# HorsesLandWater

## Management Guidelines

to accompany the

***HorsesLandWater***

***Action Planner for Horse Properties***

- **Whole of property management**
- **Paddock management**
- **Management for intensive horsekeeping**

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# HorsesLandWater
Management Guidelines

## Introduction

Horse property managers are recognising more and more the value of good environmental management. They are facing increasing scrutiny of their environmental management performance from regulatory government agencies, from external stakeholders, and from neighbours and industry peers. All would like to see horses kept in a sustainable manner with minimal adverse impact on the environment.

In addition, awareness has increased regarding the relationship between enhanced horse health and environmentally-conscious land management.

This document is designed to support the Action Planner and to act as a stand-alone information source.

## About the project

Throughout several ongoing environmental awareness raising efforts by the horse keeping community (led by HorsesLandWater), it has been recognised that a vital component in making a difference in true on-ground improvements is the presence of targets for desirable environmental land management practice(s). The following underlying principles led to the need for developing management guidelines for the horse keeping community:

- Environmental (on-ground) outcomes can potentially be achieved in a more straightforward manner if the pathway to those outcomes is known and has general horse industry support (e.g. what practice is likely to achieve outcomes).
- Management guidelines for horse property owners, if developed in conjunction with and endorsed by government agencies, will provide important steps in enhancing government's confidence in the commitment of the horse keeping community to environmental management
- Horse keepers will be more likely to take action to undertake sustainable planning and management practices when assisted by a horse industry body (e.g. Horse SA or WA Horse Council) and advised of the links with horse health.
- Best practice principles will provide clear messages to horse property owners as to which practices will have a greater possibility of meeting their 'environmental duty of care'.
- If underpinned by a structure that allows monitoring of application of these practices and environmental improvements, best practice guidelines have the potential to act as a target-setting protocol.
- The horsekeeping community has been identified as drawing more benefit from best practice advice rather than self-directed risk assessment procedures.
- Assisting landholders to comply with current regulatory requirements by providing them with a framework for environmental improvements.

Therefore, through extensive consultation which involved surveys, a number of workshops, field days, testing of practices and the recording of collective experiences, this 'Management Guidelines' document has been put together.

We hope you, your horses and the property on which your horse lives benefit from the information contained within.

## How to use these guidelines

These guidelines are designed to be used in conjunction with HorsesLandWater's *Action Planner for Horse Properties* to assess and continually improve environmental management.

This publication consists of a series of topics for each of the 30 topics in the Action Planner. For each topic, there is some brief background information, a statement of best practice, practical step-by-step guidelines to help you improve your current practices, and links to helpful resources and further information.

First, work through the Action Planner and identify which management topics will help you make improvements on your horse property (available from www.horseslandwater.com).

Next, look at the corresponding topics in this publication to help you develop action plans for your property. There is an action plan template at the back of the Action Planner.

For some management issues, you may need to get professional advice for more detail and to help you work out what is best for your horse property.

Congratulations for taking the first steps. Your horse – and the environment – will say thanks!

# Foreword

Being the owner of a thoroughbred stud and a passionate breeder of horses, I am a great believer that the country on which they run needs to be the best for them. There is nothing more important than the environment which both humans and horses share.

As horse property managers, regardless of where we are located in Australia, there is always an opportunity to improve our land and management practices. Our horses reflect the land. There is truth in the saying "healthy land, healthy horses".

It is our challenge to learn about the soil, about water, and appreciate good pastures in the same way we learn about our horses and delight in their athletic prowess, every day watching them grow and play is an integral part of the complex ecological matrix of which we are all embedded.

This 'Management Guidelines' for horse properties and the supporting resource booklet 'Action Planner for Horse Properties' will act as guides to evaluate the property your horse lives on. Use these documents to start your journey of thinking, watching, and to take the first of many small steps towards a horse property which enhances the natural assets already present.

Talk to your friends, look around you at what is working well on properties, don't be afraid to ask questions, look for answers, and share the experiences and knowledge with other horse owners in your district, your catchment managers and your horse industry.

It is our responsibility to ensure that we are doing all we possibly can to protect our land and develop new sustainable farming practices. We must be mindful of how we manage our properties and run our horses on it ... if we fail to do so then there will be bleak times ahead for our future generations.

*Gerry Harvey*
*Baramul Stud, Widden Valley, NSW*
*Chairman, Magic Millions Sales Pty Ltd*

# Contents

# What is a catchment?

A catchment is an area of land that catches rainfall, and directs it to a creek, river, dam or gutter, which eventually flows out to an ocean or lake.

Water is the link throughout the catchment. As well as rivers, creeks, lakes, dams and reservoirs, a catchment also includes groundwater, stormwater, waste water, and related infrastructure (including sewage pipes and treatment systems).

It is important to maintain a healthy catchment to ensure watercourses:

- can support aquatic life such as fish, frogs and insects;
- can supply safe drinking water for communities, and
- are available for recreational use.

Everybody lives and works in a catchment, so we all have a responsibility to look after the environment within our local catchment.

All properties need to be well managed to prevent pollutants (including sediments from soils, nutrients from manure and fertilisers and chemicals from pesticides or veterinary products) from damaging the surrounding environment and/or entering watercourses or groundwater.

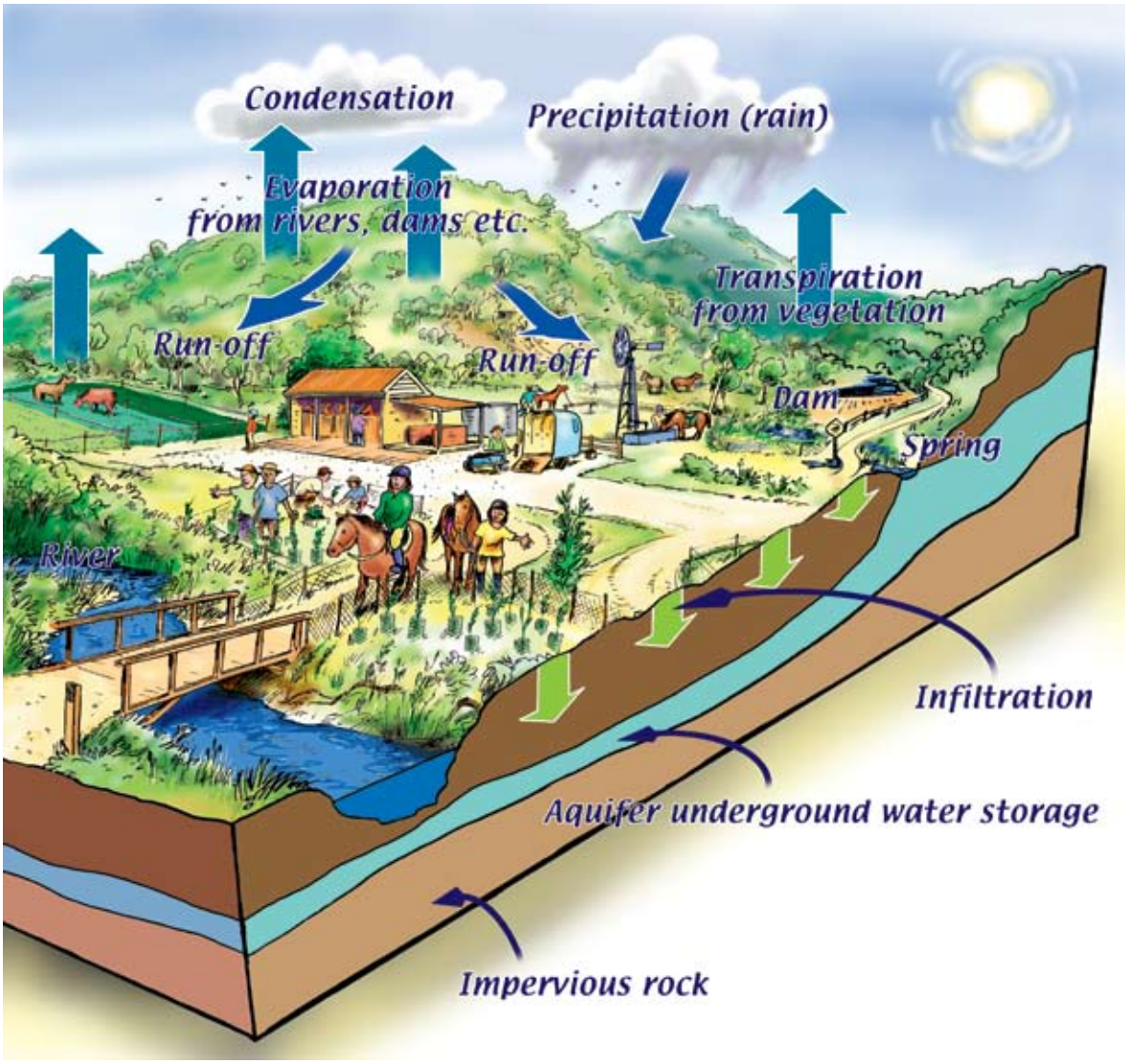
The way you manage activities on your horsekeeping property can have a direct impact on the surrounding environment and the quality of the water that runs off your property, which in turn has an impact on your catchment's health. These include activities such as:

- soil health, pasture composition and groundcover maintenance;
- weed control;
- manure management;
- storage and application of veterinary products and chemicals; and
- horse access to and across watercourses.

A horse property that practises sound environmental management will have quality pastures, low incidence of weeds, habitats for native birds and animals and well-maintained watercourses. Sound environmental management not only translates into healthy land but also provides an environment that will have positive impacts on the health of the horses that live on such a property.

It is important to understand how activities on your horsekeeping property can be managed to prevent poor water quality in your catchment and promote horse health. Once issues are identified you can then begin working towards managing activities on your property to reduce or prevent pollutants harming the surrounding environment and catchment.

These guidelines, along with the *Action Planner*, are designed to assist you to recognise any improvements in management practices that will promote catchment health on your property.



# Whole of property management

Property management plan
Horsekeeping systems
Development and related approvals
Siting of stables, yards, trails and intensive work areas
Fire prevention planning
Emergency response planning
Habitat for native plants and animals
Storage and transport of veterinary products and chemicals
Application and disposal of veterinary products and chemicals
Preventing weeds entering or leaving the property
Pest animals
Disposal of deceased horses

# 1 Property Management Plan

## Introduction

A Property Management Plan (PMP) is a working plan of the design and management of the horse property, that is based on the property's physical resources, the activities (e.g. breeding, sports horses) that are undertaken on the property, your goals and financial factors.

A well thought out and workable PMP for a horse property has great potential benefits. It will help ensure:

- you achieve your personal goals for your horse property and lifestyle,
- the natural resources on your property (and the surrounding environment) are well managed and protected, and
- the specific requirements and personal goals of your horsekeeping enterprise are met.

A well-designed PMP will set out future property improvements, or management changes, that are achievable for you.

Many horse property managers are probably already doing many of the things that would be included in a PMP, but may not have put these down 'on paper' as a formalised plan. Others might have done some sort of property plan but it might need updating.

A PMP for a horse property would look at ways you can eventually reach the 'best practice' outcomes that are in HorsesLandWater's *Action Planner for Horse Properties*.

Having a documented PMP is often an advantage when you need to apply to local council or other agencies for approval to put up shelters, riding arenas and stables or make other changes to your horsekeeping enterprise (see *Development and related approvals* – page 10).

The best result though, is knowing that our horses are gaining benefit from good pasture cover, shelter, good water quality and are staying healthy due to mud, dust and other environmental factors which can contribute to overall health being reduced or eliminated.

### What is land capability ?

Land capability refers to the ability of land to be used for a particular purpose (or managed in a particular way) without suffering degradation.

Different types of land have different land capability depending on factors such as soil type, slope, drainage, rainfall etc. For example, steep land with clay soil that gets soft when wet cannot withstand having as many horses kept on it as flat, well-drained land.

The key is to recognise the factor/s that are present (and how minor or severe they are) that limit land capability for horsekeeping on any piece of land.

The main land capability factors that are important for horsekeeping are:

- Potential for soil erosion
- Susceptibility to waterlogging
- Soil strength e.g. soft when wet or dusty when dry
- Saline areas
- Soil pH (although acidity can be overcome)
- Rockiness
- Streambanks, watercourses etc.
- Terrain – different slopes and aspect

A land capability class map of the property is one of the main steps in a property management plan.

### Best Practice

**A Property Management Plan for the management of natural resources on the horse property is in place, is actively used and is reviewed (updated) annually.**

*Developing or updating a Property Management Plan ... "should not be a difficult task".*

## Steps to achieve best practice

### How to develop a Property Management Plan

Developing (starting from scratch) or updating a PMP for a horse property should not be a difficult task.

Technical assistance and other resources can be accessed to help horse property owners do this (see links, Page 47), or you can do it yourself. Involving members of your family, staff or clients (if agistment is your business), will give a greater chance of success in the uptake of the agreed final PMP.

The basic steps are outlined as follows:–

- Write down your personal vision (lifestyle, time and money) and farm vision (type and number of horses and horsekeeping system) for the property, taking into account short and long term goals.
- Purchase an aerial photo or detailed map of your property, and at least four sheets of clear plastic overlay (available from survey suppliers).
- On the first overlay sheet placed over the aerial photo of the property, draw the property's physical features (hills/flats, drainage lines, creeks, dams, rock outcrops, vegetation etc).
- On a second overlay, draw the boundaries of the land capability classes on the property. Land capability classes are the different types of land on the property such as flat land, steep land, waterlogged areas, rocky areas, saline areas, and different soil types etc (see *What is land capability?* at left).
- Look at options to best match your horsekeeping system (i.e. paddocking with/without hand feeding, yarding etc. – see *Horsekeeping Systems* – Page 8) or other land use enterprises with the different land classes on the property. For example, have grazing paddocks on good land, restrict horse access to steep land etc, retain native vegetation on rocky land and creekline areas, plan to fence off watercourses.

- On a third overlay sheet, draw the existing property layout (fences, shelters, troughs, raceways etc).
- Draw up a fourth map overlay of your future, 'realistic' or 'improvement' property layout, based on how you could best accommodate your future horse management on the property with the resources available to you (especially time and money). Your aim should be to eventually reach the best practice standards for horse management as outlined in this publication.
- Write down, in priority order, the activities you plan to undertake to implement your 'realistic' property plan over a reasonable timeframe (say 3-5 years). This would take into account time, money and other commitments.
- Work out ways you can monitor the health of the property (e.g. soil testing, periodic pasture cover assessments, or photo points).
- Include contingency measures for emergencies, and build these into the plan.
- Don't let your PMP gather dust on a shelf, but actively use and implement it, and review or update it regularly. Talk about the plan with the rest of your family, or others who live or work on the property, and make sure everyone knows how they can help with putting it into practice.


*Aerial photo with overlays for various features.*

# 2 Horsekeeping systems

## ● Introduction

An important decision to make when deciding how to best manage your property is how many horses you keep and how they are housed and fed.

The choice of the horsekeeping system (i.e. paddocking with/without hand feeding, yarding etc. see 'Horsekeeping Systems' box) for any property needs to take into account:

- the 'capability' of land on the property (see 'What is land capability', on *Property Management Plan* – Page 6) – how many horses can be kept without degrading the land;
- how much time, money and other resources e.g. available yards, are available; and
- the type of horse enterprise (e.g. showjumpers, racing etc).

As more horses are kept on a given area of land, more time, money, management and facilities are needed for it to be a successful enterprise.

A realistic approach needs to be taken so that the horse property can be well managed within budget and time constraints, and to meet your personal goals, so that the horses are healthy and there is no risk of harm to the land or the environment.

## ● Steps to achieve best practice

### Step 1

**Identify the land capability of your property.**

If you have a good understanding of the soils on your property and their limiting factors for management, plus rainfall, slopes and location of watercourses, then you already have some understanding of the land capability.

Land management advisers and rural consultants can help you to assess land capability on your property and assist with planning stocking rates, property layout and management.

As a guide, if some parts of your property have any of the following factors, these are the types of land capability classes you have:

- potential for soil erosion
- susceptibility to waterlogging
- soil strength e.g. soft when wet or dusty when dry
- saline areas
- soil pH (i.e. acid, neutral or alkaline, although acidity can be overcome)
- rocky areas
- streambanks, watercourses
- terrain – different slopes and aspect

On land where horses are kept, land capability falls into three main categories, which are recognised as:–

1. All-year access: land that has no significant constraints, and horses can be kept on it most of the time, except when spelling pastures etc.
2. Restricted access: land with significant land capability limitations (e.g. winter waterlogging, steeper slopes) and horses are only allowed access at certain times when conditions are safe.
3. Prohibited access: land that is not suitable for horses, such as steep slopes in high rainfall areas (1,000 mm+), sandhills, saline areas, creek lines and areas of native vegetation.

**Best Practice**

**The number of horses on the property and the management system used is determined by the land capability and the needs of the horse property manager.**

*High input system.*

### Horsekeeping systems

- **Low input system (paddocking, no hand feeding)** – does not require stables or yards or a daily input of labour, but does require pasture management throughout the year.
- **Medium input system (paddocking, hand feeding)** – has stables or yards for routine management – e.g. horses may be stabled when the paddock cannot withstand hoof activity or paddock cover is too low.
- **High input system (yarding)** – has stables or yards where horses spend the majority of their time, and may only spend a few hours a day in the paddock or being exercised.

### Step 2

Work out your property's 'nutritional potential' (also called 'stocking rate' or 'carrying capacity').

To work out the nutritional potential or stocking rate of your horse property:

1. Find out the 'nutritional potential' in dry sheep equivalents ('DSEs' – see explanation in box below) of typical pastures for your district. You may need to consult your local Department of Primary Industry.

**DSEs**

The livestock carrying capacity (including horses) or 'nutritional potential' of land is referred to in units of 'DSEs' (Dry Sheep Equivalents). The DSE is the number of dry adult sheep that can be kept on one hectare of good dryland pasture without supplementary feeding year after year.

One DSE is the nutritional requirement of a 50 kg wether, but it can also be thought of a measure of the amount of grass that will grow.

The DSEs of horses are generally accepted to be:

| | |
|---|---|
| Light | 10 |
| Draught | 14 |
| Ponies | 6 |

2 Estimate the total nutritional potential of your property by multiplying your district's DSE with the number of hectares of horse grazing access on the property (taking into account the months of the year horses can use restricted access areas). See the following example:

**Example:**

(Cherry Gardens, South Australia –
10 DSE and 900 mm average annual rainfall):

| | | |
|---|---|---|
| Area 1 | 3 ha x 12/12 months (all year access) | x 10 DSE = 30 |
| Area 2 | 2 ha x 9/12 months (restricted access) | x 10 DSE = 15 |
| Total for property | | = 45 DSE |

If you are going to keep light horses (10 dse each), then the potential stocking capacity is 45/10 = 4.5 horses on the 5 ha property.

**It is important to note that the actual (sustainable) stocking capacity is a function of your horsekeeping system (see below), local differences in land capability, seasonal variations in rainfall, and your land management adjustments to those factors.**

The actual nutritional potential of your pastures may be lower than this if pastures are in poor condition or pasture production is restricted by soil factors (e.g. shallow soil, low soil fertility etc).

### Step 3

Work out the stocking rates you can use with your intended type of horsekeeping system.

Besides the nutritional potential of the property, the actual stocking rates used on horse properties depends on the type of horse management system used. This is generally:

**Low input system (paddocking, no hand feeding):**

- Has fewer horses than the nutritional potential (stocking rate) of the land, and
- does not require stables/yards or a daily input of labour but does require pasture management throughout the year.

**Medium input system (paddocking, hand feeding):**

- Has the same number or marginally more horses than the nutritional potential of the land, and
- has stables/yards for routine management – e.g. horses may be stabled when the paddock cannot withstand hoof activity or paddock cover is too low.

**High input system (yarding):**

- Has many more horses than the nutritional potential of the land, and
- has stables/yards where horses spend the majority of their time and may only spend a few hours a day in the paddock.

*Medium input system.*

*Low input system.*

## Notes

# 3 Development and related approvals

## Introduction

If you plan to keep horses on a property, or are considering making additions or changes to your existing horse enterprise, you may need certain types of prior approval because of State and local planning and development regulations.

It is important you contact your local Council to find out what regulations apply to your situation and what you will need to do to obtain the necessary approvals and permits for your development.

## Steps to achieve best practice

To identify what approvals you will need for your proposed horse enterprise or property improvements, the suggested course of action is:–

### Step 1

Contact your Council planner to find out about development application requirements if you are considering:

- keeping horses (i.e. current land use is different)
- increasing horse numbers
- increasing horse numbers above previous approvals, or
- putting up stables, sheds and other structures including dams, or watercourse alterations.

You should also find out if you need to apply to any State Government agencies for permits, approvals or licences for your development. Your council planner may be able to tell you this, but you could also contact the agencies directly.

### Step 2

Apply as soon as possible to your Council, and provide all the information that is requested.

Follow up any queries as soon as possible to minimise delays.

At present, there is a lot of variation in the information that councils ask for regarding horsekeeping development applications, so you will need to find out in detail what your Council requires in your situation.

The following is a basic checklist of outcomes that you should take into consideration when planning (or modifying) a horsekeeping enterprise. These are the sort of things that councils may ask to be included in a horsekeeping development application, e.g. how you plan to:–

- Prevent soil erosion.
- Prevent water pollution.
- Prevent an increase in pest plants, pest animals or vermin.
- Prevent any significant odour production.
- Pervent excessive noise.
- Protect areas of significant native fauna and flora.
- Maintain the visual appeal of the area where it is located and be managed so as not to unreasonably affect adjoining properties.
- Satisfactorily contain the horse in a manner safe to the horse.
- Ensure the health and welfare of the horse.

**Best Practice**

**Approvals and permits are in place for horsekeeping and property improvements.**

*Prior approval may be needed before additions or changes to horse enterprises.*

*If a dam is being considered, your Council planning officer should be contacted.*

- Have access to safe exercise areas if horses are kept in stables or yards continuously (this may or may not be on the property).

### Step 3

Apply to any other agencies (if needed) for permits or approvals. Your local Council can advise on permit requirements. This may include for any dams or native vegetation clearance that you identified in Step 1. Do this as early as possible to minimise potential delays.

### Step 4

After development approval is given to you by the Council, you can proceed with your development. Any significant changes will need to go back through the planning system.

Likewise, once you have received any other approvals or permits, you can proceed with these developments.

## Notes

# 4 Siting of stables, yards and intensive work areas

## ● Introduction

Horse property facilities such as stables, yards and exercise areas need to be well designed and managed to avoid environmental and neighbourhood problems such as:

- excess odour (especially from urine),
- excess noise (potential concern to neighbours),
- rodents (attracted to stored feed and spilt feed),
- dust and mud, and
- pollution of water resources from water runoff.

(also see *Management of horse feeding, watering and congregating areas* – Page 33 and *Horse exercise areas and yards* – Page 38).

These potential issues should be considered when you are putting up new horse facilities or upgrading existing facilities, because of their potential impacts on your neighbours, and because of certain environmental regulations.

## ● Steps to achieve best practice

Suggested steps to take are:–

- Discuss your plans with your neighbours and if there are any issues, aim to negotiate a solution that is reasonable and meets both your needs.
- Design and manage stables to control odour from urine – install an impervious floor, regularly clean stable floors and replace bedding material.
- Set up horse facilities so that runoff is not contaminated with waste and cannot pollute water resources such as creeks and dams.
- Manage manure so that odour problems are avoided – regularly remove manure from stable collection bays and around intensive work areas.
- Surface high horse traffic areas with a suitable material that will prevent dust or mud problems.
- Keep horse feed in sealed containers, promptly clean up spilt feed, and use baiting for rodent control. It also helps to use large containers when feeding horses so that they don't spill much feed on to the ground.
- Design and locate stables, yards and ancillary buildings so that you will minimise potential noise and odour problems for your neighbours e.g. adequate buffer distance from neighbour's property/house.
- Install gutters on stables and shelters to control stormwater.
- When planning loading and unloading areas for horse floats, consider ways to minimise noise and odour for your neighbours.
- Look at maintenance, re-routing or upgrades for any trails utilised around the property, to ensure that water moves off the trail and does not form pools or erosion channels.

**Best Practice**

**Horse facilities are sited and managed with consideration given to convenience and potential environmental impacts, and through open communication with neighbours.**

*There are several issues to consider when siting new facilities.*

*Good design and management will avoid environmental and neighbourhood problems.*

## Notes

# 5 Fire prevention planning

## ● Introduction

The threat of fire is high for many stable yards, where the storage of hay, bedding and electrical faults can be potential causes of fires. There is a greater threat on horse properties that are located in rural areas with a high bushfire risk.

Fire authorities recommend that property owners (e.g. land size over 0.5 hectares) maintain a four metre break along boundary fence lines and around all outbuildings, and a 20 metre break around dwellings (under-storey vegetation kept at 10 cm height or less).

Local councils may give notice to a landowner requiring specific action to be taken to remedy a potential hazard. Failure to comply is an offence and the council may carry out the work and recover the cost from the landowner.

## ● Steps to achieve best practice

Suggested actions are: –

- Develop a fire prevention plan. This should outline the work required to help safeguard your property, and what actions should be taken on high fire risk days, and if a fire threatens. Your local fire service can assist in fire training and fire information.

  All property owners should be aware of and heed fire restrictions e.g. Total Fire Ban Days that apply in their districts.

  Your fire prevention program may include:–

  - Maintain adequate fire breaks around buildings (minimum 20 metres) and property infrastructure (minimum 4 metres), and manage excess fuel loads.
  - Store feed and other flammable materials safely on the property.
  - Make sure fire fighting equipment is on hand, in working order, and ensure staff are capable of basic fire control.
  - Ensure suitable sources of water are accessible for fire fighting on the property.
  - A fire emergency plan for the property. Ensure any staff or other people on the property are aware of the plan. This could include:
    - reporting a fire,
    - emergency plans for spot fires and approaching bushfires,
    - communication plans,
    - access for fire-fighting vehicles,
    - strategies for protection of livestock and property,
    - evacuation plans,
    - safe assembly areas for people and horses, and
    - emergency first aid facilities.

  In bushfire risk areas, horse property owners should consider:

  - How can I protect my horses and property from a bushfire?
  - What should I do when a fire threatens?
  - What should I do during and after the fire?

- Property managers should also cooperate with (and may contribute to) neighbourhood and district fire plans, and these should also be understood by staff and clients of such businesses as agistment centres.
- Plan for paddocks close to buildings and animals to be regularly grazed.

**Best Practice**

**A fire prevention program is documented and implemented throughout the year.**

*Rural property owners have a responsibility to undertake bushfire prevention measures.*

## Notes

# 6 Emergency response planning

## ● Introduction

Natural disasters such as flood, fire, strong winds, other weather events or an emergency disease outbreak may have the potential to occur in your area.

It is important to have an emergency response plan in place to ensure you respond to an emergency situation in a safe and effective way that will minimise harm. This is the best way to protect the family, horses and other livestock, property and assets. It is too late once the emergency starts.

## ● Steps to achieve best practice

### Step 1

Draw up an emergency response plan for your property. You should do this together with family or staff. Assistance with emergency planning can be obtained from organisations such as the Country Fire Service (CFS), State Emergency Service (SES), local Council, and State departments of agriculture.

Your emergency response plan should cover the range of emergency situations that could potentially occur on your property, such as:

- fire, including bushfire (see *Fire prevention planning* – Page 12),
- flood, drought, strong winds or storm,
- livestock disease outbreak, and
- accidental spillage or leakage of chemicals.

The South Australian State Emergency Service has a list of basic rules for emergencies:–

1. Be aware of threats from natural disasters to life and property.
2. List numbers of all essential and emergency services shown on the inside front cover of your telephone directory for quick reference.
3. Always ensure your transistor radio (battery operated) is at hand and working.
4. When you become aware that a disaster may occur, or has occurred, listen to your radio and follow official warnings and advice.
5. Always have available a torch for emergency lighting (naked flames could cause explosions).

### Step 2

Make sure all relevant people are aware of your plan – family, staff, visitors, neighbours and relevant authorities e.g. CFS.

### Step 3

Test your plan (e.g. do an emergency drill). This will identify any problems within the plan and will ensure all relevant persons are aware of and have participated in the implementation of the plan.

### Step 4

Review your plan every year and update it if needed.

**Best Practice**

**An emergency response plan is documented, communicated to all relevant people, and reviewed annually.**

## Notes

# 7 Habitat for native plants and animals

## Introduction

Most horse properties, particularly in rural areas, have significant native plant habitats and other areas which can be habitats for native animals, birds and fish.

Properties where horses are kept can contribute valuable habitat for our dwindling native plant and animal communities.

It is important that such habitats are preserved and managed on horse properties. There may be significant opportunities to enhance habitats on the property. The planning and management of these habitat areas should be a key part of the Property Management Plan.

Landowners have responsibilities to preserve and protect native vegetation, including forest, woodland, grasslands, wetlands and watercourses and should check with their local authorities.

## Steps to achieve best practice

The suggested steps to achieve this are as follows. These would be identified when you do a Property Management Plan.

### Step 1

Look at what is already on the property – native vegetation (including trees, shrubs and grasses), creeks, wetlands etc. which could be habitats for animals, and keep an eye out for native animals and birds on your property.

You can get advice on habitats from your local council, local Landcare group, Local Action Planning group, Natrual Resources Management Board or other natural resources management organisations that may be in your area.

### Step 2

Look at how you can manage and protect the habitats on your property:–

- The best way to protect native vegetation from decline, and to protect watercourses etc, is to fence these areas off to keep horses and livestock out.
- Control any weeds and pest animals that occur in these areas, because these can do a lot of damage to native vegetation.
- If you are using pesticides and chemicals in nearby areas, look at keeping a reasonable buffer distance between the spray area and the native habitat to avoid spray drift and prevent damage to the native vegetation.
- Keep to marked trails and track surface areas when exercising horses.

Some other options to consider that could help you protect significant stands of native vegetation on the property include:–

- Entering into a formal Heritage Agreement on a block of native vegetation, whereby a payment is made to the property owner, and the vegetation is fenced by the agency. This is a permanent agreement that applies to the property title.
- You may be able to apply for funding subsidies for fencing of existing vegetation or replanting of local native species on the property. Contact your local Landcare group, Local Action Planning group or other natural resources management organisations that may be in your area. Note that in some cases an informal management agreement may apply (e..g. for 5-10 years) to the fenced area of native vegetation, depending on the policy of the funding programs.

**Best Practice**

**Existing habitats are protected and enhanced for native plants and animals.**

*It is important that habitats for native plants and animals are preserved and managed.*

### Step 3

Consider ways you could expand or enhance the habitats on the property. You can get advice from bushcare advisers, Landcare or Local Action Planning coordinators.

Some ways to do this are:

- plant local native species,
- leave fallen hollow logs, and
- look at expanding vegetation areas to build on wildlife corridors in your district.

## Notes

# 8 Storage and transport of veterinary products and chemicals

## Introduction

It is important to store and transport chemicals correctly to avoid any harmful effects to yourself, other people, your horses, your property and the wider environment.

Agricultural and veterinary products include many veterinary products, fertilisers, pesticides and fuel which may be used on horse properties.

Property managers need to be aware of, and comply with, regulations that apply to the storage and transport of chemicals and veterinary products. Acts with environmental provisions place a duty of care on anyone who uses or disposes of agricultural and certain veterinary chemical products and fertilisers.

The correct procedures for safe storage and transport of chemical and veterinary products are given on the container labels, or on Material Safety Data Sheets (MSDS) (available from retailers or manufacturers) for any product.

## Steps to achieve best practice

Suggested steps are:–

- Read the labels of any veterinary or chemical products you currently have, or intend to obtain, so that you understand the correct/appropriate methods for storing and transporting them.
- If you are not sure of some aspects, or need more information about any product, speak to the supplier of the product and, if it is appropriate, contact your veterinarian, department of agriculture or the local Natural Resources Management Board.
- Check with your local Natural Resources Management Board to see if there are any guidelines that apply to using particular chemical products in your area.
- Make sure you have a suitable safe, secure area to store your veterinary and chemical products, including any that are hazardous e.g. chemical storage shed with concrete floor or lockable rodent-proof cupboard.
- Always transport chemical products according to the label instructions.
- Work out an emergency response plan for chemical spills or leakage on your property and have spill response equipment (e.g. absorbent material) located close to the storage area. This should ensure that any spillage does not harm the environment; for example, by preventing the contamination of runoff water/stormwater or groundwater or other water resources.

**Best Practice**

**Veterinary products and chemicals (pesticides, fertilisers etc.) are stored and transported according to labels, relevant legislation and recommended guidelines.**

*There is a duty of care on anyone who uses or disposes and agricultural and certain veterinary chemicals.*

## Notes

# 9 Application and disposal of veterinary products and chemicals

**Best Practice**

**Veterinary products and chemicals (pesticides, fertilisers etc) are applied and disposed of according to labels, relevant legislation and recommended guidelines.**

## ● Introduction

It is important to use and dispose of chemicals correctly to avoid any harmful effects on yourself, other people, your horses, your property and the wider environment.

Agricultural and veterinary products include many veterinary products, fertilisers, pesticides and fuel which may be used on horse properties.

Property managers need to be aware of, and comply with, regulations that apply to the use (application) and disposal of chemicals and veterinary products. Acts with environmental provisions place a duty of care on anyone who uses or disposes of agricultural and certain veterinary chemical products and fertilisers. Any person using or disposing of these products needs to take appropriate measures such as observing label instructions, giving consideration to prevailing weather conditions and maintaining equipment used for applying them.

Each State of Australia has its own Act and Regulations pertaining to agricultural and veterinary products. In many States, some chemical products are classified as 'Restricted'. Only persons who are authorised and have specific qualifications and training (e.g. your veterinarian) are allowed to obtain and use these products, according to what is stated on the product label.

The correct methods for using and disposing of these products are written on the product labels, on relevant guidelines (e.g. in South Australia, EPA draft 'Lifestyle Landholder Guideline for Pesticide Use' 2005) and on the Material Safety Data sheets (MSDs) that apply to any particular product.

In some areas, there may also be codes of practices or guidelines available that specify what products can or cannot be used in particular areas such as watercourses.

Often there are services available for the disposal of used chemical and veterinary product containers, such as 'Drum MUSTER' and hazardous household waste disposal days in various Council areas. Unwanted chemicals can be disposed of through the ChemClear program run by Agsafe.

*The correct methods for using and disposing of agricultural and veterinary chemicals are written on the product labels.*

## ● Steps to achieve best practice

A suggested checklist for action is:–

- Read the labels of any veterinary or chemical products you currently use, or intend to use, so that you understand the correct methods for using and disposing of them.
- If you are not sure of some aspects, or need more information about any product, speak to the supplier of the product or contact your veterinarian, State department of agriculture, Environment Protection Agency or local Natural Resources Management Board.
- Check with your local Natural Resources Management Board to find out if there are any guidelines that apply to using particular chemical products in your area.
- Before using any 'Restricted' chemical products, make sure you have or obtain the necessary licence e.g. Chemcert or equivalent.
- Make sure you have a suitable safe area to use for preparing and cleaning up chemical products e.g. chemical storage shed with concrete floor and sump.
- Make sure you have the right sort of equipment (including safety clothing etc) for applying the products, and that it is properly calibrated and kept in good working order.
- Always apply chemical products according to the label instructions. Consider weather conditions etc. when applying herbicides, for example to avoid spray drift problems.

*Make sure you have the right equipment (including safety clothing) for applying products..*

- Make sure you clean and dispose of used chemical and veterinary product containers according to label instructions. Find out about and use any services available in your area to dispose of used chemical containers, such as 'Drum MUSTER'.
- Use a service such as ChemClear to dispose of unused chemicals.
- Work out an emergency response plan for chemical spills, poisonings or leakage on your property. This should ensure that any spillage does not harm the environment e.g. not contaminate runoff water/stormwater, groundwater or other water resources.

## Notes

# 10 Preventing weeds entering or leaving the property

## Background

Weeds on horse properties (see *Weed Identification and Control* and *Proclaimed Pest Plants* – Pages 26 and 27) are a concern because some species are toxic to horses. Weeds growing in pastures reduce the amount horses can graze as they take the place of desirable, edible pasture plants. Weeds also do environmental harm if they grow in native vegetation.

An important aspect of weed control on horse properties is the risk that weeds can be imported on to the property through:

- hay,
- feed contaminated with weed seeds, and
- contractors coming in to cut hay or undertake other work.

Equally, weeds can also be exported from the property by these means. Most weeds actually don't enter properties via horses – it is usually via purchased hay, bird droppings, water and wind.

Declared (proclaimed) pest plants need to be controlled on the property, according to legislation (see *Proclaimed pest plants* – Page 27).

## Steps to achieve best practice

It may not be possible to completely prevent weeds entering the property, but reasonable steps that can be taken are:–

- First, identify any weeds that are already on the property, and make sure these are actively managed or controlled.
- Find out what weeds are known to occur in your district/ region, and which would be a problem if they came on to your property.
- Isolate/quarantine new horses coming onto the property for 10-14 days. It is good practice to isolate new horses for 10-14 days after arrival to ensure that they are healthy and not harbouring any disease or other problems. This will also ensure that any seeds from unknown plants present in the horse's gut system, or residue from unknown veterinary drugs, will pass through. Manure is collected and stored separately as part of the waste management and quarantine program.

  It should also be noted that grooming and cleaning the hooves of horses moving off and on to properties will assist in managing the introduction of other plant diseases, such as Phytophthora or Branched Broomrape.
- When buying hay, try to get hay that is weed-free, or at least that comes from a property that is known not to have a weed problem. Depending on the property size and enterprises, it may be possible to grow and cut some hay on your property.
- Make sure any other horse feed, or feed for other stock you get, is weed free.
- Designate a carpark area for visitors and entry/exit point for the property for contractors and visitors and surface it to manage erosion and act as a barrier for weed seeds.
- Speak to contractors about your concerns and provide a cleaning down area for machinery if this is determined necessary.
- Put up signs or use other means to communicate your weed quarantine precautions to clients, visitors etc.

**Best Practice**

**An active program to prevent weeds entering or leaving the property is in place.**

*Some species of weeds are toxic to horses.*

*The paddock above was clean and extensively sprayed for five years, but one round bale purchased from a fodder store was fed into the paddock for one week – this was the result.*

*The same paddock the following year ... after spraying, reseeding and careful grazing management.*

## Notes

# 11 Pest animals

## ● Introduction

Many introduced animals such as rabbits, foxes, feral goats, starlings and sparrows cost many millions of dollars each year due to the harm they do to the natural environment and to primary production. Horse properties are at risk of harm from these pest animals.

Their harmful effects include grazing and destruction of vegetation, damage to crops and pastures, preying on livestock, harm to native animals and their habitats, and indirect effects such as soil erosion and decline of water quality. The presence of pest animals can also reduce the value of land.

Rabbits for example can still cause a lot of damage even in low numbers. Rabbits are still a major concern despite the impacts of the rabbit calicivirus disease. Foxes and cats are considered to be major threats to biodiversity in many areas through their impact on native animals.

Rabbits, foxes, feral goats and deer are declared (proclaimed) pest animals in some States, where property owners have responsibilities to control pest animals.

Horse owners need to check with their local authorities in relation to what are pest animals in their areas.

## ● Steps to achieve best practice

A suggested checklist for action is:–

- Find out what pest animals are known to occur in your district, and which of these you should be prepared to control on your property. Your local Council or Natural Resources Management Board should be able to give you this information.
- Keep an eye out for and identify any pest animals on your property, including signs of their presence.
- Find out from your local Council or Natural Resources Management Board the recommended methods and strategies for controlling any pest animals on your property, which will depend on your property location (e.g. properties near urban areas may need different strategies to rural areas).
- Carry out the recommended pest animal control strategies for each type of pest animal that applies to your property. This may mean taking particular measures at specific times of the year, or at times when pest animal numbers reach a certain level.
- Regularly monitor pest animal activity, and modify your control programs accordingly.

**Best Practice**

**Pest animals are identified on the property, and a pest specific control program is in place.**

## Notes

# 12 Disposal of deceased horses

## Introduction

Disposal of deceased horses is an important issue that horse owners should plan ahead for in order to avoid emotional and financial stress when the necessity arises.

Horses may need to be destroyed at short notice as a result of accident, illness or injury. Disposal of deceased horses both on-property and off-property should be considered.

Burying horses in watershed areas is not encouraged as the decomposition process can lead to pollutants leaching into groundwater.

## Steps to achieve best practice

Suggested actions are:–

- Discuss with the family ahead of time what you would like to happen and prioritise options. This may include:–
  - burial on the property,
  - burial off property,
  - euthanasia by your veterinary surgeon,
  - commercial stock collection and disposal service,
  - transport to a slaughterhouse,
  - cremation, or
  - prior arrangement with the zoo, hunt club kennels or other business which may have requirements for a deceased horse.
- Deceased horses can be appropriately buried on the property. When selecting a burial sites:
  - check with your local Council as to its requirements,
  - avoid environmental impacts – locate as far away from watercourses and sources, drainage lines and shallow groundwater as possible, and
  - ensure there is enough space and spacing of pits for the number of burials required.

**Best Practice**

**A plan exists for the suitable disposal of deceased horses.**

*Plan ahead for old horses.*

## Notes

# Paddock management

Maintain groundcover
Pasture composition
Weed identification and control
Proclaimed (declared) pest plants
Seasonal wet areas, wet seeps and drainage lines
Steep slopes
Management of manure
Fence line tracking
Management of horse feeding, watering and congregating areas
Shade and shelter
Management of watercourses (including erosion gullies and dams)
Stock crossings

# 1 Maintain groundcover

## ● Introduction

Groundcover on horse properties includes living plants (pasture, natural vegetation) or dry plant residues, stones or gravel etc., or even manure. It is important that there is adequate groundcover on properties to prevent the risk of soil erosion by water or wind and to reduce dust which can lead to problems with horses' health.

Soil erosion by water (i.e. rain washing soil from the paddock) can result in pollution of water in creeks and dams and cause dams to fill up with silt. Soil erosion causes loss of the most fertile part of the soil, which reduces pasture growth. Other effects of soil erosion are the build-up of soil on fences and roads, and dust storms.

Bare soil in paddocks is also a problem because it increases the risk of horses getting sand colic. Dust also increases the risk of horses getting respiratory tract infections.

On horse properties, soil erosion is most often a problem in places where horses congregate and bare spots develop as a result, such as near gateways, along fencelines, feeding areas etc. Steep slopes and watercourses are more susceptible to erosion. There is a higher risk of soil erosion when pastures are resown if the soil is cultivated or there is no plant cover.

In many States, property owners have a responsibility to take reasonable steps to prevent land degradation (such as soil erosion).

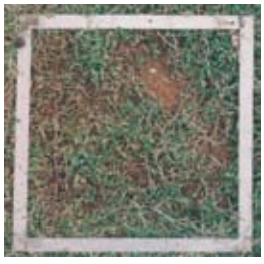
## ● Steps to achieve best practice

Suggested steps are:–

### Step 1

Measure the groundcover level in your grazing paddocks at least twice a year, e.g. at the end of winter and the end of summer. Percentage groundcover means the proportion of the soil surface that is covered by plant material or similar.

One way to measure percentage groundcover is the 'wire' method (see box at right).



*Illustrations of different degrees of ground cover – 50% (above) and 70% (below).*

**Best Practice**

**All grazing areas have ground cover of at least 70% (for soil susceptible to water erosion) or 50% (for soil susceptible to wind erosion*) at least 3cm high throughout the year.**

*It is important that there is adequate groundcover ... to prevent the risk of soil erosion.*

If the groundcover levels on grazing areas are less than adequate, this may be due to one or more reasons, such as low soil fertility or unsuitable soil pH, lack of desirable plants in pastures or aspects of pasture management such as grazing management.

### Step 2

Assess soil fertility and soil pH levels.

Desirable pasture plants (see *Pasture Composition* – Page 24) need reasonably good soil fertility levels as well as a soil pH that is not strongly acidic.

**Wire method of measuring groundcover**

1. Take a straight piece of fencing wire that reaches approximately to your shoulder height.
2. Bend one end of the wire to form a handle.
3. Choose a representative path across the area you want to measure for groundcover.
4. Hold the wire at arm's length and shoulder height, with the tip straight down, but not touching the ground.
5. Looking straight ahead along the transect line, take two steps along the transect.
6. After the second step, while still looking ahead, lower the point of the wire to the ground.
7. After the wire has contacted the ground, look down and record the presence (yes) or absence (no) of surface cover directly under the point of the wire.
8. Repeat steps 4 - 7 until you have recorded 25 sample points (or more) along the transect.
9. The percentage groundcover = number of 'yes' points divided by the total number of points, then multiply by 100.

From: *Field method for measuring soil surface cover* – PIRSA Fact Sheet No. 8/2001 Agdex 571

- Undertake regular (e.g. every few years) soil tests for fertility and pH. Advice and assistance for soil testing is available from departments of agriculture, rural merchandise outlets, rural consultants and fertiliser companies.
- Apply fertiliser and/or lime. based on those soil test results Fertiliser is usually applied in April-May, and lime can be applied at any time of the year that you have access to paddocks. Pastures usually need 'maintenance' dressings of fertiliser each season to maintain good condition.

### Step 3

Ensure that pastures have a good composition of desirable pasture species (also see *Pasture Composition* – Page 24).

Pastures that have a lot of weeds and annual plants quickly become bare over summer, whereas perennial plants give good groundcover through summer.

- Identify the amount of desirable pasture plants and weeds present in your pastures. Assistance for pasture species identification and pasture management is available from rural consultants.
- If pastures are mainly weeds and/or annual species, consider re-seeding pastures with recommended pasture seed mixes.
- Control weeds where necessary (also see *Weed identification and control* – Page 26).

### Step 4

Make sure that pastures are rotationally grazed evenly and not overgrazed.

- Pastures must be rotationally grazed to maintain strong growth. This means putting horses in a paddock only for a certain period, then moving them to another paddock to spell the pasture. For best results, grazing should start when pastures grow to 10-15 cm height, then pastures should be spelled when the pasture has been grazed down to 3-5 cm height.

  Grazing pastures down below 3 cm height weakens perennial grass plants, and groundcover levels may get too low. Rotational grazing is easier if there are many smaller paddocks on the property rather than a few large paddocks.
- Manage excess manure in grazing paddocks (see *Management of Manure* – Page 31) so horses graze pastures evenly and the pasture doesn't become rank in patches.
- Rotate the position of feeding areas and troughs so they are always on well-covered ground.
- Hand feed, stable, or consider agistment at times before groundcover levels in paddocks get too low.
- Prevent fenceline 'tracking' (see *Fence Line Tracking* – Page 32) by using double fencing or by keeping more than one horse in grazing paddocks.
- Pay special attention to areas where horses congregate (gateways, along fence lines, feeding areas) as they are more likely to bare the soil there.
- Be especially vigilant of groundcover levels in fragile areas (steep slopes, watercourses, wet soil areas) as these can be damaged more easily by horses. Remove horses immediately when there are signs of damage to the pasture or before groundcover levels get low.

Also, consider surfacing roads, tracks, yards and other high horse-traffic areas to prevent erosion, dust and mud and manage stormwater runoff.

## Notes

# 2 Pasture composition

## ● Introduction

Pastures that have good quality plants will provide the best grazing for horses, and will provide good ground cover, which will help protect the soil from erosion.

Without good pasture management, most pastures tend to deteriorate over time and become weedy where horses are grazed.

Weedy pastures provide relatively poor feed for horses. Weeds can also present risks because some weeds (e.g. Salvation Jane/Paterson's Curse) are toxic to horses.

Weedy pastures also tend to die off quickly in spring and don't leave much groundcover through summer-autumn. Bare patches in grazing paddocks can increase the risk of horses getting sand colic.

Good quality pastures for horse grazing should ideally consist of:

- 70% - 80% desirable pasture grasses,
- 20% - 30% legume species (see 'Legumes' box below), and
- less than 10% weed species (no proclaimed weeds should be present).

**Legumes**

Examples of legume plants in pastures are subclover, medic, and lucerne. Legumes get nitrogen from the air by 'fixing' nitrogen in special nodules in their roots. Legumes growing in pastures help maintain good nitrogen nutrition in the soil, so less nitrogen fertiliser needs to be applied.

Legumes in pastures also provide nutritious feed for grazing animals.

## ● Steps to achieve best practice

The following steps are suggested:–

### Step 1

Identify the amounts of desirable pasture plants and weeds present in your pastures. You can get assistance for pasture species identification and pasture management from rural consultants and advisers (see links).

If your pastures have reasonable numbers of desirable pasture plants, but there is room for improvement, good pasture management may be enough to get the right pasture composition, i.e. providing adequate soil fertility and correct grazing management – see steps 2 and 3.

If your pastures are mainly weeds and/or annual species, you will probably have to consider re-seeding pastures (step 4) as well as steps 2 and 3.

### Step 2

Assess soil fertility and soil pH levels. Desirable pasture plants need reasonably good soil fertility levels as well as a soil pH that is not strongly acidic.

- Undertake regular (e.g. every few years) soil tests for fertility and pH. Advice and assistance for soil testing is available from departments of agriculture, rural merchandise outlets, rural consultants and fertiliser companies.
- Apply fertiliser or lime based on soil test results. Pastures usually need 'maintenance' dressings of fertiliser each season to maintain good condition.

**Best Practice**

**All grazing areas have quality pasture grasses and legumes with less than 10% weed species and no proclaimed pest plants.**

*Rotational grazing is easier if there are smaller paddocks on the property rather than a few large paddocks.*

*Consider re-seeding pastures with recommended pasture seed mixes.*

### Step 3

Make sure that pastures are grazed evenly and not overgrazed. If pastures are overgrazed or bare patches develop, this makes it easy for weeds to proliferate.

- Pastures. must be rotationally grazed to ensure strong growth. This means putting horses in a paddock only for a certain period, then moving them to another paddock to spell the pasture. For best results, grazing should start when pastures grow to 10-15 cm height, then should be spelled when the pasture is 3-5 cm high. Grazing below 3 cm height weakens perennial grasses, and groundcover levels may get too low. Rotational grazing is easier if there are many smaller paddocks on the property rather than a few large paddocks.
- Manage excess manure in grazing paddocks (see *Management of Manure* – Page 31) so horses graze pastures evenly and the pasture doesn't become rank in patches.
- Slash excessively tall pasture or cut for hay.
- Rotate the position of feeding areas and troughs so they are always on well-covered ground.
- Consider the option of cross grazing with cattle or sheep at times when pasture growth becomes uneven.
- Control weeds in pastures (see *Weed identification and control* – Page 26).

### Step 4

Consider re-seeding pastures with recommended pasture seed mixes. You can get assistance for choosing pasture seed mixes to best suit your property, and pasture sowing and management advice from rural consultants and advisers.

Try to include perennial pasture species and legume species that are suited to your area.

In many area, species that can be considered include phalaris, cocksfoot, kikuyu and perennial ryegrass combined with a sub-clover. Within these species, there are different varieties suited to particular rainfall zones and soil types. It is recommended to resow pastures with 20 perennial pasture grass plants per square metre plus 60 subclover plants per square metre.

- If possible, re-seed pastures by 'direct drilling', especially on any ground that may be at risk of soil erosion. Direct drilling is where the seed is sown along with fertiliser into unworked ground. Usually, direct drill seeding implements are designed to cut a slot just along the row where the seed is sown, and leave the soil between the rows unworked. Usually a knockdown herbicide is applied to the old pasture before it is re-seeded.
- If your pastures only lack perennial grass plants or legume plants, it may be possible to just oversow either of these into your pasture, rather than completely re-seeding the pasture.
- Note that horses will need to be excluded from re-seeded paddocks for most of the first year. It may be more manageable to re-seed only some paddocks each year.
- On newly-sown pastures, be prepared to control pests such as red-legged earth mite otherwise this pest can quickly destroy the pasture.

## Notes

# 3 Weed identification and control

## ● Introduction

Weeds on horse properties are a concern because some species are toxic to horses, such as Salvation Jane/Paterson's Curse. Weeds growing in pastures reduce the amount horses can graze as they take the place of desirable, edible pasture plants. Weeds also do environmental harm if they grow in areas of native vegetation (i.e. choke out native species).

Abundant weeds usually indicate that pasture quality is poor, and may also be an indicator of low soil fertility or acid soil. Weedy pastures tend to provide poor soil cover particularly during summer/autumn. Also, weed-infested paddocks will produce poor quality hay containing weed seeds.

If there are any proclaimed (declared) weeds on the property, then these must be controlled according to legislation (see *Proclaimed Pest Plants* – Page 27).

Where possible, a range of methods should be used to control weeds (e.g. good weed hygiene on the property, good grazing management, re-seeding pastures) rather than just a single method (such as relying on chemicals).

An integrated weed control program is an important aspect of property management, and is one of the components of a property management plan.

## ● Steps to achieve best practice

Suggested steps are:–

### Step 1

Regularly inspect the property for weeds and identify which weeds are present. You can get assistance and advice on weed identification and control from rural consultants and advisers, and from your Natural Resources Management Board.

### Step 2

Carry out weed control programs for any problem weeds, using methods that are recommended for your area (especially proclaimed weeds). You can find this out from your Natural Resources Management Board, rural advisers or consultants. Consider using selective weed sprays in pastures (if required).

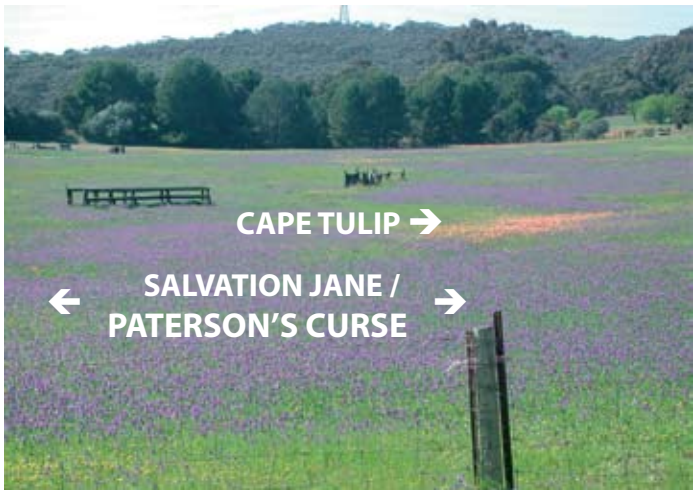
### Step 3

Ensure there is good weed hygiene on the property (see *Preventing weeds entering or leaving the property* – Page 18).

- Ensure as far as possible that any hay or feed brought on to the property is free of weeds and weed seeds.
- Quarantine new horses for 10-14 days to prevent seed spread on to the property.
- Clean boots, vehicle tyres etc before leaving properties visited for horse events.
- Designate a carpark area for visitors and entry/exit point for the property for contractors and visitors.
- Speak to contractors about your concerns and provide a cleaning down area for machinery if this is deemed necessary.
- Put up signs or use other means to communicate your weed quarantine precautions to visitors.

**Best Practice**

**An active pasture weed control program is in place, which is regularly monitored and reviewed.**




*Weeds on horse properties are a concern because some species, such as Salvation Jane / Patterson's Curse and Cape Tulip (above), are toxic to horses.*

### Step 4

Manage pastures well (see *Pasture Composition* – Page 24). Good quality pastures that have mostly desirable pasture plants will tend to out-compete with most weeds.

- Maintain good soil fertility and ensure soil pH does not become too acid. Do regular soil tests for fertility and pH, and apply fertiliser and/or lime according to soil test results.
- Consider renovating or re-seeding pastures if the amount of desirable pasture plants is low.
- Where possible, use rotational grazing of pastures (see *Maintain groundcover* – Page 22), and don't overgraze pastures because this makes it easy for weeds to proliferate.

### Step 5

Each year, review your weed control program. Each season, monitor weeds present and numbers of weeds in pasture paddocks. Look at how successful or otherwise your weed control has been, and modify the program accordingly.

## Notes

# 4 Proclaimed pest plants

## Introduction

In any areas, there are certain pest plant species that are 'proclaimed' under State legislation.

Generally, pest plants are proclaimed because they are poisonous to livestock, or are particularly difficult to control and have a high potential to spread and reduce the value of land.

The actual species of plants that are declared pest plants varies in different areas. Examples of declared weeds include gorse and blackberries. They may also include golden dodder, poison ivy, perennial thistle and Rhus.

All landowners have specific responsibilities to control proclaimed weeds on their properties, and to report any of these to the relevant Natural Resources Management Board in their area.

Currently, adjoining landowners are responsible for controlling pest plants on roadsides; otherwise Natural Resources Management Boards will undertake such control with adjoining landowners liable for the costs.

Where possible, a range of methods should be used to control weeds (e.g. good weed hygiene on the property, good grazing management, re-seeding pastures) rather than just a single method (such as relying on chemicals). An integrated weed control program is an important aspect of property management, and is one of the components of a property management plan.

## Steps to achieve best practice

Suggested steps to identify and control declared weeds on the property are as follows. Control of declared pest plants should be a high priority.

### Step 1

Regularly inspect the property for weeds, and identify any declared pest plants that are present. You can get assistance and advice on weed identification and control from rural consultants and advisers, and from your Natural Resources Management Board.

If you find any declared pest plants on the property, notify your Natural Resources Management Board.

### Step 2

Carry out weed control programs for any problem weeds, using methods that are recommended for your area (especially proclaimed weeds) by your Natural Resources Management Board. Consider using selective weed sprays in pastures (if required).

### Step 3

Ensure there is good weed hygiene on the property (see *Preventing weeds entering or leaving the property* – page 18).

- Ensure as far as possible that any hay or feed brought on to the property is free of weeds.
- Quarantine new horses for 10 - 14 days to prevent seed spread on to the property.
- Clean boots, vehicle tyres etc before leaving properties visited for horse events.

**Best Practice**

**Proclaimed pest plants are identified and controlled.**

*Blackberry*

*Salvation Jane / Patterson's Curse*

*Cape Tulip*

*Generally, pest plants are proclaimed because they are poisonous to livestock, or are particularly difficult to control and have a high potential to spread and reduce the value of land.*

*Gorse*

- Designate a carpark area for visitors and entry/exit point for the property for contractors and visitors.
- Speak to contractors about your concerns and provide a cleaning down area for machinery if this is deemed necessary.
- Put up signs or use other means to communicate your weed quarantine precautions to visitors.

### Step 4

Manage pastures well (see *Pasture composition* – Page 24). Good quality pastures that have mostly desirable pasture plants will tend to out-compete most weeds including pest plants.

- Maintain good soil fertility and ensure soil pH does not become too acid. Do regular soil tests for fertility and pH, and apply fertiliser and/or lime according to soil test results.
- Consider renovating or re-seeding pastures if the amount of desirable pasture plants is low.
- Where possible, use rotational grazing of pastures (see *Maintain groundcover* – Page 22), and don't overgraze pastures because this makes it easy for weeds to proliferate.

**Step 5**

Each year, review your weed control program. Each season, monitor any declared pest plants present in pasture paddocks. Look at how successful or otherwise your weed control has been, and modify the program accordingly.

You can get help from your Natural Resources Management Board to accomplish this task.

## Notes

# 5 Seasonal wet areas, wet seeps and drainage lines

## ● Introduction

Property owners in in many areas have a legal responsibility not to damage watercourses and to maintain them.

Most soils get very soft when the soil is wet, with the exception of sands.

If horses or other animals have access to wet soil areas, this can cause:

- 'pugging' – holes left from hooves sinking into the soil, which damages soil structure and leaves a hard compacted soil when it dries out,
- damage to pasture plants and root systems of grasses e.g. 'skid marks', and
- development of bare areas which are prone to soil erosion, particularly along drainage lines.

Pugging can also increase water ponding after rainfall, which leads to build up of bacterial and algal growth on the ground. When this runs off, it can contribute to water pollution of dams and creeks.

Wet soil ('waterlogging') is mainly an issue on properties in higher rainfall areas, where certain areas of land can be wet for a number of days or weeks each year. Waterlogging mainly occurs in low lying areas, on soils with poorly draining subsoils, on areas with shallow watertables, soils around springs and seeps, and drainage lines. However, in some places sloping land can be affected by waterlogging.

In drier times of the season, there may be signs of winter waterlogging such as holes left from pugging, and sometimes by the presence of waterlogging indicator weeds such as dock.

It is important that horses are kept off seasonally wet (waterlogged) areas, wet seeps and drainage lines when the soil is wet.

## ● Steps to achieve best practice

Suggested steps to take are:–

### Step 1

Identify any areas of the property that are wet much of the year, become wet in winter or after heavy rain, including drainage lines. When you do a property management plan, mark these areas on an overlay that shows different land classes on the property (see *Property Management Plan* – Page 6).

### Step 2

Look at ways you can restrict horse access to these areas when the soil is wet:–

- If you have a low input horse management system, you could use temporary electric fencing to cordon off wet areas in winter.
- Consider permanently fencing off wet areas into separate paddocks (i.e. fencing to land class) so that horses can easily be kept out when the soil is wet.
- Plan to agist horses off property during wet periods.
- Locate feeding and watering areas well away from areas that get wet.
- Remove horses to yards and/or stables.

**Best Practice**

**Horse access is restricted from seasonal wet (waterlogged) areas, wet seeps and drainage lines while the soil is wet and soft.**

*It is important horses are kept off seasonally wet areas.*

### Step 3

Look at ways to improve wet areas. You can get advice on this from rural consultants and advisers.

- On any badly pugged areas, take horses out of the paddock to spell the pasture, and re-seed pasture on these areas if it is in poor condition.
- Sow waterlogging-tolerant pasture plants on wet areas.
- Consider including swales (i.e. broad, low contour banks) and tree plantings to slow down, absorb and disperse excess water movement down slopes.
- In some cases, waterlogging can be reduced by soil treatments (e.g. gypsum) or installation of drainage systems, but this may be costly and impractical.

If you are looking around for land for more intensive horsekeeping systems, try to select a property that doesn't have much seasonally wet land.

## Notes

# 6 Steep slopes

## ● Background

Steeply sloping land on properties needs to be carefully managed as there is usually a high risk of soil erosion. It is also usually difficult to access steep land with vehicles and machinery.

Where horses have access to steep slopes, bare areas can quickly develop, and horses' hooves can rip up plant root systems under wet conditions. If horses start to 'track' along fence lines down steep slopes, there is a high risk of soil erosion.

Pastures may not grow as well on steeper slopes if the soil is shallow or rocky. If the slope is too steep for fertiliser spreading, weed spraying etc, it will be more difficult to maintain a good quality pasture for horse grazing.

Steep slopes are regarded as land with an incline of 15% or more in areas up to 1,000 mm annual rainfall, and above 12% slope in areas with more than 1,000 mm rainfall.

## ● Steps to achieve best practice

The suggested steps to achieve this are:–

### Step 1

Identify any areas of steep slopes (12% - 20% or more) on your property.

You can measure slope using a clinometer (you may be able to borrow one from your local department of agriculture).

These areas should be marked on a property map overlay (land classes) when you do a property management plan.

### Step 2

Plan to restrict horse access to steep slopes, including any sloping land that has had soil erosion problems in the past.

- Fence these areas off so horse access can be restricted.
- Only graze horses on these areas for short periods, if at all, when there is plenty of pasture cover, and the soil is not wet. Keep a close eye on the pasture condition and remove horses if there is any sign of low groundcover or damage to pasture plants by hooves.

### Step 3

Maintain good pastures on steep slopes, i.e. ensure there is good pasture composition, and ensure soil fertility and pH levels are suitable for good pasture (see *Pasture composition* – Page 24).

- Consider sowing or encouraging perennial native grasses on these areas to help provide a hardwearing ground cover that will last well through summer

**Best Practice**

**Horses are restricted from steep, erosion-prone slopes.**

*Where horses have access to steep slopes, bare areas can quickly develop, and horses' hooves can rip up plant root systems under wet conditions.*

## Notes

# 7 Management of manure

## ● Introduction

Manure from grazing animals, including horses, is high in nutrients (e.g. phosphorus and nitrogen) and also contains pathogens (e.g. cryptosporidium). The pathogens and viruses that occur in manure can cause animal health problems. Excess manure left in paddocks also increases the risk of nutrients and pathogens in manure entering and polluting watercourses and underground water, where there is water runoff.

If manure is left to build up in horse grazing paddocks, pasture growth can become tall and rank around manure pads, both due to the concentrated nutrients, and because horses avoid grazing near manure. This leads to patches of rank pasture which horses don't like to graze, while other patches of pasture can become overgrazed. This is described as 'horse sick' pasture. When this happens, there is less of the pasture that horses can graze, and bare patches are at risk of soil erosion (see *Maintain groundcover* – Page 22).

In many areas, property owners also have legal responsibilities to avoid discharging or depositing waste or pollutants into any waters, bores or on to land where it might enter the water.

## ● Steps to achieve best practice

Suggested actions are:–

- Regularly collect manure from areas where it tends to build up, such as yards, shelters, feeding areas etc. Options to deal with the manure include:
  - composting it yourself for sale or re-use on the property,
  - selling it in bags,
  - having it removed by a waste disposal company or by Council arrangement, or
  - having it collected to be composted by a composting company or community organisation which may want horse manure, e.g. community gardens.
- Consider harrowing manure in paddocks when there is a build-up of manure, to spread it out and break up the pads.
- Keep lactating mares and foals away from watercourses as their manure can contain significant concentrations of pathogens and viruses.
- In higher rainfall areas, encourage dung beetles.
- If pasture growth is uneven with rank patches, consider slashing the pasture or cutting hay from the paddock.

It is not be necessary for all manure to be removed from paddocks. Manure is a natural fertiliser, and what is kept helps maintain soil fertility and therefore pasture health. The aim is to remove it often enough from paddocks/yards or manage it so that the problems mentioned above do not occur.

**Best Practice**

**Action is regularly taken to prevent build-up of manure in paddocks.**

*Manure left in paddocks increases the risk of nutrients and pathogens in the manure entering and polluting watercourses and underground water.*

*Harrowing with a 2 x 6m piece of construction mesh.*

## Notes

# 8 Fence line tracking

## ● Introduction

Horses tend to walk along paddock fence lines, particularly if a horse is left in a paddock by itself and there are horses in the next paddock. This concentrated hoof traffic wears down the pasture along the fence, resulting in a bare strip and eventually a hollow track along the fence – this is called 'tracking'.

Bare strips and gutters from tracking can cause rain to funnel and cause erosion. In some cases this can also cause the fence to collapse. Tracking is a more serious issue on steeper slopes because of the high risk of soil erosion.

## ● Steps to achieve best practice

Suggested actions to avoid fence line tracking are:–

- Keep horses in pairs or herds – avoid having single horses in adjacent paddocks.
- Consider the behaviour of horses "left behind" when a mate goes out for a ride. Often serious environmental damage lasting years can be caused over an hour by a stressed horse. Yarding, tying up or placing a temporary friend in the paddock may be options to consider.
- Regularly 'spell' grazing paddocks by rotational grazing.
- Consider constructing double fencing between paddocks if tracking is a problem. It also helps to establish a shelterbelt in the strip between the double fences and if located on the boundary, can assist with disease, weed and fire manangement.
- Look at using temporary electric fencing around areas that are susceptible to tracking.
- Maintain good, hard wearing pastures (see *Maintain groundcover* and *Pasture composition* – Page 22 and 24) that can help resist tracking.

Suggested actions to repair areas damaged by tracking are:–

- Remove horses, then fill in the depressions and resow pasture on the area if hollows from tracking are evident.
- Consider options to prevent tracking on these areas in future e.g. put in barriers (rocks etc) to alter direction of horse tracks away from fencelines.
- Fill in the tracking lanes with quarry rubble or other hardened surface to prevent further erosion.

**Best Practice**

**No fence line tracking is evident on the property.**

*Concentrated hoof traffic wears down the pasture along the fence, resulting in a bare strip and eventually a hollow track along the fence.*

## Notes

# 9 Management of horse feeding, watering and congregating areas

## ● Introduction

Areas where horses congregate, such as hand feeding areas, water troughs, gateways and shelters have a lot of hoof traffic which can quickly wear down pasture, leaving bare and unstable soil.

These areas can have problems with mud and dust, and are more susceptible to soil erosion, soil compaction and pugging. Bare soil in grazing or feeding areas increases the risk of horses getting sand colic. Dust also increases the risk of horses getting respiratory tract infections. There can also be a build-up of manure in these areas. Soil erosion and water runoff from these areas can lead to pollution of watercourses, including dams and creeks.

Property owners may also have responsibilities to avoid discharging or depositing waste or pollutants into any waters, bores or on to land where it might enter the water.

## ● Steps to achieve best practice

Suggested actions are:–

- If hand feeding is done in paddocks, select your location carefully – avoid clay or sand or low lying areas that tend to get wet or drain directly into watercourses.
- Consider permanently surfacing the heavy horse traffic areas.
- Rotate the position of hand feeding areas in paddocks so they are always on stable ground, to prevent areas becoming bare.
- Locate water troughs on stable ground away from paddock corners.
- Locate feeding areas and water troughs etc away from areas that drain directly into watercourses, to minimise the risk of water pollution.
- Lay down rubber conveyor belt matting or other "pad" material which will both provide surface protection and prevent feed getting mixed with dirt. This type of surface can also be moved around to suit.

## Notes

**Best Practice**

**Horse feeding, watering and congregating areas are managed to prevent dust, mud and erosion.**

*Areas where horses congregate have a lot of hoof traffic which can quickly wear down pasture, leaving bare and unstable soil.*

*Rubber conveyor belt matting or other "pad" material will both provide surface protection and prevent feed getting mixed with dirt. This type of surface can also be moved around to suit.*

# 10 Shade and shelter

## ● Introduction

Horses that are not kept in stables need some form of protection against sun, wind, rain and extremes of temperatures. Shade and shelter can be natural (e.g. trees) or artificially provided by a paddock shelter.

Horses tend to congregate in shelter and shade areas, and the concentrated hoof traffic can wear out the pasture cover resulting in mud, dust and erosion problems (see *Management of horse feeding, watering and congregating areas* – Page 33).

In addition, rainfall runoff from the roof of paddock shelters can cause erosion problems if this is not well considered in shelter design.

## ● Steps to achieve best practice

Suggested actions are:–

- Locate shelters on stable ground where possible – i.e. avoid slopes, clay or sand or low lying areas that get wet.
- Build shelters with a non-erodible surface (e.g. concrete, compacted quarry rubble, or commercial horse rubber flooring on a base), and fit gutters to control stormwater.
- If dust or mud is an issue, surface high traffic areas around shade and shelter with dolomite or alternative material, such as quarry rubble, to stabilise the soil.
- Consider shelters which are movable, so if you are unsure if the location you have first selected will be the best, the shelter can be moved, or the shelter can be moved as part of your paddock management.
- Feed the horse in the shelter to keep feed dry and to encourage maximum impact (time spent by the horse in one spot) to be concentrated on a durable surface

**Best Practice**

**Paddock shade and shelter areas are designed and managed to prevent dust, mud and erosion.**

*Shade and shelter can be natural or artificial.*

## Notes

# 11 Management of watercourses (including erosion gullies and dams)

## ● Introduction

In South Australia, property owners have a responsibility under Sections 131 and 133 of the *Natural Resources Management Act 2004* to not damage watercourses and to maintain them.

When horses are allowed access to watercourses, including creeks, dams, or erosion gullies, their hooves can easily disturb the fragile ground in these areas and lead to further erosion problems and disturbance of watercourse beds and banks.

Manure left in these areas, or which has been allowed to build up on slopes directly running off into a watercourse, can also pollute the watercourses as nutrients and pathogens run off, especially during periods of heavy rain.

Research has shown that young animals, including foals on lactating mares, can affect water quality through the introduction of Cryptosoridium and Giardia from their manure. Careful consideration needs to be given to planning the design and layout of paddocks on properties with foals, and rotational grazing rosters should ensure that lactating mares are not left with foals in paddocks without protected creeklines.

Studies have shown that livestock do better when fed on reticulated water than water from creeks and dams during summer, when these supplies become limited and higher concentrations of salts and other nutrients affect the taste of the water.

Horse riders on trails need to consider bringing water in a (collapsible) bucket from the creek to the horse, to avoid streambank damage.

Property owners may also have legal responsibilities to avoid discharging or depositing waste or pollutants into any waters, bores or on to land where it might enter the water.

## ● Steps to achieve best practice

Suggested actions are:–

- Plan to fence off watercourses and riparian areas (at least 5 metres width from edge of watercourse), dams, erosion gullies etc as part of the property management plan.
- Plan to set up a reticulated water system on the property, which feeds to water troughs rather than allowing horses to access dams and creeks.
- Manage access to and/or across watercourses, e.g. stock crossing points or dam entry points.

**Best Practice**

**Watercourses are fenced to restrict horse access.**

*Plan to fence off watercourses and riparian areas*

*Hooves can easily disturb the fragile ground in these areas and lead to further erosion problems and disturbance of watercourse beds and banks.*

## Notes

# 12 Stock crossings

## ● Introduction

If horses are allowed to walk across, congregate or play and frolic through watercourses, their hooves can easily disturb the fragile ground in these areas and lead to erosion problems and disturbance of stream beds.

Manure left in these areas can also pollute the watercourses. Research has shown that young animals, including foals on lactating mares, can affect water quality through the introduction of Cryptosoridium and Giardia from their manure.

Horse riders on trails also need to consider selecting the best crossing points for creeks and to ride straight across. Damage is done when horses are permitted to paw and play in the water, greatly disturbing the creekbed.

Property owners may also have legal responsibilities to avoid discharging or depositing waste or pollutants into any waters, bores or on to land where it might enter the water.

## ● Steps to achieve best practice

Where horses need to be able to cross watercourses on the property, crossings should be carefully sited, designed and constructed and positioned to prevent harm to the watercourse. It may be an option to use natural crossings i.e. places that have a hard base or stable base of rocks.

As a general guideline, stock crossings should be constructed to minimise impact on the watercourse.

If a constructed stock crossing is required, make sure:

- you get advice and approval from the Department of Land, Water and Biodiversity Conservation before starting construction, and
- you construct the crossing according to specifications that are suited to the flow dynamics of the watercourse and your budget.

Also:

- control horse access to the crossing, for example by installing gates at the entry/exit of the crossing.

Culverts (drains or channels under a road or track) are another option, although these are likely to be more expensive to construct.

**Best Practice**

**Stock crossings are selected and designed to prevent stream bed and stream bank erosion.**

*Stock crossings should have a stable, hard base that will not erode – e.g. bed of rocks, or hardened bed.*

## Notes

# Management for intensive horsekeeping

Horse exercise areas and yards
Stable/yard waste storage
Cleaning and disposal of waste in intensive horsekeeping areas
Storage of feed
Cleaning out horse floats and trucks
Wash down areas

# 1 Horse exercise areas and yards

## Introduction

Intensively-used areas on horse properties such as stable yards, arenas and horse yards have a lot of hoof traffic on the ground. Unless the ground on these areas is stable or surfaced with a hard-wearing material, there may be problems with mud, dust and soil erosion.

Bare soil in grazing or feeding areas increases the risk of horses getting sand colic. Dust also increases the risk of horses getting respiratory tract infections.

Often these traffic areas also form part of a workplace and there is the consideration of the safety of workers, volunteers and visitors to your stableyard.

Manure build-up, storage and management is also an issue in these areas. Soil erosion and water runoff from these areas can lead to pollution of watercourses, including dams and creeks, if management regimes and facilty design features are not put into place.

Under wet, muddy conditions, pugging (paw holes) of soil can occur in these areas. This increases water ponding after rainfall and leads to build-up of bacterial and algal growth which can contribute to pollution of dams and creeks downstream.

Property owners may also have legal responsibilities to avoid discharging or depositing waste or pollutants into any waters, bores or on to land where it might enter the water.

## Steps to achieve best practice

Suggested actions are:–

- Surface these areas with materials such as horse rubber matting, sand, asphalt, cement or quarry rubble, or alternatively establish a hard-wearing grass such as kikuyu.
- Regularly collect and remove manure from stables, yards and other areas where it tends to build up. Work out ways to dispose of or use the manure, such as selling it in bags, having it removed by a waste disposal company, or having it collected to be composted by a composting company.
- Have 'stableyard rules' about pathways and areas to be used for the leading, grooming and attendance to horses. No rules (especially on busy agistment centres, riding schools or studs) leads to degradation of the whole stableyard area.

**Best Practice**

**Intensive horse areas are managed to prevent dust, mud and manure build-up, and stormwater/watercourse pollution.**

*Intensively used areas on horse properties have a lot of hoof traffic on the ground and there may be problems with mud, dust and soil erosion.*

## Notes

# 2 Stable/yard waste storage

## Introduction

Manure from grazing animals, including horses, is high in nutrients (e.g. phosphorus and nitrogen) and may also contain pathogens (e.g. cryptosporidium). Manure from foals (as with all young animals) contains higher levels of pathogens than faeces from adult horses.

Horse manure and soiled bedding from stables and yards can pollute watercourses and other water resources via water runoff, if the waste facilities are not well sited and designed.

Good waste storage and management is also important to avoid odour problems, which could offend neighbours.

Apart from that, it can build up and become unsightly.

Property owners may also have legal responsibilities to avoid discharging or depositing waste or pollutants into any waters, bores or on to land where it might enter the water.

## Steps to achieve best practice

Suggested actions that can be taken are:–

- Check whether your local council has any specific regulations or requirements for horse waste storage.
- Consider putting in manure bays, or alternative structures that can safely contain manure and soiled bedding. Choose a type of bedding for which it is easy to manage disposal.

  Well designed manure bays should:
  - be roofed, to prevent rain falling on the waste and creating runoff that is loaded with nutrients and pathogens which could pollute watercourses,
  - be sited away from watercourses to avoid the risk of water pollution, and
  - allow good access by vehicles or other machinery used in disposal of the waste or transfer to composting areas.
- Regularly remove manure from the bays, then consider:
  - selling it in bags,
  - having it removed by a waste disposal company or by Council arrangement,
  - composting manure yourself for sale or re-use on the property, or
  - having it collected to be composted by a composting company or community organisation who may want horse manure, e.g. community gardens.
    For example, some properties have arrangements with waste disposal companies to fill removable lidded bins that meet these requirements (also see *Cleaning and disposal of waste in intensive horsekeeping areas* – Page 40).

**Best Practice**

**Horse manure and soiled bedding are stored in a manner that prevents runoff entering or escaping from the area.**

*Consider putting in manure bays, or alternative structures that can safely contain manure and soiled bedding.*

## Notes

# 3 Cleaning and disposal of waste in intensive horsekeeping areas

## Introduction

Manure from grazing animals, including horses, is high in nutrients (e.g. phosphorus and nitrogen) and may also contain pathogens (e.g. cryptosporidium). Manure which is allowed to build up can affect water quality. Manure from foals (as with all young animals) contains higher levels of pathogens than faeces from adult horses.

Manure can quickly build up in intensive horsekeeping areas such as stables, yards and small paddocks. A build-up of manure can lead to:

- risk of pollution of watercourses through water run-off,
- uneven pasture growth (see *Management of manure* – Page 31), and
- risk of horses becoming infected by internal parasites.

In addition, urine build-up in stables and yards causes excessive urine smell. Urine contains ammonia, and if it is allowed to build up it can put horses at risk of respiratory system and eye problems.

Good waste management is also important to avoid odour problems, which could offend neighbours.

Property owners may also have legal responsibilities to avoid discharging or depositing waste or pollutants into any waters, bores or onto land where it might enter the water. Check with local authorities.

## Steps to achieve best practice

Suggested actions are:–

- Regularly clean stables so that waste does not build up, and regularly remove manure from yards and small paddocks.
- Ensure that wastewater from cleaning these areas does not go into stormwater drains or into watercourses. It should be either directed to a suitable surface soakage area, to a trade waste connection, or collected and taken away by a licensed liquid waste contractor.

**Best Practice**

**Intensive horsekeeping areas are regularly cleaned and wastes disposed of appropriately.**

*Regularly clean stables so that waste does not build up.*

## Notes

# 4 Storage of feed

## Introduction

Feed storage areas can attract vermin and pests due to the availability of food, and are also good nesting and breeding areas. Vermin (rats, mice) and pests can carry diseases, spoil the feed, and damage storage areas.

Horse feed can spoil if it is not kept in a dry, sealed environment.

In addition, stored feed such as hay can be a fire risk.

## Steps to achieve best practice

- Select feed storage containers that will keep feed dry and prevent entry of vermin.
- Lay bait for vermin around feed storage areas.
- Store feed away from stables to minimise the fire risk.

## Notes

**Best Practice**

**Horse feed is stored in dry, sealed containers and is not accessible to vermin.**

# 5 Cleaning out horse floats and trucks

## Introduction

Manure, urine and uneaten feed in horse floats and trucks contains nutrients and pathogens. There is the risk of polluting water resources if horse floats and trucks are cleaned out where the runoff could enter stormwater drains (e.g. on footpaths, streets or drains) or watercourses.

Property owners may also have legal responsibilities to avoid discharging or depositing waste or pollutants into any waters, bores or on to land where it might enter the water.

## Steps to achieve best practice

Suggested actions are:–

- Clean out horse trucks and floats by sweeping initially, then using a minimal amount of water if they need to be washed clean.
- Commercial transport operators or private vehicles which carry stock from a range of properties or a number of species should consider additional cleaning options to minimise the spread of disease.
- Dispose of the collected residues appropriately. For example dry waste could be:
  - sold in bags,
  - removed by a waste disposal company or by Council arrangement,
  - composted on-site for sale or re-use on the property, or
  - collected to be composted by a composting company or community organisation who may want horse manure, e.g. community gardens.
- Wastewater should be either directed to a suitable surface soakage area, to a trade waste connection, or collected and taken away by a licensed liquid waste contractor.

**Best Practice**

**Horse transport vehicles are cleaned out with waste collected and contained for disposal.**

*Clean out horse trucks and floats by sweeping initially, then using a minimal amount of water if they need to be washed clean.*

## Notes

# 6 Washdown areas

## Introduction

Wash water from washing down horses, including products used for washdown, contains potential pollutants, and can pollute water resources if allowed to go into stormwater drains or watercourses.

Property owners may also have legal responsibilities to avoid discharging or depositing waste or pollutants into any waters, bores or on to land where it might enter the water.

## Steps to achieve best practice

Suggested actions are:

- Locate wash down areas where wash water cannot enter watercourses or stormwater drains. This could be done on well grassed areas that are well away from watercourses etc where the wash water is fully absorbed into the ground.
- Consider using shampoos or products that are biodegradable.

Note that some local councils may have requirements for the wastewater to go into a sump, septic system or closed evaporation trenches – so you should find out what your Council requires.

## Notes

**Best Practice**

**Waste water from wash down areas does not enter watercourses or stormwater drains.**

*Locate wash down areas where wash water cannot enter watercourses or stormwater drains.*

# Appendix 1 Development and related approvals in South Australia

## Development approval for horsekeeping

In South Australia, you *may* need development approval from your local Council (under the Development Act) to:–

- Keep horses on the land, if the previous land use was different, or to increase the number of horses kept.
- Put up structures including stables, sheds or arenas.
- Undertake 'water affecting activities' including construction of dams, bores, or to make alterations to watercourses including enlargement of dams.
- Horsekeeping is defined under the Development Act 1993 (Schedule 1) in South Australia as:

  *"the keeping or husbandry of horses where more than one horse is kept per three hectares of land used for such purposes or where hand feeding of a horse is involved".*

If you can provide evidence that horses have been kept on the property (i.e. more than one horse per three hectares [approx. 7.4 acres] of land) in the past, your Council may recognise you have 'existing use rights' so that you don't need to apply for a development application for change of land use for horsekeeping.

'Existing use' is generally defined as the type of land use that has occurred more or less continuously over a period of years up to the present, but different councils have different dates and specifications for this.

Any development application for horsekeeping falls into one of three categories, termed:

- complying,
- merit, or
- non-complying.

Each council's Development Plan outlines the areas where horsekeeping developments fall into each of these categories.

- Complying development: Where a horsekeeping application is classed as a 'complying' development, approval will be granted.
- Merit development: Where a horsekeeping application is classed as merit, the council may impose certain conditions which must be addressed in the application. It may be helpful to have a land management property plan (see Page 6) prepared that shows that 'best practice' standards of environmental management and horse management will be used.
- Non-complying development: Where a horsekeeping application is classed as a 'non-complying' development, it can be more difficult to get approval. The council will usually ask for evidence (Statement of Effect) of how the proposed enterprise will meet the principles in its Development Plan that apply to the zoning (e.g. rural, rural living etc) that the property lies in. It may be helpful for a detailed land management property plan (see Page 6) to be prepared that shows that 'best practice' standards of environmental management and horse management will be used.

To find out more, contact the Planning Department at your local Council office.

## Other approvals and permits

To construct or alter a well or bore in South Australia, a permit is needed from Water Licensing, Department of Water Land and Biodiversity Conservation. A permit will also be needed for any 'water affecting activity' on a floodplain or in a watercourse, including stock crossings.

Within the Mt Lofty Ranges watershed and any prescribed surface water area, either a permit is required from the Minister (Conservation) or a development approval is required from the local council for building or enlarging dams.

Some types of more intensive stabling of horses may require council approval in some areas.

Clearance of any native vegetation in South Australia requires approval from the Native Vegetation Council, under the Native Vegetation Act 1991. Native vegetation is defined as all local native species including small ground covers and native grasses. Some exemptions apply to certain types of clearance for fire control, fences etc but these should be clarified with the Native Vegetation Council (Department of Water Land and Biodiversity Conservation).

## Contacts:

- Water permits (Section 127): Ph. 8463 6810, Water licensing Ph. 8204 8588 Dept of Water Land and Biodiversity – www.dwlbc.sa.gov.au
- Native Vegetation Council, DWLBC – Ph. 8124 4744 or email nvc@saugov.sa.gov.au
- Planning SA (now part of Dept of Primary Industries and Resources SA) – www.planning.sa.gov.au or www.pir.sa.gov.au where a 'Guide for Applicants – Horsekeeping' can be obtained.
- Adelaide Hills Council Information Sheet – A guide for horsekeeping (September 2004)

**Horsekeeping is defined under the Development Act, 1993 Regulations as meaning:**

*"the keeping or husbandry of horses where more than one horse is kept per three hectares of land for such purposes or where the hand feeding of a horse is involved".*

1 Horsekeeping should not:
   (a) occur on land with steep slopes in high rainfall areas,
   (b) be located on poorly-drained land, land when subject to waterlogging or land when subject to inundation or flooding, or
   (c) result in the removal of native vegetation.

2 Horsekeeping should not be developed unless provision is made for the management of wastes without environmental, health or water pollution risk.

3 Horsekeeping should not detrimentally affect the character or amenity of its locality or cause unacceptable nuisance to community or the environment by way of:
   (a) the disposal of water and waste products,
   (b) any risk to health and wellbeing of the community,
   (c) the generation of noise, dust, odour, effluent and other similar obnoxious conditions,
   (d) destruction of surface vegetation and soils, or
   (e) inadequate security precautions being taken to prevent straying of animals from the land.

4 All stables and other auxiliary structures should be sited so that
   (a) they meet Local Council planning requirements with respect to watercourses, dams and land subject to inundation or flooding by a 100-year ARI event.

5 Watercourses and dams should be fenced to minimise animal access.

7 Stormwater runoff should be directed around buildings and directed away from horsekeeping areas (horsekeeping yards, stables and intensive exercise areas).

8 Waste water from wash down areas or stables should be directed on to vegetative filters or to a suitable waste water system.

9 Development in the form of horsekeeping that requires stables (enclosed) or shelters (at least one open side) or horsekeeping yards should ensure:
   (a) the stables are large enough for the horse to lie down, get up and comfortably turn around and have adequate clearance above the horse's head so the horse's health and safety is not adversely affected,
   (b) stables and yards are constructed of suitable materials that are safe for the horse,
   (c) the stables have adequate cross ventilation to prevent condensation,
   (d) the stables are sited so as not to unreasonably affect dwellings on adjoining properties,
   (e) the stables are sited according to council requirements with respect to distances from watercourses and dams,
   (f) the stable and shelter floor surfaces are above the natural ground level and suitably graded for drainage purposes,
   (g) the stable floor is kept dry by the provision of adequate bedding and daily removal of damp bedding and manure,
   (h) the yards have a well-drained, non-erodable surface,
   (i) the manure is to be removed from stables and small yards on a daily basis and from large yards regularly,
   (j) the stables will have gutters and downpipes to remove stormwater away from the structure,
   (k) the yards and stables will be protected from stormwater intrusion by suitably constructed drains,
   (l) any stable or shelter is constructed of kick-proof material to a minimum height of 1.2 metres,
   (m) grain feed is stored in vermin-proof containers, and
   (n) stables, horse shelters and horsekeeping yards are constructed on a prepared site which has a fall of no greater than 1-in-10.

10 Intensive exercise areas should:
   (a) be surfaced and managed so the surface does not erode or produce dust when used,
   (b) be designed so that surface runoff water will be controlled, and
   (c) have manure regularly removed to prevent build-up.

11 Horsekeeping should ensure:
   (b) the maintenance of 70% surface cover (plant residues) of at least 3 cm height in all paddocks subject to water erosion, and 50% surface cover in paddocks subject to wind erosion,
   (c) the removal or harrowing of manure in paddocks as necessary,
   (d) the protection of areas of native vegetation from degradation, and
   (e) the provision for removal of horses off paddocks if paddocks have less than the required ground cover or are waterlogged or at risk of becoming degraded in any way.

# Glossary

**Annual** (plant) – plant that completes a full life cycle within a year, i.e. germinates, grows, flowers, sets seed then dies.

**Buffer zone** – area of land used or designed to isolate one area of land from another so that adverse effects arising from one area do not affect the other.

**Carrying capacity** – also called 'nutritional potential' – standardised estimate of the number of livestock that can be maintained on good quality rain-fed pasture on a given area of land – see 'dry sheep equivalent'.

**Clay** (soil) – soil containing mostly small (fine) particles including at least 30% clay particles, which behaves much like plasticine.

**Direct drilling** – sowing a crop or pasture into uncultivated ground.

**Dry sheep equivalent (DSE)** – the number of dry adult sheep that can be kept on one hectare of good dryland pasture without supplementary feeding year after year.

**Enterprise** – type of land use activity e.g. horse stud, dairy.

**Erosion** – physical breaking down or wearing away of the land surface by rain, running water or wind.

**Fence line tracking** – development of a worn or bare strip of ground, sometimes developing into a furrow, along a fence line caused by horses walking back and forth along the fence line.

**Ground cover** – any material on the soil surface e.g. pasture, crop, stubble/residue, stones, manure, mulch.

**Harrow** – light tillage implement with tynes or fingers designed to operate at shallow depth, for example 1-5 cm.

**Herbicide** – chemical that weakens growth of or kills plants.

**Horsekeeping** – defined in the Development Act as "the keeping or husbandry of horses where more than one horse is kept per three hectares of land used for such purposes or where hand feeding of a horse is involved".

**Land degradation** – decline in the quality of natural resources, commonly caused by human activities.

**Land capability** – ability of land to sustain a particular type of land use or land management activity without suffering degradation.

**Legume** – type of plant that can get nitrogen from the air, by using nitrogen 'fixing' bacteria in nodules on its roots.

**Lime** – a naturally occurring calcareous material used to raise the pH of acid soils, and to supply the nutrient calcium for plant growth.

**Native vegetation** – plants that are native to a particular area (indigenous) including trees, shrubs, grasses, wetland plants etc.

**Nutritional potential** – see 'carrying capacity' and 'dry sheep equivalent'.

**Perennial plant** – plant that is capable of living for many years, usually has more active growth at certain times of the year and is relatively dormant at other times.

**Pesticide** – general term for a chemical or substance that weakens or kills animal or plant pests.

**pH** – measure of acidity or alkalinity, such as in soil. pH = 7 is neutral, less than 7 is acidic, more than 7 is alkaline (standard measurement in water).

**Pollution** (water) – contamination of water by any undesirable substance such as the result of human activity. Could include nutrients, soil particles, chemicals etc.

**Ponding** – pooling of water in depressions in the soil surface, such as holes left by animal hooves (pugging).

**Pugging** – holes left in the surface of land, such as animal hoofs on wet soil.

**Rotational grazing** – grazing management system where individual paddocks are alternately grazed then rested (spelled), with grazing animals moved from one paddock to another, to maximise pasture grazing and keep adequate groundcover on pastures on the property.

**Runoff** – rainfall that does not immediately soak into the ground and flows over the surface.

**Salinity** – salt-affected land where there is enough salt in the soil to reduce plant growth or kill plants.

**Sand** (soil) – soil consisting of mostly sand (coarse) particles.

**Seeps** – areas where water within the soil profile comes to the surface.

**Shelterbelt** – area of trees or shrubs (natural or planted), usually in the shape of a long strip, intended to create shelter for grazing animals or crops from wind.

**Soil erosion** – detachment and movement of soil by the action of rain, running water or wind.

**Soil fertility** – level of nutrients in the soil that are needed for plant growth.

**Steep land** – generally regarded as land with an incline of 20% or more.

**Watercourse** – any river, stream, creek or channel where water flows at least some of the time.

**Waterlogging** – soil condition where the ground is completely wet and water may lie on the surface.

# Books, fact sheets and other publications


Avery A (1997) *Pastures for horses – a winning resource*. RIRDC: www.rirdc.gov.au/eshop

Cleugh H (2003) *Trees for shelter – a guide to using windbreaks on Australian farms* RIRDC: www.rirdc.gov.au/eshop

Dixon P (Ed) (1996) *From the ground up: property management planning manual.* National Landcare Program. Australia

Foyel J (1994) *Hoofprints: A Manual for Horse Property Management.* Primary Industries SA Agdex 461/10 Horse SA Online Store: www.horsesa.asn.au

Hunt W F (1994) *Pastures for horses* New Zealand Equine Research Foundation. New Zealand: www.nzerf.co.nz

Huntington P, J. Myers & L. Owens (2004) *Horse Sense: the guide to horse care in Australia and New Zealand.* (2nd edn). CSIRO Publishing, Melbourne: www.publish.csiro.au

Kohnke J, F. Kelleher & P. Trevor-Jones (1999) *Feeding horses in Australia*, RIRDC: www.rirdc.gov.au/eshop

Myers J (2005) *Managing horses on small properties*, CSIRO Publishing, Melbourne: www.publish.csiro.au

Nash D (1999) *Drought feeding and management for horses* RIRDC: www.rirdc.gov.au/eshop

Offord M (2006) *Plants poisonous to horses: An Australian Field Guide*: RIRDC www.rirdc.gov.au/eshop

Pollitt C (2001) *Equine laminitis* RIRDC: www.rirdc.gov.au/eshop

Rose R & Offord M (eds) 1997 *Proceedings of the equine nutrition and pastures for horses workshop* RIRDC: www.rirdc.gov.au/eshop

Stubbs A (1993) *Healthy land, healthy horses – a guidebook for small properties*. RIRDC: www.rirdc.gov.au/eshop

Stubbs A (1998) *Sustainable land use for depastured horses*. RIRDC: www.rirdc.gov.au/eshop


# Websites and links and other publications

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|---|---|
| HorsesLandWater | www.horseslandwater.com |
| Australian Horse Industry Council | www.horsecouncil.org.au |
| Emergency Management Australia | www.ema.gov.au |
| Equiculture | www.equiculture.com.au. |
| Animal Health Australia | www.animalhealthaustralia.com.au |
| Australian Local Government Association | www.alga.asn.au |
| Landcare Australia | www.landcareaustralia.com.au |
| Natural Resources Management Boards | www.nrm.gov.au |
| Greening Australia | www.ga.org.au |
| CRC Weed Control | www.weeds.crc.org.au/weed_management/indiv_species_b.html |
| ChemClear | www.chemclear.com.au |
| Poisons Information Centre | http://ausdi.hcn.net.au/poisons |
| Pest Animal Control | www.daffa.gov.au/brs/land/feral-animals/contact |
| Weeds of National Significance | http://www.weeds.org.au/natsig.htm |
| Community Gardens | www.communitygarden.org.au |
| The Organic Equine | www.theorganicequine.co.nz |
| Horse Keeping Guidelines | dataserver.planning.sa.gov.au/publications/745p.pdf - |
| Horses for clean water | www.horsesforcleanwater.com |
| Australian Water Association | www.awa.asn.au |
| Safer grass, about safer feed for laminitis horses | www.safergrass.org. |

Rural Industries Research and Development (RIRDC) books can be purchased from RIRDC, phone 02 6272 4819 or email publications@rirdc.gov.au, website: www.rirdc.gov.au/eshop . Some RIRDC books and booklets can be downloaded for free from the internet.

Check your State government departments' websites, including Environment & Heritage, Primary Industries, Water, Natural Resources Management & Environment Protection Authorities.

Equine Centre: www.equinecentre.unimelb.edu.au (part of The University of Melbourne) has fact sheets and lots of other information on horse health and horse keeping.

www.landcaresolutions.com by Chris Ferreira and Tracy Bell, for a small fee there are all sorts of information on sustainable property management (much of it horse-based).

Small Farm Drought Planning, Horses & Bushfires, Horses & Floods

Agricultural Notes

Victorian Department of Primary Industries: www.dpi.vic.gov.au

Livestock Management: construction of livestock crossings

Water Notes, Water and Rivers Commission, Western Australia: www.wrc.gov.au

The Australian magazine *Hoofbeats* has a section every month called *The Green Horse* which is about landcare issues and horses.

# HorsesLandWater
# Management Guidelines




**www.horseslandwater.com**