

## FIRE AS A LAND MANAGEMENT TOOL:

# Pile and windrow burns

## Introduction

In New Zealand fire is commonly used for land clearing and for disease control in agricultural or horticultural industries. While it is a valuable tool, fire use comes with risk. Knowledge of how to use fire safely will reduce the risk to life, neighbouring property and the environment.

While Fire and Emergency New Zealand provides advice and guidance to help ensure burns are completed safely, the person who lights or causes a fire to be lit is responsible for ensuring the fire remains safe and is completely extinguished.

## Purpose of this guide

The purpose of the guide is to help landowners:

- safely use fire for land management when conducting pile or windrow burns
- plan and execute safe pile or windrow burns that achieve the desired result.

If you have any comments or feedback on this guide, please email [Wildfire@fireandemergency.nz](mailto:Wildfire@fireandemergency.nz)

## Pile and windrow burns

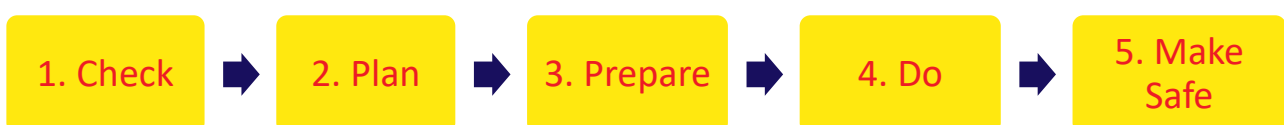
**Pile burns** are the burning of cut and stacked vegetation. **Windrow burns** are the burning of vegetation that is placed in long narrow rows as a result of forest or scrub clearing.

They can be useful for:

- Property maintenance
- Removal of trimmings
- Forest or scrub clearing.

## Key stages

There are five key stages to follow to safely use fire as a land management tool.



# Guide – Pile and windrow burns

## 1. Check

Check the following:

- a. Fire season and permitting requirements
- b. Territorial authority and regional council restrictions
- c. Advice from Fire and Emergency New Zealand
- d. Appropriate insurance is in place.

### a. Fire season and permitting requirements

Before you light a fire in the open air, you need to find out:

- what the current fire season is for your area, and
- whether you need a fire permit.

Check the fire season status in your region using the [checkitsalright.nz](http://checkitsalright.nz) website.

There are three fire seasons:

<b>Open</b>	No fire permit is needed to light a fire in open air. But Fire and Emergency can provide advice and support to help you burn safely.
<b>Restricted</b>	Fire conditions are elevated such that your mitigations of the risks need to be assessed.
<b>Prohibited</b>	There is a total ban on the lighting of any fires in open air.

If the burn will be within a Restricted fire season, obtain a fire permit using the [checkitsalright.nz](http://checkitsalright.nz) website.

### b. Territorial authority and regional council restrictions

Check with your local territorial authority and regional council about any other restrictions or rules for burning in the open air. These could include:

- resource consents
- discharge to air permit for smoke and emissions
- clearance of vegetation
- bylaws.

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## c. Advice from Fire and Emergency New Zealand

Contact Fire and Emergency so we know what you are intending and we can provide advice. Even if your burn is in an open fire season, there are still risks when lighting a fire and we are here to help.

Advice on using fire for land management is free. Receiving advice does not take away your responsibility for the fire, but use of our expertise can minimise your risk and the adverse consequences of your burn.

Larger burns may take several months to prepare, so it's important to get in touch with us early.

Contact details for your local Fire and Emergency office is available on the [checkitsalright.nz](http://checkitsalright.nz) website.

## d. Insurance

Check with your insurance company exactly what your insurance covers:

- **Insurance of property for loss and replacement from fire:** For your house, household effects, other buildings, vehicles, plant and machinery, forests and crops.
- **Public liability insurance:** To cover the cost of damage and loss to a third party from any fire that escapes from your property and damages other party's property.

# Guide – Pile and windrow burns

## 2. Plan

When planning your burn, it is vital to think about the:

- a. time of year
- b. location of the fire
- c. fire environment
- d. fire behaviour
- e. safety of personnel.

### a. Time of year

The best time of year to burn is late summer to early autumn, when the temperatures start to cool and before the autumnal winds start to strengthen and make burning potentially dangerous.

Determine how many favourable days with the right weather conditions your burn requires. Compare this with previous year's weather information to determine the likelihood of achieving this. This information is available from NIWA at [fireweather.niwa.co.nz](http://fireweather.niwa.co.nz), the MetService and other websites.

Give yourself a good window of opportunity to ensure that you don't miss out when the seasons change.

Understand the effects of weather on your local area. What effect will an approaching front have? How does the topography affect wind change? How will this affect the way your fire behaves?

### b. Location of the fire

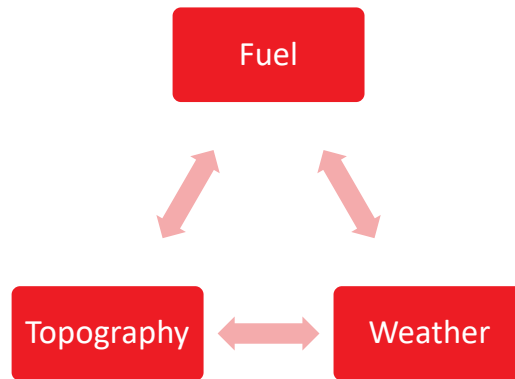
Think about where you want to have the fire. If your burn is going to be in close proximity to high-value commercial plantations, crops, areas of Public Conservation Land or other farm infrastructure, you must consult with your neighbours over how you intend to mitigate against the risk of your burn spreading to their property.

You may consider using specialist structure fire protection contractors and equipment if the burn is to be near high-value assets such as buildings.

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## c. Fire environment

The fire environment is made up of fuel, topography and weather. Although we can't take away any of these elements in order to put the fire out, the fire environment helps us understand how the fire will behave so we can put things in place to reduce the risk.



### Topography

Topography is the shape of the land and is made up of the following attributes:

Attribute	Description
Slope	Affects the speed that a fire travels uphill. A fire doubles its speed for every 10 degrees of uphill slope.
Aspect	North and west facing slopes are usually sunny and dry and have lighter, more flammable vegetation, allowing fire to spread faster and fire to be more volatile.
Terrain	The valleys, gullies, slopes, ridges and flat areas can all affect the direction and speed that a fire travels. Rough, uneven or steep terrain can make traveling difficult and slow for vehicles, machinery and people. Terrain may not affect the rate at which a fire spreads, but can affect how people move around.
Elevation	In general, temperature decreases and relative humidity increases with elevation. Wind strength can increase as airflow is forced over or around hills. Rainfall is greater on the side of a hill or mountain range that faces the prevailing wind.




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## Fuel

Understanding the vegetation (fuel) you intend to burn off is important to achieving the result you want. There are several fuel factors that determine how hot and long your fire will burn and how far and fast it will travel

### Fuel density

Fuel density refers to the thickness of the vegetation.

Fuel density		Description
Fine fuels		<p>These are fuels that lose moisture easily and dry out quickly. Dry fine fuels ignite easily and can carry a fire rapidly. In most cases fires start in light fuel and spread to other fuel types.</p> <p>Examples are grasses, fallen leaves, pine needles and small twigs.</p>
Medium fuels		<p>These require more time to dry out and are too large to start a fire by themselves. Medium fuels produce hot fires.</p> <p>Examples are scrub, branches and young trees.</p>
Heavy fuels		<p>These are usually difficult to ignite. Once on fire heavy fuels produce high intensity fires and are difficult to put out.</p> <p>Examples are stumps, logging slash of mature trees, native forest and peat.</p>

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## Three-dimensional fuel

Fuel is also described spatially across the landscape.

Fuel	Description
Ground fuels	Ground fuels are the rotted materials under the surface of the ground (duff, roots, peat, buried wood, etc.). These fuels can burn from centimetres deep to a metre or more.
Surface fuels	Surface fuels are on the ground. Examples are leaf litter, low and medium-sized shrubs, seedlings, grasses, fallen dead matter.
Ladder fuels	Ladder fuels are fuels that link together vertically. They may include dead fuels hung up in lower branches of scrub or un-pruned trees, tall shrubs, small size trees, bark flakes, draped needles, tree lichens.
Contiguous fuels	This is the distribution of all the different fuel types across the landscape. It includes how far the fire might spread and how dense or scattered the fuel is.
Crown fuels	Crown fuels are the tops of the trees. They are more affected by wind. Crown fires may be hotter and faster than surface fires.

## Other fuel factors

Other factors to consider are:

- quantity – the more fuel there is the greater the intensity of your fire
- moisture – the greater the moisture content of your fuel (especially green vegetation), the harder it will be to light and sustain a fire.

If the vegetation produces a very high fire intensity, it can cause erratic fire behaviour that increases the likelihood of embers being blown outside the burn perimeter in most circumstances.

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## Weather

Weather is the most variable factor in the fire environment. It can change very quickly and catch people out.

Element	Description
Air temperature	Fuels in a warm environment are pre-heated by the air temperature and the sunlight, drying it out and making ignition easier.
Relative humidity	The amount of moisture in the air. When relative humidity is low, fuels dry and ignite easier. Embers remain hot longer and travel further, increasing the risk of spot fires. Wet fuels lose moisture to dry air (sunny days). Green vegetation does not lose or gain moisture as quickly as dead fuels.
Wind speed	Wind helps dry out fuels, it directly affects the speed at which a fire spreads and direction the fire will travel. Wind is the biggest element that catches people out when they are using fire.
Rainfall	Fuels absorb moisture in continuous rain or high humidity. In short periods of heavy rain, water tends to run off and not be absorbed by fuels.

You need to be familiar with your local and regional weather patterns. Fire generally burns quickly during mid-afternoon when relative humidity is low and the temperature is higher.

- In coastal areas, look for the onshore coastal breeze that arrives most afternoons.
- In hilly/mountainous areas, cool wind displaces warm air down valley systems in the afternoon.



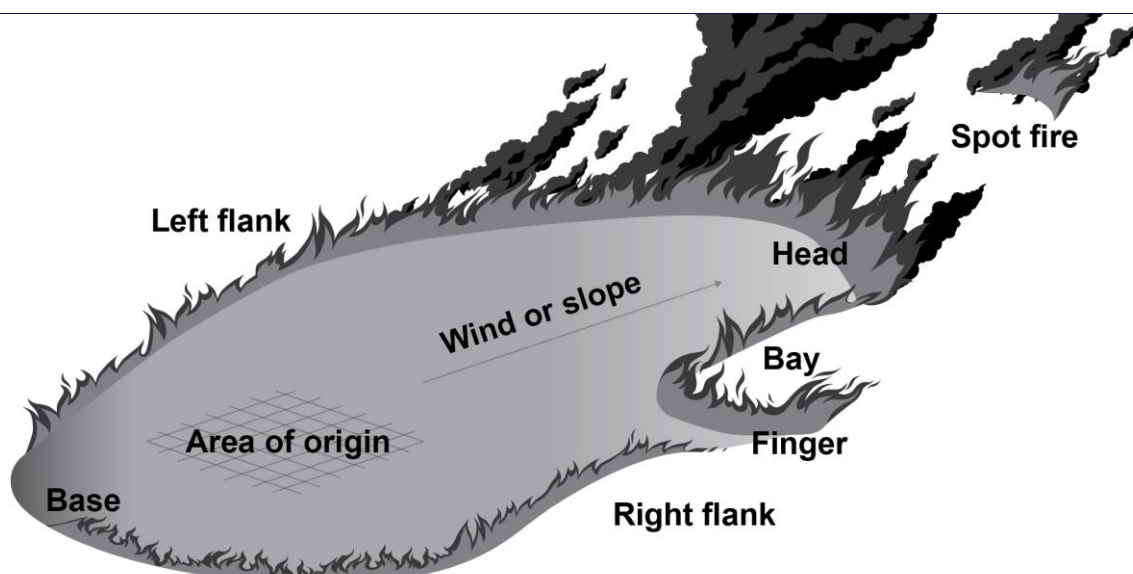
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## d. Fire behaviour

### Parts of a fire and how they behave

There are different parts of a fire and they exhibit different behaviours:

Part of the fire	Description
Area of origin	Where the fire starts.
Base	This is the least intense part of the fire's outer edges, and has the lowest flames and slowest rate of speed.
Bays	Indents between forward moving 'fingers' of the fire.
Fingers	Narrow slivers of the advancing vegetation fire that extend beyond the head or flanks.
Embers and firebrands	Loose particles of burning fuel in the air.
Flanks	The left and right outside edges of the fire. The fire intensity is lower along the flanks.
Head or heading fire	The head is the part of a fire where the rate of spread, flame length and intensity are greatest, usually when burning downwind or upslope.  The position of the head of the fire depends on the wind direction, fuel and topography.  <b>It is dangerous to work in this area.</b>
Islands	Areas of unburnt fuel within the fire.
Perimeter	The whole outer edge, or boundary of the fire.
Spot fires	New fires ignited by embers ahead of the main fire.



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## How fire spreads

Heat can be transferred from burning vegetation to unburnt vegetation through:

- **Radiation:** The rays of heat from a fire travel in a straight line in all directions and heat unburnt vegetation near it.
- **Conduction:** Different substances carry heat at different rates. If burnt logs are left in a pile or buried underground, they continue to burn slowly.
- **Convection:** Hot air from the fire rises up. These columns of hot air can carry ash, embers and small pieces of burning fuel.
- **Ember transport:** Embers can be transported by wind, in convection column or by rolling downhill. They can be caught in gutters on houses, piles of vegetation or trees spreading the fire.

## Fire intensity and energy

- Fire intensity increases abruptly when two fires burn together and the increase is greater when fires converge along a line rather than at a point.
- A solid line of fire always spreads faster and builds up intensity quicker than does a series of spot fires spaced along the same line.
- A large number of small fires burning simultaneously can produce the same kind of explosive convective energy as a single large fire because too much heat energy is released too rapidly.

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## e. Safety of personnel

Safety of personnel is paramount when using fire as a land management tool. It is crucial that everyone involved has the right skills and knows what is involved.

Everyone present is responsible for ensuring safety on the site at all times. However, having a structure so people know what their role is helps ensure things run smoothly and people know what is expected of them.

Personal protective clothing is a must – wool or cotton clothing. Do not wear synthetics. Consider equipping personnel with specialised personal protective clothing to the same standard as used by Fire and Emergency.

Dangerous situations to watch out for include:

- No communications
- Unclear instructions
- Working alone
- Getting tired
- Working with machinery.

Consider the number of resources required for the safe ignition and supervision of the fire during the burn, to watch and patrol for any escapes or spot fires. Also consider if you have the resources to deal with an escape, and if more are needed where they will come from.

Crews must also have access to food and water for replenishment and rehydration.

## f. Plan the burn

Once you have considered all of these factors, you can then plan the burn.

Determine:

- the objectives of your burn
- the burn method and light-up pattern
- how the fuel is to be prepared, e.g. felled or crushed, sprayed with desiccant, etc.
- the risk mitigations you will need, e.g. firebreaks, safety zones, escape routes, etc.
- the resources required, e.g. personnel, fire safety equipment, etc.
- the safety of the personnel involved, e.g. escape routes, communications plan.

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## 3. Prepare

Before you complete the burn, you need to prepare the:

- a. fuel
- b. land
- c. resources.

### a. Preparing the fuel

Give your vegetation plenty of time to dry out. The majority of sap is water. Windrowing or spraying vegetation and leaving it for up to six months will allow it to dry out and give you a much better burn.

If possible, prepare the burn site in the spring and burn in the autumn. This gives the vegetation plenty of time to dry over the summer months and will produce a good clean burn, reducing the likelihood of fire escaping. Once vegetation is dry it takes longer to regain the moisture making autumn a good time to burn.

Ensure there is no debris piled on the outside of the firebreak.

Within the burn-off area, ensure there are no large piles of slash on the edge of the fire as this will create high intensity fire near your boundary.

Place large material in the centre of the burn area to ensure the boundary of the fire isn't compromised.

### Piles

- If you are using a contractor for tree trimming or stacking your piles, discuss with them prior to trimming the best location of the tree trimmings to be piled.
- Stack your piles according to your requirements. It might be a number of 3 m x 3 m piles or a large 30 m x 30 m pile.
- Ensure trimmings are at least 30-50 m away and on the downwind side of any shelter belt, trees, fences, buildings or other combustible material.
- Ensure smoke will not create a nuisance to neighbouring properties and public roads.
- Ensure there is at least 5 m of cleared space around each pile to act as a firebreak.
- Avoid piling heaps for burning under or close to power lines as smoke can cause arcing and power outages.

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## Windrows

- Windrows should be at least 50 m away from any other combustible material. Windrows tend to have a large quantity of medium to heavy fuels, so the distance required to reduce the effects of radiant heat on surrounding combustible fuels, and ensure embers aren't transferred outside the burn area.
- Windrows should be spaced widely apart so the fire can't transfer from one windrow to another, allowing you to retain control of the fire.
- Make sure your windrows are free of soil as this will assist in the drying of the vegetation and the burning of the rows. Windrows with lots of soil will cause the fire to smoulder, creating a low intensity burn with lots of smoke and a lot of left-over material. The soil also assists in holding the heat creating problems for managing the fire and possible flair up issues later down the track.

## b. Preparing the land

A firebreak's main function is to break the continuity of the fuel to provide a barrier against the spread of fire. For large land-clearing burns, they also provide:

- A place to light up from
- Access for crew and equipment to deal with spot fires across the break
- A safety zone and escape route for the crews.

There are several different types of firebreaks, use the appropriate type for the burn location.

### Mechanical firebreak

Use earth-moving machinery to clear a perimeter line of vegetation growth down to mineral earth. It's acknowledged that firebreaks are normally unable to contain a fast running fire, but they serve as a break to continuous fuel and act as a tactical barrier to fight the fire from and to carry out patrols.

In hilly country, form firebreaks along spurs and ridges, where they are most effective and easily constructed.

**Note:** You may need a resource consent from your District Council to undertake earthworks for large burns.

### Hand-cut firebreak

Established by the use of chainsaws and hand tools, normally used in areas where it is not practical, economic or environmentally acceptable to use machinery.

### Burnt firebreak

Usually carried out in conjunction with a natural barrier such as a road or track, watercourse or hand-cut firebreak. In general, the fire is lit in a strip pattern and allowed to 'back slowly' into the wind to create a wide strip of burnt fuel to act as a firebreak.

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## How wide should my firebreak be?

The fire environment factors of topography, weather and fuel must be considered when determining the width of your firebreaks.

For flat land, the recommended width for firebreaks is at least 2-2.5 times the height of the fuel to be burned. For example, when burning 2m high scrub, your firebreak should be a minimum of 4-5m wide.

Unburned fuel should be pushed to the outside of the firebreak.

A firebreak must not have any fuel present in it. Firebreaks may consist of a dozed mineral earth track, green grassy paddock, river, road or other similar non-combustible features.

Consider the provision of safety zones for personnel to retreat to if circumstances become dangerous while burning and also create turn around areas for patrol vehicles and tankers, etc. to turn safely.

Ensure that the outside of the firebreak is clear of debris, otherwise this creates nests of material for embers to catch in and spread the fire outside of the burn area.

## c. Preparing the resources

Ensure you have the personnel and equipment resources required available for the day of the burn.

### Crews

Ideally your crews will have the skills and competency to carry out the burn, based on the complexity. For complex, controlled burns consider engaging specialised contractor services to manage and perform your burn.

Determine the numbers required, considering the size of the burn, in particular:

- the length of the burn perimeter
- the light-up pattern and length of any lines to be lit
- be guided by advice from Fire and Emergency.

For large burns, crews are generally split into patrol and lighting party groups.

### Patrols

You will need enough patrols to:

- keep a close watch along the length of the boundary
- allow each member to have ready visual and vocal contact with those on either side – this is vital should a call come for assistance to cope with break-away fire
- have escape routes and safety zones and make them known to all personnel.

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## Lighting party

When organising the number of people for the lighting party, consider the:

- length of the light-up line
- ease or difficulty with which the people can move along it, i.e. terrain.

## Grouping and placement

The lighting party and the patrols need to function as a cohesive unit.

- No individual can be allowed to work out of contact with the rest
- The lighting party must be under strict control during all stages of the burn
- Each burner operator should have a support person with them.

## Equipment

Ensure you have the resources required lined up, depending on the size of the burn:

- communications equipment for all personnel – radios are preferred over mobile phones
- hand tools for firefighting – e.g. shovels, Pulaski tools, chainsaws, portable extinguishers
- lighting up equipment – e.g. hand, mobile, aerial burners
- mechanical resources – e.g. bulldozers, excavators, tractors, engines, tankers, patrol vehicles, personnel transport
- ground firefighting – e.g. fire engines, water carriers, hoses, foam
- aerial firefighting – e.g. helicopters, fixed wing, portable dams
- water supplies – location and distance away from the burn, accessibility, volume.

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## 4. Do

On the day of the burn, ensure you:

- a. obtain the latest weather forecast
- b. notify of intent to burn
- c. confirm the safety zones and escape routes
- d. perform safety briefing
- e. deploy your resources
- f. commence burning
- g. supervise the fire at all times that it is actively burning.

**Call 111 immediately if at any point you are concerned about a risk to people, property or the environment.**

### a. Obtain the latest weather forecast

It is important to obtain the latest weather forecast for the area in the morning. You need a current and long range forecast no earlier than 12 hours before light-up.

Do not light up in strong winds or when strong winds are predicted. Generally, fires should not be lit with a wind greater than 25 km/h (small branches are moved). Your permit may specify a maximum wind speed.

Continue monitoring the weather forecast during the day and change your plans to suit the weather.

### b. Notify of intent to burn

Notify the people you have identified and contacted during the planning phase as needing to be aware of the burn, including:

- All occupiers of land adjoining the land containing the area to be burnt
- Fire and Emergency communication centre so that they are aware of the burn taking place if members of the public call to notify of fire or smoke
- Helicopter operator on standby for fighting any escaped fire, where appropriate.



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## c. Confirm the safety zones and escape routes

Safety zones and escape routes should have already been determined during the planning and preparation phases. Confirm that these are still valid and are in place.

Establish LACES:

- **Lookouts:** People who are looking out for signs of danger during the burn
- **Awareness or Anchor points:** Everyone is aware of the objectives of the burn and expected behaviour, and crews are working from safe and secure anchor points
- **Communications:** Everyone has well-established communication links, radios, crew leaders, etc., and all situational updates are communicated to everyone
- **Escape routes:** More than one escape route available for everyone and are communicated
- **Safety zones:** Zones of safety whether natural or constructed, vehicles available are positioned correctly for escape.

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## d. Perform safety briefing

A good briefing on the light-up pattern and what is required from the crew helps avoid accidents. They must be aware of the location of their safety zone and have two options for their escape route to their safety zone.

Go over LACES and the 21 dangerous situation watchouts (see below).

Ensure you have a good first aid kit on hand for an emergency.

### Key safety messages

- The rule for the **buddy system** is that you work as a pair – entering, working and leaving the fireground together. The purpose of the buddy system is that you look out for one another, maintain contact all the time and if that contact is lost, the buddy must take immediate action to re-establish contact, provide assistance or call for help.
- It's essential to **communicate any changes to the fire to all personnel** on site to ensure safety of the resources and surrounding public and to be able to respond to break-outs or spot fires from outside the burn perimeter.
- **Before entering the fireground** ensure you are wearing all your personal safety equipment and that you have adequate drinking water.
- Make sure you get a **full briefing**.
- Remember to **ask questions** if things are not clear to you!
- **Fire intensity** increases abruptly when two fires burn together and the increase is greater when fires converge along a line rather than at a point.
- **A solid line** of fire always spreads faster and builds up intensity quicker than does a series of spot fires spaced along the same line.
- It takes a **disciplined ignition crew** to recognise that some ignition patterns require considerable patience and that it's wiser not to force the fire, but allow it to develop and achieve the fire behaviour sought for the burn.
- **Keep a close eye** on the fire and alert your crew leader to any changes or unexpected fire behaviour.
- **Successful management of a heading fire** requires that no individual strip of fire can develop to a high intensity before it reaches either a firebreak or another burned out strip.
- **Be aware** that a large number of small fires burning simultaneously can produce the same kind of explosive convective energy as a single large fire because too much heat energy is released too rapidly.
- When working around fire never underestimate **the effects of radiant heat**. The damaging effect of heat on your body builds up with the more time spent working in the heat.

Know your **dangerous situation watchouts** and LACES.

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## Dangerous situation watchouts

1. Fire size is unknown
2. Unfamiliar territory
3. No escape route
4. Don't know the local weather
5. No communications
6. Instructions are not clear
7. Getting hotter
8. Wind changes speed or direction
9. Building fireline downhill with fire below
10. Uphill or downward of a fire
11. On a steep slope
12. In rugged terrain
13. Can't see the fire
14. In unburnt vegetation
15. Walking through hot ashes
16. Working alone
17. Getting tired
18. Near powerlines
19. Working with machinery
20. Working with aircraft
21. Working around trees or spars.

## Clothing

All personnel must wear the right clothing when working around fire:

- For complex controlled burns consider equipping personnel with specialised personal protective clothing to the same standard as used by Fire and Emergency.
- Wear natural fibre clothing, such as cotton or wool. Synthetic materials can melt and cause severe injuries. Woollen clothing is better as it will absorb the effect of sparks without burning, whereas cotton won't give the same protection or stand the rough usage clothing is often subject to at burns.
- Ensure your legs and arms are covered, preferably with fire resistant overalls.
- Don't tuck clothing in. Instead, create layers so hot material you come into contact with doesn't catch in your clothing. For example, don't tuck the bottom of trousers into socks, let the trouser leg fall over the outside of your boot.
- Wear sturdy laced up leather boots, ideally with a steel cap.
- When working close to the fire, use heavy leather gloves to protect your hands from radiant heat and hot material.
- When working around heavy machinery and large piles wear a safety helmet.

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## e. Deploy your resources

Assign groups, sectors and tasks to the crew leaders or individual personnel. Allocate call-signs according to your communications plan, if required.

## f. Commence burning

- Follow the burn plan light-up pattern.
- Burn downwind of anything flammable outside of the perimeter.
- Do not allow anyone to light up:
  - while moving uphill or up valley or gully bottoms
  - alone or out of touch with other members of the crew.

## Piles

Be ready to put the fire out at the first indication of any adverse change in weather or other conditions which could move the fire out of your control.

If using an accelerant to help start the pile fire, ensure you store or place the containers away from the piles, outside the cleared zones around each fire, away from any ignition source.

## Windrows

- Light each windrow along its length. Only light the first third of a windrow and see how it progresses.
- When windrows are on a slope, light from the top (upslope) and work down.
- Where windrows are on flat ground start at the downwind end.
- Once started, windrows are difficult to extinguish. Retain control by burning:
  - into the wind or downslope
  - only a few windrows at a time.

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## **g. Supervise the fire at all times that it is actively burning**

- Make the escape routes and safety zones known to all personnel
- Post lookouts where there is possible danger
- Patrol and observe the adjoining land outside of the perimeter for spot fires
- Rapidly suppress any spot fires outside of the perimeter, if it is safe to do so
- In the event of a sudden flare up or flame across a break, lie flat on the ground rather than running
- Maintain patrols until the fire is out

**Call 111 immediately if at any point you are concerned about a risk to people, property, or the environment.**

## **Greatest danger**

The greatest danger exists along the perimeter firebreak, bordering on flammable fuel outside the burn, where it has been freshly lit.

Patrols must be in greatest number behind the lighting party, stationed on the cleared firebreak area, and as the line of fire lengthens they spread out along the length of the boundary.

If the burn happens to be on the lee edge of the area being burnt, there is even more reason for patrols to be close together because smoke blowing over them will restrict their visibility.

## **If flames come across a firebreak**

In the event of flames across a firebreak, the patrols must understand that the safest place is on the ground. They should throw themselves flat, protect their face with a shovel, and DO NOT remain upright. This way, not only will they avoid injury from burning but once the flurry of flame has passed, will be in a position to see and attack any fires that it may have caused on the other side of the firebreak.

As the fire burns back from the boundary edge and it becomes safer, the patrols move forward and close up, reducing the spacing between themselves along those parts of the boundary where the most danger of fire crossing exists.

## **Do not watch the burn**

It's important that patrols position themselves with their backs to the area being burnt. The natural inclination or temptation to watch the burn must be resisted. However, always maintain good situational awareness of where the fire is.

Keep a strict watch on the fuel **outside** the burn area, to ensure spot fires do not get a good hold before they are detected.

If they are noticed immediately they can be dealt with before they get out of hand.

If the fire escapes, aggressively attack if it is safe to do so

**Call 111 immediately if at any point you are concerned about a risk to people, property or the environment.**

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## 5. Make safe

After the burn has been completed, check the location of the burn in the days and weeks following burning to ensure it's completely cold in the centre.

When strong winds occur it can fan the fire back into life and transfer embers, creating unwanted fires. Piles of burnt vegetation can hold heat for months after burning,

Check your piles or windrows in the days and weeks following burning to ensure it is cold in the centre. Turn the piles or windrows to ensure complete burning of the material.

Do not restock any piles with fresh fuel for a later burn as there is the risk of the fire reigniting.