

Appendix 5: WHS and Safety Considerations Fire Ecology Booklet

Acknowledgments

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Disclaimer: The information contained in this publication is based on knowledge and understanding at the time of writing October 2024. However, because of advances in knowledge, users are reminded of the need to ensure that information upon which they rely is up to date and to check currency of the information with the appropriate officer of Local Land Services or the user's independent adviser.

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Planning for fire on your property

Operational considerations

1. Unbounded burning
 - a. This refers to the process of applying fire to the landscape without full mineral earth control lines around the perimeter of the area being burnt. This can be an effective and acceptable method and may be preferred in some instances due to the potential damage to environmental and/or cultural values associated with control line construction.
 - b. It is important to note that a landowner is responsible for the planned burn and there may be legal consequences if the fire spreads beyond the burn area/property boundary or the smoke causes a traffic accident. The landowner will need to ensure the fire is monitored during the entire period the fire is active, including overnight.
 - c. The key risk with unbounded burning is that the fire spreads beyond the area intended to be burnt.
 - d. This can be effectively mitigated by undertaking burning operations at appropriate times, both diurnally and seasonally. For example:
 - An unbounded burn may be ignited later in the day once the temperature has started to fall and the relative humidity has started to rise so that the fire will self-extinguish during the evening.
 - An unbounded burn could be ignited on day when the forecast weather is benign for the period of operations and followed by rain in subsequent days.
 - Unbounded burns could be planned for periods leading into winter to ensure any residual effects from the fire i.e. smouldering in the duff layer, burning in tree stumps etc have adequate time to self-extinguish prior to the onset of hotter, drier conditions.
2. Low intensity, 'cool' burns
 - a. Fire behaviour and subsequent intensity is driven by fuel, weather and topography and influenced by lighting patterns and input from resources i.e. availability of water, sufficient crews to monitor and respond etc. The intent for this fire management plan is to apply fire in such a way that it is always maintained as a low intensity burn.
 - b. A simple method for determining whether a fire is low intensity is to assess the following:
 - Flame height. The top of the flame should be no higher than your knees or 50cm
 - Flame length. When burning on a slope, flame length should be no longer than 50cm
 - Forward rate of spread i.e. how fast the fire is moving. You should be able to comfortably outpace the fire at a normal walking pace.
 - Spotting distance. You should not be creating fire intensity that allows for a convection column to carry fire brands from bark to land in front of the fire and start new spot fires.
 - c. The intensity of the fire can be maintained as low by using a variety of techniques and strategies including:
 - Weather – Only applying fire when the weather is 'benign'. An easy way to measure this is to check the daily 'Fire Danger Rating' (FDR) and only ignite when the FDR is <12 i.e. no rating. Note that you should also consider the forecast weather for subsequent days if the fire will not be completely extinguished on the day.

1. Fire Danger Ratings can be checked here [Fire Danger Ratings and Total Fire Bans - NSW Rural Fire Service](#)
2. The maximum level of temperature is provided detail in the burn plan under 'Burn Prescriptions'.
 - Lighting pattern – Use of spot ignition to start small fires in single, specific spots rather than long strips.
 - Lighting pattern – Ignite so that the fire backs into the wind i.e. avoid lighting where the fire will move with the wind.
 - Topography – Lighting fires at the top of hills and slopes and letting the fire 'back down' the hill/slope, which uses 'backing fire' to promote the forward spread of fire.
 - Resources – Using water and hand tools to reduce the intensity of the fire
3. Training, experience and knowledge of participants
 - a. The success of a burn can be significantly influenced by the training, experience and knowledge of participants and therefore it is recommended that burns are only undertaken when there is at least one person who has previous experience in planned burning and understands how fuel, weather, topography, lighting patterns and available resources affects fire behaviour.
 - b. All activities undertaken should be conducted where the activity is matched with personnel that are suitably qualified and/or experienced. For example, machine operation only undertaken by personnel with a level of accreditation that matches the type, size and use of the machine. This can be supported with appropriate Safe Work Method Statements.
 - c. There are a variety of organisations that can provide staff with the required experience, including Traditional Owner groups, Rural Fire Service, NSW National Parks and Wildlife Service and private fire management companies.

Further information about conducting low-intensity burns on your property can be found on the NSW RFS website: https://www.rfs.nsw.gov.au/data/assets/pdf_file/0011/13322/Standards-for-Low-Intensity-Bush-Fire-Hazard-Reduction-Burning.pdf

Operating fuel management equipment – safe use and maintenance

Hand tools

The most common hand tools used in firefighting and fire management are the axe and the rakehoe (or McLeod tool). Both have sharp blades capable of inflicting injury to the user or others working nearby. Consequently, great care must be taken when using them.

Using hand tools and other small equipment can also be hazardous while working on a slope, in dusty or smoky environments, when darkness is falling and in areas where there is the potential of falling rocks and trees. Extreme care must be taken at all times as it is difficult to maintain your mobility and balance when using certain pieces of equipment.



Figure 28 – A rakehoe is a very useful hand tool.

Powered hand tools

Chainsaws

Chainsaws are used in fuel management to fall trees, cut branches and to cut firebreaks. They are a useful, but a potentially dangerous tool. Do not operate a chainsaw unless you are trained to use one and are wearing the correct protective clothing.

Correct protective clothing for chainsaw operation includes:

- Helmet
- Face shield/eye protection
- Ear protection
- Gloves
- Chainsaw trousers or chaps
- High visibility personal protective clothing
- Steel cap safety boots.

Leaf blowers

In the right circumstances, leaf blowers can be used to create small mineral earth breaks quickly and easily prior to lighting up on the edge for a planned burn, or as part of bushfire preparedness activities. In areas where there is leaf litter without any grasses, shrubs, trees etc attached to the soil, such as a road or track then a leaf blower can be used to blow the leaves and create a mineral earth break without creating soil disturbance.



Figure 29 – An example of a fire control line that can be made to mineral earth using a leaf blower.

The same technique can also be used to help protect trees by creating a circle of mineral earth at the base that can prevent fire from burning the tree.

There are various types of leaf blowers, and it is recommended to use back pack blowers for activities that require hours of continual operation to ensure the process is conducted safely and effectively.



Figure 30 – Chainsaws and blowers are useful tools when used correctly.

Drip torches

A drip torch has a burning wick attached via a wand to a fuel reservoir. When in use, a constant flow of drip torch fuel keeps the wick alight.

Drip torches are used solely for authorised prescribed burning, back burning, burning out and other lighting activities.

A drip torch consists of several components:

- Body
- Filler cap
- Wand
- Nozzle and wick
- Bleed screw/breather vent
- Tap.

The body or reservoir contains the flammable mixture used for ignition. Capacity varies according to manufacturer from 4 to 9 litres of fuel.

Drip torch fuel consists of a mixture of diesel and petrol (unleaded). Typically, the mixture is 3 parts (75%) diesel; and 1 part (25%) unleaded petrol.

Flammable fuels are hazardous if not handled with care. The fuel tank must never be opened while the wick is flaming or hot. Always refer to the manufacturer's specification for the correct ratio to use (may be found stamped on the body of the drip torch). Other mixture must not be used.

The drip torch operates as follows:

- The wand transfers the fuel from the body to the nozzle and wick for ignition.
- The nozzle controls the flow of fuel to the wick. The wick is soaked in fuel.
- The bleed screw/breather vent controls the rate of flow of the fuel to the wick. This ensures an even and constant flow of fuel when the unit is operated in a tilted or almost inverted position by allowing air to bleed into the tank. When not in use the bleeder screw should be tightly closed to prevent fuel spilling during transit.



**Figure 31 – A drip torch is a useful tool to assist with lighting a burn.
Correct ratio is 3 parts diesel to 1 part petrol.**

Knapsacks

A knapsack is a portable spray pump containing between 16 to 20 litres of water and fitted with shoulder straps for carrying on the back. It has a hand-operated pump, which can be used to deliver water either in the form of a jet or a spray.

Many knapsacks have containers made of polythene, while newer knapsacks may be collapsible to allow easier storage.

On the fireground, you can use a knapsack to:

- Suppress a low intensity fire that can be easily and safely extinguished.
- Support hand crews who are constructing a control line close to the fire edge.
- Assist in mopping up operations.



Figure 32 – Example of a knapsack.

Fusee's

'Fusee's' are matches that have been made with longer shafts and burning time compared to other matches. The extra length makes the matches far safer and easier to strike and handle when lit and they have an approximate burning time of 20 seconds.

- Once the match is alight it cannot be blown out.
- The matches burn with a very intense heat to make lighting a fire that much easier.
- Matches burn with 3 times the intensity of an ordinary match.
- Matches have a longer shaft than other matches making them much safer and easier to strike and handle when lit.



Figure 33 – An example of a 'Fusee' style of match.

Pumps

Pumps, both portable and connected to tanks, can be a very useful tool for planned burns. Each pump has a slightly different method of operation with which you should be aware and proficient.

Generally, smaller pumps are impeller type pumps attached to a petrol or diesel motor.

Centrifugal impeller type pumps require priming with water before their use, few smaller pumps have dedicated priming pumps or the ability to self-prime and will require filling from a bucket or similar through a priming port.

Pressure fire pumps operate at a higher pressure than reticulated supplies. Typically, firefighting pumps run at a pressure of up to 1000PSI.

Head maximum head refers to the maximum height the pump can pump to. Simply put, if the pump has a maximum head of 50 metres (vertical rise), the flow rate will be around 0 at 60 metres. Friction loss in the hoses used can reduce this distance.

Flow rate indicates the amount of water the pump can gush out in a minute or hour. Most smaller pumps can pump about 400 litres per minute. You should be aware of the output of your pump as this rate can quickly deplete your tank water.



Figure 34 – Fire pumps are very useful to draw and pump water from a range of water sources.

Safety

Before undertaking any fuel management works you should undertake a site safety survey. Essentially this is a process where the worksite is inspected, and hazards are identified. Where hazards are identified, measures are put into place to mitigate risks.

Further information regarding health and safety can be found at the NSW SafeWork website, <https://www.safework.nsw.gov.au/>

Working alone

When you work alone, the risks increase. If people don't know where you are when an accident happens, you may not be found for a long time. You may be trapped, injured and not in a position to help yourself. Ensure someone knows where you are and what you are doing at all times.

Tree hazards

Working around trees can be particularly hazardous. Falling trees, limbs and branches can strike operational personnel and members of the public, block access along roads, designated escape routes or fire control lines, or can be a traffic hazard.

A weakened tree structure is a heightened risk and is an important hazard to be aware of. All personnel should be able to identify tree hazard markings and be able to use barrier tape to establish exclusion zones and request expert assessment and treatment.

How to identify hazardous trees

Look up for:

- hung-up branches
- tree lean
- branch or trunk defects
- effects of wind on the tree.

Look down for:

- trees with exposed dry wood
- exposed roots
- defect in lower trunk
- active fire or smoke at base of tree.

Look around for:

- trees affected by fire
- trees beside roads and tracks
- diseased, stressed or drought-affected trees.

Managing hazardous trees on your property is your responsibility. Be aware of the condition of trees before you or people working on your property work near them.



Figure 35 – Examples of hazardous trees.

Radiant heat and hydration

Radiant heat from a fire can be a significant safety issue in both bushfire and planned burning situations. A general rule of thumb is that you should remain at a distance that is at least four times the height of the flames. For example, when flame heights are one metre then you should be no closer than four metres from the fire. Wearing correct PPE/C can assist in reducing the effects from radiant heat when you are working in proximity to a bushfire/planned burn.

Whether you are working near a fire and subjected to the effects of radiant heat or away from the fire and working actively over a sustained period, the effects of dehydration can be sudden and in severe cases can result in heat stress/heat stroke. Heat stroke is a medical emergency situation and requires the activation of your medical emergency response procedure.

Therefore, it is very important to remain hydrated, including appropriate use of electrolytes, during bushfire response and planned burning operations.

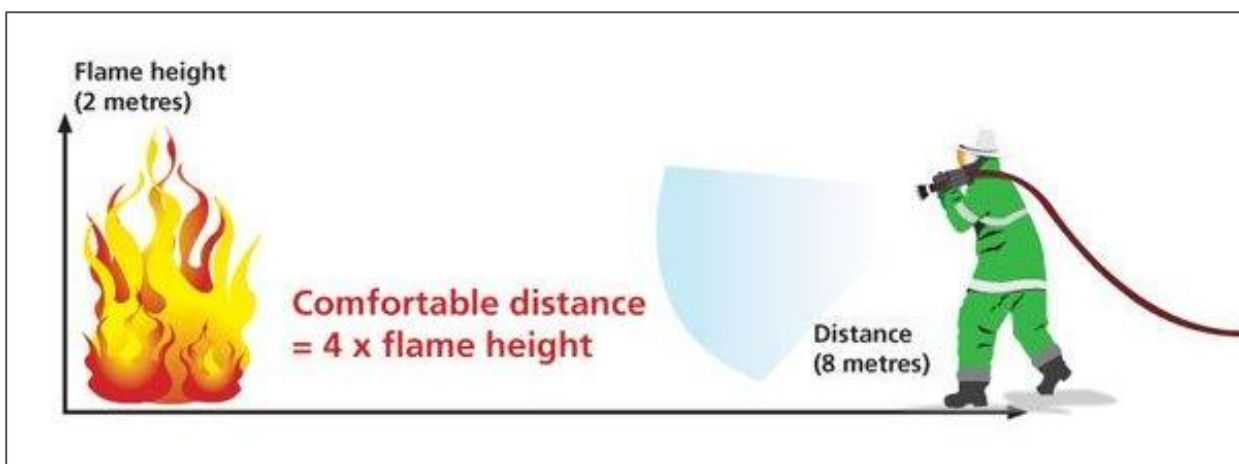


Figure 36 – Remaining a comfortable distance from a fire is important to reduce the effects from radiant heat.

Manual handling

Fire management activities often involve lifting or moving heavy equipment or objects (tasks referred to as manual handling). The weight and shape of equipment or objects such as branches and logs may make them more hazardous to lift or move.

Risk factors associated with manual handling can include:

- posture and movements
- The duration and frequency of the task
- Distance and time
- The effort/force required to lift/move the object
- The nature of the load, for example, shape and weight.

Unless performed correctly, manual handling activities have the potential to cause injury.

Personal protective clothing and equipment

There is a range of personal protective clothing (PPC) and equipment (PPE) that can be used when undertaking planned burning and it is important to remember that PPC/E is the lowest level in the hierarchy of controls for health and safety and should be considered the last line option.

Covering all exposed skin with clothing can offer some protection from radiant heat and should include:

- A wide-brimmed hat to protect your head. In areas where tree hazard exists, consider the use of a hard hat that meets Australian standards.
- A long-sleeved, collared shirt and long pants made from cotton or some other natural fibre.
- Tough leather garden gloves – not rubber or synthetic.
- Sturdy boots and wool or cotton socks.
- **Respiratory** protection against atmospheric contaminants (particulates) at bushfires can be provided by wearing a particulate filter mask which remove contaminants from the air that you breathe. P2 particulate filter masks should be worn when working to prevent the inhalation of particulates contained in dust, exhaust fumes and smoke.
- **Eye** protection is worn to prevent eye injuries and irritation, and the resulting impediment to your vision.
- **Hearing** Equipment and machinery such as chainsaws, pump and plant used during fire management can be noisy. Hearing protection, such as earmuffs or earplugs, should be worn when operating or when working near such equipment, particularly for long periods of time. The best form of hearing protection is to move away from the noise – remove ear protection as soon as practicable.
- **Chemicals** such as herbicides and flammable liquids are often used in fuel management tasks. Exposure to chemicals can lead to a variety of immediate or long-term health effects including headache, poisoning, respiratory illness, burns and birth defects. Manufacturers and importers are required to supply a Safety Data Sheet (SDS) that explains how to handle the chemical safely. Always follow the manufacturer's instructions on storage, use and disposal of chemicals.

Using machinery

In bushfire management/planned burning, machinery may include heavy machinery such as bulldozers, forestry mulchers, skid steer tractors and excavators. It can also include power take off (PTO) attachments on tractors and tree chippers.

Before using any of this equipment, you must ensure that you have been appropriately trained in its use and, wherever applicable, have obtained relevant licensing or certification to ensure safe operation.

It is important to understand the impacts that this type of machinery can have on the environment and planning must include consideration and where appropriate, mitigation against issues such as:

- Soil disturbance leading to erosion.
- Land degradation, especially in sensitive areas such as riparian zones.
- Changes in water movement across the landscape.
- Movement of weeds across the landscape.

There are significant risks associated with using machinery and equipment and injuries from the unsafe use of plant tend to be severe. Examples of serious injuries caused by dangerous plant include:

- Having limbs amputated by unguarded moving parts of machines.
- Being crushed by mobile plant.
- Fractures from falls while accessing, operating or maintaining plant.

Working around machinery

Heavy machinery, such as bulldozers, excavators, graders, farm machinery, tractors, posi-tracks and bobcats create their own unique set of hazards. Personnel working near any heavy machinery, in a vehicle or on foot, risk being crushed if the machine operator is not aware of them.

It is important that you never work in an area below where the machinery is operating and that you maintain at least two tree lengths separation while working. These machines may dislodge rocks, logs and trees, on both flat ground and on slopes, causing hazards for both workers on foot and vehicles.

Precautions

- Do not approach heavy machinery until you have established eye contact and received acknowledgement from the operator.
- Operators will have extreme difficulty hearing over the noise of the machine. Only approach when directed by the operator.
- Heavy machinery such as a bulldozer, can slew or turn quickly and without warning. You should never attempt to hitch a ride as the moving tracks, or wheels, can be hazardous.



Figure 37 – Large machinery/heavy plant can be useful in the right circumstances.

References

1. Hines *et al.* (2010). *Overall fuel hazard assessment guide 4th edition*, Victorian Government Department of Sustainability and Environment.
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4. Watson, P. (2006) Fire Frequency Guidelines and the Vegetation of the Northern Rivers Region. Draft 2. Hotspots project, Nature Conservation Council of NSW, Sydney. <https://www.hotspotsfireproject.org.au/download/literature-review-fire-frequency-guidelines-vegetation-northern-rivers.pdf>

Appendices

Appendix 1 - Sample Bushfire Mitigation Operational Schedule

ANNUAL BUSHFIRE MITIGATION OPERATIONAL SCHEDULE		
Mitigation Task	Date Completed	Comments
Planning		
Contact the local RFS and discuss new/changed requirements and seek advice regarding the property fire management plan i.e., water availability (SWS Program), access and egress, signage etc.		
Review the property fire management plan and confirm strategies and actions are appropriate		
Identify prioritised actions identified in the fire management plan to undertake, including planned burns on the property		
Vegetation Management / Structural Fire Preparedness		
All flammable vegetation removed from around key buildings including sheds and other structures		
Ensure firewood and other bushfire fuel is stored appropriately for the Summer months		
Where possible ensure driveways and roadsides are clear of fuel and verges are maintained to a fuel height of <100mm		
General site maintenance prepared for fire danger season e.g. grass mowed, dead grass removed, leaf litter removed and any gardens beds around buildings prepared		
Clear gutters, roof surfaces/valleys, external decks and verandas clear of leaf litter/dead plant material accumulation for all buildings		
External building components for all site buildings should be free of combustible material and are to be painted and sealed, window and external vent screens serviceable		
Dangerous fuels and other items e.g. leaf litter, gas bottles and chemicals removed away from buildings		
Plant and Equipment		
All bushfire fighting equipment tested, fire water tanks full with appropriate RFS couplings and operational e.g. fire extinguishers, fire hose reels,		
All bushfire fighting pumps and generators are tested and fit for purpose		
All bushfire fighting vehicles e.g., water carrying vehicles/trailers, plant e.g., Positrak, dozer, excavator etc are tested and fit for purpose		
Access and Egress		
RFS Fire fighting appliances have defined emergency access and egress areas including turn around areas		
Inspect access roads and tracks (drainage, surface conditions and vegetation) identify and implement maintenance as required		

Appendix 2 - Allowable activities – Environmental Protection Works



Allowable activities - Environmental Protection Works

This factsheet provides guidance to landholders considering removal of native vegetation under the Environmental Protection Works allowable activity in order to rehabilitate land towards its natural state.

Overview

Allowable activities cover a range of routine land management activities associated with agriculture and other common farming practices in rural areas. Removing native vegetation for allowable activities does not require approval under the *Local Land Services Act 2013*. However, other approvals may be required, refer to the table on page 3 for further information.

Environmental Protection Works include:

- re-vegetation or bush regeneration works
- wetland protection works
- erosion protection works
- dune restoration works
- ecological burning
- controlling weeds.

Environmental Protection Works do not include coastal protection works (within the meaning of the *Coastal Management Act 2016*).

Removing vegetation undertaken for allowable activities on a property must only be carried out by you as the landholder, or on your behalf unless specifically stated otherwise.

Where can I use the Environmental Protection Works allowable activity?

Clearing vegetation for *Environmental Protection Works* can be applied on Category 2 - regulated land.

Environmental Protection Works **may** also apply to dead and non-native vegetation on Category 2 – Vulnerable land. Restrictions apply. Contact Local Land Services for guidance.

Environmental Protection Works are **not** permitted on Category 2 – Sensitive land or on Private Native Forestry Plan areas unless certified by Local Land Services.

To check if you have Category 2 - Vulnerable regulated land and Category 2 - Sensitive regulated refer to this map:

www.lmbc.nsw.gov.au/Maps/index.html?viewer=NVRMap

You should only clear using an allowable activity to the minimum extent necessary and in a manner that minimises the risk of soil erosion.

Want to know more?

We're here to help

Online: lls.nsw.gov.au/land-management

You'll find other land management resources including fact sheets

Call us on 1300 795 299 and ask for an officer to advise you on land management

Email us at slm.info@lls.nsw.gov.au

Drop into your nearest Local Land Services office



Local Land Services

Allowable activities - Environmental Protection Works

Allowable activities - Environmental Protection Works

Examples of Environmental Protection Works

Environmental Protection Works include a broad range of land, soil and vegetation management actions reasonably necessary to rehabilitate land towards its natural state.

Revegetation and bush regeneration works

These works are aimed at helping the recovery and restoration of an ecosystem that has been degraded and may include activities such as revegetation of land with local native plants. A key focus of restoration is to return structure, composition and function to native vegetation areas. This leads to improved viability, species richness and habitat resources. Some removal of native vegetation may be required to undertake this work and must be to the minimum extent necessary.

Wetland protection works (including streams & estuarine)

These works are aimed at rehabilitating and improving the condition of wetlands including streams and estuarine areas. Wetlands are mapped as Category 2 - Vulnerable land and there are restrictions on removal of any type of vegetation (native and exotic). Removal of vegetation should only occur in a way that does not disturb the soil or groundcover and you may need to stage the works to manage risk. You should seek professional advice from suitably qualified experts prior to undertaking wetland protection works. Local Land Services and the Soil Conservation Service can assist.

Erosion protection works

These works may require removal of native and other vegetation to construct structures to reduce soil erosion or deep ripping to alleviate soil compaction, improve water infiltration and promote native groundcover. You should seek professional advice from suitably qualified experts prior to undertaking works. Local Land Services and the Soil Conservation Service can assist.

Ecological burning

Ecological or prescribed fire management may have an impact on native vegetation and should be carefully planned and implemented to improve condition of native vegetation structure, diversity and extent. You should seek advice and approvals from relevant organisations such as the Rural Fire Service prior to an ecological burn.

Control of weeds

Weeds have the same status as native vegetation on Category 2 - vulnerable land. The control of weeds may be undertaken under the Environmental Protection Works allowable activity however limitations may apply relating to soil disturbance and extent of removal. You should seek professional advice from suitably qualified experts prior to undertaking works. Local Land Services and the Soil Conservation Service can assist.

Dune Restoration works

These works are restricted to coastal areas and require consent from your local council under the Coastal Management SEPP. No consent required by Local Land Services.

Planning for Environmental Protection Works

Local Land Services strongly recommends that you prepare a plan of works prior to using the Environmental Protection Works allowable activity. You should plan ahead and retain relevant approvals and documentation when using the environmental works allowable activity.

You are responsible for ensuring all approvals are obtained and records are maintained. Local Land Services can assist in providing access to resources, advice and examples of planning documents that could be used as templates in appropriate circumstances.

Local Land Services recommends that you include the following in an Environmental Protection Works plan of works:

1. A description of the proposed activity and environmental outcome to be achieved. Consider the factors that may be driving degradation in the activity area.
2. Location of the proposed activity including a map marking the area of planned works is recommended.
3. Complex projects may require several stages to complete. Consideration of each stage is recommended. For example, Stage 1 - remove environmental weeds, Stage 2 - construct temporary erosion and sediment control works, Stage 3 - Revegetation with local native species. List any appropriate objectives for production outcomes in the same area, where planned.
4. Best Practice Guidelines and methods that will be applied. These should be referenced where possible.
5. Other approvals relevant. Include a record of all checks and consultations made in the decision making process.
6. Timing of the works. Include staged timeframes, where planned.
7. Person/s undertaking the work. Aim for a suitable level of contractor accreditation, experience or supervision where necessary.
8. Suggested monitoring and follow up actions likely to be required and schedule for the longer term.

Your nearest Local Land Services Office can be found at www.lls.nsw.gov.au or by calling 1300 795 299. Ask for an officer to help you with land management.

Allowable activities -Environmental Protection Works

Other approvals that may apply when using Environmental Protection Works allowable activity

Removal of native vegetation using the *Environmental Protection Works* allowable activity does not require approval under the *Local Land Services Act 2013 (LLS Act) 2013*. However, other approvals may be required from other organisations such as the Office of Water, Rural Fire Service and/or your local council. Other legislation that may apply to your environmental works proposed activity is outlined in the table below. Local Land Services may be able to assist you in contacting the relevant agencies responsible for each legislation.

Legislation	Revegetation & Bush Regeneration Works (Ecological Restoration)	Wetland protection works (including streams & estuarine)	Erosion protection works	Dune Restoration works	Ecological burning	Control of weeds
<i>Water Management Act (2000)</i>		✓	✓			✓
<i>Environmental Planning and Assessment Act 1979</i> <i>Local Environment Plan</i>	✓	✓	✓	✓	✓	✓
<i>Protection of the Environment Operations Act 1997</i>		✓	✓			
<i>Biodiversity Conservation Act 2016</i>	✓	✓	✓	✓	✓	✓
<i>Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)</i>	✓	✓	✓	✓	✓	✓
<i>National Parks And Wildlife Act 1974</i>	✓	✓	✓	✓	✓	✓
<i>Coastal Management Act 2016</i>	✓	✓	✓	✓	✓	✓
<i>State Environmental Planning Policy (Coastal Management) 2018</i>	✓	✓	✓	✓	✓	✓
<i>Biosecurity Act 2015</i>	✓	✓	✓	✓	✓	✓
<i>Pesticides Regulation 2017</i>	✓	✓	✓	✓	✓	✓
<i>Rural Fires Act 1997</i> <i>Rural Fires Regulation 2002</i> <i>Bushfires and Environmental Assessment Amendment Act 2002</i>					✓	
<i>Agricultural and Veterinary Chemicals Code Act 1994</i>	✓	✓	✓	✓	✓	✓
<i>Surveying and Spatial Information Act 2002</i>			✓			

Allowable activities - Environmental Protection Works

Appendix 3 - Consideration of other approvals – Environmental burning

Considerations Of Other Approvals - Environmental Burning

For all burns each of the following considerations should be addressed. If the answer to a question is “yes” or the answer is uncertain, the corresponding action should be followed.

Consideration	Answer	Action if answer is “yes”
Does the burn require development consent or does a Tree Preservation Order apply to the planning zone in which the burn area is located in the Local Environment Plan?	Yes / No	Contact Council to determine if a Development Application to undertake the burn and/or control line needs to be lodged, or if an application to remove trees needs to be lodged.
Is it proposed to burn SEPP14 Coastal Wetlands?	Yes / No	Prepare an Environmental Impact Statement or do not burn.
Is it proposed to burn SEPP26 Littoral Rainforests?	Yes / No	Do not burn
Is the land mapped or described as a fire exclusion zone in the local district Bush Fire Risk Management Plan?	Yes / No	Do not burn
Are threatened species, populations or Endangered Ecological Community’s (EECs) listed under Schedule 1 or Schedule 2 of the Biodiversity Conservation Act 2016 likely to be present in burn area?	Yes / No	Although approval under the Biodiversity Conservation Act is not required for burns carried out as allowable activities, an ecological assessment should be carried out to determine whether the burn will have a significant impact on those species, populations or EECs. If a significant impact is likely the burn should not proceed.
Are threatened species, populations or EECs listed under the Commonwealth <i>Environment Protection and Biodiversity Conservation Act 1999</i> likely to be significantly threatened by the burn present in burn area?	Yes / No	Contact the Commonwealth Department of the Environment for advice regarding whether the burn proposal should be referred for assessment.
Will the burn be conducted within 20 metres of any stream, wetland, lake or lagoon?	Yes / No	Take all reasonable steps to ensure fire does not burn within the riparian buffer zones.
Do additional control lines need to be constructed to safely contain the burn?	Yes / No	Where possible use the closest natural/existing containment lines to the intended perimeter of the burn area and construct lines where native vegetation has already been disturbed. Construction of additional control lines must be limited to the minimum extent necessary to carry out the burn safely and not exceed 4 metres in width. Do not construct control lines within the applicable riparian buffer zone distance unless they are constructed perpendicular to the water body.
Is the burn area zoned Strategic Fire Advantage Zone (SFAZ) in the district Bush Fire Risk Management Plan and is the fire interval of the proposed burn more frequent than the RFS minimum fire interval for SFAZs?	Yes / No	If the proposed fire interval is more frequent than the RFS minimum fire interval, provide justification why it will be beneficial from an ecological and/or cultural perspective.

Consideration	Answer	Action if answer is "yes"
Is the burn area zoned Land Management Zone in the district Bush Fire Risk Management Plan and is the proposed fire interval less than the minimum fire interval for the vegetation formations in the burn area as per the NSW State Wide Fire Interval Guidelines?	Yes / No	Provide justification why the fire interval proposed is beneficial from an ecological and/or cultural perspective.
Does the burn area include slopes >18 degrees?	Yes / No	Take measures (lighting patterns, low BKDI) to minimise the potential for moderate intensity fire on soil surface slopes >18 degrees.
Are there known or potential Aboriginal values, sites, objects or Places in the burn area?	Yes / No	Refer the proposal to the Office of Environment and Heritage for details of objects or Places and implement relevant conditions as per the RFS/OEH document <i>Conditions for Hazard Reduction and Aboriginal Heritage.</i>
Are there any historic heritage sites that may be affected by the burn?	Yes / No	Contact the relevant authority (council and/or the Office of Heritage) and seek advice on measures to protect the site.
Is there a significant bat colony within 1000m of the burn area?	Yes / No	Only light up when winds will blow smoke away from the bat colony, or when it is known that the colony is not present.
Are there invasive species listed by the local authority as noxious or environmental weeds that occur in the burn area?	Yes / No	Take measures to prevent the spread of invasive species that may occur due to the burn and associated works.
Is an approval required under the Protection of the Environment Operations (Clean Air) Regulation?	Yes / No	Apply to the Local Council for an approval to burn.
Are there any facilities that would be impacted by smoke such as hospitals, schools, mine vents?	Yes / No	Liaise with facility owner to minimise impacts on the affected facility.

Notification required at least 24 hours before lighting up to:

- RFS Fire Control Centre – check that local brigade is also informed.
- All adjoining neighbours – can be done by phone, in person or hand delivery of a notice to neighbour (letterbox okay if owner not available).

Also contact before burn:

- If near local roads, Local Council (by phone)
- If near major roads, Roads and Maritime Service (by phone)
- If relevant lands nearby, Commonwealth Department of Defence (by phone)

Appendix 4 - Sample burn plan

SIMPLE BURN PLAN	Name:		Burn Size (Ha):		Burn Planner:		Attachments: Map SMEACS – Q Briefing sheet Pre burn checklist				
	Burn Leader	Name:			Endorsement	Name:					
		Signature:				Signature:					
	Address:					Map Ref					
	Land Owner:		Season:		Burn Year:					Vegetation Type:	
SITUATION							Variables	Prescription	Forecast/Observation		
Fuel Hazard Assessment							Temp (°)		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Surface	Near Surface	Combined	Elevated	Bark Type	Bark Hazard	Overall	Relative Humidity (%)				
							Wind Speed (km/hr)				
Grassland Condition		Natural		Equivalent Tonnes/Ha:			Fuel Moisture Content (%)				
General site information							Drought Factor				
<ul style="list-style-type: none"> • Assets • Size of burn • Fire history • Vegetation type(s) • Control lines 							Wind Dir. (°)				
							Forest Fire Danger Rating				
							Grass Curing (%)				
							Flame Height (m)				
							FROS (km/h)				
Environmental Values							Spots (km/h)				
Cultural Values											
MISSION (Objective)											
<ol style="list-style-type: none"> 1. Use planned burning to promote regeneration of wet sclerophyll forest species such as koala food trees in targeted areas in the fire management zones. 2. Reduce the surface fine fuels in the fire management zones to assist in reducing the intensity of bushfires impacting the areas of koala habitat. 3. Provide an environment to share community-based fire management activities and foster learning, training and awareness. 											

EXECUTION (lighting pattern, control lines, prep works)	People		Tankers		Vehicles		Plant		Other	
<p><u>Phase 1 – Target smaller section on the western side of the block</u></p> <ol style="list-style-type: none"> 1. Using a positrak with smudge/harley bar or by hand with a rake or blower to remove leaf litter and minimise soil disturbance, create a 1 metre mineral earth break along the access tracks. 2. Rake around the base of high value Eucalypt trees to a minimum depth of 1 metre. 3. Use small, targeted spot lighting starting in the downwind corner of the block and let the fire ‘back’ into the wind to minimise fire behaviour. 4. Once lighting commences, monitor fire spread to ensure fire stays within control lines. 5. Protect trees as required using support crew with water knapsacks or firefighting vehicle. 6. Light along the access track maintaining ‘backing fire’ i.e., do not light with the wind. 7. Let the fire burn through the block in a mosaic pattern, leaving some areas unburnt. 8. Only introduce new spots of fire internally in the block once confidence with fire behavior and lighting patterns has been established. 9. Bring the fire through the block until the perimeter has been secured with a burnt edge to a minimum depth of 20 metres and sufficient fire has been applied internally to achieve objectives. 10. Using water and hand tools, black out any areas of heat, smouldering logs/fuels etc so that the areas burnt are cool to touch. <p><u>Phase 2 – Target larger section on the eastern side of the block</u></p> <ol style="list-style-type: none"> 1. Repeat the steps outlined in phase 1 2. Maintain a 20 – 30 metre ‘buffer’ along the edge of the watercourse where fire is excluded. Use support crew with water knapsacks to extinguish fire along watercourse buffer zone if fire does not self-extinguish. 										
<p>ADMINISTRATION AND LOGISTICS (e.g. Ops Pt, Staging Area, water, catering, traffic management arrangements.)</p> <ul style="list-style-type: none"> • Water source for vehicle is..... • Operations point, traffic management and catering detail are as follows... 										

COMMAND AND COMMUNICATIONS (Support agencies assisting, Notification requirements)

Burn Leader:

Support Crew:

Permits required.

1. *Bush fire hazard reduction certificate*
2. *Fire permit*
3. *Environmental regulation permits*

Notifications required.

1. *NSW Rural Fire Service*
2. *NSW National Parks and Wildlife Services*
3. *Adjoining landowners*

SAFETY (Hazards, risks etc)

Hazard	Mitigations
Medical emergency	<ul style="list-style-type: none"> • Develop a medical emergency procedure.
Hazardous trees, including 'widow makers'	<ul style="list-style-type: none"> • Pre works site assessment and hazardous tree identification. • Hazardous trees identified are managed via: <ul style="list-style-type: none"> ◦ Exclude tree from area of operations ◦ Rake around base of tree to exclude fire, or ◦ Create exclusion zone around the tree i.e., tape off area ◦ PPE/PPC ◦ Discuss in briefing.
Slips, trips and falls, especially working around windrows	<ul style="list-style-type: none"> • Discuss in briefing.
Snakes, insects and leeches	<ul style="list-style-type: none"> • Include first aid/snake bite kit in works leaders tool kit • Discuss in briefing.
Uncontrolled fire	<ul style="list-style-type: none"> • Refer to notes regarding operational considerations in fire management plan • Discuss in briefing.
Fire escapes	<ul style="list-style-type: none"> • Refer to notes regarding operational considerations in fire management plan • Discuss in briefing.

Burn map

Insert map

Appendix 5 - Sample SMEACS-Q briefing template

SMEACS briefing sheet

(To be completed by Burn Leader prior to burn day)

Briefing by:		Briefing to:	
Date:		Time:	
<p>SITUATION</p> <p>Current Situation Details of burn</p> <p>Weather</p> <p>Fire behaviour</p>	<p><i>Burn details</i></p> <p><u>Environmental values</u></p> <p><u>Cultural values</u></p> <p><u>Vegetation type</u></p> <p><u>Size</u></p> <p><u>Overall fuel hazard and fuel load</u></p> <p><i>Weather (at forecast maximum)</i></p> <p><u>Temperature</u></p> <p><u>Relative humidity</u></p> <p><u>Wind speed and direction</u></p> <p><u>Fuel moisture content</u></p> <p><i>Expected fire behaviour</i></p> <p><u>Flame height</u></p> <p><u>Forward rate of spread</u></p> <p><u>Spotting distance</u></p>		

<p>MISSION</p> <p>What we are trying to achieve</p> <p>Burn objectives</p>	<p><i>Environmental objective</i></p> <p><i>Fuel management objective</i></p> <p><i>Cultural objective</i></p> <p><i>Other</i></p>
<p>EXECUTION</p> <p>How do we plan to achieve objectives</p> <p>Strategies</p> <p>Tactics</p> <p>Management of resources</p> <p>Details</p> <p>Timings</p>	<p><i>Strategies</i></p> <p><i>Tactics</i></p> <p><i>Resources</i></p> <p><i>Control lines</i></p> <p><i>Contingency plans</i></p> <p><i>Additional details</i></p>
<p>ADMINISTRATION</p> <p>Logistics of operation</p> <p>Water points</p> <p>Catering</p>	<p><i>Water points</i></p> <p><i>Operations point</i></p> <p><i>Length of burn and logistics of meals etc</i></p> <p><i>Additional details</i></p>

<p>COMMAND STRUCTURE AND COMMUNICATIONS</p> <p>Structure Communications PLAN Radio channels Strategic telephone numbers</p>	<p><i>Burn Leader</i></p> <p><i>Other roles</i></p> <p><i>Communications plan</i></p> <p><i>Additional details</i></p>
<p>SAFETY</p> <p>Escape routes Fall back lines Known/anticipated hazards Watch out scenarios e.g.</p> <ul style="list-style-type: none"> • Falling trees • Snakes/insects/PPE 	<p><i>Medical emergency procedure</i></p> <p><i>Escape routes</i></p> <p><i>Fall back lines</i></p> <p><i>Known/anticipated hazards</i></p> <p><i>Additional details</i></p>
<p>QUESTIONS</p>	

Pre Burn Check list (To be completed by Burn Controller)
<ul style="list-style-type: none"> <input type="checkbox"/> Catering arranged: Person responsible: Click to enter text. <input type="checkbox"/> Notifications completed/ not complete <input type="checkbox"/> Resources arranged/ not arranged <input type="checkbox"/> Traffic management arranged if applicable <input type="checkbox"/> SMEACS ready and map printed / not printed <input type="checkbox"/> Control lines checked / not checked <input type="checkbox"/> Weather forecast obtained and checked against prescription / not checked <input type="checkbox"/> Other Click to enter text.