



# Recovery after fire

Practical steps for landholders

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# Contents

How this booklet can help	ii
<b>Part 1 – Immediate post fire</b>	<b>1</b>
<b>Monitoring Assets</b>	<b>1</b>
<b>Power Supply</b>	<b>1</b>
<b>Livestock</b>	<b>3</b>
Assessing and treating livestock	3
Feed action plans	6
Stock containment areas	9
Farm water	11
<b>Health and Finances</b>	<b>13</b>
Looking after yourself and others	13
Offers of help	14
Steps to financial recovery	15
Insurance Claims	17
<b>Part 2 – Asset recovery and pest control</b>	<b>18</b>
<b>Fixing Burnt Fences</b>	<b>18</b>
Lost boundary fences	18
Lost internal fences and whole-farm planning	19
<b>Soil Erosion</b>	<b>20</b>
<b>Pasture Recovery</b>	<b>21</b>
Fire intensity	21
Effects on annual species	21
Effects on perennial species	22
<b>Pest Control Fire Issues</b>	<b>23</b>
Pest animal control	23
Weed management	24
Weed spread after wildfire	25
<b>Part 3 – Prepare for next season</b>	<b>26</b>
<b>Bushfire Survival Plans</b>	<b>26</b>
<b>Livestock Fire Plans</b>	<b>26</b>
<b>Insurance Cover</b>	<b>28</b>
<b>Further information and contacts</b>	<b>30</b>

# How this booklet can help

Ongoing drought, climate change and the threat of more frequent and severe bushfires means it is crucial for the fire agencies and community to work together in preparing for, responding to and recovering from fire.

Rebuilding your life and farming operations after being burnt out is often daunting, stressful and costly. Where do you begin? How do you prioritise the seemingly endless tasks? Who can you approach to get help?

There is valuable information available from many sources, groups and government agencies.

- The Country Fire Authority (CFA) booklet *On the Land – Agricultural Fire Management Guidelines* (May 2007) focuses on preparing properties to limit damage from wildfire.
- The Department of Human Services (DHS) kit *After the fires: Practical advice* (2006) contains advice on personal health including food, water, clothing and stress.
- The Department of Primary Industries (DPI) is required to conduct disaster and damage assessment, and provides emergency recovery services after major fires to assist landholders in their longer-term recovery.

This booklet, *Recovery after fire: Practical steps for landholders*, helps primary producers and landholders get back to business after the emergency vehicles have pulled out.

Each chapter contains suggested actions in the critical areas of personal wellbeing and financial support; livestock and water management; soil and pasture recovery; fencing and property planning; and pest control. Sources and references to further information is provided in footnotes.

DPI staff can provide advice about specific recovery services and programs offered by the Victorian Government and other agencies following bushfire incidents. Additional information, including the extensive DPI Information Notes Series, is available on the DPI website ([www.dpi.vic.gov.au](http://www.dpi.vic.gov.au)) or by calling the DPI Customer Service Centre on 136 186.

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Summer 2009





## Part 1 – Immediate post fire

### Monitoring Assets

It is important to continue to patrol around your home and property buildings for up to six hours (and sometimes longer) after the main fire has passed through, as it is during this time that many buildings burn down due to embers. There is also the risk of vegetation reigniting from embers or smouldering fuel sources. Other hazards to monitor include falling branches and trees, holes in the ground and fallen powerlines.

If powerlines have fallen, keep clear and keep others away. The powerlines may still be live. Do not attempt to remove or prune trees which have fallen on powerlines yourself. You should call your local electricity distributor – on the faults and emergencies number on your most recent electricity bill.

### Power Supply

If you have lost power you should contact your electricity distribution company – on the faults and emergencies number on your most recent electricity bill.

If your property has been damaged by storm or fire, you should have a licensed electrician check wiring and repair any electrical damage before you reconnect power or switch on appliances.

Care needs to be taken with the use of temporary energy generators. The leads from the generator to electrical appliances must be as short as possible and in good condition.

Temporary generators must not be installed inside buildings because of the dangers of carbon monoxide poisoning from engine exhausts.

We recommend that you seek help from a licensed electrician to connect an energy generator.

If electricity supplies have not been restored to homes for any reason, property owners must not connect permanent generators or perform other electrical work around the home. Such practice is both illegal and dangerous – this work can only be carried out by licensed electricians.

Energy Safe Victoria also advises people to take the following precautions if using a generator:

- Correctly connect the generator. Make sure you have the appropriate power board and leads to fit the generator you are using, and make sure that they are in good working order.
- Keep your generator outside. Generators in enclosed areas such as homes, sheds or caravans, even with windows open, can cause carbon monoxide poisoning which can result in death.
- Do not overload your generator. This can cause damage to appliances feeding off the generator. If your generator is not big enough to power all appliances, appliances should be rotated.
- Place your generator in a location where the exhaust fumes do not come into contact with any combustible material.
- Always plug appliances into the generator rather than plugging the generator into the power socket as this increases the risk of electrocution.
- Take care when refuelling your generator as it is likely to be hot. Make sure the generator is off and has cooled before refuelling as petrol spilled on hot engine parts can ignite.

If you would like further information you can contact Energy Save Victoria (ESV) on (03) 9203 9700 or 1800 800 158 or go to [www.esv.vic.gov.au](http://www.esv.vic.gov.au)

## Livestock

### Assessing and treating livestock

#### Initial rapid assessment

DPI staff visit fire affected properties after the all-clear is given and it is safe to enter the fire grounds. Teams conduct rapid assessments that include:

- the location, boundaries and extent of the burnt area
- the approximate number of private properties burnt
- the initial estimate of the number of livestock burnt.

During this rapid assessment phase DPI staff will be contacting affected landholders and collecting critical information to establish the extent of the damage.

#### Detailed damage assessment

DPI staff will be assigned to visit your property as soon as possible to assist with more detailed assessment of damage. DPI animal health staff will assess the condition of livestock and, if required, carry out or oversee the humane destruction of stock with a poor chance of recovery.

The DPI animal health staff will assist stockowners in categorising the affected stock as:

- requiring immediate destruction
- requiring emergency salvage slaughter
- needing treatment and re-assessment
- no injury.

The *Prevention of Cruelty to Animals Act (1986)* removes the option of doing nothing. Sick or injured stock must be treated or destroyed.



### **Humane destruction of burnt livestock**

The nature and extent of burns to livestock can vary widely between animals of different species; animals within the same group and the nature of the fire and the degree of exposure. The behavioural instinct of individual animals and groups also affects the extent and distribution of burns.

Situations that warrant immediate destruction include:

- animals unable to stand up or walk due to injuries or burns sustained during the fire
- animals suffering from severe smoke or flame inhalation resulting in acute respiratory distress, as shown by facial burns; laboured breathing; frothing at the mouth and nose; and coughing
- stock with extensive burns to facial tissues and to the legs below the knee and hock joints with swelling and a dry leathery appearance of the skin (severe burns to more than 15% of the body surface).

If animals need to be destroyed in the paddock before DPI assessment teams arrive, make sure you have a witness present and contact your insurance company as soon as practicable to avoid the risk of voiding insurance cover.

It is the task of Municipal Councils to coordinate the disposal of dead stock.

- **Information Note AG1264:**  
**Disposing of carcasses in response to bushfire, flood or drought**

### **Assessing salvageable livestock**

DPI assessors consider a number of factors prior to advising on the options of nursing and treatment, humane destruction or emergency salvage slaughter. These include:

- available facilities (yards and sheds) for nursing and treating stock
- whether the type of country permits intensive care of stock (hard rocky ground versus soft unburnt areas)
- the quality and quantity of feed and water available, and whether agistment can be organised
- the general body condition of the stock
- the age of the stock and cost-returns from the treatment option
- concurrent illnesses that may be affecting the stock
- stage of pregnancy
- the wellbeing of the landholders and managers in making informed decisions as to the best welfare and outcome for the livestock.

### **Salvage slaughter**

Emergency salvage slaughter must be considered early before swelling of limbs or acute lameness occurs and trimming of the carcass is minimal. Animals with quite severe burns may recover with intensive veterinary treatment and nursing, but this should be attempted only if the animals are of great sentimental or economic value. This can be time consuming, extremely costly and ultimately unrewarding. Animals likely to survive will:

- be mobile
- have only localised skin damage on legs
- have all or most hooves still intact
- have only superficial burns to face, lips and eyelids
- have only superficial burns to the anus, vulva, udder, teats or pizzle.



### **Managing surviving stock**

Stock likely to survive should be placed in a paddock that has soft soil (such as sand), appropriate shelter and shade, good quality feed and water. Many animals will not be hungry for several days and may lose condition before starting to recover.

Following the fires in 2003 many apparently unaffected sheep were exposed to hot post-fire ground causing extensive injury to the hooves. This resulted in acute lameness and subsequent destruction. You need clean (not burnt) paddocks to manage surviving livestock.

You must continually assess animals with minor injuries and be aware that even minor burns may have long-term effects on the surviving stock. Pregnant stock with minor burns to the teats are often later found to have occlusion of the teat canal and are unable to be milked or suckle calves or lambs.

Several DPI trials with burnt animals are helping to develop recovery strategies. At DPI Hamilton, 20 merino sheep with moderate burns to the hooves, legs, bare areas, lips and face were kept in a paddock for 29 days without any special management attention, except welfare monitoring. Of those that died, severe burns to the lower legs, including the knee and hock, were considered the most significant lesions. The skin of the lower leg appeared dry, scorched and leathery. Internally, damage was largely confined to excessive fluid in the chest cavity. Lung abscesses were found in several sheep. Shock will kill many animals early following the fire.

- **Information Note AG0858:**  
[Horses and Bushfires](#)
- **Information Note AG1371:**  
[Assessing sheep after a bushfire](#)
- **Information Note AG1370:**  
[Assessing cattle after a bushfire](#)

### Feed action plans

No two situations of feed availability are the same. For instance, a landholder's or manager's choice of the least-cost course of action will depend on such factors as current saleyard prices for stock; size of existing drought reserves; cash-flow limitations on fodder purchases and expected duration of satisfactory stock water reserves. Three courses of action open to producers are agist stock, sell stock or feed stock.

#### Agistment

Agistment can be a cheap solution for feeding stock. Your agisted animals may even fatten on good quality feed and any animals left at home will have less competition for feed. Before agisting there are certain points that you should consider and this is best done by inspecting the agistment area.

Fencing should be secure and handling facilities available. There should be a good quantity of quality feed and the agistment should be close to markets so you do not have to bring agisted stock home again. Most agistment will be snapped up early, particularly if the fire is widespread, so this decision must be made swiftly.

A widely used form of agistment is to send your stock to a commercial feedlot, particularly finishing cattle for slaughter. While expensive, this may be offset by the sale of finished cattle at a premium price.

#### Sell Stock

Sale of stock provides ready cash as well as extra paddock feed for stock on hand. Timing of the sale and the type and number of stock to be sold are the crucial management decisions in this course of action. Inevitably, after large fires there is a period of intense selling with large saleyard yardings and possibly depressed prices. As much as possible plan your selling strategy to avoid such buyers' markets.

When selling stock the best policy is to sell the less productive animals, so that at the end of the feed shortage a core of high producing animals will remain. The decision to sell should be made quickly before the condition of the stock deteriorates. Animals in backward store condition should not be consigned to a saleyard. Consider direct consignment to an abattoir.

#### Feed stock

For the feeding option you need to ask yourself if you have the facilities, water and finances to feed when feed prices are at a premium. In 2008, feeding cattle costs around \$1.50-\$2.00/day or \$250 each over four months and feeding sheep costs up to \$0.40/day or \$48 each over four months. Feeding requires constant attention so you also need to consider future commitments and priorities such as cropping or shearing.

- [DPI booklet Drought Feeding and Management of Sheep](#)
- [DPI booklet Drought Feeding and Management of Beef Cattle](#)

Booklets are available from DPI offices or through the DPI Customer Service Centre 136 186.







## Stock containment areas

Following fire, you need to decide between feed and agistment. If you decide to feed, containing stock will reduce animal stress, as well as soil and plant loss.

The biggest factor affecting resource damage during dry periods is the amount of vegetative cover retained to protect the soil. The value of removing stock from vulnerable areas during such times cannot be over-stated. Grazing and trafficking by stock can quickly reduce the cover to levels which set-up wind erosion problems.

It is important to act early as unconfined grazing and trampling will put considerable stress on land in an already vulnerable state. If vegetation is removed so that only about one third of the soil remains covered, wind will start blowing soil particles away. Trampling will aggravate the situation and the land will be predisposed to water erosion problems when it rains.

### Benefits of stock containment

- Protection of vegetative cover on majority of property.
- Less stress on flora and fauna values of the property.
- Ease of stock feeding, watering, monitoring and handling.
- Control of shelter and shade.
- Better control of weed contamination associated with imported feed.

### What is a stock containment area?

A stock containment area is a carefully selected part of the property which is set up to hold, feed and water stock during adverse weather periods, such as days of high fire danger (Total Fire Ban). The area should have low levels flammable vegetation, such as a grazed or green paddock, to help protect stock during wildfire (CFA 2007). You should consider it as part of your property management plan, maintain it once established and make it available for use during emergencies.

If you intend to convert a stock containment area into a feedlot for cattle it must meet the requirements of the *Victorian Code for Cattle Feedlots* (1995).

- **Information Note LC0075:**  
**Stock Containment Areas**
- **Information Note AG0589:**  
**Planning requirements for feedlots of less than 50 head capacity**
- **Information Note AG0858:**  
**Horses and Bushfires**

### **Selection of stock for containment areas**

When selecting livestock for containment areas you must consider a number of general animal health factors:

- vaccinations (5-in-1 vaccine, Gudair vaccine for sheep)
- drenching
- vitamin and mineral deficiencies
- infectious diseases:
  - pneumonias
  - pinkeye
  - pulpy kidney
  - coccidiosis
  - water belly, urinary calculi
  - salmonella
  - poisonings such as nitrate poisoning on areas from the build up of high nitrogen levels and subsequent break and grass growth.

Different breeds and species adapt differently to containment areas so ongoing observation of the stock is necessary to assess feeding patterns and adaptation to feed rations. Sheep may not adapt well to the containment area and feedlots with lambs can have up to 20% of shy non-feeders in an area.

From an animal welfare perspective the use of stock containment areas invokes the basic welfare requirements of food, water and shelter. In addition:

- all stock must be inspected as least once daily and monitor body weight or condition scores to detect animals not suited to the ration or behavioural stress of the containment area. These stock are to be promptly removed as required
- any sick or injured stock must be treated or euthanased immediately
- dead stock must be immediately removed from the area
- stock must be handled with 'minimal stress handling techniques'
- all stock must have access to clean fresh water.

DPI Animal Health staff are available to discuss your animal health and welfare concerns.

- **Information Note LC 0077:**  
[Water for stock containment areas](#)

## Farm water

You should follow these steps for planning farm water after fire:

- carefully evaluate current reserves
- estimate how the status of these reserves may change over time
- consider how this will influence the management options available.

If essential water (stock, domestic or extensive horticulture) was taken for fire purposes you can contact the Municipal Recovery Centre or your local council to organise replacement water.

### Protecting dams from wind born contamination

After a fire, windborne material such as ash and soil from paddocks with inadequate groundcover may be blown into dams. Once in the water, organic materials provide ideal food for bacteria and algae. These organisms grow rapidly using up all free oxygen in the water (it becomes anaerobic) and putrefaction results.

Symptoms are dark water, a bad smell and black scum around the edge. Stock find such water unpalatable. Thick scum around the water's edge may also prevent stock accessing the water. It is believed the water is not poisonous to livestock, but it may be harmful to young or weak stock.

Once material is in the dam, aeration of the water is necessary to improve its condition and make it more palatable to stock. This is best done by pumping to a tank and reticulating to a trough. If aerated water is returned to the dam then the organisms growing on the organic material will quickly remove all the air again.

Fencing can be used to trap blowing material before it reaches the water. A closed-wired fence on the windward side is a worthwhile investment. The offending material eventually settles and can be removed with an excavator.

### Protecting dams from siltation

During summer, storms can move large volumes of silt. This can happen anytime until ground cover establishes. During the Victorian Alps fire in 2003, one dam was cleaned out three times after filling to the top.

- **Information Note LC0098:**  
Has your dam got a blue green algae problem?



**What demands will be placed on water supply?**

**Stock water needs:** Sheep require up to 40 litres of water per animal per week. Cattle require about 500 litres per week. Landholders also need to consider if watering points are being used by other animals to any significant level.

**Domestic needs:** Rules-of-thumb for an active household are:

People	1	2	4	6
Litres/week	1,250	1,900	2,380	2,650

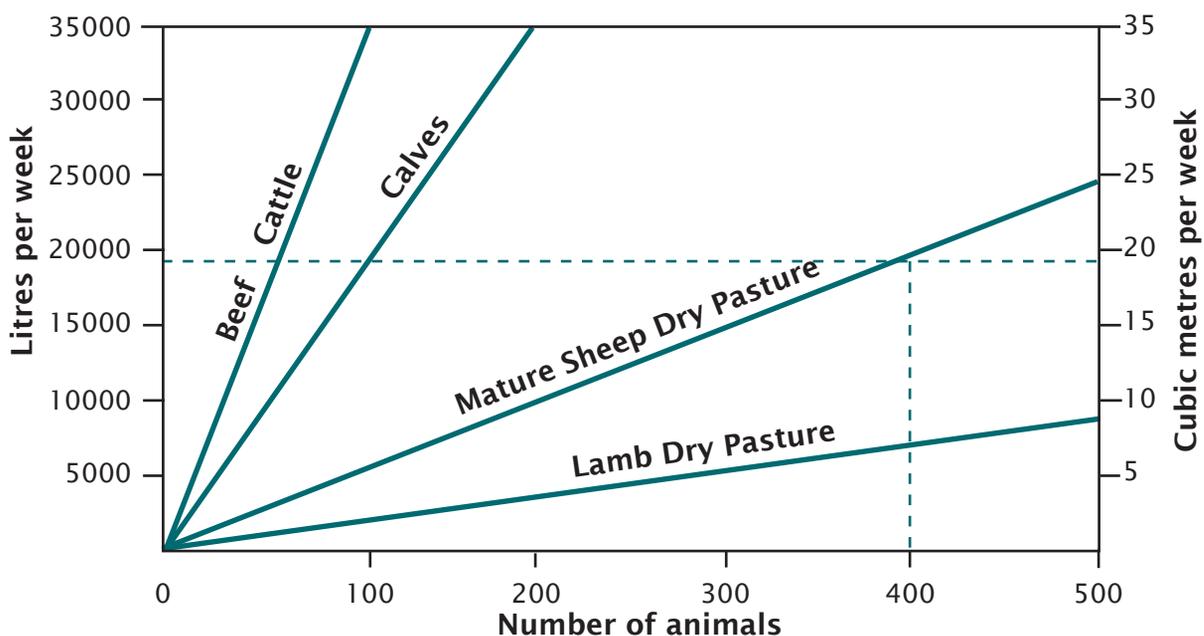
**Garden needs:** These are highly variable depending on the type of garden and the watering method. For each block of garden of 10 metres by 10 metres water use could be in the range of 200 litres/week (drip irrigated shrubs) to 1,000 litres/week (well watered vegetables).

**What options are available?**

- Reducing stock numbers.
- Combining stocks of water.
- Reticulating from dams rather than direct access.
- Carting water.
- Sinking bores.
- Permanent reticulation systems.

**Information Notes:**

- **LC 0074:**  
Organic pollution of farm dams prevention and treatment
- **LC 0089:**  
Water quality for farm dams supplies
- **LC 0064:**  
Measuring the salinity of water (most DPI officers have EC meters)
- **LC 0073:**  
How long will my dam water last?
- **LC 0092:**  
How to maintain your farm dam
- **LC 0065:**  
Water conservation on rural properties



## Health and Finances

### Looking after yourself and others

During an emergency people tend to exist in a survival state to get through the incident, using up considerable emotional reserves. They likely have a targeted focus and work hard for long periods, putting aside essential needs including food, water and sleep. It's also important to recognise that after the high a low often follows.

#### Symptoms of stress

- Difficulty thinking clearly, concentrating and remembering details.
- Not speaking clearly, slurring words and forgetting names.
- Bodily tension, stress and tightness in muscles.
- Headaches, trembling, nausea, aches and pains.
- Tired but unable to sleep.
- Lack of appetite and a desire for stimulants such as alcohol, tobacco, or coffee.
- Feeling overwhelmed and emotional, experiencing waves of anger, or unnecessary worry.
- Feeling irritable, restless and unable to relax or keep still.
- Cannot feel happy, enjoyment or affection for loved ones.
- Feeling moody, gloomy, sad or hopeless.
- Blaming others and reacting out of proportion to the situation.
- Changed relationships, avoiding contact or, alternatively, always wanting others around.

#### Looking after yourself

- Take regular short breaks.
- Stop when you have had enough.
- If it has been a tough day, try to discuss issues and solutions before heading home.
- Take care to avoid accidents.
- Spend some time doing things you enjoy when off duty.
- Get plenty of rest and sleep.
- Eat well and regularly.



### Helping others

Letting people talk is one of the best ways to help them reduce their distress. Things you can do to help people talk things out are:

- Look directly at the person speaking to you.
- Avoid interrupting.
- Ask questions occasionally to make sure you understand what they mean.
- Let the person speak freely and don't judge or give opinions.
- Don't tell people how they should think or feel.
- Make sure you understand why a question is being asked.

### Unhelpful ways of relating to affected people

- Telling them not to worry, that it could have been worse, that others are worse off or that they are the lucky ones.
- Not listening to them.
- Reassuring them everything is all right when it is not.
- Unnecessarily separating them from family or familiar surroundings.
- Getting sentimental or excited with them.
- Not giving them privacy or independence when they need it.

Victorian Department of Human Services (DHS) contacts during office hours:

- **Barwon-South Western 5226 4540**
- **Gippsland 5177 2500**
- **Grampians 5333 6669**
- **Hume 5722 0555**
- **Loddon-Mallee 5434 5555**

Lifeline: For 24-hour telephone counselling throughout Victoria 13 11 14

### Offers of help

The generosity of individuals and groups donating time, support or fodder in the aftermath of large fires can often be overwhelming. You may be reluctant to take advantage of recovery services and offers of help as this is sometimes perceived as a sign of weakness. You may think others are worse off and in greater need of assistance.

However, you have lost something during an incident and the Victorian Government, other groups and individuals recognise this and want to support your recovery. Contact your local DPI office or call 136186 to have your farm assessed. Alternatively, the Municipal Recovery Centre, run by your local Shire Council, would also be aware of available loans and grants.



## Steps to financial recovery

It is often difficult after an event like a bushfire to take time to focus on the financial plan for your business. Taking time to formulate a plan will in the long run aid faster business recovery. The following are the first steps you can take in formulating your plan.

### Step 1: Where are you now?

Assess your current financial position and **write down** a statement of all your assets and liabilities.

Assets include:

- land: Write down each parcel of land, who owns it and what the current market value is likely to be
- stock: List each class of stock and their likely current market value
- produce on hand: List all produce currently on hand including hay, grain and unsold wool at their likely value
- plant and machinery: List all plant and machinery you own and its current market value (hint: what would you pay for it at a clearing sale?)
- vehicles: List each vehicle and its likely current market value
- list the value of your bank accounts, investments and shares (accounts that are in credit)
- list the current value of any superannuation funds and the surrender value of life insurance
- list a description and value of other real estate and valuable possessions (for example jewellery or antique furniture).

Total value of all assets = .....

Liabilities include:

- current balance of your overdraft (if in debit)
- term loans (and what they are secured against)
- hire purchases or machinery loans
- other loans (for example family loans)
- credit cards (if in debit)
- unsecured creditors (all outstanding accounts)

Total value of all liabilities = .....

Net value of your assets = assets less liabilities

It can be useful to do this exercise at 30 June each year to see how your position is changing over time.

### **Step 2: Where are you likely to be in the next 12 months?**

Assess your likely future financial position and **write down** an annual cash flow budget for the next 12 months.

**Farm Income:** List the likely sources of income (if no changes are made) from each of your enterprises over the next 12 months. For example, categories may include wool, lambs, cull sheep, cattle, grain (wheat, barley, oats and canola) and diesel rebate.

**Farm Expenses:** Split into enterprise, and overhead costs. Enterprise costs include costs associated with each enterprise, such as animal health, shearing, contract services, fodder and freight. Overhead costs include costs that are always there regardless of the type of enterprise you are running, such as rates, insurance, accountant, administration, fuel, electricity and telephone.

Subtract the expenses from the income. This is your **farm operating profit or loss**. From this you then deduct (or add on) the interest and principal repayments from your profit (or loss). Then list and add on any other off farm income, such as wages, Centrelink and non-farm investment income.

Estimate your personal expenditure for the year and your personal tax liability and deduct from the figure. This will then give you your net cash flow for the year. At this point a more detailed month by month cash flow budget could be useful to track the balance of your operating account to make sure you will not exceed the overdraft limit. If your cash flow is a positive amount you have the discretion to decide to spend or save the excess. If it is a negative amount you must answer the questions 'will you need to borrow more money (is your overdraft adequate) or will you need to make other changes to your farming or personal circumstances?'

### **Step 3: Where do you want to be?**

These steps give you the basic information to start working out a plan for your business recovery. This will include determining your personal and farming priorities and goals and looking at options to meet your needs. Rural financial counsellors can assist farmers to acquire the necessary basic financial information and then work out a plan for the future. This may include seeking further assistance from other professionals including consultants, agronomists, accountants and solicitors. In any plan for the future it is also never too early to consider a succession plan for your farm.

Rural financial counselling is a free service to farmers and small rural businesses. Rural financial counsellors usually visit on farm and provide a confidential, free and independent service.

**For information on your local financial counsellor or for an appointment call 1800 686 175 or go to the website [www.rfcs.gov.au](http://www.rfcs.gov.au)**



## Insurance Claims

Notify your insurer as soon as you can after an incident. It is important your insurer is made aware of your decisions regarding the destruction of burnt livestock, any major repairs or any major cleanup of assets. It is recommended you take photographs of damaged assets and stock in order to support any insurance claims.

It is important, but often difficult under stress, to remember all of your lost assets (checklist available in “Part 3 – Prepare for next season”). However, most insurance companies understand this and are flexible enough to allow you to reopen and amend your claim case.

If you receive a payout but are unable to spend it on recovery work before the end of the financial year, it will be treated as income and taxed accordingly. Therefore, it is advisable to talk to your accountant about Farm Management Deposits (FMDs) or other solutions.





## Part 2 – Asset recovery and pest control

### Fixing Burnt Fences

#### Lost boundary fences

Boundary fences under the *Fences Act (1968)* are considered assets of the landholder and should be insured accordingly. Following the 2009 fires the Victorian Government will reimburse reasonable insurance excess to a maximum of four-hundred dollars (\$400) on all insured Crown land boundary fences destroyed or damaged by bushfires (or fire suppression backburn) regardless of the tenure of the land where that fire originates.

The Victorian Government will repair or pay 100 per cent of restoration cost of fences damaged on private land as a result of machinery used in control of bushfires (including damage to fences for emergency vehicles access).

The Victorian Government will fully fund the rehabilitation of fire control lines established by Department of Sustainability and Environment or Country Fire Authority as part of incident management during bushfire suppression activity regardless of the origin of the bushfire (public/Crown or private land).

#### Tree risk assessment

DSE and Municipal officers are generally available to provide advice about unsafe trees on your property. All enquiries should be directed through your Municipal Recovery Centre.

## Lost internal fences and whole-farm planning

Your first priority will be to replace the boundary fence. After that there is an opportunity to consider internal fences as part of a broader assessment of your property. Whole-farm planning, or property management planning, is a management tool used to determine the optimum layout of land used for primary production. The aim of whole-farm planning is to optimise production while reducing land degradation and improving environmental outcomes. It involves arranging land with the same capability (land class) so it can receive the same management.

The bushfires and subsequent loss of fencing, presents you with an opportunity to review your farm layout and management. DPI offers a variety of programs to assist in developing a whole-farm plan. In order to reduce damage and losses from potential fires in the future, it is important to carefully reconsider property and building design; access; water supply and maintenance as it relates to fire prevention, preparedness, response and recovery.

### Definition of a land class

A land class is a unit of rural land with a relatively uniform set of characteristics (geology, soil type, slope, aspect) that allows it to support a distinctive type and intensity of use. A land class requires a specific set of management practices different to other land classes to sustain those uses without damage to the land.

### How do we make a property plan?

To develop a property plan obtain an aerial photo of your property and place a sheet of rigid clear plastic film over the image. On the film, mark in your land class boundaries and then remove the photo and put the plastic film on a white background. You can design paddock sizes with the same land-class including lane ways, water systems, creeks, shelter and wildlife corridors. You then put the film back onto the photo to see how it can be implemented. If you are interested in computer-based tools there is new software available such as e-farmer and MyFOL.

**Environmental Best Management Practices (EMBP) workbooks are available from DPI offices or through the DPI Customer Service Centre on 136 186.**

***On the Land: Agricultural Fire Management Guidelines (CFA 2007)***



## Soil Erosion

Bushfires destroy vegetation, leaf litter and organic matter. As a result, the soil becomes highly vulnerable to both wind and water erosion. The lack of vegetation in catchment areas also increases the frequency and intensity of flooding.

Thunderstorms after wildfire can create very large movements of silt, gravel and even rocks. Damage is still likely to occur during winter and spring rainfall. There is not a lot that can be done to increase ground cover other than keeping stock off catchment paddocks until a grass cover is established. Consider using stock containment areas.

Temporary silt traps can be constructed out of shade cloth and steel posts above strategic dams, but large flows will wash them away filling the dam with silt. DPI can assist with advice on erosion that may occur.

- **Information Note LC 0072:**  
**Paddock protection and stock management in dry times**



## Pasture Recovery

Fire changes pastures in different ways according to a number of different factors: the intensity of the fire; the pasture species; the fertility of the soil; the time of the autumn break and follow up rains.

### Fire intensity

Three categories of burns can be defined by considering what was burnt and destroyed during a fire and what was left:

- **Cool-moderate burn:** Most dead plant material burnt; some seed and perennial grasses and clovers survive unhurt. There will usually be a small residue (or stubble) of unburnt pasture remaining.
- **Hot burn:** All dead plant material, many seeds, young and weaker perennial grasses destroyed. The topsoil usually appears charred and bare.
- **Very hot burn:** The soil is virtually sterilised. All plant material and seed is destroyed as the fire burns into the top organic matter layer of the soil.

Generally cool-moderate burns occur where there is little dry grass cover before the fire. Hot burns occur where there is heavy plant cover such as lightly grazed pasture or crop stubble. Very hot burns occur under hay bales; windrows; on sheep camps; on soils with a thick root mat or where an intense fire emerges from bush areas onto pasture land.

Plants that bury their seed or have growing points below the surface should be best able to survive the effects of a fire.

### Effects on annual species

Most annual grasses produce very little dormant seed. Usually 80 to 90 per cent of the seed in one season will germinate in the following autumn. This means any factor, such as fire which destroys annual grass seed, will cause a drastic reduction in the annual grass component in the pasture. In addition, the annual grass seed that survives the fire is very vulnerable to removal by wind. Subterranean clover has the ability to bury its seed. This substantially reduces the damage to the seed caused by fire.



## Effects on perennial species

### Grasses

Recently re-sown perennial grass pastures can be seriously damaged by fire. The young perennial plants without well established root systems and reserves are more vulnerable to fire damage, especially if the pasture was sown with a cover crop. Almost all well established perennial grasses survive a cool-moderate burn. The ability to survive a hot burn varies between species. Grasses with growing points below the soil surface survive best.

### Legumes

Observations of burnt white clover-based pasture following the 1983 Cudjee fires indicated the survival of white clover is very similar to the survival of perennial ryegrass.

### What can be done?

There are several possible courses of action after a fire. The appropriate action will depend on the intensity of the burn, the condition of the pasture prior to the fire and the finance and time available:

- **Cool-moderate burn:** The pasture should recover to its original density during the following year given adequate moisture and the absence of soil nutrient deficiencies.
- **Hot burn:** In most cases it is probably best to wait a season and see how the pasture recovers before considering re-sowing. However, in some cases it may be a good opportunity to reliably direct drill new pasture species or top up the old pasture.
- **Very hot burn:** Almost all plant material will be dead so the area should be cropped or re-sown to pasture following the fire.

Several management practices may improve the recovery of pasture after fire.

**Adding new pasture seed:** New pasture seed can be added to the pasture in a variety of ways, such as by direct drilling or over-sowing. It is usually best to wait until there is a germination of annuals after the autumn break. If weeds are dense, chemical weed control may be necessary before sowing the seed.

**Heavy harrowing:** Heavy harrowing can unearth buried seed and improve the germination, especially of subterranean clover. This harrowing may cause further damage to surviving perennial species.

**Autumn saving:** Leaving stock off the burnt pastures for six or more weeks after the autumn break improves the vigour and growth of surviving plants.

**Fertiliser:** Fertiliser application will speed the growth and recovery of pasture where there is an adequate density of regenerating plants or pasture seed has been sown.

**Broadleaf weed control:** Where broadleaf weeds start to dominate the recovering pasture, control measures such as the use of herbicides or spray-grazing are recommended.

**Seedset:** The pasture plants should be encouraged to set seed in the spring following the fire. This can be assisted by avoiding heavy grazing pressure in the mid-late spring period and not cutting the pasture for hay.

- **Information Note AG0203:**  
[Pasture recovery after fire](#)

## Pest Control Fire Issues

### Pest animal control

There is an increased window of opportunity to control pest animals post fire, as their food source has been disrupted.

#### Rabbits

Fire removes groundcover, so there is an opportunity to map where burrows exist. A baiting program is appropriate for large numbers. A warren ripping and fumigation program should follow. Generally one activity by itself is insufficient to control rabbits and vacant warrens will eventually be reinhabited. DPI has assisted with this work following major fire events.

#### Information Notes:

- **LC 0296:**  
Rabbit control using Pindone poison (VIC)
- **LC 0295:**  
Rabbits: Methods of fumigating rabbit burrows (VIC)
- **LC 0297:**  
Rabbits: Warren destruction and harbour management

#### Foxes

Foxes are controlled by baiting, shooting, fumigating and destruction of dens. The integrated use of several methods will enhance control. Fox control following summer fires is particularly important for autumn lambing. For spring lambing, control can be left to mid year. Baiting is undertaken using 1080 poison and a chemical user's permit (ACUP) is required with a 1080 endorsement to undertake this work. A program coordinated with neighbours is likely to be more effective. DPI has coordinated and financed such programs after major fire events.

- **Information Note LC 0302:**  
Integrated fox control



## Weed management

### Impact on weeds

The risk of weed invasion and the impact on farms and the environment dramatically increases during and after wildfire. After the 2003-04 bushfires in eastern Victoria, new weed species were identified and an increase in the number of infestations of existing weeds was observed. Immediate impacts of weed invasion after fire are not only felt in the areas burnt but also throughout the landscape, where weeds have been dispersed by vehicles, humans, fodder, stock and even water.

Bushfire brings with it two processes that can potentially increase the rate of weed invasion. One relates to the creation of a window of opportunity for competitive exotic plant species after fire. These species will take advantage of extra light, space, nutrients and moisture caused by the absence of desirable plants such as native vegetation, crops or pasture. Desirable species may also be vulnerable to pest species such as selective grazing on new growth by rabbits.

The other process relates to weed spread as a result of fire suppression, fire recovery and environmental events.

### Fire suppression

- Fire ground vehicles carrying weed propagules (seeds, stems and bulbs) can spread weeds.
- Weed propagules can be dislodged or picked up on the fire ground and dispersed by vehicles and machinery such as bulldozers.
- Humans can accidentally spread weed propagules on socks, boots and clothing.

### Fire recovery

Weed propagules can be:

- imported in fodder onto farm
- blown from vehicles transporting fodder
- imported on or in replacement or agisted stock
- brought in by vehicles and equipment of contractors and advisers replenishing water supplies, rehabilitating fire breaks, clearing fence lines and re-establishing vegetation
- spread in seed, mulch, soil and rock used in rehabilitation programs.



**Environmental events**

Weed seeds can also be easily spread by water flow across bare ground during rain. Once ground temperature gets above 200° Celsius, the organic matter vaporises and makes the soil resistant to water (hydrophobic). Higher run-off rates not only cause erosion and siltation of waterways but aid the dispersal of weed seeds further down the catchment.

Seeds from desirable species, as well as weed seeds, may be blown from bare ground burnt by moderate intensity fire. This can leave areas more susceptible to new weed invasions with more weed seed deposited by wind.

**Weed spread after wildfire****Natural ecosystems**

Bushfires often burn areas of exotic weeds that were posing a significant threat to forests and natural ecosystems. Weeds quickly re-establish after fires often germinating more quickly than native species. Bushfires can exacerbate the growth of opportunistic weeds such as English Broom, Blackberry and St Johns Wort.

Bushfires can present an opportunity to gain access into areas to tackle these weeds. Integrated weed control programs can focus on minimising the threats to key conservation values, infestations impacting on neighbours and eradicating isolated pockets.

**Weed management before, during and after wildfire**

There are many strategies to minimise weed establishment and spread during and after fire.

**Before and during fire:**

Knowing where weed infestations are or have been (mapping) enables a quick response for surveillance, leading to control and prevention of the spread of weeds. It may be beneficial to establish strategic vehicle and machinery wash-down areas for fire vehicles and other machinery that need to work in high-risk weed spread areas.

**After fire:**

- Verify your weed mapping and step up surveillance for new weed outbreaks. Perennial weeds with well-established, deep root systems survive fire very well. Weeds such as flatweed, docks, sorrel and onion grass are the first plants to recover and are often prominent after fires.
- Check the origin of your fodder. Has it come from a known weed infested site? Keep records of where fodder is purchased.
- Feed out fodder in a confined area (stock containment areas), away from drainage lines to reduce the likelihood of weeds being spread.
- Monitor the feed areas regularly and be suspicious of unfamiliar plants.
- Identify suspect plants as soon as possible.
- When building up stock numbers or accepting agisted stock, quarantine them for 14 days allow time for viable seed to pass through the animal.
- Check for weed seeds in fleece and continue to check for weeds in areas with new stock.
- Monitor stock routes and roads for up to 12 months after fire to detect new weeds.
- Ensure vehicles and equipment of agencies, contractors and advisers are clean and free of weeds before entering and leaving your property.
- Seed, mulch, soil and rock to be used for rehabilitation programs should be free of weed seed and propagules.
- Increase integrated weed control treatments - the first two years are critical.

Re-vegetation work must go hand in hand with treatment.



## Part 3 – Prepare for next season

### Bushfire Survival Plans

The most important aspect of fire management is the safety of people. The Country Fire Authority (CFA) recommends you develop a bushfire survival plan to help protect your family, workers and visitors. Do you have contingency plan if fire affects your land? It is strongly recommended you obtain a copy of the CFA publication *On the Land: Agricultural Fire Management* (CFA 2007) as this booklet contains many checklists to be considered.

### Livestock Fire Plans

All livestock and pets should be included when developing and activating fire plans. Planning helps to minimise the risk to livestock and pets and helps your financial and emotional wellbeing.

Deciding when to enact your fire plan will be based on the weather or the immediate threat of fire in your area. Listen to the radio and observe your own environment to decide when to put your plan into action.

**Country Fire Authority (CFA) booklet “*On the Land – Agricultural Fire Management Guidelines*” (May 2007)**



### Emergency containment area

To reduce potential injury and death to livestock you should consider relocating stock to designated low risk areas during days of high fire danger and Total Fire Bans. Low risk areas include:

- ploughed paddocks, areas cultivated and kept free of combustible vegetation
- bared-out paddocks, provided they are well defended by fire breaks
- irrigated paddocks or paddocks containing green summer crops (green feed does not burn easily)
- stockyards that can be wet in advance. However, the yards must be well defended as the fire front passes.

You should relocate stock to low risk areas once you are aware a fire is in your area, well before it poses an imminent threat. Often there is not enough time to move stock at the last minute. Radiant heat from fire has resulted in the injury and death of people and livestock caught out in the open, so ensure you have a plan and put it into action as soon as warranted.

If you do not have an appropriate low risk area it may be an option to truck them to another property or open internal gates to give stock the ability to move away from the path of the fire. **Do not open gates onto roadways** as livestock on the roads creates hazards for vehicles. The CFA recommends that you do not lock gates and that you switch off electric fencing.

- **Information Note AG0858:**  
**Horses and Bushfires**

Country Fire Authority (CFA) booklet *“On the Land – Agricultural Fire Management Guidelines”* (May 2007)

*Living in the Bush* (CFA 2004)



## Insurance Cover

The need for insurance differs from farm to farm according to financial circumstances and an individual's preparedness to take or share risk. However one constant is that all who are affected in an intense fire suffer some degree of trauma. There is also no doubt this trauma can be significantly alleviated if insurances are in order and provide adequate cover for losses.

Those who insure wisely are the quickest to recover and to begin restoring boundary fencing and planning for their future.

With rapidly rising operational costs, farmers are often tempted to cut back on insurance and accept more risk. The temptation to do this should be resisted and instead alternatives explored before a decision to accept more risk is taken. Careful financial planning before a crisis is key to ensuring your farming future.

Firstly, choose your insurance company carefully. Shop around to get the best deal but always make sure the company you select has a good rural policy and fully understands the needs of a commercial farming or grazing property and of your own personal needs. Go through your policies with the company representative on an annual basis and adjust where necessary. The increasing complexity and cost of plant and equipment should be taken into account each year when determining what to insure and to what level.

Fencing can be a big cost and this is an area where you can save on insurance. Steel end assemblies and concrete or steel posts with ringlock or an equivalent prefabricated fence will withstand most fires and leave you with a secure property even though the life span of the ringlock may be considerably reduced. Where fences are erected with wooden strainer posts and stays with steel or concrete posts in the fence line, you can save money by simply insuring the end assemblies.

Insurance on homestead and major buildings is recommended even if you have carried out fire prevention works recommended by the CFA because fire is highly unpredictable as to where and when it strikes.

Having assets and stock lost in a fire but covered by insurance is likely to result in a loss of income by the time they are replaced and reproduce. Business interruption insurance will return to the insured the amount of profit that would have been earned had there been no fire. The cost of this insurance is similar to asset insurance rates.

Finally, insurance is designed to provide a safe guard against adversity and give peace of mind to those whose assets are vulnerable to the ravages of fire and other disasters.

### **Insurance checklist**

A check list of items to remember includes:

- home buildings
- farm buildings
- machinery (mobile and fixed, including breakdown)
- fencing
- all major crops including re-sowing subsidy
- livestock
- electronic equipment
- working dogs.

### **Questions to ask when considering insurance**

What is the risk of theft?

What is the history of destructive wind, hail, flooding and fire in my area?

Are there ways I can mitigate or reduce those risks before taking out insurance cover?

Does my operation require straying stock cover?

Does my farm have unique or uncommon operations, such as GM crops, hydroponics etc.  
Are these operations covered?

Does my operation require public liability insurance?

If my farm ceases to provide an income or ceases production, should I consider business interruption insurance?



## Further information and contacts

For more information, including the Information Notes referred to in this booklet, visit the DPI website at [www.dpi.vic.gov.au](http://www.dpi.vic.gov.au) or call the DPI Customer Service Centre on 136 186.

To obtain free copies of *On the Land* and other useful documents related to fire safety and management, visit your local CFA office, visit the CFA website, [www.cfa.vic.gov.au/business/farms](http://www.cfa.vic.gov.au/business/farms), or call CFA Community Safety on (03) 9262 8444.

Victorian Department of Human Services (DHS) contacts during office hours:

Barwon-South Western	5226 4540
Gippsland	5177 2500
Grampians	5333 6669
Hume	5722 0555
Loddon-Mallee	5434 5555



