of these species.</p>

PHTR01

*Deer browsing has reduced abundance and vigour of virtually all species of shrubs and herbs; in extreme cases, the understory structure of the forest is absent (Daufresne and Martin 1997). The direct effects of browsing are obvious and can range from reduced vigour to elimination of certain species. (Introduced Species Management in Haida Gwaii (Queen Charlotte Islands- Todd E. Golumbia)

General:

In the 1930s to 1950s, stands along the Yakoun and several other rivers on Haida Gwaii were heavily harvested for valued spruce, with continued "up to the bank" harvesting along the river's tributaries until the introduction of Coastal Fisheries Forestry Guidelines in the 1980s. Early on, the Yakoun River was dammed for flooding to allow rafts of logs to flow down river and support barges to be brought upriver. All the flooding and harvesting damaged the riverbanks. Where 65-metre-tall spruce and cedar once towered, with an estimated 350 stems per hectare (sph), today 50- to 70-year-old over-dense spruce, hemlock and alder stands at 3,500 sph are present. These young, over-dense stands are tight grown, have minimal crown development, and are suppressed for diameter and root growth. The old growth once provided riverbank stability, river structure, wildlife habitat, and significant diversity, while today's over-dense conifer stands are relatively void of diversity, structure, and provide little to no riverbank stability. With the introduction of the *Forest Practice Code*, followed by the *Forest and Range Practices Act* and the HGLUOO, riparian areas of all fish streams are removed from the timber harvest land base (THLB) and are excellent candidates for habitat restoration to expedite old growth attributes.

In the late 1990's and early 2000's Forest Renewal BC funded instream and riparian restoration inventory programs. These programs highlighted priority areas for restoration treatment including: instream work; riparian forest rehabilitation; Road and landslide rehabilitation and beaver management. This project focuses on the Yakoun Watershed areas. In total 13 sub Basins were inventoried by Golder and Associates – Restoration Plan for Yakoun River Watershed 20111218. Of the 13 sub basins Yakoun Residual was # 1 Priority Treatment with a high success rating of restoration including a secondary restoration component of Riparian Forest rehabilitation. The Primary restoration component is in-stream work, not covered by this project/ SMP.

The polygons picked for treatment along the Phantom Creek met the following criteria:

- Priority treatment from previous Watershed assessments
- Within or partially within known Goshawk forage areas
- Largest riparian areas impacted by past logging practices
- Will have quick response benefits of treatment for wildlife
- Good access for crews for safety and cost savings based on available budget
- Includes stand types the trained riparian crew on Haida Gwaii are familiar with

The riparian forest rehabilitation project is enabling crews to focus on the following objectives:

- quick response to restoring wildlife habitat for:
 - saw-whet owl
 - *stads k'un* (goshawk)
 - other raptors
 - resident and migratory birds
 - and black bears

while creating immediate spinoff benefits of:

- employment
- attaining carbon benefits
- and meeting the Haida Nation's requirement of having Ts'uu (*western red cedar*) for present and future generations of Haida through:
 - planting and retaining Ts'uu in Riparian Forests and overlapping Cedar Stewardship Areas (CSA).

Mid-term objectives created for the treatment include:

- expediting the seral climax of the forest stand
- Increasing residual stem diameters in a shorter time frame than naturally occurring
- Increase root development and strength in a shorter time frame than naturally occurring
- Increase individual tree canopy and branch size in a shorter time frame than naturally occurring

Long Term Objectives created for the treatment include:

- Providing large diameter trees in a shorter time frame to naturally provide the large coarse woody debris required for:
 - the riparian forest floor
 - The river system
 - Bank stability and erosion prevention

While riparian restoration can generally focus on in stream work and lower bench stabilization, the Haida Nation has concerns over any work conducted on the lower bench of large waterways. This project will concentrate on the mid and high benches. These benches fall within the HGLUOO protected areas for fish habitat and 100-year flood plain. These benches can also be red and blue listed ecosystems and again protected in the HGLUOO through EBM.

Spacing, creation of snags and initial introduction of coarse woody debris to the forest floor is the immediate goal of the project to begin mimicking the natural processes of riparian areas and to start obtaining the objectives listed above. Through spacing, trees are released from competition and able to grow faster and develop for soil stabilization and eventual large coarse woody debris introduction. Spacing slash will act as temporary coarse woody debris, snags will act as wildlife habitat and eventual coarse woody debris for interim introduction between spacing slash and large coarse woody debris of the developing stand.

Some areas in these mid and higher benches will require planting of conifer species where the overstory is currently deciduous (alder).

PHTR01

STAND DESCRIPTION											
ZONE, SUBZONE, VARIANT CWH wh 1			SITE SERIES (RANGE) 101/111 New 07, 08, 01 old					MOIST/NUTR. GRID - range c-e			
ELEVATION Min :100m Max:150m Avg:120m			ASPECT Variable		SLOPE DATA Min. %: 0 Max. %:50 Avg. :30			SLOPE			
HUMUS FORM moder		ROOTING DEPTH 50-60		SOIL DEPTH TO RESTRICTING LAYER >100cm		SOIL TEXTURE Silty loam		SOIL COARSE FRAGMENT 10-20%		DRAINAGE Moderate/ well	

c. Treatment Area Description

CURRENT / POST TREATMENT STAND CONDITIONS											
Polygon	DBH Class	Hw		Ss		Dr		Total		Snag	
		Current Density (sph)	Target Density (sph)	Current Density (sph)	Target Density (sph)	Current Density (sph)	Target Density (sph)	Current Density (sph)	Target Density (sph)	Current Density (sph)	Target Density (sph)
PHTR01 - unit 1	0 -10	3,317	0	217	0	0	0	3,533	0	N/A	0
	10.1 – 20	683	270	1,100	75	100	25	1,883	370	N/A	757
	20.1 – 40	67	67	133	133	117	117	317	317	N/A	0
	40.1 - 60	17	17	50	50	0	0	67	67	N/A	0
	Total	4,083	354	1,500	258	217	142	5,800	754	N/A	757

STAND TREATMENT REGIME :

- Treatment will aim at retaining large trees greater than 40 cm to a maximum of 750 sph. Target 600 to 750 sph variable density.
- If 40cm dbh trees cannot be found, trees in descending lower diameter classes will be retained progressively from higher to lower dbh classes.
- Girdling to occur on all stems greater than 15cm dbh to reach the variable density of which “Cat facing” of 20 sph is prescribed; replacing girdling of the stem.
- Alder (Dr), where present will be girdled. If no conifer trees are present alder trees will not be girdled.
- All dead and dying trees will be left standing as wildlife trees and to add structural diversity except where they are danger trees and stems less than 15 cm dbh.
- The post treatment inventory will be targeted at Hw47Ss34 Dr19

Polygon	DBH Class	Hw		Ss		Dr		Total		Snag	
		Current Density (sph)	Target Density (sph)	Current Density (sph)	Target Density (sph)	Current Density (sph)	Target Density (sph)	Current Density (sph)	Target Density (sph)	Current Density (sph)	Target Density (sph)
PHTR01 - unit 2	0 -10	160	0	1,160	0	40	0	1,360	0	N/A	0
	10.1 – 20	40	40	40	40	760	300	840	380	N/A	230
	20.1 – 40	0	0	0	0	440	275	440	275	N/A	165
	40.1 - 60	0	0	0	0	0	0	0	0	N/A	0
	Total	200	40	1,200	40	1,240	575	2,640	655	N/A	395

STAND TREATMENT REGIME :

- Treatment will aim at retaining large trees greater than 40 cm to a maximum of 650 sph. Target 550 to 650 sph variable density.
- If 40cm dbh trees cannot be found, trees in descending lower diameter classes will be retained progressively from higher to lower dbh classes.
- Girdling to occur on all stems greater than 15cm dbh to reach the variable density of which “Cat facing” of 20 sph is prescribed; replacing girdling of the stem.

PHTR01

- All dead and dying trees will be left standing as wildlife trees and to add structural diversity except where they are danger trees and stems less than 15 cm dbh.
- Plant regime – 700 stems Cw. Group planting at 2-meter spacing with 5-10-meter gaps between groups; estimated group spacing at 800 sph.
- The post treatment inventory will be targeted at Dr88Ss6Hw6

TREATMENT STANDARDS :

- Leave cedar trees standing. Do not fall or girdle any cedar trees. Cedar trees will be counted as ghost trees for stand density counts
- Thin from the bottom favouring larger stems,
- No harvesting or extraction of trees,
- Watch out for bird nests and wildlife trees and leave them standing.
- Minimize bucking to two or three pieces, where possible. Longer pieces will resist movement in high flow and trap fine debris. This is especially important on medium benches.
- On high benches, reduce slash build-up by bucking initial trees felled and limbing them such that the stems come in close contact with the ground
- High stumps up to 50 cm are acceptable where lower stumps cannot be safely attained,
- Dress girdle with a chain saw to mimic natural wounds.
- "Cat Face" by scaring a minimum of one side of tree by removing bark approximately 15cm X 100cm in a slashing motion of saw down the tree. This will represent a tree being swiped by a falling tree removing bark. This is expected to stress the tree to create cone crops for birds and small mammals
- To the extent possible, fall trees perpendicular to the floodplain to maximize overflow sediment storage capability of downed slash
- All cut stumps must have a cut angle of less than 30 degrees

TREATMENT AND MONITORING REGIMES

Treatment and timing	Attributes of what is to be treated (spp,ht, age)	Area (est) ha	Standards – Stand Structural Attributes – use columns and space below.				
			Pref Spp	Acc Spp	Target	Min	BA
Anytime. Expected treatment winter 2019 Spring 2020.	Based on DBH and Species	7.3	Cw, Ss, Hw	Dr	550-750	100-200 in Gaps	

Post treatment monitoring is suggested. Compare treated and untreated portions to ensure objectives of stem density and feature creation (snags) is met. Future monitoring may be planned for basal area and stem DBH comparisons between treated and untreated sites

SPECIAL AREAS - (TREATMENT PROPOSED)

TREATMENT AREA		TYPE OF SPECIAL AREA
AREA NO. KNGR01 Unit 1 and unit 2	SIZE: 7.3 ha	The riparian zone is a special area. Therefore, this whole prescription is for a special area.
KNGR001 Unit -2	1.7 ha	Planting 700 stems Cw. Group planting at 2-meter spacing with 5-10-meter gaps between groups; estimated group spacing at 800 sph.

RESERVE AREAS – (NO TREATMENT PROPOSED)

TREATMENT AREA #		TYPE OF RESERVE AREA; N/A
AREA NO. NT1 NT2	SIZE 0.5 ha 0.5 ha	No treatment reference areas are established across the treatment area. However, the whole treatment area is a No-Harvest-Zone as per Haida Gwaii FSP Section 6.80 (HGLUOO s.10). Treatment being conducted as per FSP section 6.144 (HGLUOO s. 10)
No treatment area: A 10-meter "no treatment zone" adjacent to the lower bench or active fluvial plain is maintained for this treatment and flagged in the field		

PHTR01

A. FSP Results & Strategies					
Results and Strategies Applicable to the Site (for amendments, the listed R/S apply only to the amended areas, unless otherwise stated. Refer to the original SP/ Salvage Plan to see how the R/S apply to the original harvest area).					
R/S ID#	R/S Title	Applicable (Y/N or N/A)			How Results or Strategies apply to the site (include rationale for not applicable, where required.)
Cedar Stewardship Areas (CSA)					
6.1	Is harvesting planned in a CSA	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N	<input type="checkbox"/> N/A	<i>Outline the results or strategies applied</i> Not located within CSA
6.2 a) to g), 6.3, 6.4	If harvesting in a CSA has 6.2 a) to g), 6.3, and/or 6.4 been addressed	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input checked="" type="checkbox"/> N/A	<i>Outline the results or strategies applied</i> N/A
Cultural Feature Identification					
6.5	Has a Cultural Features Identification Survey been completed	<input checked="" type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> N/A	<i>Outline the results</i> A Formal CFI was complete July 12 th , 2019 (report September 26 th , 2019) by Guy Lawson and Doug White (both certified).
Archaeological Impact Assessment (AIA)					
6.12 a) to f)	Is an AIA required	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N	<input type="checkbox"/> N/A	<i>Outline the results</i> No, AIA is not required. Low archaeological potential.
Haida Traditional Heritage Feature (HTHF)					
6.6 a) to h)	Have HTHF been identified	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N	<input type="checkbox"/> N/A	<i>Distinguish Class of HTHF identified</i> No HTHF have been identified.
6.7, 6.8, 6.9, 6.10, 6.11	If a HTHF has been identified are the appropriate reserves and/or retention strategies applied to site	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input checked="" type="checkbox"/> N/A	<i>Outline the results or strategies applied</i> N/A, no HTHF found.
Karst Resource Features					
6.13	Is a karst survey required	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N	<input type="checkbox"/> N/A	<i>Outline the results</i> No, PHTR01 does not overlap with the mapped "karst potential"; therefore, a karst survey is not required.
Haida Traditional Forest Features (HTFF)					
6.14	Have HTFF been identified	<input checked="" type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> N/A	<i>Distinguish Class of HTFF identified</i> Class 1: Devils Club Class 2: Stink Currant Class 3: 9 features found Bracken Fern, Licorice Fern, Northern maiden-hair, Old man's beard, Oval-leaved blueberry, Sitka Columbine, Snake liverwort, Sword Fern, Thimbleberry
6.14, 6.15, 6.16, 6.17, 6.18, 6.19, 6.20	If a HTFF has been identified are the appropriate reserves or retention strategies applied to site	<input checked="" type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> N/A	<i>Outline the results or strategies applied</i> Identified Class 2 features from the CFI survey have been flagged in the field and will not be cut or damaged.

PHTR01

					<p>Management strategy is to avoid damaging class 1 and class 2 HTFF that may not have been found during the CFI survey. Training with treatment crew to identify Class 1 and Class 2 HTFF will be completed prior to start up. Class 1 and Class 2 HTFF's not previously identified by the CFI survey that the crew may discover will include the following management regime:</p> <ul style="list-style-type: none"> - Stop work - Identify the HTFF to you supervisor - Supervisor to contact Taan representative to record and flag out feature appropriately - Taan to update HTFF inventory in accordance with 6.147 of FSP <p>See 'PHTR01 CFI Report 20190716.pdf' for known locations of class 2 HTFF.</p>
Cedar and Western Yew Retention					
6.21, 6.22, 6.23, 6.24	Is Cedar retention required	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input checked="" type="checkbox"/> N/A	<p>Where development areas are calculated as per the FSP to be:</p> <p><input type="checkbox"/> (a) >10ha, pre-harvest cedar >30%; or</p> <p><input type="checkbox"/> (b) ≤10ha, pre-harvest cedar >60%</p> <p>If (a) or (b) applies, then refer to 6.21 through 6.24.</p> <p>N/A - Cedar will not be harvested or cut under this Stand Management Plan. The development area is within an immature post-harvest stand and has been developed for spacing treatment.</p> <p>All Western Red Cedar and Yellow Cedar will not be cut or girdled and will not count towards density objectives but will be included in inventory numbers.</p>
6.31, 6.32, 6.33, 6.34	Have appropriate amounts of Western Yew been retained	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input checked="" type="checkbox"/> N/A	<p>Outline the results or strategies applied</p> <p>N/A - Western Yew patches or individuals were not identified within the development area.</p>
Cedar Stocking					
6.25, 6.26, 6.27, 6.28	Does the development area have pre-harvest Cedar composition greater than 20% in the harvested area	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N	<input type="checkbox"/> N/A	<p>Outline the results or strategies applied</p> <p>No, the Cedar composition is less than 20% of the treatment unit.</p> <p>All cedar is being retained in conjunction with the Haida Nation's Cedar Stewardship Area Management Plan to allow cedar to develop in the understory for slow growth and high number of rings/ cm development of heartwood.</p>
Cultural Cedar Stands, CMTs & Monumental Cedar					
6.35, 6.39, 6.43, 6.47	Was a Cultural Cedar Stand, CMT, or Monumental Cedar identified and are the appropriate results and strategies being applied to site	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> N/A	<p>Distinguish feature(s), how it was identified, and which results and strategies have been applied</p> <p>No, Cultural Cedar Stand, CMT, or Monumental Cedar was not identified</p>
6.36, 6.37, 6.38, 6.40, 6.41, 6.42, 6.44, 6.45, 6.46, 6.48, 6.49, 6.50, 6.51	Is there a planned alteration or removal of a Cultural Cedar Stand, CMT, or Monumental Cedar and/or reduction in the reserve and/or management zone	<input checked="" type="checkbox"/> Y	<input type="checkbox"/> N	<input checked="" type="checkbox"/> N/A	<p>Outline the results or strategies applied</p> <p>N/A - Cultural Cedar Stand, CMT, or Monumental Cedar were not identified.</p>
Recreation Resources					
6.70, 6.71	Are proposed activities planned in accordance with the designated objectives for the appropriate recreation sites and trails	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input checked="" type="checkbox"/> N/A	<p>Outline the results or strategies applied</p> <p>N/A, PHTR001 is not within or adjacent one of the five recreation sites or four recreation trails.</p>
Type I & Type II Fish Habitat					

PHTR01

6.79, 6.80, 6.81	Have Type I and/or Type II Fish Habitat been identified	<input checked="" type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> N/A	<i>Distinguish feature(s) and how it was identified</i> Two type I fish habitats were identified within and adjacent to the treatment area.
6.79, 6.80, 6.81, 6.82	Have the appropriate riparian reserve zones and riparian management zones been applied	<input checked="" type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> N/A	<i>Outline the results or strategies applied</i> A 10m special management zone established along type I streams. Phantom Creek is outside the treatment area with a fall away prescription; no spacing slash input within the stream is expected. Stream 1 is within the treatment area with a fall away prescription to minimize any slash input within the stream.
Active Fluvial Units (AFUs)					
6.83, 6.84	Have Active Fluvial Units been Identified	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N	<input type="checkbox"/> N/A	<i>Distinguish feature(s) and how it was identified</i> No, Active Fluvial Units were not identified.
6.83, 6.85, 6.86	Has the appropriate AFU management zone(s) been applied	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input checked="" type="checkbox"/> N/A	<i>Outline the results or strategies applied</i> N/A
Upland Stream Areas					
6.87	Are harvest rates consistent with the results of the watershed analysis	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input checked="" type="checkbox"/> N/A	<i>Outline the results or strategies applied</i> N/A – Following spacing there will be an intact immature forest cover.
6.87, 6.88, 6.89, 6.90	Has sufficient vegetation and trees been retained in upland stream areas	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input checked="" type="checkbox"/> N/A	<i>Outline the results or strategies applied</i> N/A
Sensitive Watersheds & Community Watersheds					
6.91, 6.94	Is the area located within a sensitive or community watershed	<input checked="" type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> N/A	<i>Distinguish feature(s) and how it was identified</i> The prescribed treatment units are not located within a sensitive watershed.
6.91, 6.92, 6.93, 6.94, 6.95	Based on the watershed assessment and/or analysis is the appropriate rate of harvest being applied	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input checked="" type="checkbox"/> N/A	<i>Outline the results or strategies applied</i> N/A -
Restrictions in a Stream, Wetland, or Lake Riparian Management Area					
6.96, 6.97, 6.98, 6.99, 6.100	Do any streams, wetlands, or lakes not meet the definition of Type I or II fish habitat, as defined in the HGLUOO	<input checked="" type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> N/A	<i>Distinguish feature(s) and how it was identified</i> One type I fish stream approximately 10m outside southern treatment boundary. One type I fish (Stream 1) within treatment area. Wetlands: None Lakes: None
6.101	Is there sufficient retention of trees within riparian management zones for streams, wetlands, and lakes that do not meet the definition of Type I or II fish habitat, as defined in the HGLUOO	<input checked="" type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> N/A	<i>Outline the results or strategies applied</i> Yes – treatment will retain most dominant trees within the management zone.
Biodiversity					

PHTR01


6.102	Are the legislative requirements as per FPPR s.35 and s.36 achieved	<input checked="" type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> N/A	<i>Outline the results or strategies applied</i> N/a – No road building or machine operations.
6.103, 6.104, 6.105, 6.106	Are the legislative requirements as per FPPR s.64 and s.65 achieved	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input checked="" type="checkbox"/> N/A	<i>Outline the results or strategies applied</i> N/A
6.107	Are the legislative requirements as per FPPR s.66 and s.67 achieved	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input checked="" type="checkbox"/> N/A	<i>Outline the results or strategies applied</i> N/A
6.108, 6.109, 6.110	Are there any forested swamps ≥0.25ha, if yes, have appropriate retention levels been applied?	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N	<input type="checkbox"/> N/A	<i>Distinguish feature(s) and how it was identified</i> No forested swamps greater than 0.25ha were identified during field work.
6.111	Has an ecological representation analysis been completed	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input checked="" type="checkbox"/> N/A	<i>Outline the results or strategies applied</i> The Treatment Unit was classified as CHWwh1 01(95) 03 (05). Application of the treatment will allow the stand to reach an ecologically climax mature stand sooner, through anthropogenic process rather than natural thinning or exclusion processes. The treatment will allow the currently suppressed stand to release through increased growing space, allowing more light, nutrients, and moisture to be available, to the ecologically dominate stems of the stand.
6.112, 6.113, 6.114, 6.115, 6.116	Is the amount of old forest retained in rare or common site series greater than or equal to the applicable target listed in HGLUOO Schedule 10	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input checked="" type="checkbox"/> N/A	<i>Outline the results or strategies applied</i> N/A, development area is a regenerating second growth forest planned for future forest development.
6.117, 6.118, 6.119	Have red or blue-listed ecological communities been identified	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N	<input type="checkbox"/> N/A	<i>Outline the results or strategies applied</i> No, there were no red or blue listed communities identified during field work.
Wildlife					
6.120	Has a bear den been identified, if yes, has the appropriate reserve and management zone been applied	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N	<input type="checkbox"/> N/A	<i>Distinguish feature(s) and how it was identified</i> <i>Outline the results or strategies applied</i> No black bear dens were identified in the prescribed development area.
6.121	Has an active bear den been identified, if yes, has the appropriate no work zones been applied	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N	<input type="checkbox"/> N/A	<i>Distinguish feature(s) and how it was identified</i> <i>Outline the results or strategies applied</i> No active black bear dens were identified in the development area.
6.122, 6.124	Is alteration or removal of a bear den or its reserve and/or management zone planned	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input checked="" type="checkbox"/> N/A	<i>Outline the results or strategies applied</i> N/A – No active or inactive black bear dens were identified.
6.123	Is bear den recruitment activities planned	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N	<input type="checkbox"/> N/A	<i>Outline the results or strategies applied</i> Bear activity is expected to increase post spacing as stem densities will allow for passage and increased light will allow for more berry production. Furthermore, riparian prescription will emulate and accelerate the natural

PHTR01

					thinning process by creating stands with a heterogenous vertical and horizontal complexity typical of old-growth forests. The treatment proposed is intended to accelerate the development of riparian old growth characteristics as the stand matures.
6.125	Does the plan comply with the "Guidelines for Raptor Conservation"	<input checked="" type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> N/A	Outline the results or strategies applied Yes, this Stand Management Plan complies with the "Guidelines for Raptor Conservation". The treatment is focused on stems less than 20cm DBH; therefore, not affecting potential nest sites and roosting or perching sites.
6.126, 6.127, 6.128	Has a Marbled Murrelet nesting habitat retention inventory been completed; if yes, outline the retention allocation strategy	<input checked="" type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> N/A	Outline the results or strategies applied 1.6 ha does overlap with MAMU habitat polygons as indicated in the Schedule 11. Treatment prescribed is expected to accelerate old growth attributes, including large crowns for Marbled Murrelet habitat. Treatment will aim at retaining large trees greater than 40 cm to a maximum of 650 sph. No reduction in the MAMU habitat.
6.129, 6.130, 6.132, 6.136, 6.137, 6.139	Are there any HGLUOO Schedule 12 reserves applicable to the area for Northern Goshawk and Northern Saw-whet Owl nesting habitat, if yes, have these areas been appropriately managed	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input checked="" type="checkbox"/> N/A	<i>Outline the results or strategies applied</i> N/A –does not overlap with the Schedule 12 reserves, for Northern Goshawk and Northern Saw-whet Owl nesting habitat. The treatment is expected to enhance forage habitat and nesting opportunities for Northern Goshawk and Northern saw-whet Owl.
6.131, 6.138	Has Northern Goshawk or Northern Saw-whet Owl nesting habitat been identified outside of a HGLUOO Schedule 12 reserve and, if yes, been appropriately managed	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N	<input type="checkbox"/> N/A	<i>Distinguish feature(s) and how it was identified</i> <i>Outline the results or strategies applied</i> No, Northern Goshawk and Northern Saw-whet Owl nesting habitat has not been identified outside of the HGLUOO Schedule 12 within prescribed treatment area. Treatment is expected to enhance habitat for these species.
6.133, 6.134, 6.135	Has a Great Blue Heron nest, or potential nest, site been identified	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N	<input type="checkbox"/> N/A	<i>Distinguish feature(s) and how it was identified</i> <i>Outline the results or strategies applied</i> The development area and prescribed treatment area is not located within or adjacent to known Great Blue Heron rookeries or nests. Treatment is expected to enhance nesting opportunities for heron nesting
6.140	Are forest management activities planned within 500m of Important Bird Areas	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N	<input type="checkbox"/> N/A	<i>Outline the results or strategies applied</i> N/A Treatment area is not within 500m of an Important Bird Area(s).
6.140	Have the habitat values associated with the Important Bird Areas been considered and documented	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input checked="" type="checkbox"/> N/A	<i>Outline the results or strategies applied</i> N/A – treatment area is not within 500m of an Important Bird Area(s).
Forest Reserves					
6.141	Are all Forest Reserves shown on HGLUOO Schedule 8 being reserved	<input checked="" type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> N/A	<i>Outline the result or strategy applied</i> Yes – all forest reserves are being reserved.
6.142, 6.143	If a Forest Reserve shown on HGLUOO Schedule 8 is being altered is the alteration consistent with FSPs6.142 and s6.143	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input checked="" type="checkbox"/> N/A	<i>Outline the results or strategies applied</i> There is no conflict with HGLUOO forest reserves. Application of the treatment will allow the stand to reach an ecologically climax mature stand sooner, through anthropogenic process rather than natural thinning or exclusion processes. The treatment will allow the currently suppressed stand to release through increased growing space, allowing more light, nutrients, and moisture to be available, to the ecologically dominate stems of the stand.

PHTR01

6.144, 6.145	Is mature or old forest being recruited through natural processes or voluntary interventions in Reserve Zones, Management Zones, and/or Stand Level Retention	<input checked="" type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> N/A	<p><i>Outline the results or strategies applied</i></p> <p>This treatment a voluntary intervention in the reserve and management zones of Type I and II streams to enhance growth, habitat and structure of the riparian areas in a shorter time frame than natural processes.</p>
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B. Supporting Information	
Amendment Description/ Notes: <input type="checkbox"/> N/A	
Assessments:	Riparian - Y <input type="checkbox"/> / Not req. <input checked="" type="checkbox"/> Terrain - Y <input type="checkbox"/> / Not req. <input checked="" type="checkbox"/> Gully - Y <input type="checkbox"/> / Not req. <input checked="" type="checkbox"/> Fish - Y <input type="checkbox"/> / Not req. <input checked="" type="checkbox"/> Visual - Y <input type="checkbox"/> / Not req. <input checked="" type="checkbox"/> Karst - Y <input type="checkbox"/> / Not req. <input checked="" type="checkbox"/> Windthrow - Y <input type="checkbox"/> / Not req. <input checked="" type="checkbox"/> Cultural Features ID - Y <input checked="" type="checkbox"/> Arch. - Y <input type="checkbox"/> / Not req. <input checked="" type="checkbox"/>
Attachments: <i>(completed and reviewed, results incorporated into plans)</i>	Stand Management Plan Map: <input checked="" type="checkbox"/> Other (specify):
Administration:	<input type="checkbox"/> <i>"I certify that the work described herein fulfills the standards expected of a member of the Association of British Columbia Forest Professionals and that I did personally supervise the work."</i> <input checked="" type="checkbox"/> <i>"I certify that I have reviewed this document and, while I did not personally supervise the work described, I have determined that this work has been done to the standards expected of a member of the Association of British Columbia Forest Professionals."</i>
<p>Prepared By:</p> <p>William Crocker Name (Printed)</p> <p>Signing RPF:</p> <p>William Crocker RPF Name (Printed)</p> <p>03/31/2020 Date Signed (mm/dd/yyyy)</p> <p>3773 RPF Number</p>	 <p>RPF Signature and Seal</p>



Riparian Treatment Map

Geographic Centre:
(Block Centre)
132° 17' 35" W Long. / 53° 22' 36" N Lat.

PHTR01 Riparian Treatment area falls within MAMU Habitat and Forest Reserve

Legend

Boundaries

- Falling Corner
- Plot Location
- Treatment Boundary
- NO Treatment Zone
- Tenure Boundary

Riparian Features

- Type 1 Stream
- Type 2 Stream
- Upland Stream
- Non-Classified Drainage
- Unknown
- Fish Sensitive Feature
- Wet Ground/Swamp
- Reach Break

Lakes / Wetlands

- Forested Swamp
- Type 1 Habitat (Lake/Wetland)
- Type 2 Habitat (Lake/Wetland)
- Non-Fish (Lake/Wetland)
- Unverified Lake/Wetland/Swamp

Roads

- Road Station (Hub)
- Engineered Road
- Existing Road
- Rece Road
- Adjacent Engineered Road
- FSR Road
- Old Grade
- Old Skid Trail
- De-activated Road

Contours (5m interval)

- Index Contour and Label
- Intermediate Contour

LUO Features

- Yew Tree (Single)
- Yew Tree (Group)
- Indian Hellebore
- Pacific Crab Apple (Single)
- Pacific Crab Apple (Group)
- Devil's club
- Monumental Cedar (>120cm DBH)
- Monumental Cedar (<120cm DBH)
- CMT, Culturally Modified Tree
- Other Bear Den

LUO Features within TAUP/Development Area

- LUO Reserve
- LUO Management Zone

Other Features

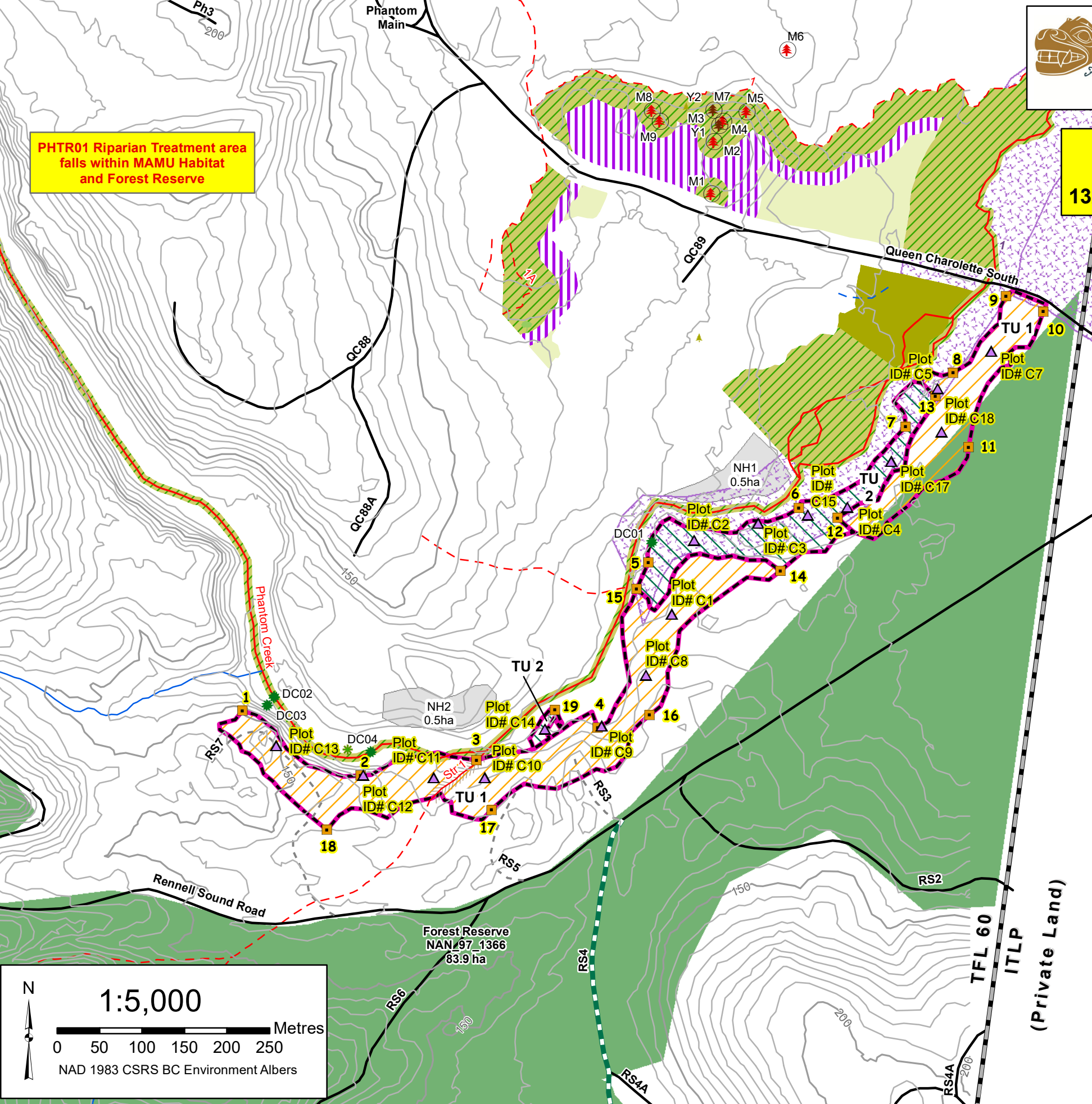
- Permanent Sample Plot
- Dangerous Tree
- Windthrow
- Rock
- Rock Bluff
- Slide
- Gully
- Heli Pad
- Heli Service Landing
- Gate
- Adjacent Retention
- Adjacent WTRA
- Greened Up Block
- Non-Greened Up Block
- Growth & Yield Plot Buffer

LUO Schedules

- Cedar Stewardship Area
- Forest Reserve
- Upland Stream Watershed Sub-Unit
- Sensitive Watershed Boundary
- Northern Goshawk Reserve
- Northern Saw-Whet Owl Reserve
- Marbled Murrelet Habitat (Class 1 & 2)

Other Constraints

- Park / Protected Area
- Wildlife Habitat Area



Polygon / Area	Spp	Diameter Class (stems/ha)					Total	%
		0-10 cm	10-20cm	20-40cm	40-60cm	60-80cm		
Unit 1 - 5.6	Hw	0	270	67	17	354	47	
	Ss	0	75	133	50	258	34	
	Dr	0	25	117	0	142	19	
Total		0	370	317	67	754		

STAND TREATMENT REGIME

- Treatment will aim at retaining large trees greater than 40 cm to a maximum of 750 sph. Target 600 to 750 sph variable density.
- If 40cm dbh trees cannot be found, trees in descending lower diameter classes will be retained progressively from higher to lower dbh classes.
- Girdling to occur on all stems greater than 15cm dbh to reach the variable density of which "Cat facing" of 20 sph is prescribed; replacing girdling of the stem.
- Alder (Dr), where present will be girdled. If no conifer trees are present alder trees will not be girdled.
- All dead and dying trees will be left standing as wildlife trees and to add structural diversity except where they are danger trees and stems less than 15 cm dbh.
- The post treatment inventory will be targeted at Hw 47Ss34 Dr19

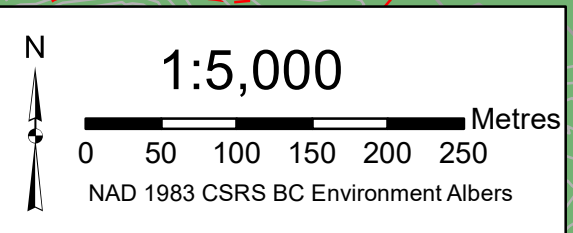
Polygon / Area	Spp	Diameter Class (stems/ha)					Total	%
		0-10 cm	10-20cm	20-40cm	40-60cm	60-80cm		
Unit 2 - 1.7	Hw	0	40	0	0	40	6	
	Ss	0	40	0	0	40	6	
	Dr	0	300	275	0	575	88	
Total		0	380	275	0	655		

STAND TREATMENT REGIME

- Treatment will aim at retaining large trees greater than 40 cm to a maximum of 650 sph. Target 550 to 650 sph variable density.
- If 40cm dbh trees cannot be found, trees in descending lower diameter classes will be retained progressively from higher to lower dbh classes.
- Girdling to occur on all stems greater than 15cm dbh to reach the variable density of which "Cat facing" of 20 sph is prescribed; replacing girdling of the stem.
- All dead and dying trees will be left standing as wildlife trees and to add structural diversity except where they are danger trees and stems less than 15 cm dbh.
- Plant regime - 700 stems Cw. Group planting at 2-meter spacing with 5-10-meter gaps between groups; estimated group spacing at 800 sph.
- The post treatment inventory will be targeted at Dr88Ss6Hw 6

TREATMENT STANDARDS:

- Leave cedar trees standing. Do not fall or girdle any cedar trees. Cedar trees will be counted as ghost trees for stand density counts
- Thin from the bottom favouring larger stems.
- No harvesting or extraction of trees.
- Watch out for bird nests and wildlife trees and leave them standing.
- Minimize bucking to two or three pieces, where possible. Longer pieces will resist movement in high flow and trap fine debris. This is especially important on medium benches.
- On high benches, reduce slash build-up by bucking initial trees felled and limbing them such that the stems come in close contact with the ground
- High stumps up to 50 cm are acceptable where low er stumps cannot be safely attained.
- Dress girdle with a chain saw to mimic natural wounds.
- "Cat Face" by scaring a minimum of one side of tree by removing bark approximately 15cm X 100cm in a slashing motion of saw down the tree. This will represent a tree being swiped by a falling tree removing bark. This is expected to stress the tree to create cone crops for birds and small mammals
- To the extent possible, fall trees perpendicular to the floodplain to maximize overflow sediment storage capability of downed slash
- All cut stumps must have a cut angle of less than 30 degrees



PHTR01
TFL60
Mapsheet: 103F.039
Map Updated: April 01, 2020
Map By/Updated By: O.VDM/ KVG/ JR