Fuel Management Prescription
West-1 & Ridge-1

A. PROJECT IDENTIFICATION	
PROJECT ID AND UNIT ID: Coquitlam Fuel Management 2023 West-1 & Ridge-1 Fuel Management Prescription	LAND OR TENURE HOLDER: Municipal Ownership – City of Coquitlam PID: 023325879 & 016472993
LATITUDE/LONGITUDE: TU-W: N 49° 18.087' ; W 122° 48.161' TU-R: N 49° 18.226' ; W 122° 48.023'	GEOGRAPHIC DESCRIPTION: The two treatment units are located in Hoy Creek Ravine and Natural Areas (TU-W) and Ridge Park (TU-R) in the City of Coquitlam. TU-W is located west of residential properties on Panorama Drive and east of residential properties on Rockcress Place, Sunridge Court, and Forestridge Place. TU-R is located to the north of TU-W, north of the transmission line right-of-way.
HIGHER-LEVEL PLAN(s): City of Coquitlam Community Wildfire Resiliency Plan (2021)	MAP REFERENCE NUMBER: 092G.108 & 092G.109 (MOFR Mapsheet Grid, 1:50,000)

B. FUEL TREATMENT PROJECT DESCRIPTION			
OBJECTIVE:	☒ Public Safety	☐ Range Improvement	☐ Ecosystem Restoration
	☐ Recreation	☐ Wildlife Habitat	☐ Other: Critical Infrastructure protection
	Description: The main objectives of this fuel management prescription (FMP) are to reduce the ignition potential and potential fire behaviour within these municipally-held parcels of land. Achieving this will provide for: • Reduced fire risk to neighboring private properties; • Enhanced safety and efficacy of first responders from Coquitlam Fire / Rescue Services (CFRS) and/or the BC Wildfire Service in the event of an interface fire in the area; This fuel management prescription encompasses two proposed treatment units ('West-1' and 'Ridge-1') identified in the 2021 CWRP for the City of Coquitlam. After evaluating the site, it was determined that the same stand types and treatment specifications characterized both units. As a result, they are described together in this prescription document.		
STRATEGIES:	The objectives of this prescription can be achieved through a combination of the following strategies: • Abating accumulations of deadfall (fine woody debris and/or low-quality coarse woody debris); • Removing low-habitat quality snags; • Pruning retained conifers to decrease the vertical continuity of fuels; • Spacing understory conifer trees where dense thickets exist;		
METHODS:	The proposed strategies can be operationalized through a combination of the following methods: • Physically removing pre-existing debris accumulations and activity fuels; • Manual (e.g., chainsaw, brush saw) tree falling; • Manual pruning (e.g., chainsaw, pole saw); • Ensuring that all healthy deciduous trees, shrubs, and veteran trees are retained.		

C. FUEL TREATMENT UNIT (FTU) SUMMARY							
FTU	NET AREA (ha)	GROSS AREA (ha)	LEAVE AREAS (ha)	NP (ha)	NAR (ha)	TREATMENT REGIME[1]	General Description
TU-W	2.72	2.90	0.20[2]	-	-	SNAG, TFB,	Forest stands in this area are conifer dominated, with an overstory

[1] PRU = Prune; SNAG = Falling Dead Trees; SFR = Surface Fuel Reduction; TFB = Thin From Below

[2] Net out areas have been identified in the northwest corner of Ridge-1. A 0.15 ha area covers an area of rip-rap and disturbed ground with deciduous/shrubby vegetation to the immediate south of Parkway Boulevard, while a 6-m wide stream area was identified along Falcon Creek (intended as 3 m either side of the stream centerline). The stream channel is flat, swampy, and poorly defined in this area which does not allow for a more strict net-out to be mapped and flagged, but the intent of this small net-out is to capture this swampy area that requires no treatment.

TU-R	6.05	6.05	0.00	-	-	PRU, SFR	dominated by western hemlock (*Tsuga heterophylla*, Hw), with a smaller component of western redcedar (*Thuja plicata,* Cw) and Douglas-fir (*Pseudotsuga menziesii*, Fd). Crown base heights are very high on average, with high crown closure. There are a considerable amount of dead standing and damaged trees, mostly affected by western hemlock looper (*Lambdina fiscellaria,* IDL) and hemlock dwarf mistletoe (*Arceuthobium tsugense*, DMH). Understory densities are low and there is very little herb and shrub growth. Pockets of deadfall are considerable throughout the site. The site is moderately sloped (25 - 45%) and has good access from all neighbouring roads and the transmission line, and an established singletrack trail network throughout. TU-R overlaps a previously completed treatment (implemented circa 2011 – see prescription map). This prescription aims to maintain the effects of the previous treatment, and expand on it to the larger area.
TOTALS	8.9	9.1	0.2				

D. SITE CHARACTERISTICS

FTU	CFFBPS FUEL TYPE	TIMBER TYPE	BGC SUBZONE, VARIANT & SITE ASSOC.	ELEVATION RANGE (m)	SLOPE POSITION	SLOPE RANGE (%)	ASPECT
TU-W & TU-R	C3 (C-5, M-1/2 25%)	$Hw_{43}Cw_{29}Fd_{29}$	CWH dm 101 (106)	200 - 310	Mid (Upper)	20 - 45	SE (Variable in ravine)
FUEL TYPE DETERMINATION		Fuel types were determined with information from the Canadian Forest Service Pacific Forestry Center's *British Columbia Wildfire Fuel Typing and Fuel Type Layer Description* document (2018), in combination with professional determinations of fuel types and potential fire behaviour in the CWH BEC zone.					
REPRESENTATIVE WEATHER STATION		The "UBC Research" fire weather station was chosen to represent this prescription area. This weather station is located in a flat clearing approximately 17 km to the east of the treatment area. This station is located in the CWH dm and is ~40 - 150 m lower in elevation than the treatment area, which provides comparable weather outputs.					

E. SOIL CHARACTERISTICS

FTU	SOIL TEXTURE	DUFF DEPTH (cm)	COARSE FRAGMENTS (%)	SOIL DISTURBANCE LIMIT (%)	SOIL HAZARD RATING		
					Compaction	Erosion	Displacement
TU-W & TU-R	SL	4	25	5	M	M	H

F. VALUES – *FOREST AND RANGE PRACTICES ACT*

RIPARIAN & LAKESHORE AREAS - Forest Planning and Practices Regulation (FPPR) division 3, Government Action Regulation (GAR) section 6, Forest and Range Practices Act (FRPA) sections 180 and 181

Is the proposed burning, cutting, modification or removal of trees, or site preparation, in an area that contains streams, lakes or wetlands?	Yes ☒ No ☐	Falcon Creek (defined by Coquitlam as an indefinite river / stream) runs through the northwest corner of TU-R and the southwest corner of TU-W, with an additional tributary (Falcon Tributary) joining this beyond the far south end of the treatment area. The treatment area is outside the riparian management area (RMA) of the tributary.

RIPARIAN MANAGEMENT AREAS (RMAs) - FPPR sections 51 and 52				
STREAM, LAKE, WETLAND ID	CLASS	RRZ (m)	RMZ (m)	SPECIFICATIONS FOR RIPARIAN OR LAKESHORE MANAGEMENT AREAS
Falcon Creek	S3	20 (1.1 ha overlap)	20 (0.7 ha overlap)	Treatment specifications within and adjacent to the riparian management areas have been chosen to protect the channels themselves and maintain streambank stability, while not affecting the shading of the stream. Within the Net-Out area (see prescription map), no foot traffic or machine traffic should occur, and no thinning, pruning, or surface fuel removal should take place. Within the riparian reserve zone (RRZ), the following specifications should be followed: • No removal of live trees of any size class. Hazardous trees may be removed (as identified by WDTA) to facilitate safe worker access for pruning and surface fuel removal work. • Pruning specifications and surface fuel specifications for FWD still apply, though all LWD and CWD should be retained. Material that is spanning or inside the channel should not be removed; • No machine use, unless approved by the contract supervisor and demonstrated that this will cause no considerable amount of soil disturbance; • No refueling of equipment (e.g., machinery or chainsaws, etc.) Within both the RRZ and riparian management zones (RMZ), the following specifications should be followed: • Do not introduce any debris into the channels; • Ensure that appropriate spill-kits are accessible when refueling chainsaws or machinery within the RMZ.
TEMPERATURE SENSITIVE STREAMS - FPPR section 53, GAR section 15, FRPA sections 180 and 181				
Are there temperature sensitive streams or direct tributaries to temperature sensitive streams within or adjacent to the proposed treatment area?	Yes ☐ No ☒	There are no temperature sensitive streams or direct tributaries to temperature sensitive streams within or adjacent to the proposed treatment area.		
ROAD CONSTRUCTION IN RIPARIAN MANAGEMENT AREAS - FPPR section 50				
Is road construction proposed in riparian management areas within the treatment area or an associated road permit (RP)?	Yes ☐ No ☒	No road construction is proposed in RMAs within the treatment area and there is no road permit associated with this treatment.		
STREAM CROSSINGS - FPPR section 55				
Will stream crossings be constructed within the proposed treatment area or a road permit road providing access to the treatment area?	Yes ☐ No ☒	There are two pre-existing stream crossings of Falcon Creek in the treatment area: at the northwest end of TU-R the transmission line access road crosses the stream and is suitable for a pickup and/or small machinery – though load limits and any travel restrictions should be confirmed by BC Hydro prior to tendering of treatment and must be confirmed prior to implementation; at the south end of West-1 there is a footbridge on a hiking trail that crosses the stream and is only suitable for travel by ground crews. No additional crossings of Falcon Creek will		

		need to be (or should be) constructed during treatment. Where manual work is performed on either side of Falcon Creek in TU-W, ground crews should take care to not damage the streambank or channel, while there is no concern that crews can safely cross at multiple locations. The need to cross Falcon Creek to work on the west side in TU-W can be reduced by temporarily removing the chain-link fence that is blocking this area to the west of the footbridge, and off of Rockcress Place. Any removal of these fences will need to be coordinated with and approved by the City of Coquitlam. No road permit is associated with this treatment area.		
MAINTAINING STREAM BANK AND CHANNEL STABILITY ON S4, S5, and S6 STREAMS - FPPR section 52 (2)				
Is the proposed treatment in the RMZ of an S4, S5 or S6 stream that is directly tributary to an S1, S2 or S3 stream and the activity is likely to contribute significantly to the destabilization of the stream bank or the stream channel?	Yes ☐ No ☒	The proposed treatment is not within the RMZ of an S4, S5 or S6 stream that is directly tributary to an S1, S2 or S3 stream.		
DOMESTIC WATER LICENCES (inside or outside of community watershed) - FPPR section 59				
Does the proposed treatment area contain water sources that are diverted for human consumption by a licensed waterworks?	Yes ☐ No ☒	The proposed treatment area does not contain water sources that are diverted for human consumption by a licensed waterworks.		
LICENCED WATER WORKS (inside or outside of a community watershed) - FPPR section 60				
Does the proposed treatment include areas that are within 100m of a licensed waterworks?	Yes ☒ No ☐	There are no licensed waterworks overlapping or within 100 m of the treatment area.		
FISHERIES SENSITIVE WATERSHED - GAR section 14, FPPR section 8.1				
Are any activities proposed within a fisheries sensitive watershed?	Yes ☐ No ☒	No activities are proposed within a fisheries sensitive watershed.		
COMMUNITY WATERSHED - GAR section 8, FPPR section 8.2, 61, 62 and 84				
Does the proposed treatment area include areas that are within a community watershed?	Yes ☐ No ☒	The proposed treatment area is not located within a community watershed.		
Will this project require road or guard construction or deactivation within a community watershed?	Yes ☐ No ☒	See above.		
WATERSHED ASSESSMENT CONSIDERATIONS - FRPA section 180 areas with "significant watershed sensitivity"				
Does the proposed treatment area include areas that have watershed assessment considerations?	Yes ☐ No ☒	The proposed treatment area does not include any areas within significant watershed sensitivity.		
SOIL DISTURBANCE AND PERMANENT ACCESS STRUCTURES - FPPR sections 35 and 36				
Fuel Treatment Unit	Proposed Max Allowable Soil Disturbance	Proposed Max Soil Disturbance for Roadside Work Areas	Proposed Max Permanent Access	
TU 1	5	No separate RWA delineated.	No PAS proposed.	These allowable soil disturbance thresholds are derived from provincial legislation. Given the

				prescribed retention and prescribed treatment methods, meeting or being under the max. allowable soil disturbance of 5% should be feasible. Soil disturbance should be actively monitored by the contract supervisor, and any excessive amounts of disturbance may require a rehabilitation plan to be developed.
Do the proposed Permanent Access Structures exceed 7% of the total area?	Yes ☐ No ☒	No PAS are proposed for this treatment area.		
LANDSLIDES AND TERRAIN STABILITY - FPPR section 37				
Does the proposed treatment area include areas where terrain stability is a concern?	Yes ☐ No ☒	The proposed treatment area does not include areas where terrain stability is a concern, nor were any indicators of potential slope instability noted in the field. The area is gently sloped, no road construction is proposed, and the number of healthy retained trees should adequately continue to provide slope stability.		
SUITABLE SECONDARY STRUCTURE - FPPR section 43.1				
Does the proposed treatment area include a "targeted pine leading stand"?	Yes ☐ No ☒	The proposed treatment area does not include a targeted pine leading stand.		
UNGULATE WINTER RANGE - GAR section 12, FRPA sections 180 and 181, FPPR section 69				
Does the proposed treatment area include areas within an Ungulate Winter Range?	Yes ☐ No ☒	The proposed treatment area does not include areas within a UWR.		
WILDLIFE HABITAT AREA - GAR section 10, FRPA sections 180 and 181, FPPR section 69				
Does the proposed treatment area include any wildlife habitat areas (WHA)?	Yes ☐ No ☒	The proposed treatment area does not include any WHAs.		
MIGRATORY BIRD CONVENTION ACT - 1994				
Does the proposed treatment have the potential to impact migratory bird habitat?	Yes ☒ No ☐	The proposed treatment has the potential to impact migratory bird habitat if implementation occurs during the peak breeding bird window. This treatment area is within Bird Conservation Region 5 (Nesting Zone A1) with a nesting period from late-March to mid-August, though the core nesting season is from early-May to mid-July. The nests of all migratory bird species are protected when they contain a live bird or a viable egg. All fuel management work occurring during this nesting period should be informed by a breeding bird survey performed by a qualified individual, which will determine the risk of the work to migratory birds, the presence of occupied nests, and establish appropriate buffer zones and setback distances from occupied nests. In addition, pileated woodpeckers, green herons, and great blue herons may inhabit the treatment area (as per Birds Canada's Nesting Calendar Query Tool), and their nests are protected year-round. No nests of these species were noted during field work, and it is unlikely that any suitable nesting trees of either of these species would be damaged or targeted for removal.		
OBJECTIVES SET BY GOVERNMENT FOR WILDLIFE - FPPR section 7				

Does the proposed treatment area include areas to which objectives for wildlife under FPPR section 7 apply?	Yes ☒ No ☐	Species at Risk: The treatment area does not include any publicly available or masked-secured areas designated provincially as habitat for species and/or ecosystems at risk. Regionally Important Wildlife: The treatment area does not include any areas designated for regionally important wildlife. Critical Habitat for Federally Listed Species at Risk: The treatment area does not include any land designated as proposed or finalized critical habitat for a federally listed species at risk.
OBJECTIVES SET BY GOVERNMENT FOR BIODIVERSITY OBJECTIVES (Landscape Level) - FPPR Part 4 Division 5		
Does the proposed treatment area include areas to which objectives for landscape level biodiversity under FPPR section 9 apply?	Yes ☐ No ☒	-*Maximum cutblock size* does not apply to this treatment area. The treatment area is well under 40 hectares, timber harvesting is not an objective, and proposed treatments will largely mimic the effect of a natural disturbance (i.e., low-severity fire event). -*Harvesting adjacent to another cutblock* does not apply to this treatment area.
OBJECTIVES SET BY GOVERNMENT FOR BIODIVERSITY OBJECTIVES (Stand Level) - FPPR Part 4 Division 5		
Are considerations for maintaining stand structure (wildlife trees, wildlife tree reserves, etc.), coarse woody debris, and maintaining tree and vegetation species composition incorporated into this prescription?	Yes ☒ No ☐	-*Wildlife tree retention* will be prioritized and managed for at the stand level, as no untouched wildlife tree retention areas have been delineated. See WILDLIFE TREE RETENTION TARGET for additional information. -*Coarse woody debris* retention (and recruitment) will be prioritized and managed for at the stand level, and amounts will greatly exceed (intentionally) the minimums proposed in FPPR and/or the Chief Foresters Guidance on Coarse Woody Debris. See COARSE WOODY DEBRIS (CWD) RETENTION TARGET for additional information.
RECREATION FEATURES - FRPA section 56 and 149, FPPR section 70		
Does the proposed treatment area contain interpretive sites, recreation trails, recreation sites, recreation facilities that are of significant recreation value and are designated a resource feature?	Yes ☐ No ☒	The treatment area contains multiple local recreation trails as part of the Tri-Cities Offroad Cycle Association (TORCA) network, heavily utilized by local non-motorized recreationalists. Their usage by any machinery should be coordinated with and approved by TORCA and the City. Trails are displayed on the FMP map, and will be referenced by the names given to them on Trailforks. • Goldilocks: Double-track trail (~3 m wide) leading along the transmission line from Parkway Boulevard, then traversing into the middle of TU-R. Likely suitable for small machinery. • Porridge: Single-track traversing through the center of TU-W, from the transmission line to Falcon Creek. • Too Hot: Single-track trail off the end of Sunridge Court. Has metal blockades in place at the end of the cul-de-sac. • Too Cold: Single-track trail off the end of Rockcress Place. Has metal blockades in place at the end of the cul-de-sac. • Just Right: Single-track trail off the end of Rockridge Lane. Has metal blockades in place at the end of the cul-de-sac. Contains a bridge over Falcon Creek. While these trails provide favourable access to the site for implementation crews, they will need to be returned to their pre-treatment quality when treatments are finalized. Any disturbance or modifications to any of the trails should be communicated to TORCA and the City. No provincially designated recreation trails, sites, or facilities are located within the treatment area.
VISUAL QUALITY OBJECTIVES - GAR section 7, FRPA sections 180 and 181, FPPR section 9.2		
Is the proposed treatment within a scenic area?	Yes ☐ No ☒	The proposed treatment area is not within a scenic area nor does it have an established visual quality objective. Visual quality of the site will not be affected due to high retention of overstory trees.

ARCHAEOLOGICAL RESOURCES/CULTURAL HERITAGE RESOURCES - FPPR section 10		
Are there any known archaeological sites or cultural heritage resources that are important to First Nations within the proposed area? No Referral to Land Manager is required if proposed TU is on the applicant's own First Nation Land.	Yes ☐ No ☒	According to the Provincial Archaeology Branch, there are no known archaeological sites recorded within 100 m of the treatment area, and archaeological potential modelling is not currently available to the Province that describes the potential for previously unidentified archaeological sites to occur in this area. The Arch Branch does not identify a need for an archaeology study or any Provincial heritage permits at this time. If archaeological material is encountered during development, all individuals involved with implementing this FMP **must stop all activities immediately** and contact the Arch Branch for direction at 250-953-3334.
INVASIVE PLANTS - FRPA section 47 and FPPR section 17		
Is the introduction and spread of invasive plants likely as a result of the proposed treatment?	Yes ☒ No ☐	A number of species were noted adjacent to private properties and the transmission lines (and are common throughout disturbed forests in this area). • Himalayan blackberry (*Rubus armeniacus*) • Yellow archangel, (*Lamiastrum galeobdolon).* Generally, operations should minimize the spread of invasive plants through the following measures: • Clean clothing, boots, and equipment thoroughly when entering and exiting the treatment area. Wash in designated wash sites and prevent run-off from entering waterways or riparian areas. • Avoid driving through, parking on, or walking through weed infestations. • Ensure crews are aware of the importance of invasive species management and can identify all the common invasive species in the region. Additionally, an occurrence of Japanese knotweed (*Reynoutria japonica)* has been identified adjacent to the treatment area through the Invasive Alien Plant Program (IAPP) database. No occurrences were observed in the field. However, if knotweed is identified at the site, patches **should not be disturbed** and occurrences should be reported to site supervisor. Identification aids can be found at the Invasive Species Council of BC website. https://bcinvasives.ca/wp-content/uploads/2021/02/Field_guide_to_Noxious_Weeds_11th_2021.pdf
NATURAL RANGE BARRIERS - FRPA section 48, FPPR section 18		
Are there natural range barriers within the proposed treatment area that are likely to be removed or rendered ineffective?	Yes ☐ No ☒	There are no natural range barriers within the proposed treatment area.
LAND USE OBJECTIVES (Higher Level Plans and objectives set by Government under the *Land Act*)		
Are there land use objectives (higher level plans or objectives under the *Land Act*) that apply to the proposed treatment area or a Road Permit necessary to provide access to the treatment area?	Yes ☐ No ☒	No land use plan or higher-level plan applies to the treatment area, nor is a road permit necessary to provide access to the treatment area.
Do the proposed activities conflict with land use objectives (higher level plans or objectives under the *Land Act*)?	Yes ☐ No ☒	The proposed activities do not conflict with any land use objectives.

Known and potential species at risk, windthrow hazard, and old growth management areas	Yes ☐ No ☒	Species at risk have been addressed above. A windthrow field card was not completed for the treatment area, though the proposed treatment (i.e., thin from below, retaining veterans, retaining healthy dominants, removing snags, and selecting for windfirm species [Fd]) will not increase windthrow risk in the area. Endemic windthrow/breakage was noted throughout the TU, but was concentrated on dead standing trees. No old growth management areas (legal or non-legal) overlap the treatment area.

G. OTHER CONSIDERATIONS AND REQUIREMENTS		
ENGAGEMENT AND CONSULTATION – FIRST NATIONS		
First Nations consultation complete?	Yes ☐ No ☒	Any comments received after finalization may incorporated into the prescription as an amendment.
Musqueam Nation		An introductory message and map of the project area was sent April 29, 2024, describing the fuel management objectives of the project.
Tsleil-Waututh Nation		An introductory message and map of the project area was sent April 29, 2024, describing the fuel management objectives of the project.
People of the Rivers Referrals Office		An introductory message and map of the project area was sent April 29, 2024, describing the fuel management objectives of the project.
Katzie First Nation		An introductory message and map of the project area was sent April 29, 2024, describing the fuel management objectives of the project.
Kwikwetlem First Nation		Kwikwetlem First Nation referrals staff attended a Community FireSmart & Resiliency Committee in April 2023 introducing the project. Prescription 'summaries' (abbreviated descriptions of proposed works, in non-technical language) were shared in October 2023 and March 2024. Draft prescriptions were shared April 29, 2024.
Squamish Nation		An introductory message and map of the project area was sent April 29, 2024, describing the fuel management objectives of the project.
Tsawwassen First Nation		An introductory message and map of the project area was sent April 29, 2024, describing the fuel management objectives of the project.
CONSULTATION – GENERAL		
An introduction to this project was provided at the City of Coquitlam's Community FireSmart & Resiliency Committee meeting in April 2023 to summarize prescription objectives, strategies, and methods. Representatives from the following organizations were present at the meeting: City of Coquitlam (Development & Planning, Parks, Fire Rescue Service); Metro Vancouver Regional District (Water Services, Parks); and Kwikwetlem First Nation.		
EXISTING TENURE HOLDERS (Forest, Range, Guide Outfitters, Trappers, etc.)		
Tenure Holder	Concerns?	Measures proposed to address licensee's assets /

		concerns
No tenure holders overlap this treatment area.	Yes ☐ No ☒	-
PRIVATE PROPERTY		
Does private property border the proposed treatment area?	Yes ☒ No ☐	Private property borders the treatment area to the east and west in West-1, and off the northwestern corner of TU-R. Fence-lines were used as treatment area boundaries where applicable – no legal private land survey had been conducted. Adjacent property owners should be notified by the City of proposed works a minimum of 14 days prior to startup.
SMOKE MANAGEMENT		
Does a smoke management plan beyond OBSCR exist for the proposed treatment area?	Yes ☒ No ☐	Metro Vancouver's Air Quality Management Bylaw No. 1082 applies to the treatment area, in addition to the OBSCR. As an approved plan for Community Wildfire Risk Reduction, burning may occur under Division 2 of OBSCR, but the permitting process required by Metro Van carries heightened restrictions for any open burning. Additionally, open burning is restricted in approximately 70% of the treatment area as it is within 50 m of a residential structure (under OBSCR). Debris disposal methods alternative to pile burning should be explored.
SAFETY		
Have any specific safety concerns been identified in or adjacent to the proposed treatment area?	Yes ☒ No ☐	Mortality within the stand presents a hazard to workers, which will be dealt with appropriately through a WDTA / DTF. Several residents adjacent to the area have also dumped material inside the treatment area, which often contains non-vegetative debris. Dealing with this material will be at the discretion of the contract supervisor / City of Coquitlam. Steep topography and rocky ground also present safety hazards to field crews in multiple areas. A rocky knoll in the northeast corner of TU-R is identified on the prescription map where access may be impeded.
UTILITIES & INFRASTRUCTURE		
Are utilities or infrastructure located in or adjacent to the proposed treatment area? i.e. power lines, rail lines, etc.	Yes ☒ No ☐	A BC Hydro transmission line separates TU-W and TU-R, and the right-of-way will likely be used for crew and/or machine access. Prior to tendering treatment and/or implementation a site visit should be held with BC Hydro to discuss access and/or staging along the right-of-way, potential need for certified utilities arborists (CUAs), and/or any additional concerns had by BC Hydro. There is no additional utilities infrastructure within or adjacent to the treatment area.
ACCESS CONTROL		
Are there any foreseen issues with access and access control during and post treatment?	Yes ☒ No ☐	There are simple blockades at access points off of the cul-de-sacs to the west of TU-W. If these limit access for crews and/or machinery, their temporary removal (and replacement) should be discussed with the City of Coquitlam. For TU-R, access along the transmission line corridor (Westwood Plateau Hiking Trail) will likely need to be coordinated with BC Hydro and/or TORCA if machinery is being mobilized. Referenced in the stream crossing and outstanding works section, there are chain-link fences partially blocking access to the west side of Falcon Creek in TU-W – the temporary removal of these will need to be discussed with Coquitlam prior to treatment startup.
TRAFFIC CONTROL		

Is traffic control required at any point during operations?	Yes ☒ No ☐	Traffic control may be required along Parkway Boulevard when any falling is occurring that may impact the road, or if debris is being loaded and hauled away from the road. Traffic control should be discussed with and approved by the City, and any necessary permits from MOTI (or equivalent) will need to be obtained.

OTHER (E.g Public Notification)

The treatment unit abuts several private residences. The City of Coquitlam should notify residents prior to operations commencing. Installing signage around the treatment area explaining the purpose of the project is recommended as well.

H. FUEL LOADING AND TREATMENT SPECIFICATIONS

Fuel Treatment Unit ID: West-1 and Ridge-1

H.1 TREATMENT SPECIFICATIONS SUMMARY

FUEL REMOVAL/RETENTION STRATEGY BY SIZE/SPECIES

- **Hazard trees**
  - Fall hazard trees identified by a qualified assessor through a WDTA, unless identified as a high value wildlife trees
- **Dead trees:**
  - Cut all dead standing trees < 17.5 cm DBH.
- **Live trees**
  - Cut all live L4 trees (<7.5 cm DBH and 1.3 m height)
  - Cut most live L3 (7.5-12.5 cm DBH) and L2 (12.5-17.5cm DBH) trees. About 10 SPH in this diameter class should be retained. Trees to be retained should be:
    - Healthy and vigorous,
    - Preferably not Hw
    - Spaced at least 5 m from another retained conifer
  - Retain all live deciduous trees and shrubs.
- **Pruning**
  - Prune any retained conifers that are ≥ 5 m in height to 2 m;
  - Prune any retained conifers that are < 5 m in height to 1 m (this does not apply if the tree has > 5 m vertical and horizontal separation from another retained conifer crown).

TREATMENT SPECIFICATION RATIONALE

- The majority of dead standing trees are low-habitat quality (i.e., small) conifer trees, and/or hazard trees. Left to fall on their own, these trees can create elevated piles of surface fuels which provides vertical continuity to any conifer crowns surrounding them, and/or present a hazard to adjacent infrastructure or people;
- Cutting specifications of live standing trees will ensure that the post-treatment density is desirable and that the shaded conditions of the stand are maintained, while allowing for minor amounts of healthy regeneration. These specifications will reduce the ladder fuel layer and break up vertical continuity in the stand;
- Pruning conifer trees will ensure that there is not vertical continuity between surface fuels (i.e., fine woody debris) and tree crowns – see Appendix E for additional information. Pruning trees shorter than 5 m leaves potential for more than 40% of the live crown : height ratio to be removed, which will unnecessarily affect the tree's vigour. Very few conifer trees that are ≤ 5 m in height will be retained (estimated at < 50 SPH and often in isolated clumps, covering < 1 % of the stand overall), so the potential of these trees candling is not a concern at the stand level.
- Surface fuel removal (as specific below) will ensure that the likelihood of crown fire initiation is reduced and that the hazardous burning potential of piled accumulations is eliminated. Retention of LWD and CWD will allow contractors to retain boles of larger felled trees and pre-existing deadfall, which are the most difficult pieces to physically remove or burn and which create the most soil disturbance when burnt.

H.2 STAND FUEL LOADING

Complete a STAND and STOCK TABLE (SST) appendix for each FTU. The SST(s) must be attached to this document. A professional volume estimate is required when merchantable tree cutting is prescribed and a timber cruise should be considered when cutting >50 m^3/ha or >500 m^3 in total.

Is the cutting of standing trees prescribed?

☒ Yes

☐ No

Comments:

The majority of standing trees to be cut are merchantable and understandable sized snags (which will be retained on site as CWD) and unmerchantable understory conifers. No utilization of merchantable or non-merchantable material is proposed due to small volumes and quality of material.

STAND AND STOCK TABLE SUMMARY (copied from Stand and Stock Tables in Appendix)

Layer Info	Crown Base Height Range (m)	Age / Average Tree Height (m)	STEMS PER HECTARE (sph)			VOLUME PER HECTARE (m^3/ha)		
			Existing	Cut	Leave	Existing	Cut	Leave
Total Live & Dead (Layer 1)	1 (Cw) – 30	14 – 38	686	86	600	476	0	476
Total Conifers & Dead (Layer 2)	1 – 5	7 – 14	28	19	9	-	-	-
Total Conifers & Dead (Layer 3)	1 – 4	1.5 – 5	114	103	11	-	-	-
Total Conifers & Dead (Layer 4)	0.5	1	86	86	0	-	-	-
TOTAL ALL LAYERS (from Stand and Stock Table appendix)	-	-	914	294	620	-	-	-

H.3 SURFACE FUEL LOADING (kg/m2)

Size Class (cm)	Existing	Existing Distribution	Target (kg/m^2)	Target Distribution	Methodology Used
Fine Woody Debris (</=7cm)	0.72 – 2.0 kg/m^2 *(point accumulations up to 4 kg/ m2)*	Scattered on average, with some significant point accumulations associated with blowdown / breakage.	0.5 kg/m^2 [3, 4]	Scattered	Browns Transect
Large Diameter Woody Debris (>7cm – </= 20cm)	3 – 13 t/ha	Scattered, often in elevated jackpots.	Retain all.	See COARSE WOODY DEBRIS (CWD) RETENTION TARGET	
**Coarse Woody Debris (CWD) (20cm+)	Up to 600 pieces/ha				

H.4 CROWN CLOSURE AND CANOPY BULK DENSITY

Crown Closure (%)	Existing: (Dead / Live) 55 – 80%	Target: 50 - 80% (A reduction in crown closure is not a driving objective of this prescription. Small decreases will likely occur where snags are removed)
Canopy Bulk Density (CBD)	CBD was not measured but will be minimally affected by the proposed treatments. Decreases will occur in sub-canopy layers as clumps of understory conifer trees are thinned, and minor decreases will occur in the overstory where canopy snags are felled.	

H.5 BIODIVERSITY AND FOREST HEALTH CONSIDERATIONS AND TARGETS

[3] Target on average. Intent is to have all FWD removed that is introduced through treatment, and have all pre-existing accumulations abated. No accumulations to exceed 1.0 kg/m^2 in any 1m x 1m area.

[4] For short (i.e., < 5 m tall) conifers that are retained and only pruned to 1 m in height, FWD must be abated to < 0.3 kg/m^2 within 1.5 m of any point where the CBH is < 2 m.

**COARSE WOODY DEBRIS (CWD) RETENTION TARGET - Pieces / ha and Distribution	All CWD and LWD that is pre-existing and/or introduced should be retained. Minor amounts of LWD can be removed at the contractor's discretion to facilitate debris removal. It is expected that the total amount of LWD and CWD will not exceed 50 t/ha on average, which is an acceptable amount to balance fire hazard, potential soil heating, site productivity, and wildlife characteristics. All retained LWD and CWD should be bucked and limbed so that the: • Fine woody components (i.e., branches / tops) are removed (flush with the bole); • Majority of the piece is in contact with the ground; • Piece is kept in the longest continuous piece.
WILDLIFE TREE RETENTION TARGET – describe specific wildlife tree features to protect, sph, geographic preferences etc.	Prior to or concurrently with treatment, a Wildlife Danger Tree Assessment should be performed by a qualified assessor. All trees that exhibit high-value wildlife characteristics given this ecosystem should be retained, unless they pose an immediate safety risk to workers and/or the public. If no work zones (NWZ) are established, these need to be identified to and approved by the contract supervisor to confirm that they do not unduly compromise the risk-reduction efforts. No more than 5% of the TU should be designated as NWZs.
FOREST HEALTH- Should include details such as agent, affected species, incidence rating, mortality, and targets	Multiple forest health agents in the surrounding area have been noted through provincial surveys and during field work, most notably western hemlock looper (IDL) and western hemlock mistletoe (DMH). This has resulted in occasional patches of mortality, points of significant surface fuel loading, and standing overstory trees in declining health and/or with structural deformities. Estimated that 5-10% of mature stems are impacted by DMH, concentrated in pockets. Treatment specifications have been chosen to remove the majority of dead and damaged looper trees, while retaining and promoting healthy individuals of a diversity of species.

I. TREATMENT DESCRIPTION

MERCHANTABLE TIMBER CUTTING

ROADS, LANDINGS AND TRAILS (e.g., will new road construction be required, is there existing roads that will be utilized?):

No new road construction will be required, and there is reliable trail access directly into the majority of the treatment area (see Recreation Features above for additional information regarding each of these trails). Unofficial footpaths, game trails and old roadbeds are found within the treatment area, though these have not been tracked and will not be identified on treatment maps.

FELLING (e.g., is there special measures required for felling, hand falling areas, etc.):

Any hand falling of timber >15 cm diameter at stump height (30 cm) shall be performed in line with WorkSafeBC Faller Certification standards. Stump heights should not exceed 10 cm in height on the high-side for stems < 12.5 cm in diameter, and 30 cm in height for stems larger than this. All stumps should be cut at 0° (not parallel to the slope).

YARDING/SKIDDING (e.g., is there specific yarding areas identified, is forwarding preferred over skidding due to sensitive soils in some areas etc.):

Yarding or skidding of material is not recommended due to the small volume of material to be cut and removed. If material is being removed off-site it is likely that it can be manually loaded into small tracked machinery (e.g., morooka) or a quad and trailer.

PROCESSING, LOADING AND HAULING (e.g., are there specific areas identified regarding where these activities may occur?):

Loading and hauling of non-merchantable debris is likely to occur. The best location to perform this is likely where the transmission line right of way intersects Parkway Boulevard. There is a gated and paved parking area at this spot (marked on prescription map), and the double-track transmission line access road commences from this point. Use of the gated and paved parking area should be confirmed with the City, as it is situated on private land, and use of the transmission line access road should be confirmed with BC Hydro in advance of treatment, as described above.

SLASH DISPOSAL (e.g., is there a recommended slash disposal method?): N/A.
SPECIAL MEASURES: N/A
STAND MODIFICATION TREATMENTS
BRUSHING: The retention of all healthy deciduous trees and shrubs is an objective of this prescription. These should only be targeted for brushing as required for any safe falling procedures.
PRUNING: Any retained trees that are greater than 5 m in height that have a CBH lower than 2 m will be pruned to 2 m, and any retained trees that are less than 5 m in height that have a CBH lower than 1 m will be pruned to 1 m. CBH will be measured as the distance between the ground and the lowest point on either a live branch or a cluster of dead branches (especially with needles and fine branches or volatile mosses or lichens) dense enough to allow fire to spread vertically to the crown. For deciduous trees / shrubs with a heavy amount of decadent stems / branches at the base or in the lower canopy, these dead portions should be pruned. Pruning should be within 1 cm of the branch collar and should not result in damage to the stem.
THINNING: Estimated cutting specifications are outlined in Table H and in Appendix D.
DEBRIS PILING: Debris may only be piled within the treatment area for the purpose of pile burning or for facilitating removal.
PILE BURNING: Pile burning is not a recommended or overly realistic debris disposal option for this site, due to the adjacency to private properties and bylaw restrictions. If pile burning is chosen (and performed in compliance with OBSCR Division 2 and Metro Vancouver's Air Quality Management Bylaw No. 1082), activities should consider the following parameters: • Burn piles must be constructed to facilitate effective ignition and complete combustion. • Burn piles must be within the treatment area boundary. • Burn piles should be placed to avoid scorching any retained pieces of CWD or retained boles. It is the Prime Contractor and contract supervisor's responsibility to obtain all required permits and burn registration numbers from Metro Vancouver, Coquitlam, and the BCWS, and complete notifications as per OBSCR requirements, including but not limited to: adjacent property owners and the CFRS.
MULCHING: Mulching / chipping can be utilized to facilitate debris removal, but mulched / chipped material cannot be broadcast on site. A minor amount of mulched / chipped material can be retained in isolated areas (no larger than 10 m x 10 m, not exceeding 10 cm in depth, and not covering more than 10% of the treatment area).
MASTIATION: See mulching above.
GRINDING: See mulching above.
PRESCRIBED FIRE: Fuel reduction targets will need to be achieved without the use of prescribed fire. The adjacency to private residences, as well as the wet forest type (CWH dm) and predominant herb/shrub layer make this site unsuitable for prescribed fire pre or post-treatment.
PLANTING: Planting is not prescribed or required as the post-treatment stands will still be effectively stocked with a diversity of species, and the areas should be managed in the long-term for continued fire resilience.
OTHER:
AUTHORIZATION AND TIMBER TENURE REQUIREMENTS (To be populated in consultation with the land manager. E.g., BC Parks, Natural Resource District, Mountain Resorts Branch etc.)
FRPA Section 52: Not required as this treatment is on municipal land.
Forestry License to Cut (FLTC): Not required as this treatment is on municipal land.
Park Use Permit: Not required as this treatment is on municipal land.
Road Permit or Road Use Permit: Not required as treatment does not require access via a forestry road, provincially owned highway, or road managed by MOTI.
Other (i.e., local government, utilities, etc.): **BC Hydro:** Access to, staging along, and vegetation removal adjacent to the BC Hydro transmission line right-of-way will need to be coordinated with and permitted by BC Hydro prior to treatment (and ideally prior to treatment tendering). Load limits and/or considerations for the crossing of Falcon Creek need to be determined.

City of Coquitlam: Temporary removal of traffic blocking features at end of cul-de-sacs, and chain-link fences along Falcon Creek and/or Parkway Boulevard.

J. POST TREATMENT

EXPECTED VEGETATION RESPONSE BY FTU:

TU-W and TU-R: Where deadfall is cleaned up and slight decreases in canopy closure occur from snag or understory conifer removal, the increased insolation will likely provide the herb / shrub layer with improved growing conditions. It is expected that a mix of conifer species will continue to naturally regenerate, though little natural understory regeneration was observed pre-treatment.

ADDITIONAL MONITORING AND MAINTENANCE:

Planned / Scheduled Monitoring & Maintenance:

Time Post Treatment (months / years)	Activity / Treatment:	FTU(s):	Comments:
10 – 15 Years (or post-disturbance)	Maintenance treatments	TU 1	Maintenance treatments to keep these parcels in a low-hazard state will likely be required due to natural stand processes. See below for potential triggers for maintenance treatments.

Triggers For Maintenance Treatments:

Conifer Regeneration: Regeneration of > 200 SPH of conifer trees that are > 1.5 m in height. Healthy regenerating conifers (likely Fd and Cw) that were retained through this prescription should not count toward this target.

Snags & Hazard Trees: Natural succession or forest health events that result in > 10% of overstory trees being dead.

Surface Fuels: Accumulations that exceed the prescription specifications in an area ≥ 10 m x 10 m

SILVICULTURE OBLIGATIONS: Do silvicultural obligations apply to the treatment area? Yes ☐ **No** ☐

PLANTING: Is planting a treatment identified in this prescription or required as a legislative obligation? Yes ☐ **No** ☐

STOCKING STANDARDS: N/A

FTU	Stocking Standard ID	Pref. Spp.	Acc. Spp.	Well-Spaced Stem/ha				Minimum Height (m)			Regen Delay	Free Growing (years)
				TSS	MSS Pref. & Acc.	MSS Pref.	MITD	Pl	Others	RTH (%)		

K. Outstanding Works

Prior to implementation, the following notifications should occur:

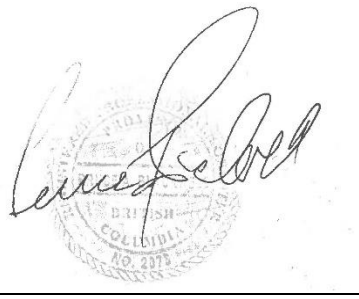
1. First Nations
2. City of Coquitlam
3. Coquitlam Fire & Rescue Services
4. Adjacent property owners

The consultation process should be undertaken by Coquitlam or representative. Consultation / notification shall be completed in a manner and a schedule determined by Coquitlam (recommended timeline is 14 days prior to start-up), but may consist of email or phone notifications, contacting individual households, onsite signage, notification through websites or social media, and/or holding a general public meeting. Prescription specifications may be modified based upon received feedback; any modifications must be formalized as a prescription amendment signed by a qualified RPF to ensure that modifications do not compromise treatment objectives or negatively impact other values (unintended consequences).

L. ADMINISTRATION

PREPARATION

Monica Nederend, FIT Brin Farrell, FIT	
QUALIFIED REGISTERED PROFESSIONAL NAME *(Printed)* Bruce Blackwell	QUALIFIED REGISTERED PROFESSIONAL SIGNATURE

	
PROFESSIONAL ASSOCIATION & MEMBER NUMBER FPBC, 2073	DATE May 24, 2024

M. ATTACHMENTS

MAPS: **Yes ☒** No ☐	FIELD DATA CARDS: Yes ☐ **No ☒** Data collected during field work and summarized by each TU – original data is not presented with this FMP.
WUI WTA Plots and Photos: **Yes ☒** No ☐ Representative WTA plots completed but not attached to this FMP.	CRUISE DATA: Yes ☐ **No ☒**
AIR PHOTOS/IMAGERY: Yes ☐ **No ☒**	BURN PLAN: Yes ☐ **No ☒**
MODELING/DATA ANALYSIS: Yes ☐ **No ☒**	STAND & STOCK TABLES: **Yes ☒** No ☐
SURFACE FUEL LOADING DATA: Yes ☐ No ☐ Data collected during field work and summarized by each TU – original data is not presented with this FMP.	OTHER:
TERRAIN STABILITY ASSESSMENT Yes ☐ **No ☒** Completed By: Date:	VISUAL IMPACT ASSESSMENT Yes ☐ **No ☒** Completed By: Date:
ARCHAEOLOGY IMPACT ASSESSMENT Yes ☐ **No ☒** Completed By: Date:	BIOLOGIST ASSESSMENT Yes ☐ **No ☒** Completed By: Date:
ADDITIONAL COMMENTS:	

Appendix A: Representative Photos

Figure 1: Representative photos showing common surface fuel conditions (top left), rocky knolls with high mortality and heavier surface fuel (top right) and a common stand view - showing stem exclusion conditions with a lack of conifer regeneration.

Appendix B: Prescription Map

TU	Net Area (ha)	Gross Area (ha)	Leave Areas (ha)	Treatment Regime
TU-W	2.72	2.92	0.20	SNAG, TFB, PRU, SFR
TU-R	6.05	6.05	0.00	
Total	**8.77**	**8.97**	**0.20**	

City of Coquitlam
Fuel Management
Prescription 2023
West-1 & Ridge-1

Local Government Name: City of Coquitlam
FMP Consultant: B.A. Blackwell & Associates Ltd.
GIS Consultant: B.A. Blackwell & Associates Ltd.
Project ID: CRI-605

Legend

- Falling Corners
- Prescription Project Boundary
- Prescription Treatment Unit
- Net Out
- Wildfire Threat Plot
- Parking
- Cliffs
- Transmission Lines
- Paved Road

Trails

- Double-track
- Single-track
- Riparian Mgmt. Zone
- Riparian Reserve Zone
- Stream

Ownership

- Municipal
- Private

1:2,500

Coquitlam

B. A. Blackwell & Associates Ltd.

Appendix D: Stand and Stock Tables

Project ID: Coquitlam FMP 2023

Treatment Unit ID: TU-W and TU-R

H. STAND AND STOCK TABLE

Complete a STAND and STOCK TABLE (SST) appendix for each FTU. The SST(s) must be attached to this document. A professional volume estimate is required when merchantable tree cutting is prescribed and a timber cruise should be considered when cutting >50 m^3/ha or >500 m^3 in total.

Is the cutting of standing trees prescribed?

☒ Yes

☐ No

Comments:

The majority of standing trees to be cut are merchantable and understandable sized snags (which will be retained on site as CWD) and unmerchantable understory conifers. No utilization of merchantable or non-merchantable material is proposed due to small volumes and quality of material.

Are there any challenges to utilizing merchantable material? If yes, please provide details.

☐ Yes

☒No

Comments: No merchantable material that is not dead standing will be cut. Volumes of dead standing to be cut are small and CWD retention is being prioritized.

Statement of Limitations: *Stand descriptions and pre-treatment stand structure numbers are estimates only and should not be relied upon by Contractors for estimating budgets used in bidding or tender preparation. Contractors are responsible for conducting site visits to gather sufficient information for tender preparation. Stand density and structure is variable across both West-1 and Ridge-1, and the fuel removal and retention specifications in Table H. should be given precedence over the estimated numbers in this table.*

Species and Diameter Class	Crown Base Height Range (m)	Average Age / Tree Height (m)	STEMS PER HECTARE (sph)			VOLUME PER HECTARE (m^3/ha)		
			Existing	Cut	Leave	Existing	Cut	Leave
Layer 1 (≥ 17.5 cm dbh)								
Hw	7.3 - 20	27.9 m	258	0	258	174	0	174
Cw	4.8 - 12	27.7 m	148	0	148	115	0	115
Fd	13.8 – 35	37.5 m	79	0	79	164	0	164
Total Dead Potential	*None captured in plots. Dead standing trees with low habitat quality should be felled.							
Total Live	-	-	485	0	485	453	0	453
Layer 1 (12.5 cm – 17.5 cm dbh)								
Hw	8 - 15	No data	29	29	0	3	3	0
Cw	1 - 6	14	57	0	57	7	0	7
Deciduous	-	No data	29	0	29	3	0	3
Total Dead	-	No data	86	86	0	7	7	0
Total Conifers & Dead	-	-	172	86	86	20	10	10
Layer 2 (≥ 7.5cm - 12.5cm dbh)								
Hw	1 - 5	7	14	5	9	-	-	-
Deciduous	-	14	43	0	43	-	-	-
Total Dead	-	7	14	14	0	-	-	-
Total Conifers & Dead	-	-	28	19	9	-	-	-
Layer 3 (> 1.3m Height and < 7.5cm dbh)								
Cw	1 - 4	1.5 - 5	71	60	11	-	-	-
Deciduous	-		29	0	29	-	-	-

Total Dead	-		43	43	0	-	-	-
Total Conifer & Dead	-	-	114	103	11	-	-	-
Layer 4 (< 1.3m Height)								
Hw	0.5	1	43	43	0	-	-	-
Cw			29	29	0	-	-	-
Fd			14	14	0	-	-	-
Total Conifer	-	-	86	43	43	-	-	-
Total Live & Dead (Layer 1)	-	-	485	0	485	-	-	-
Total Conifers & Dead (Layer 2)	-	-	28	19	9	-	-	-
Total Conifers & Dead (Layer 3)	-	-	114	103	11	-	-	-
Total Conifers & Dead (Layer 4)	-	-	86	43	43	-	-	-
TOTAL ALL LAYERS	-	-	713	165	548	-	-	-

Appendix E: Fire Behaviour Calculations

Project: City of Coquitlam FMPs (2023)		Pre-treatment	Post-treatment spec.
TU(s): West-1& Ridge-1	Weight of fuel (kg/m²):	0.7 - 2.0 kg/m2	0.5 kg/m2 (avg)
Weather Station: UBC Research	Rate of Spread (m/min):	2 m/min (Red Bk)	1.3 m/min (FBP Agg)
90th Percentile BUI: 105.92	Wildfire Intensity (kW/m):	Rank 3, 500 - 2000	Surface, 198 kW/m
90th Percentile ISI: 6.19	own Base Height (CBH) (m):[1]	1 m (Cw/Hw/Dead)	2.0 m
CFFBPS Fuel Type: C-3	ritical Surface Intensity (kW/m):	158.6 kW/m	448.6

[1] CBH - refer to Fuel Management Prescription Guidance for CBH measurement direction

Surface Fire Intensity Targets		
Is Wildfire Intensity below 2000 kW/m?	Yes	← These boxes auto populate when Wildfire Intensity and CSI values are input into their respective boxes.
Is Wildfire Intensity less than CSI?	Yes	←

Critical Surface Fire Intensity Calculations

Wildfire Intensity I = HWR (Byram 1959)		
Enter Weight of the Fuel (kg/m²)	→	0.5
Enter Rate of Spread (m/min)	→	1.3
Wildfire Intensity (kW/m)	=	195.0

Wildfire intensity is used to index fire suppression difficulty and to evaluate whether the critical threshold for crown fire ignition has been exceeded. Post-treatment wildfire intensity should be below 2,000 kW/m or the CSI, whichever is the lower value.

Critical Surface Fire Intensity for Initial Crown Combustion (Van Wagner 1977)		
Enter Foliar Moisture Content (%)	→	95
Enter Crown Base Height (m)	→	2.0
Critical Surface Fire Intensity (kW/m)	=	448.6

The threshold for which a surface fire will begin to involve crown fuel is the Critical Surface Fire Intensity (CSI). Suppression is more successful when the surface fire intensity is less than the CSI and crown fuel is not ignited.

Project: City of Coquitlam FMPs (2023)		Pre-treatment	Post-treatment spec.
TU(s): West-1& Ridge-1	Weight of fuel (kg/m²):	0.7 - 2.0 kg/m2	0.3 kg/m2 (avg)
Weather Station: UBC Research	Rate of Spread (m/min):	2 m/min (Red Bk)	1.3 m/min (FBP Agg)
90th Percentile BUI: 105.92	Wildfire Intensity (kW/m):	Rank 3, 500 - 2000	Surface, 117 kW/m
90th Percentile ISI: 6.19	own Base Height (CBH) (m):[1]	1 m (Cw/Hw/Dead)	1.0 m
CFFBPS Fuel Type: C-3	ritical Surface Intensity (kW/m):	158.6 kW/m	158.6

[1] CBH - refer to Fuel Management Prescription Guidance for CBH measurement direction

Surface Fire Intensity Targets		
Is Wildfire Intensity below 2000 kW/m?	Yes	← These boxes auto populate when Wildfire Intensity and CSI values are input into their respective boxes.
Is Wildfire Intensity less than CSI?	Yes	←

Critical Surface Fire Intensity Calculations

Wildfire Intensity I = HWR (Byram 1959)		
Enter Weight of the Fuel (kg/m²)	→	0.3
Enter Rate of Spread (m/min)	→	1.3
Wildfire Intensity (kW/m)	=	117.0

Wildfire intensity is used to index fire suppression difficulty and to evaluate whether the critical threshold for crown fire ignition has been exceeded. Post-treatment wildfire intensity should be below 2,000 kW/m or the CSI, whichever is the lower value.

Critical Surface Fire Intensity for Initial Crown Combustion (Van Wagner 1977)		
Enter Foliar Moisture Content (%)	→	95
Enter Crown Base Height (m)	→	1.0
Critical Surface Fire Intensity (kW/m)	=	158.6

The threshold for which a surface fire will begin to involve crown fuel is the Critical Surface Fire Intensity (CSI). Suppression is more successful when the surface fire intensity is less than the CSI and crown fuel is not ignited.

Figure 2: Screencap from BCWS' critical surface fire intensity "calculator", showing expected pre-treatment and post-treatment fire behaviour (under 90th percentile conditions) for areas with 0.5 kg/m² of fine woody debris (top) and 0.3 kg/m² of fine woody debris (bottom).

The above figure shows how pre-treatment conditions (with the most hazardous portions of the stand being defined as a C-3 fuel type) would likely result in a Rank 3 surface fire (using the FBP red book, given 90th percentile weather conditions) or an intermittent crowning fire (recognizing that the expected wildfire intensity exceeds the critical surface fire intensity, given the low (1 m) crown base heights. Post-treatment FWD targets have been paired with post-treatment CBHs in order to result in an expected surface fire intensity that is below the critical surface fire intensity. FWD amounts averaging 0.5 kg/m² will be permitted where CBHs are 2.0 m or greater, but where the CBH is less than 2.0 m then FWD will need to be abated to 0.3 kg/m² within 1.5 m.