

SITE PLAN CP 404 BLOCK 6 COOPER CREEK CEDAR LTD.

A. TENURE IDENTIFICATION

LICENCE NO.: FL A30171	CP: 404	BLOCK: 6	TIMBER MARK: FE5404	UTM: 0501323 E, 5497609 N	LICENSEE NAME: Cooper Creek Cedar Ltd.
AREA UNDER TENURE (ha): 18.0	MAPSHEET/OPENING #: 82F066	ELEVATION: 682-864 m	LOCATION: Balfour Face		

B. AREA SUMMARY

AREA OF NO PLANNED REFORESTATION (ha) (NPR)									
PERMANENT ACCESS	ROCK	WATER	SWAMP	OTHER NP	NC>4ha	WILDLIFE TREE RETENTION AREA (HA):	IMMATURE	OTHER (RESERVE)	TOTAL NPR AREA
1.0	-	-	-	-	-	1.9	-	1.5	4.4
NET AREA TO BE REFORESTED (ha)									
SU	SU AREA DESCRIPTION								NET AREA TO BE REFORESTED:
	This block is located on lower Balfour Face above the community of Balfour								
A	<p><u>ICHdw1 104</u></p> <p>The lower elevation of the SU is transitional to the ICHxw. Aspect is mainly south facing with moderate to gentle slopes. Surface subsoil texture is Sandy Loam. Soils are moderately-well drained. Coarse fragment content is moderate (40-50%). Moisture regime is mesic to submesic and nutrient regime is medium. Humus form is a mor (6.0cm thickness) and rooting depth is 36 cm. Soils are non-sensitive.</p> <p>Pre-harvest stand density is 338 stems/ha with a composition of Fdi (75%) Cw (17%) Bg (8%). There is a dead standing and down density of 112 stems/ha of Fdi.</p> <p>Reserve 14-16 m²/ha Basal Area as per Section G – Silvicultural Systems</p> <p>Conventional Ground Based harvest methods and a Retention silviculture system.</p>								6.3
B	<p><u>ICHdw1 101⁹ 104¹</u></p> <p>Terrain is a gently sloped bench. The lower elevation is transitional to the ICHxw. Aspect is mainly southwest facing, slopes range from 10 to 35%. Surface and subsoil texture is Sandy Loam. Soils are moderately-well drained. Coarse fragment content is moderate to high (45-75%). Moisture regime is mesic and nutrient regime is medium. Humus form is a mor (4.5 cm thickness) and rooting depth is 30 cm. Soils are non-sensitive.</p> <p>Pre-harvest stand density and composition is similar to SU A.</p> <p>Reserve 14-16 m²/ha Basal Area as per Section G – Silvicultural Systems</p> <p>Conventional Ground Based harvest methods and a Retention silviculture system.</p>								3.6
C	<p><u>ICHxw 101⁷104³</u></p> <p>The upper elevation is transitional to the ICHdw1. Aspect is mainly south-southeast facing, slopes range from 20-50%. Surface soil texture is Loam to Sandy-Loam and subsoil texture is Sandy Loam. Soils are moderately-well drained. Coarse fragment content is moderate (45-65%). Moisture regime is mesic to submesic and nutrient regime is medium. Humus form is a mor (6.0cm thickness) and rooting depth is 40cm. Soils are non-sensitive.</p> <p>Pre-harvest stand density and composition is similar to SU A.</p> <p>Reserve 14-16 m²/ha Basal Area as per Section G – Silvicultural Systems</p> <p>Conventional Ground Based harvest methods and a Retention silviculture system.</p>								3.7
TOTAL NET AREA TO BE REFORESTED:									13.6
TOTAL AREA UNDER THE PLAN:									18.0

SOIL DISTURBANCE

SU	Max. Allowable Soil Disturbance (%)	Max. Amount TAS May Exceed MASD Prior to Rehab (%)	Max. Allowable Soil Disturbance For Roadside Work Areas (%)	Maximum Permanent Access Structures (%)
A	10.0	5.0	25%	5.6
B	10.0	5.0		
C	10.0	5.0		

SU	CRITICAL SITE CONDITIONS THAT AFFECT THE TIMING OF OPERATIONS AND HOW THEY AFFECT THEM
A, B, C	<ul style="list-style-type: none"> Avoid machine travel during periods of soil saturation to reduce risk of soil compaction. Utilize designated harvesting trails, or a supporting snow pack in the winter. Spot piling along roadsides, landings and within the NAR may be necessary to remedy high levels of coarse woody debris.

RESULTS AND STRATEGIES

Biodiversity Objectives	
Result or Strategy Description	3.5.3 - Old and Mature Forest
Applies:	YES
How the Result or Strategy Applies to the Site (or Rationale if it does not apply)	<p>'KBHLP Objective 2 – Old & Mature Forests'</p> <p>Landscape Unit K10</p> <p>This block falls within ICHdw (Intermediate Biodiversity emphasis) in which there are targets for Mature + Old in this landscape unit.</p> <p>Analysis completed by Timberland Consultants Ltd. (August 2020) show a surplus of Mature + Old in the Landscape Unit / BEC pairing as well as Connectivity Corridor.</p> <p>Requirement for Old Forest is considered to be met through spatially, non-legal Old Growth Management Areas (OGMAs). LU K10 / ICHdw was identified by the District (May 2019) as having an aspatial deficit of Old. CP 404 does not include any harvest of Age Class 8 or 9 therefore an analysis of Old is not required.</p>
Result or Strategy Description	3.5.3 - Green-up
Applies:	YES
How the Result or Strategy Applies to the Site (or Rationale if it does not apply)	'KBHLP Objective 4 – Green-up' – The proposed cutblock is consistent with FPPR Section 65(2).
Result or Strategy Description	3.5.1 - Objectives set by Government for Wildlife and Biodiversity – Landscape Level
Applies:	YES
How the Result or Strategy Applies to the Site (or Rationale if it does not apply)	'KBHLP Objective 4 – Green-up'. The proposed cutblock complies with Sections 64 and 65 of the FPPR.
Cultural Heritage Resources	
Result or Strategy Description	3.7 - Objectives set by Government for Cultural Heritage Resources
Applies:	YES
How the Result or Strategy Applies to the Site (or Rationale if it does not apply)	<p>A referral letter dated February 16, 2021, was sent to the appropriate individual(s) and/or group(s).</p> <p>The Penticton Indian Band completed a Cultural Heritage Review (report dated August 26, 2021) containing recommendations manage for Cultural Heritage Resources of importance to the band.</p> <p>As part of a commitment to conserve drainage feature integrity, single tree retention prescribed for the block will, in part, be retained in non-classified drainages as per Section G – Silvicultural Systems.</p>
Recreation Resources	
Result or Strategy Description	4.3 - Recreation Sites
Applies:	NO
How the Result or Strategy Applies to the Site (or Rationale if it does not apply)	The proposed cutblock is not located within a designated Recreational Area or Trail with legal objectives; therefore, managing for Recreation Resources is not applicable.
Riparian Management	
Result or Strategy Description	3.4.1 Objectives set by Government for Fish, Water, Wildlife & Biodiversity in Riparian Areas
Applies:	YES
How the Result or Strategy Applies to the Site (or Rationale if it does not apply)	<ol style="list-style-type: none"> 1) Non-classified drainage 6-1 runs through WTRA-1 in the centre of the block. 2) See Section E.1 for Riparian Management Strategies. 3) See Section F for management strategies related to Temporary Access Structures and Soil Disturbance that should be used during and post-harvest in order to prevent/reduce soil disturbance and sediment delivery.
Soil Objectives	
Result or Strategy Description	3.1 - Objectives set by Government for Soils [FPPR Section 5 and 12.1(1)]
Applies:	YES
How the Result or Strategy Applies to the Site (or Rationale if it does not apply)	<ol style="list-style-type: none"> 1) SU A, B and C do not contain sensitive soils and soil disturbance will not exceed 10%. Specific measures for mitigating soil disturbance levels are addressed in Section F of this Site Plan. 2) Areas of the block where temporary access structures are required will be rehabilitated. Specific rehabilitation measures are addressed under Section F of this Site Plan. 3) PAS does not exceed the recommended limit of 7.0% and is estimated at 5.6%. 4) Areas within the block assigned to roadside work areas will not exceed 25%.
Visual Objectives	
Result or Strategy Description	3.6 – Visual Quality
Applies:	YES
How the Result or Strategy Applies to the Site (or Rationale if it does not apply)	<p>Parts of CP 404 fall within a Partial Retention (PR) visual landscape unit and the rest fall in areas that are not visually sensitive.</p> <p>A Visual Impact Assessment was completed by Timberland Consultants in 2021 and the proposed blocks and associated roads are consistent with the visual quality objectives.</p> <p>The proposed development of CP404 – Laird meets the established VQO of PR from the selected viewpoints.</p>

Water Management Objectives	
Result or Strategy Description	3.4.4 - Consumptive Use Streams
Applies:	YES
How the Result or Strategy Applies to the Site (or Rationale if it does not apply)	<p>'KBHLP Objective 6' – CP404 Block 6 is located within the Laird Face Domestic Watershed.</p> <p>Referral letters dated March 17, 2021 were sent to POD licensees with a 30 day response period.</p> <p>Reserves on the one draw (NCD 6-1/McKay Creek) and in-block single tree retention of mature trees focused on drainage features will help mitigate impacts to domestic water sources.</p> <p>There is a one POD for domestic water consumption on McKay Creek (NCD 6-1). This intake was not found where mapped with the public water license database. The McKay Creek draw has been reserved from harvest in WTRA-1 or excluded from block boundaries at top of draw. Spur 5 crosses McKay Creek draw. An oversized culvert will be installed concurrent with road construction and silt control measures will be implemented to mitigate negative impacts to the domestic water source.</p> <p>See Section E.1 for Riparian Management Strategies. See Section G: Silvicultural Systems for Retention strategies.</p> <p>See Section F.2 for Comments from TSA (Terrain Stability Site Review).</p>
Wildlife Objectives	
Result or Strategy Description	3.3.1 - Objectives set by Government for Wildlife - Species at Risk – Section 7 of the FPPR
Applies:	YES
How the Result or Strategy Applies to the Site (or Rationale if it does not apply)	<p>The block is not within a Wildlife Habitat Area.</p> <p>There were no sightings of Species at Risk during field development of this cutblock.</p> <p>No Wildlife Habitat Features were observed during development of this CP.</p>
Result or Strategy Description	3.5.2 - Objectives set by Government for Wildlife and Biodiversity – Stand Level
Applies:	YES
How the Result or Strategy Applies to the Site (or Rationale if it does not apply)	<p>One internal Wildlife Tree Retention Area is planned for this block, totalling 1.9 ha. Overall wildlife tree retention percentage for block 6 is approximately 10.6%. Total WTRA for CP 404 is 5.9 ha which constitutes approximately 7.2% of the gross area of the permit.</p> <p>Wildlife tree retention in CP 404 is consistent with FPPR section 66.</p>
Result or Strategy Description	3.3.2 - Ungulates
Applies:	YES
How the Result or Strategy Applies to the Site (or Rationale if it does not apply)	<p>This block overlaps Ungulate Winter Range Management Unit 178. Analysis completed by Timberland Consultants Ltd. (December 2020) shows post harvest Ungulate Winter Range Management Unit 178 meets minimum retention and maximum disturbance requirements for snow interception cover and forage areas.</p>

ADDITIONAL COMMENTS

Consistency Statement
<p>This block is consistent with the approved 2018 to 2023 Forest Stewardship Plan for Cooper Creek Cedar Ltd – Forest Licence A30171.</p> <p>This Site Plan is prepared for FL A30171 CP 404 Block 6, in accordance with FRPA Section 10(1), (2) & (3).</p>
Community Watersheds
<p>FSP Section 3.4.3</p> <p>Not applicable - The proposed block is not located within a Community Watershed.</p>
Enhanced Resource Development Zones
<p>FSP Section 3.2.1</p> <p>'KBHLP Objective 7 – Enhanced Resource Development Zones – Timber'</p> <p>Block 6 is not within an Enhanced Resource Development Zone.</p>
Fire Maintained Ecosystems
<p>FSP Section 3.5.3</p> <p>'KBHLP Objective 8 – Fire maintained Ecosystems'. There are no NDT 4 ecosystems in the FDUs under this FSP, therefore the requirement to create a Result/Strategy for this objective does not apply.</p>
Fisheries Sensitive Watersheds
<p>FSP Section 3.4.2</p> <p>At the time the FSP was developed there were no designated "Fisheries Sensitive Watersheds" in FDUs under this FSP, therefore the requirement to create a Result/Strategy for this objective does not apply.</p>

<p>Invasive Plants</p> <p>FSP Section 4.1 – Invasive Plants</p> <p>The IAPP website was checked on June 25, 2020. The following invasive species were reported in nearby areas to CP 404 (Laird Creek), mainly at low elevations within the first km of Balfour Face FSR in the general area of the Balfour Transfer Station: Burdock, Canada thistle, Chicory, Common tansy, Oxeye daisy, Himalayan blackberry, Hoary alyssum, Japanese knotweed, Scotch broom, Spotted knapweed, St Johns wort, Orange hawkweed, and yellow hawkweed.</p> <p>Measures to prevent the introduction or spread of invasive plants noted in the FSP include:</p> <ul style="list-style-type: none"> • Cleaning equipment before moving from a worksite with existing infestations to a new work site. • Minimizing soil disturbance during primary forest activities (PFA). • Reseed exposed mineral soil, resulting from a PFA in the first available fall or spring within 12 months following the soil disturbance. Plan planting of cutblocks as soon after harvesting as possible. • During PFAs minimize soil disturbance by: <ul style="list-style-type: none"> • Harvest on a snowpack, when feasible • Random skid to designated skid trails to minimize skidder traffic on the ground • Utilize benches for skid trails to minimize side cuts • Utilize brush to construct skid trails to reduce contact with the ground • Use overhead cable harvesting systems on steep ground • Where grass seeding is undertaken, CCC will use certified grass seed (Canada common #1 or better grade) from reputable suppliers to ensure premium quality free of invasive plant seed, or a seed mix recommended by a MFLNRO range specialist. • See FSP for additional strategies and practices regarding invasive plants.
<p>Natural Range Barriers</p> <p>FSP Section – 4.2</p> <p>Not applicable. There are no range tenures located in the FDUs covered by this FSP.</p>
<p>Timber</p> <p>FSP Section 3.2 - Timber</p> <p>As per Sec 12(8) of the FPPR, results or strategies are not required for an objective set by government for timber.</p>
<p>Wildlife - Caribou</p> <p>FSP Section – 3.3 and 3.5.3</p> <p>‘KBHLP Objective 3 – Caribou’ was cancelled and replaced by <i>GAR Order #U-14-012 – Mountain Caribou – Southwest Kootenay Planning Unit</i>. This block does not fall within a Caribou Management Zone or federally listed critical habitat matrix.</p>
<p>Wildlife – Grizzly Bear Habitat - Connectivity</p> <p>FSP Section 3.3 and 3.5.3</p> <p>‘KBHLP Objective 5 – Grizzly Bear Habitat & Connectivity Corridors’.</p> <p>Block 6 falls partially within Connectivity Corridor. Analysis completed by Timberland Consultants Ltd. (December 2020) show a surplus of Mature + Old within LU K10/ICHdw as a whole and within connectivity corridor area.</p>

STOCKING REQUIREMENTS

SU	NAR (ha)	Standards ID #	Other Performance Standards
A	6.3	1062309	See Section H - Stocking Requirements
B	3.6	1062309	
C	3.7	1062309	

C. MANAGEMENT OBJECTIVES & STRATEGIES

<p>C.1 MANAGEMENT OBJECTIVES</p> <ul style="list-style-type: none"> • Objectives for CP 404 Block 6 include protecting nearby streams and domestic water sources, meeting visual quality objectives, managing for fire mitigation and a changing climate, and maintaining biodiversity and wildlife values: All of these objectives are carefully considered, and a balance between all management objectives is the goal. • Harvest this mature stand of Fdi Cw (Bg) for sawlogs, chips and value-added products and manage for a healthy, free growing stand of natural FdLwPyPw (BgPICw) for similar end products. • Wildlife Tree Retention Area (WTRA): One WTRA is planned for retention, totalling 1.9 ha in size (10.6% of the block). The reserve shelters mature stand values, wildlife values, a natural drainage and portions of stand structure that are similar to the harvest area. • Kootenay Boundary Land Use Plan – Implementation Strategy (June 1997): This block is located within the designated Landscape Unit K10 (West Arm) – Intermediate BEO Assignment.
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<p>C.2 CONDITIONS THAT MUST EXIST AFTER HARVEST OR TREATMENT TO ACCOMMODATE KNOWN FOREST RESOURCES</p> <p>C.2a WILDLIFE</p> <p>Stand Level attributes/ concerns identified:</p> <p>Ungulate Winter Range: See RESULTS AND STRATEGIES section 3.3.2 - Ungulates</p> <p>Migratory Bird Habitat Assessment: Block 6 is within Migratory Bird Risk Rating 4 polygon (Age class 6-7, height class 3-4, Fd leading stand) The management matrix therefore requires:</p> <ol style="list-style-type: none"> 1) The entire Site must be scheduled for harvest outside Restricted Period 2 (May 15 – July 20), OR 2) One or more BMP's with DoP rank 2 (moderate) must be selected from the list of Best Management Practices (BMPs) and applied to the Site. <p>BMP PL1 and LO2 have been implemented on site to reduce the likelihood of incidental take and to conform to CCC's adopted management strategy. PL1 refers to a high retention silviculture system that will be prescribed, where 14-16m² Basal Area per hectare will be retained. LO2 refers to Increasing riparian retention where possible i.e. to match eco-site where riparian-centric species may nest or feed; Streams/non-classified drainages have been preserved in WTRA.</p> <p>BMP PL3 and SO4 have been implemented as well. PL3 refers to the appropriate training of forest planners, layout personnel, and forest workers. SO4 refers to operation specific recommended practices when chance encounters of active nests occur.</p>
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<p>Stand/Site Attributes</p> <p>Slope values are low to moderate in most of the block. Lower elevation ICHdw1 and upper ICHxw site conditions. Aspect is mainly southeast facing, with short broken slopes. Lower slope location. Recreational ATV trails and firewood access trails are throughout the block. Rocky out crops and exposed bedrock are found throughout SU C.</p> <p>Cruise composition summary:</p> <ul style="list-style-type: none"> Density: Fdi⁷⁵ Cw¹⁷ Bg⁸ Volume: Fdi⁸⁴ Cw¹² Bg⁴ <p>Forest cover adjacent to the block includes similar mature stands outside most boundaries. A juvenile stand is found across Balfour Face mainline to the northwest. A partial cut stand with an estimated 20% crown closure exists to the northeast. A transmission line right-of-way clearing runs along part of the southern boundary.</p>
<p>Actions prescribed:</p> <p>Total Area specified for the retention of wildlife trees: 1.9 ha (10.6% of gross area)</p>
<p>Wildlife Tree Retention Patch (WTRA):</p> <p>WTRA-1 (1.9 ha) Fd 6 Cw 1 Lw 1 Bg 1 Ep 1 (At) – 90 years – 25.0m – 35%cc: This WTRA encompasses a moderately steep slope, NCD and gully. It contains nesting, perching and cover values as well as ample browse species including Douglas maple, hazelnut and snowberry. Trails and scat were noted.</p> <p>WTRA will provide stand structure values for wildlife, perching and cover values, riparian values and visual values. WTRA has been established in part, as a best management practice for the reduction of migratory bird incidental take (BMP PL2), and to mitigate risk to downslope terrain hazards.</p>
<p>C.2c FISHERIES</p> <p>There are no fish streams within the block.</p> <p>See Section E.1 for Riparian Management Strategies.</p> <p>Drainage from the the cutblock area flows down slope toward the community of Balfour.</p>
<p>C.2d WATERSHEDS</p> <p>See section 3.4.4 (Consumptive Use Streams)</p>
<p>C.2e RECREATION</p> <p>Not applicable. The proposed cutblock is not located within a designated Recreational Area or Trail with legal objectives.</p>
<p>C.2f BIOLOGICAL DIVERSITY</p> <p>Landscape Unit - K10 (West Arm): Intermediate BEO Assignment.</p>
<p>C.2g VISUAL RESOURCE MANAGEMENT</p> <p>See RESULTS AND STRATEGIES section 3.6 (Visual Quality)</p>
<p>C.2h CULTURAL HERITAGE</p> <p>See RESULTS AND STRATEGIES section 3.7 (Objectives set by Government for Cultural Heritage Resources).</p> <p>See section E.5 for Archaeological information.</p>
<p>C.2i RANGE</p> <p>Not applicable. There are no range tenures located in the FDU covered by this FSP.</p>
<p>C.2j OTHER RESOURCES</p> <p>Trapping / Guiding: Trappers or guiding license holders in the area will be identified and notified through the Forest Stewardship Planning process.</p> <p>Windthrow: Windthrow hazard is Moderate for adjacent mature stands. And Low for adjacent immature stands. Adjacent stands have already been partially exposed to windthrow hazard due to past logging and powerline right-of-way clearing. Mature stands surrounding the harvest area are similar to the block with moderately well to well drained soils. Windthrow resistant species are a component of neighboring stands. Soils are coarse and moderately well drained with 30-40 cm rooting depth.</p>
<p>CONDITIONS NOT APPLICABLE TO THIS SITE PLAN</p> <p>THE FOLLOWING CONDITIONS WERE CONSIDERED, AND FOUND NOT TO BE APPLICABLE TO THIS SITE PLAN: None identified.</p>

D. ECOLOGICAL INFORMATION AND SITE CHARACTERISTICS

D.1 STANDARDS UNITS AND CRITICAL SITE CONDITIONS						
BIOGEOCLIMATIC						
SU	TREATMENT UNIT	ZONE	SUBZONE	VARIANT & PHASE	SITE SERIES	SITE TYPE
A	1	ICH	dw	1	104	-
B	1	ICH	dw	1	101 ⁹ 104 ¹	
C	1	ICH	xw	-	101 ⁷ 104 ³	

E. MANAGEMENT STRATEGIES

E.1 RIPARIAN MANAGEMENT STRATEGIES				
RIPARIAN RESERVE ZONE (RRZ)				
RIPARIAN/LAKE ID	RIPARIAN/LAKE CLASS	HARVESTING Y/N	SU XREF	DESCRIPTION OF THE PURPOSE AND EXTENT OF REMOVAL OR MODIFICATION OF TREES AND ANY RELATED FOREST PRACTICES IN RIPARIAN RESERVE ZONE(S)
-	-	-	-	-
RIPARIAN MANAGEMENT ZONE (RMZ)				
RIPARIAN/LAKE ID	HARVESTING Y/N	SU XREF	MANAGEMENT STRATEGIES FOR RIPARIAN OR LAKESHORE MANAGEMENT AREAS INCLUDING PROTECTING STREAM BANKS (if there is no RRZ), MAINTAINING SHADE, AND DEBRIS MANAGEMENT. IF FELLING AND/OR YARDING ACROSS STREAMS. INCLUDE EITHER THE RESIDUAL BASAL AREA <u>OR</u> DENSITY FOR RMZ (S) AND LMZ (S).	
-	-	-	-	
NON-CLASSIFIED (NC) RIPARIAN AREAS				
RIPARIAN/LAKE ID	SU XREF	MANAGEMENT STRATEGIES		
NCD 6-1 (McKay Creek)	WTRA-1	This draw has been reserved from harvest in WTRA-1 or excluded from block boundaries aside from the Spur 5 road crossing. See Section G – Silvicultural Systems for single tree retention prescription for drainage features. (See additional management strategies below)		

Section E.1 continued

Riparian Assessment was completed by Timberland Consultants Ltd. in **May and June 2017**.

- Fall and skid timber away from riparian features** (streams, NCD's, wetland) where practicable. Any debris entering a riparian feature as a result of harvesting will be removed upon completion of harvesting activities unless it does not obstruct water flow or its removal would cause further damage to the riparian feature. **Minimize crossings** on **watercourse channels** to the extent possible.
- Where **watercourses** are crossed more than once, it is recommended to place a temporary skid bridge (e.g.: logs placed in draw) in order to prevent a potential diversion of flow.
- All **machine trails** and **crossings** (NCD) should be fully rehabilitated upon the completion of harvesting or prior to the next freshet. Excess material that could cause redirection of natural drainage patterns should not be left at crossing locations.
- All **surface drainage patterns** should be maintained and any that are disrupted as a result of harvesting operations should be restored immediately.
- A **post-harvest inspection** should be completed to assess the amount of logging debris/excess soil within the wetted perimeter of all subtle drainage features. All natural drainage patterns should be maintained and left free of excess debris (slash or soil) that could result in a redirection of seasonal surface runoff/drainage diversion.
- Basal area retention** levels for the in-block RMZ (within the NAR) are based on windthrow, windfirmness, wildlife habitat, water quality, and operational constraints.

E.2 FOREST HEALTH MANAGEMENT STRATEGIES					
SU	Code	Nelson Region DRA Risk Factors	Points	Relative Risk	Comments
All	DRA	Site factors Host factors Inoculum potential Disease factors	8 6 0 19	H H L H	<ul style="list-style-type: none"> • Armillaria is present at low to moderate levels within the stand. Centres with grey and red attack also often show signs of interaction with bark beetles. • The Nomographic Zones in Section 3.0 of the <u>"Armillaria Root Disease Management Guidelines for the Nelson Forest Region" (June 1998)</u> indicate that Alternative or Intensive deferred treatments for root disease management are appropriate for this site, should Armillaria become a problem. • Alternative treatments will include planting a species mixture that includes species tolerant and /or moderately susceptible to Armillaria (e.g.: Cw, Lw, Pw). Fd (highly susceptible) may be included but should be limited to a maximum of 50% of the mix. Microsite selection should reflect buffer zones around infected stumps, if they can be identified. • Hand-pulling (preferred) or pop-up spacing (alternative) should be considered in the future should Armillaria become a limiting factor in meeting regeneration or free growing requirements (see section H). • Stumping or pushover harvesting treatments are not preferable due to low sign of Armillaria, cable harvest areas, high soil hazards, and consumptive use streams in the area.
		Total	33	H	
Other Forest Health Factors					
SU	Code	%	Comments		Current risk to inventory
All	IBD	5	Approximately 5-10% of stems show signs of IBD, of which nearly all are grey attack, with very little red or green attack noted. Due to the presence of frass, beetles and pupae/larva the infestation is presumed to be ongoing at endemic levels. Due to the risk rating of the stand and the high consequence should an epidemic occur a treatment plan has been designed to manage the infestation. <ul style="list-style-type: none"> • Funnel traps and subsequent trap trees in the area may be utilized if required based on the results of post-harvest spillover probes conducted by a Qualified Professional. • Leave tree prescriptions require Douglas Fir that exhibits signs of stress, scarring, decay or general poor health are not to be selected for retention. Depending upon the severity of the infestation post-harvest, MCH packets may be applied to dispersed retention in areas of high IBD presence determined by the assessment of a Qualified Professional. • Trap trees may be considered for beetle management if timing of road building and block harvesting permits. This is to be determined by a qualified professional. Retention strategies should carefully consider pest resiliency.		Mod
All	DSB	0	Pw is absent or present in minor amounts in the current stand. Plant only rust resistant stock. Expect high incidence of white pine blister rust on any naturally regenerated Pw.		nil
All	DML	25%	Lw was not recorded in the cruise but is present within and adjacent to the stand. Mistletoe was noted in a number of these stems; If Lw is planted it should not be planted within 10m of a DML infected Lw.		nil
Expected future risks and actions					
A forest health/pest incidence assessment is not required. Forest health information was collected during SP field data collection in November 2020 .					
E.3 VEGETATION MANAGEMENT STRATEGIES					
LIVESTOCK TO BE USED FOR VEGETATION MANAGEMENT: YES: <input type="checkbox"/> NO: <input checked="" type="checkbox"/>					
See Section H5: BRUSHING / STAND TENDING					
E.4 COARSE WOODY DEBRIS (CWD) MANAGEMENT STRATEGIES					
CWD levels are low (4 to 12% ground cover) with small isolated areas of higher suspended cover created by pest and disease centres. CWD is predominantly composed of 15-40cm diameter stems of Fd (Bg Cw Ep, Douglas maple).					
Manage for minimum CWD levels post-harvest in accordance with wildfire mitigation strategies. Post-harvest CWD will consist of non-merchantable existing levels and snags, along with residue and breakage.					
(FPPR Section 68): Manage for the minimum of 4 logs per hectare , each being at least 2 metres in length and at least 7.5cm in diameter at one end.					
See the SITE PREP section (K.1) for additional CWD management strategies.					
E.5 ARCHAEOLOGICAL IMPACT ASSESSMENT					
Archaeological Overview Mapping of the CP 404 area shows that block 6 overlaps a polygon with an archaeological potential rating. On July 16-17th, 2018, TMECS (Tipi Mountain Eco-Cultural Services Ltd.) completed an archaeological field inspection under BC Heritage Inspection Permit 2018-0192.					
No archaeological materials or sites were observed, recorded or are otherwise suspected within the proposed boundaries of Block 6.					

F. SOIL CONSERVATION

F.1 SITE DISTURBANCE						
SU	HAZARD RATINGS			SOIL CHARACTERISTICS		
	SOIL COMPACTION	SOIL DISPLACEMENT	SURFACE SOIL EROSION	DEPTH TO UNFAVOURABLE SUBSOIL (cm)		TYPE OF UNFAVOURABLE SUBSOIL
				MIN(cm)	MAX(cm)	
A	Moderate	Moderate	Moderate	60	60	No restricting layer to 60cm
B	Moderate	Moderate	Moderate	42	42	Fragmental (>70% CF)
C	Moderate	Moderate	Moderate	65	65	No restricting layer to 65cm
F.2 SOIL DISTURBANCE LIMITS						
<p>SU A: ARE THERE SENSITIVE SOILS? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO</p> <p>SU B: ARE THERE SENSITIVE SOILS? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO</p> <p>SU C: ARE THERE SENSITIVE SOILS? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO</p> <p>MAX. PROPORTION OF TOTAL AREA UNDER THE PRESCRIPTION ALLOWED FOR PERMANENT ACCESS STRUCTURES (PAS): 5.6%</p> <p>Roadside harvesting or temporary landings will be used.</p> <p>DEACTIVATION OF PERMANENT ACCESS STRUCTURES: Any landings will be deactivated – debris will be piled & burned, water control will be installed around all landings.</p>						
Terrain Stability						
<p>A site review was conducted by Apex Geoscience Consultants Ltd. On October 27, 2020 as a precautionary measure to identify any terrain or hydrological concerns.</p> <p>The site review found no evidence of terrain instability and no indicators that timber harvesting will have an impact on water quality, quantity, or timing of flows.</p>						
SU	MAXIMUM ALLOWABLE SOIL DISTURBANCE WITHIN THE NET AREA TO REFOREST (%)		MAXIMUM EXTENT SOIL DISTURBANCE LIMITS MAY BE TEMPORARILY EXCEEDED TO CONSTRUCT TEMPORARY ACCESS STRUCTURES OR EXCAVATED OR BLADED TRAILS (%)			
A	10%		5%			
B	10%		5%			
C	10%		5%			
<p>MASD for Roadside Work Areas: 25%</p> <p>Maximum soil disturbance levels may be exceeded for short periods of time; however any temporary access structures or excavated or bladed trails will be rehabilitated to the extent necessary to bring the SU net area back into compliance with the specified soil disturbance limits.</p> <p>See Section F.4 below for description of temporary access structures or excavated or bladed trails, if any.</p> <p>Avoid harvesting during spring freshet/breakup conditions when soils are moist to reduce soil displacement and compaction.</p> <p>Steep slopes >35% are present within SU A and C, see Harvest Plan Map. In all SUs ground based harvest methods will be utilized.</p>						
F.3 REHABILITATION TIME FOR TEMPORARY ACCESS STRUCTURES						
MAXIMUM ALLOWABLE TIME TO COMPLETE REHAB (MEASURED FROM COMPLETION OF HARVEST): 1 YEAR						

F.4 MANAGEMENT STRATEGIES FOR TEMPORARY ACCESS STRUCTURES				
SU	GENERAL LOCATION:	MAX ALLOWABLE HEIGHT OF CUTBANKS (m)	AVERAGE HEIGHT OF CUTBANKS (m)	EQUIPMENT TO BE USED (IF OTHER THAN EXCAVATOR)
A	Blading or excavating is expected to occur in parts of the unit with moderate to steep slopes.	0.8	0.3	Skidder, cat.

Proposed Landings (temporary):
3 landings @ 0.2 ha each = 0.6 ha

Temporary Trails:
SU A: 101.7m x 4m = 0.04 ha
SU C: 235.3m x 4m = 0.09 ha

- SU A, B and C: Conventional, ground- based harvest methods. Mainly favorable and some adverse skidding to roadside and landings
- See Section E.1 for stream management strategies.

The following will apply for any excavated/bladed trails that are required:

- Maximum trail width is 4m.
- Actual dimensions of bladed trails may vary depending on topography.
- The amount of bladed trail constructed will be kept to a minimum.

Short sections that become bladed trails where a non-bladed trail crosses a hump or ridge will be exempt from rehabilitation requirements provided that the soil disturbance limits in this SP are not exceeded.

Rehabilitation for bladed or excavated trails:
Any bladed or excavated trails will be rehabilitated as follows:

- De-compact the trail, including removing woody debris that is conducting subsurface moisture
- Place fill material that was sidecast on the excavated portion of the trail
- Re-contour the slope
- Re-establish natural surface drainage
- Place some woody debris over exposed mineral soil

G. SILVICULTURAL SYSTEMS

SILVICULTURAL SYSTEMS	
SU	SYSTEM / VARIANT / PHASE
All	Retention silviculture system.
STAND STRUCTURE AND SITE CONDITION - COMMENTS	
<p>Post-harvest stand structure will be even-aged with one age class.</p> <p>One Wildlife Tree Group Reserve Area (WTRA): totalling 1.9 ha</p> <p>Leave Trees (All SUs) Reserve 14-16 m²/ha Basal Area of Fdi in the ≥ 50cm DBH classes evenly distributed throughout the block in a combination of single tree and small groups to reduce the potential spread of a wildfire and to provide stand structure, biodiversity, visual and wildlife values. Give preference to larger diameter, wind-firm dominants and/or vet.</p> <p>Non-classified drainages: Above single tree retention will also be utilized for riparian management of NCDs. 100% of merch and non-merch trees will be retained within NCDs to top-of-draw; an additional 8m beyond top-of-draw will be a feathered edge in which 50% of merch stems and 100% of non-merch stems will be retained.</p> <p>Wildfire Mitigation</p> <p>Fd, Py and Lw are fire-adapted species that are predicted to survive a fire than other species on this site. Thinning the stand from above while retaining fire resilient stems and minimizing the surface fuels to meet the minimum CWD requirements is a recognized fire mitigation management plan. The objective is to retain larger, healthy stems with live crowns while maintaining a 3-5-m (or even) spacing between the crowns. The larger leave trees have higher crowns, which means a longer distance between surface fuels and tree crowns; reducing the effective ladder fuels, and reducing the likelihood of the fire moving into the canopy. Regularly spaced leave trees will shade the understory, which will help reduce ground temperatures and prevent brush species from becoming established, further reducing the ladder fuels. Leave tree distribution is expected to be regular where large stems exist and is operationally feasible to do so. Adequate inter-crown spacing prevents the spread of a potential wildfire between leave trees, while still providing ground shading. Post harvest the stand will be easier to protect should a fire occur – fire will move more slowly through the stand due to less ground fuel, an open stand with clean ground & a more open canopy that will let more water and fire retardant through to the ground from air drops than a full canopy stand. The roads and trails constructed to access the block will provide better access for the fire fighters.</p> <p>Including Fd, Lw & Py in the planting mixture will make the stand more resilient to adapt to changing climate conditions & to adapt to species specific pests.</p> <p>Snags</p> <p>No snags or stubbed trees are prescribed to be left behind in the block, as they are a hazard from a fire management perspective, and a safety/operational hazard in the cable harvest areas.</p>	

H. STOCKING REQUIREMENTS (As per Fire Management/ Wildland Urban Interface (WUI) stocking standards for Selkirk Resource District South Columbia November 20, 2018)

LICENCE #	CP	BLOCK	OPENING NUMBER	LOCATION
A30171	404	6	82F066	Balfour Face

H1 ECOLOGICAL INFORMATION										
SU	Net Area (ha)	Zone	Subzone	Variant/Phase	Site Series (complex - %)	Elevation			Slope position	Soil Texture (0-30cm)
						Min	Max	Avg		
A	6.3	ICH	dw	1	104	720	870	795	Lower	SL
B	3.6	ICH	dw	1	101 ⁹ 104 ¹	705	755	730	Lower	SL
C	3.7	ICH	xw	-	101 ⁷ 104 ³	685	745	715	Lower	L-SL

RATIONALE FOR STOCKING STANDARD FSP ID SELECTION		
STANDARDS UNIT FSP ID #	CHANGE FROM STANDARD PRACTICE	COMMENT: (For example: Forest health (DRA) or Rocky site)
A, B, C: 1062309	N/A	Partial Cut/ Basal Area Retention Stocking Standard

H2 STOCKING REQUIREMENTS FOR SILVICULTURAL SYSTEMS OTHER THAN SINGLE TREE SELECTION				
SU	Fire Management Partial Cut (Shaded Fuel Break) Stocking Standard (As per Fire management/Wildland Urban Interface (WUI) stocking standards for Selkirk Resource District South Columbia November 20, 2018)			
A, B, C	The resulting stand may be considered sufficiently stocked in the overstorey, and regeneration obligations will not be incurred if a minimum 12m²/ha basal area of preferred and acceptable leave trees is retained 1-3 years post harvest . .			
Standards ID	Acceptable leave trees must be dominant or co-dominant layer trees ≥17.5 cm DBH, and:			
	<ul style="list-style-type: none"> > 25% live crown with no indicators of decline; Free of gouges and wounds > 1/3 of stem circumference; and Free of wounds on a supporting root within 1 m of the stem. 			
1062309	Min. Basal Area / ha:	12m ²	Assessment Period:	1-3 years post harvest
	Preferred Species:	Fd Lw Py Pw	Acceptable Species:	Bg Pl Ac At Ep Cw Hw

H3 SITE PREPARATION	
TECHNIQUE (S) / LIMITING FACTORS	
Options include:	
<ul style="list-style-type: none"> Mechanical bunching (pile and burn) where feasible. Piles in the NAR may be left unburned in order to contribute to wildlife habitat and coarse woody debris values. Manage CWD and slash with a goal of future wildfire mitigation; minimize surface fuels post-harvest. Site prep that removes almost all of the aboveground biomass creates a good firebreak given the limited fuel remaining. This will reduce the intensity of a potential fire, and make it easier for firefighters to suppress. This does not mean removing all organic material down to mineral soil; just to reduce significant accumulations of surface fuel. 	

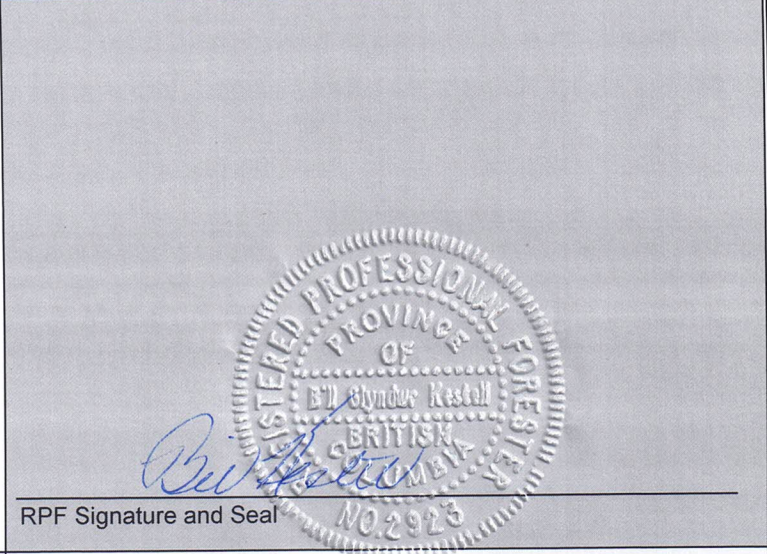
I. ADMINISTRATION

RPF SIGNATURE AND SEAL:

Bill Kestell

RPF Name (Printed)
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.

Date: December 15, 2021 RPF #: 2923



RPF Signature and Seal

SITE PLAN PREPARED BY:
 Tom Haukaas, RFT

MAJOR LICENSEE SIGNING AUTHORITY:

SITE PLAN ATTACHMENTS:

SP MAP(S)

 Licence Holder Signing Authority Signature

 Licence Holder Signing Authority Name (Printed)

Date: _____

	Standards Units					TOTAL HA	%
	A	B	C				
HAZARD RATINGS:							
Compaction	Moderate	Moderate	Moderate				
Soil Displacement	Moderate (14)	Moderate (12)	Moderate (9)				
Surface Erosion	Moderate (21)	Moderate (21)	Moderate (21)				
Forest Floor Displacement	High (23)	High (25)	High (23)				
Mass Wasting	Low (18)	Low (19)	Moderate (23)				
Harvest System	Ground based	Ground based	Ground based				
TOTAL AREA	10.2	4.1	3.7		18.0		
Wildlife Tree Patches / NP Nat							% WTP/RES
WTRA	1.9	-	-		1.9	10.6	
NP FOR	-	-	-				
OTHER Reserve	1.5	-	-		1.5	8.3	
Permanent Access Structures							% Disturbance
Proposed roads	0.4	0.5			0.9	5.0	
Existing roads	0.1				0.1	0.6	
Landings							
Total disturbance permanent access structures	0.5	0.5	-		1.0	5.6	
NET AREA TO BE REFORESTED	6.3	3.6	3.7		13.6		
Sensitive Soils (Y/N)	No	No	No				
Temporary Access Structures: Road, landing, excavated or bladed trails that will be rehabilitated (% of NAR).	5% (excavated/bladed trails)	5% (excavated/bladed trails)	5% (excavated/bladed trails)				
Max. Allowable dispersed Soil Disturbance (% of NAR by Standards Unit) as a result of harvesting, mechanical site preparation, or hazard abatement activities.	10%	10%	10%				

Rehabilitation/Deactivation measures:

All landings and trails within the NAR are temporary and will be rehabilitated by decompacting, re-contouring, surface restoration, followed by planting.

Proposed Roads (permanent):

SU A Spur 5: 302m x 12m= 0.36 ha

SU B Spur 5: 384.1m x 12m= 0.46 ha

Existing Roads (permanent):

Balfour Face FSR: 104.2m x 12m= 0.13 ha

Temp Trails:

N/A

Temp Landings:

3 landings @ 0.2 ha each = 0.6 ha

See **Section F.4** for discussion of rehabilitation of excavated/bladed trails.