

Nelson / Marlborough Forest Industry Working Group

Fire Prevention Guidelines for Forestry Operations

Operative from 12th Feb 2020
Updated 10th Feb2020

When a BUI of over 40 exists, the colour code for each of the forest climate areas will be broadcast over the radio at 10:00am each morning. The current day's level will be given as well as the forecast for the following day.

Nelson Tasman Area Channels broadcast on are:

NFL :1,3,12,13,14,15

TPF : Ops R2, Ops R4

You may also obtain the broadcast by email, contact – Firepermit.Nelsontasman@fireandemergency.nz

or alternatively you can view the colour code levels with a 5 day forecast at:

<https://fireweather.niwa.co.nz/region/Nelson%20Tasman>

Escalating to one or more higher code levels may be appropriate for a period of time if significant wind and or low RH and or high temperatures exist. A guide on assessing this can be found at the back (Appendix 1).

Code Green BUI less than 40

Equipment Requirement					
Requirements for....	Extinguishers	Water	Knapsacks	Handtools	Communication
Harvesting Crews		2*20 Litres or 9 litre pressurised water extinguisher on skid.	2*15 litre on site(full)	4 shovels	Radio
Tree faller (Manual)	1* 350gm capacity Class A, B carried on belt each person using chainsaw				Radio
Tractor, Skidder, Excavator, Felling Machine	1*2kg dry powder Class A, B 1* 9 litre water pressure or 2kg foam				
Loader, Hauler, Bell and Waratah	1*2kg dry powder Class A, B				
Car, Utility or Van	1*0.9 kg Class A, B			1 shovel	
Truck or Grader	1*2kg dry powder Class A, B			1 shovel	Radio
Silviculture Crew	1* 350gm capacity Class A, B carried on belt for each person using chainsaw	1*20 Litres per knapsack (full) or 9 litre pressurised water extinguisher		Per 5 people - 4 total made up of shovels, slashers, combi, puklowski, mcleod	Radio

Activity Requirement	
Requirements for....	
Welding / Gas Cutting / Abrasive Wheel Cutting	Only on bare earth 1 * 15 litre knapsack (full) or 9 litre pressurised water within 5m of work area. Patrol for 30 minutes after completion
Smoking	Only on bare mineral earth areas or in huts / vehicles

Code Blue BUI 40.1 to 60

Equipment Requirement					
Requirements for....	Extinguishers	Water	Knapsacks	Handtools	Communication
Harvesting Crews		2*20 Litres or 9 litre pressurised water extinguisher on skid.	2*15 litre on site(full)	4 shovels	Radio
Tree faller (Manual)	1* 350gm capacity Class A, B carried on belt each person using chainsaw				Radio
Tractor, Skidder, Excavator, Felling Machine	1*2kg dry powder Class A, B 1* 9 litre water pressure or 2kg foam				
Loader, Hauler, Bell and Waratah	1*2kg dry powder Class A, B				
Car, Utility or Van	1*0.9 kg Class A, B			1 shovel	
Truck or Grader	1*2kg dry powder Class A, B			1 shovel	Radio
Silviculture Crew	1* 350gm capacity Class A, B carried on belt for each person using chainsaw	1*20 Litres per knapsack (full) or 9 litre pressurised water extinguisher		Per 5 people – 4 total made up of shovels, slashers, combi, puklowski, mcleod	Radio

Activity Requirements	
Requirements for....	Requirements are....
Welding / Gas Cutting / Abrasive Wheel Cutting	Only on bare earth 1 * 15 litre knapsack (full) or 9 litre pressurised water within 5m of work area. Patrol for 30 minutes after completion
Smoking	Only on bare mineral earth roads, landings, in huts or vehicles. No Smoking in cutover
Daily Inspections and maintenance	Assess daily weather at 11:00am onsite to determine need for elevation of preparedness &/or work restrictions. ** See escalation methods at back of guide Check chainsaws and machinery for debris build up near hot working parts such as belly pans and radiators. Check engine bay hydraulic hoses for leaks. Inspect hauler blocks for heat, and ropes for binds, rock strikes. Vegetation around backline blocks cleared of vegetation to mineral earth 1.5m radius. Inspections should be noted in diary.
Weekly inspections and maintenance	Documented inspection of all fire equipment (including extinguishers)
Chainsaw thinning	Review site hazards (Undergrowth fuels, aspect, and escape routes). Move chainsaw thinning to areas with lower hazard where possible
Fire starts	Notify lookout or PRFO of any fire start regardless of size.
Emergency planning	Notify lookout of any road closures or weekend work Discuss code blue requirements and preparation for future elevation to code yellow at tailgate meetings Identify suitable water points (For ground and helicopter) around work areas
Forest access	Review public access to forest.

Note: Items highlighted in BOLD are equipment or activity requirements that have been newly introduced from the previous colour code

Code Yellow BUI 60.1 to 80

Equipment Requirements					
Requirements for....	Extinguishers	Water	Knapsacks	Handtools	Communication
Harvesting Crews		2*20 Litres or 9 litre pressurised water extinguisher on skid.	2*15 litre on site (full)	4 shovels	Radio
Tree faller (Manual)	1* 350gm capacity Class A, B carried on belt each person using chainsaw				Radio
Tractor, Skidder, Excavator, Felling Machine	1*2kg dry powder Class A, B 1* 9 litre water pressure or 2kg foam				
Loader, Hauler, Bell and Waratah	1*2kg dry powder Class A, B				
Car, Utility or Van	1*0.9 kg Class A, B			1 shovel	
Truck or Grader	1*2kg dry powder Class A, B			1 shovel	Radio
Silviculture Crew	1* 350gm capacity Class A, B carried on belt for each person using chainsaw	1*20 Litres per knapsack (full) or 9 litre pressurised water extinguisher		Per 5 people – 4 total made up of shovels, slashers, combi, puklowski, mcleod	Radio

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Activity Requirements	
Requirements for....	Requirements are....
Welding / Gas Cutting / Abrasive Wheel Cutting	<p>Only on bare earth</p> <p>Wet down area within 4m of work site before commencing</p> <p>Contact Lookout before starting 5485613 or Richmond Hill Lookout on RT</p> <p>1 * 15 litre knapsack (full) or 9 litre pressurised water within 5m of work area.</p> <p>Patrol for 30 minutes after completion.</p>
Smoking	Only on bare mineral earth roads, landings, in huts or vehicles. No Smoking in cutover
Daily Inspections and maintenance	<p>Assess daily weather at 11:00am onsite to determine need for elevation of preparedness &/or work restrictions. ** See escalation methods at back of guide</p> <p>Check chainsaws and machinery for debris build up near hot working parts such as belly pans and radiators.</p> <p>Check engine bay hydraulic hoses for leaks.</p> <p>Inspect hauler blocks for heat, and ropes for binds, rock strikes.</p> <p>Vegetation around backline blocks cleared of vegetation to mineral earth 1.5m radius.</p> <p>Inspections should be noted in diary.</p>
Weekly Inspections and maintenance	<p>Documented inspection of all fire equipment (including extinguishers)</p> <p>Weekly cleaning for all machines and chainsaws.</p>
Chainsaw thinning	Review site hazards (Undergrowth fuels, aspect, and escape routes). Move chainsaw thinning to areas with lower hazard where possible
Fire starts	Notify lookout or PRFO of any fire start regardless of size.
Emergency planning	<p>Notify lookout of any road closures or weekend work</p> <p>Identify suitable water points (For ground and helicopter) around work areas</p> <p>Discuss code Yellow requirements and preparation for future elevation to code Orange at tailgate meetings</p> <p>Consider covering in tailgate meetings:</p> <p>escape plans (X2).</p>
Forest access	Restrict public access to forest.
Mowing and slashing (Roadside and ground)	Stop road side mowing and slashing

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Code Orange BUI 80.1 to 100

Equipment Requirements					
Requirements for....	Extinguishers	Water	Knapsacks	Handtools	Communication
Harvesting Crews		2*20 Litres or 9 litre pressurised water extinguisher on skid. 1 * 20 litre water at each back block.	1* full knapsack at each back block.	4 Shovels Shovel or fire rake at each back block	Radio
Tree faller (Manual)	1* 350gm capacity Class A, B carried on belt each person using chainsaw				Radio
Tractor, Skidder, Excavator, Felling Machine	1*2kg dry powder Class A, B 1* 9 litre water pressure or 2kg foam				
Loader, Hauler, Bell and Waratah	1*2kg dry powder Class A, B				
Car, Utility or Van	1*0.9 kg Class A, B			1 shovel	
Truck or Grader	1*2kg dry powder Class A, B			1 shovel	Radio
Silviculture Crew	1* 350gm capacity Class A, B carried on belt for each person using chainsaw	1*20 Litres per knapsack (full) or 9 litre pressurised water extinguisher		Per 5 people – 4 total made up of shovels, slashers, combi, puklowski, mcleod	Radio

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Activity Requirements	
Requirements for....	Requirements are....
Welding / Gas Cutting / Abrasive Wheel Cutting	<p>Only on bare earth</p> <p>Wet down areawithin 4m of work sitebefore commencing</p> <p>Contact Lookout before starting 5485613 or Richmond Hill Lookout on RT</p> <p>1 * 15 litre knapsack (full) or 9 litre pressurised water within 5m of work area.</p> <p>Patrol for 30 minutes after completion.</p>
Smoking	Only on bare mineral earth roads, landings, in huts or vehicles. No Smoking in cutover
Daily Inspections and Maintenance	<p>Assess daily weather at 11:00am onsite to determine need for elevation of preparedness &/or work restrictions.</p> <p>** See escalation methods at back of guide</p> <p>Check chainsaws and machinery for debris build up near hot working parts such as belly pans and radiators.</p> <p>Check engine bay hydraulic hoses for leaks.</p> <p>Inspect hauler blocks for heat, and ropes for binds, rock strikes.</p> <p>Vegetation around backline blocks cleared of vegetation to mineral earth 1.5m radius.</p> <p>Inspections should be noted in diary.</p>
Weekly inspections and maintenance	<p>Weekly documented inspection of all fire equipment (including extinguishers)</p> <p>Weekly cleaning for all machines and chainsaws.</p>
Chainsaw thinning	Review site hazards (Undergrowth fuels, aspect, and escape routes). Move chainsaw thinning to areas with low hazard i.e D.fir, south facing slopes, low fuel loading, flat topography.
Fire starts	Notify lookout or PRFO of any fire start regardless of size.
Emergency planning	<p>Notify lookout of any road closures or weekend work</p> <p>Discuss code Orange requirements and preparation for future elevation to code Red at tailgate meetings</p> <p>Consider covering in tailgate meetings:</p> <p>escape plans (X2).</p> <p>Identify suitable water points (For ground and helicopter) around work areas</p>
Forest access	<p>Restrict public access to forest .</p> <p>Consider putting up signage at access points warning of fire danger.</p> <p>Restrict all hunting and firewood gathering.</p>
Mowing and slashing (Roadside and ground)	Stop road side mowing and slashing
<p>Machines – including: Cable assisted machines,</p> <p>Mobile machinery and 2 stage trucks.</p> <p>Does not include cable haulers</p>	<p>Stop all machines except backline tractors working on cutover or tracks that do not have working inbuilt engine compartment suppression systems at 1300hrs.</p>

Note: Items highlighted in BOLD are equipment or activity requirements that have been newly introduced from the previous colour code

Code Red BUI 100.1 to 120

Equipment Requirements					
Requirements for....	Extinguishers	Water	Knapsacks	Handtools	Communication
Harvesting Crews		1000 litre mobile pressurised water available with 60m hose on skid. 1 * 20 litre water at each back block.	1 * full knapsack at each back block.	4 shovels Shovel or fire rake at each backblock	Radio
Tree faller (Manual)	1* 350gm capacity Class A, B carried on belt each person using chainsaw				Radio
Tractor, Skidder, Excavator, Felling Machine	1*2kg dry powder Class A, B 1* 9 litre water pressure or 2kg foam				
Loader, Hauler, Bell and Waratah	1*2kg dry powder Class A, B				
Car, Utility or Van	1*0.9 kg Class A, B			1 shovel	
Truck or Grader	1*2kg dry powder Class A, B			1 shovel	Radio
Silviculture Crew	1* 350gm capacity Class A, B carried on belt for each person using chainsaw	1*20 Litres per knapsack (full) or 9 litre pressurised water extinguisher		Per 5 people – 4 total made up of shovels, slashers, combi, puklowski, mcleod	Radio

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Activity Requirements	
Requirements for....	Requirements are....
Welding / Gas Cutting / Abrasive Wheel Cutting (hotworks)	<p>Only on bare earth and no hotworks between 1200hrs and 1900hrs</p> <p>Wet down area within 4m of work site before commencing</p> <p>Contact Lookout before starting 5485613 or Richmond Hill Lookout on RT</p> <p>1 * 15 litre knapsack (full) or 9 litre pressurised water within 5m of work area.</p> <p>1000 litres available under pressure with at least 60m of hose within 2 minutes of worksite</p> <p>Patrol for 30 minutes after completion.</p>
Smoking	Only on bare mineral earth roads, landings, in huts or vehicles. No Smoking in cutover
Daily Inspections and maintenance	<p>Assess daily weather at 11:00am onsite to determine need for elevation of preparedness &/or work restrictions.</p> <p>** See escalation methods at back of guide</p> <p>Check chainsaws and machinery for debris build up near hot working parts such as belly pans and radiators.</p> <p>Check engine bay hydraulic hoses for leaks.</p> <p>Inspect hauler blocks for heat, and ropes for binds, rock strikes.</p> <p>Vegetation around backline blocks cleared of vegetation to mineral earth 1.5m radius.</p> <p>Inspections should be noted in diary.</p>
Weekly Inspections and maintenance	<p>Weekly documented inspection of all fire equipment (including extinguishers)</p> <p>Weekly cleaning for all machines and chainsaws.</p>
Chainsaw thinning	<p>Review site hazards (Undergrowth fuels, aspect, and escape routes). Move chainsaw thinning to areas with lower hazard where possible</p> <p>No chainsaw thinning after 1200 hrs</p>
Fire starts	Notify lookout or PRFO of any fire start regardless of size.
Emergency planning	<p>Notify lookout of any road closures or weekend work</p> <p>Discuss code Red requirements and preparation for future elevation to code Purple at tailgate meetings</p> <p>Consider covering in tailgate meetings:</p> <p>escape plans (X2).</p> <p>Identify suitable water points (For ground and helicopter) around work areas.</p> <p>Patrol sites for at least 1 hour after machine shutdown.</p> <p>Consider having 3 person quick response crew with tanker within 10 minutes of each operation.</p>

Note: Items highlighted in BOLD are equipment or activity requirements that have been newly introduced from the previous colour code

Activity Requirements	
Requirements for....	Requirements are....
Forest access	Restrict public access to forest. Consider putting up signage at access points warning of fire danger. Restrict all hunting and firewood gathering
Mowing and slashing (Roadside and ground)	Stop road side mowing and slashing.
Harvesting Chainsaws	Stop all chainsaw operations in cut over after 1200hrs
Machines including: Cable assisted machines, Mobile machinery, 2 stage trucks and cable haulers.	Stop all machines including moving ropes and carriages, working on cutover or tracks at 1300hrs.

Note: Items highlighted in BOLD are equipment or activity requirements that have been newly introduced from the previous colour code

Code Purple BUI 120.1 +

Equipment Requirements					
Requirements for....	Extinguishers	Water	Knapsacks	Handtools	Communication
Harvesting Crews		1000 litre mobile pressurised water available with 60m hose	2*15 litre (full & on skid) Full knapsack at each backblock.	4 shovels Shovel or fire rake at each backblock	Radio
Tree faller (Manual)	1* 350gm capacity Class A, B carried on belt each person using chainsaw				Radio
Tractor, Skidder, Excavator, Felling Machine	1*2kg dry powder Class A, B 1* 9 litre water pressure or 2kg foam				
Loader, Hauler, Bell and Waratah	1*2kg dry powder Class A, B				
Car, Utility or Van	1*0.9 kg Class A, B			1 shovel	
Truck or Grader	1*2kg dry powder Class A, B			1 shovel	Radio
Silviculture Crew	1* 350gm capacity Class A, B carried on belt for each person using chainsaw	1*20 Litres per knapsack (full) or 9 litre pressurised water extinguisher		Per 5 people – 4 total made up of shovels, slashers, combi, puklowski, mcleod	Radio

Note: Items highlighted in BOLD are equipment or activity requirements that have been newly introduced from the previous colour code

Activity Requirements	
Requirements for....	Requirements are....
Welding / Gas Cutting / Abrasive Wheel Cutting (hotworks)	<p>Consider Stopping all Hotworks</p> <p>Only on bare earth and no hotworks between 1200hrs and 1900hrs</p> <p>Wet down area within 4m of work site before commencing</p> <p>Contact Lookout before starting 5485613 or Richmond Hill Lookout on RT</p> <p>1 * 15 litre knapsack (full) or 9 litre pressurised water within 5m of work area.</p> <p>1000 litres available under pressure with at least 60m of hose within 2 minutes of worksite</p> <p>Patrol for 30 minutes after completion.</p>
Smoking	Only on bare mineral earth roads, landings, in huts or vehicles. No Smoking in cutover
Daily Inspections and maintenance	<p>Assess daily weather at 11:00am onsite to determine need for elevation of preparedness &/or work restrictions.</p> <p>** See escalation methods at back of guide</p> <p>Check chainsaws and machinery for debris build up near hot working parts such as belly pans and radiators.</p> <p>Check engine bay hydraulic hoses for leaks.</p> <p>Inspect hauler blocks for heat, and ropes for binds, rock strikes.</p> <p>Vegetation around backline blocks cleared of vegetation to mineral earth 1.5m radius.</p> <p>Inspections should be noted in diary. Daily inspection of hydraulic hoses, block bearings, machine belly pans and radiators.</p>
Weekly Inspections and maintenance	<p>Weekly documented inspection of all fire equipment (including extinguishers)</p> <p>Weekly cleaning for all machines and chainsaws.</p>
Chainsaw thinning	Stop all thinning
Fire starts	Notify lookout or PRFO of any fire start regardless of size.
Emergency planning	<p>Notify lookout of any road closures or weekend work</p> <p>Discuss code Purple requirements tailgate meetings.</p> <p>Consider covering in tailgate meetings:</p> <p>escape plans (X2).</p> <p>Identify suitable water points (For ground and helicopter) around work areas.</p> <p>Establish 3 person quick response crew with tanker within 10 minutes of each operation.</p> <p>Patrol sites for at least 1 hour after machine shutdown.</p> <p>Consider short response standby helicopter within 10mins of operation.</p> <p>Extensions to working hours on bare earth or processing sites are subject to appropriate readiness and emergency response planning.</p>

Note: Items highlighted in BOLD are equipment or activity requirements that have been newly introduced from the previous colour code

Activity Requirements Cont'd	
Requirements for....	Requirements are....
Forest access	Restrict Public access to forest Consider putting up signage at access points warning of fire danger. Stop all hunting and firewood gathering.
Mowing and slashing (Roadside and ground)	Stop road side mowing and slashing.
Harvesting chainsaws	Stop after 1200hrs.
Machines including: Cable assisted machines, Mobile machinery, 2 stage trucks and cable haulers.	Stop all machines working on bare earth or processing sites between 1300 and 1900 HRS Stop all machines including moving ropes and carriages, working on cutover or tracks at 1300hrs. Consider stopping log truck movement between 1300-1900hrs. (An example method for doing this is in Appendix 2) Stop all slash raking and fire breaking

Note: Items highlighted in BOLD are equipment or activity requirements that have been newly introduced from the previous colour code.

Appendix 1 ****Code Escalation Options**

The following options are available in assessing current weather conditions or forecast conditions when making the decision to escalate to a higher code level: **NB it may be appropriate that you elevate more than one level while a significant fire weather event is occurring i.e strong wind and or low RH and or high temperatures.**

1. If the FWI is or forecast to be over 25. This can be found at:
<http://ruralfiredanger.co.nz/w.cgi?cmd=nrfa®ion=Waimea%20Rural%20Fire%20District> or by calling the lookout, or
2. An onsite measurement of Wind and RH indicates that the FWI is likely to be over 25, or
3. If there is wind that is averaging more than 20-25km/h. This can be measured either by a handheld wind meter or by using the Beaufort wind scale as below:
 - Force 2 = Light breeze, 6-11 km/h – wind felt on the face, leaves/needles rustle
 - Force 3 = Gentle breeze, 12-19 km/h – leaves/needles and small twigs in constant motion, wind extends light flags
 - Force 4 = Moderate breeze, 20-29 km/h – wind raises dust, small branches are moved
 - Force 5 = Fresh breeze, 30-39 km/h – small trees begin to sway, waves form on open water.

When assessing the decision to escalate if and how many levels, you can assess the following indicators in forming your decision:

- Steep slopes – greater than 20 degrees (35%, or grade of 1 in 3)
- High fuel loads – especially if dry fine fuels from thinning, cutover or scrub understory (e.g. gorse, fern, manuka) are present
- Hotter, drier aspects – North or West facing
- If fine fuels are dry – indicated by dead litter on the ground crunching as walked on, elevated dead needles snapping when bent, seed pods / cones bursting or dust rising from dirt tracks as you walk along them.

The more indicators present – the higher the risk

Considering risks associated with log transport in extreme conditions (Code Purple)

There are several specific risks associated with log transport operations described below. Before Fire weather conditions reach Code PURPLE each logging site and location can be reviewed against the risks described as well as any other risks that might be relevant. The risks provided in this document along with recommended mitigations can be reviewed for each logging crew and a strategy for the next 3 weeks based on their location proposed and documented in the table below.

Risk assessment considerations:

People
The operation is near a rural community that would be threatened by a fire. The driver is at risk from a fire starting within the near neighbour environment
Equipment
The loading operation is by tracked excavator-based equipment that can be a source of sparks The loader is a source of a machine fire. Regular checks of cleanliness and/or inbuilt suppression equipment. Chains dragging on the road can ignite fine fuels along road edge A flat tyre collapses onto the steel rim generating sparks Failed wheel bearings and brake components can drop hot metal
Materials
There are fine fuels in close proximity to the loading operation There is a fuel loading imposing into the roadway
Environment
Wind conditions The crew is near to a county road with a low fuel environment. Short pasture There is a very long lead distance to the nearest county road The exit road is narrow and carries some form of fuel loading near to the carriageway There is no alternative access (escape) opportunity for the truck

Mitigations

1. Chains, tyres, wheels are all checked prior to leaving skid and at the load securing point
2. Any fine fuel on the loading area is brushed off to mineral soil prior to the logging crew leaving at the end of their shift 1300hrs.
3. The crew has a mobile pressurised water supply of at least 2000 litres and at least 60m of fire hose located within 10 minutes response time for the loading point and exit road.

Stop transport operations between 1300-1900 in code purple when: (If any of the following considerations are present)

1. Wind exceeds 10 Km/hr (FWI 30)
2. A dwelling or community is close to the operation or access road and evacuation would be complicated (fire would block one-way valley system; continuous high fuel loadings surround property/dwellings)
3. A tracked excavator-based loader is working
4. The access roadway is narrow and/or overgrown (carries some form of fuel loading)
5. There is any combustible material on the loading area
6. There is no reliable/suitable alternative escape route for the people on the load out site

Proposed load out restrictions 1300-1900 for the next three weeks at each crew are:

List of each crew / location with risk assessment and restrictions

Crew	Location	Risks	Restrictions
A	Block XXX	Located in gully below houses	No Load outs
B	Block YYY	People in houses further up one-way valley	No load outs
C	Block ZZZ	No near neighbours, new road with no encroaching fuel, wheeled loader, fresh skid clear of slash, reliable escape route available. Pressurised water available	Load outs allowed