



Natural Resources
Adelaide and Mt Lofty Ranges

Rural living handbook

A guide for rural landholders of the Adelaide Plains, Mount Lofty Ranges and Fleurieu Peninsula



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Disclaimer

This handbook is not a comprehensive guide to managing your land. It is intended to help you find good advice. No legal liability is accepted for the information, errors or omissions contained in this booklet.

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Australian Government



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Introduction – rural living

‘Getting away from it all’ is an Australian dream. In the Adelaide and Mount Lofty Ranges (AMLR) region, getting away from it all often involves buying a rural block. Rural blocks can be productive farmland, a bush block or a combination of both.

However, the environment is under pressure from our collective lifestyles. So the Adelaide and Mount Lofty Ranges Natural Resources Management Board through the Department for Environment and Water, along with private businesses and individuals, is pursuing sustainable development to protect our environment for the future.

Local activities have a significant effect on water quality and catchment health. We have a responsibility to ensure that we care for and maintain healthy watercourses, soil, remnant vegetation and native fauna populations.

As we need to get along well with our neighbours, we should avoid affecting the chosen lifestyle of others in pursuing our individual goals. However, our rural landscape is a productive farming and resource area, and some legitimate activities carried out in the region may have unavoidable impacts.

Different people will want to manage their land in different ways. Some will want to keep and enhance the existing bush; others will want to run stock and cultivate crops. Whatever your goals as a landowner or manager, you need to be aware of your rights and responsibilities.

The *Rural living handbook* brings together some of the significant issues that you will face as a rural landholder within the AMLR region. It also provides contact details for people and organisations that provide support to rural landholders.



Map of the Adelaide and Mount Lofty Ranges Natural Resources Management Board region



1 | Buying your property

- Moving out of the city
- Living in the region
- What is the Adelaide and Mount Lofty Ranges Natural Resources Management Plan?
- Planning and managing your property
- Case study



Moving out of the city

Before you decide to buy a rural property, it is recommended that you have it independently assessed, and consider the following questions:

- Does the zoning of the land allow your proposed use, or will you need to apply for a change of land use or any other permit?
- Are all required services provided to the property? If not, can they be provided economically? Or is it an area that will always have limited services? Services include phone, internet (connections in rural areas may be slow, so check with providers), gas, water, sewer and electricity.
- Is the land use that you plan for the property suited to the landscape and capability of the land?
- What weeds are on the property? Are any of them declared weeds? (By law declared weeds must be controlled).
- Is there soil erosion on the property that will be time consuming and expensive to fix?
- Are there pest animals (e.g. rabbits, foxes) on the property?
- What is the likely amount of time and money required to control weeds, erosion and pest animals on the property?
- Are there good-quality pastures? Are they dominated by native or introduced species? Will they provide all-year round ground cover?
- Is there enough shade and water for livestock?
- Are you aware that in most instances you require approval to remove native vegetation? How might this affect your activities?
- Is there enough water to carry out the activity or activities that you have in mind and is it of suitable salinity?
- Do you know what the regulations and conditions are for building dams or sinking bores? Do you know that any work undertaken in or around a watercourse requires a permit (see chapter 2 on 'Natural resources')?
- Does the vendor have a water licence or authorisation, and are they willing to transfer this to you as the buyer? Is an approved meter installed? You can check metering requirements with the Department for Environment and Water.
- Has a water allocation plan been adopted for the area in which the property is located? Note that water allocations plans are legal documents and may prohibit the building of new dams, or the taking of water (from dams, watercourses or underground) in some areas. The latest versions of plans can be found at www.naturalresources.sa.gov.au/adalaidemtloftyranges.
- Is the soil fertile and the pH appropriate for pasture, crops or any other produce that you want to grow?

- Are the fences in good repair and suitable for confining stock and the overall grazing management of the property?
- Are there suitable stockyards/facilities for the animals you intend to run?
- Do you know the history of the property? Have previous owners sown pastures and used fertilisers? Will you need to remove rubbish?
- Is the region prone to flood or bushfire? Will you need to undertake any management activities to minimise these risks?
- If there is no existing dwelling and you want one, does the land have a building entitlement?
- Are there existing or proposed adjacent land uses that will affect your enjoyment of the property? For example, are there legitimate rural uses nearby such as agriculture, horse-keeping, quarries, mines or forestry that produce dust, odours or noise?
- Is there a Heritage Agreement on the property that requires you to undertake specified management actions and limit the land uses?
- Have you asked the local council if there are:
 - any development applications proposed nearby?
 - other developments that have been approved but not started?
 - any restrictions on developing certain desired land uses?
 - any rights-of-carriageway or other easements on the property that need to be maintained and/or which may allow neighbours access?
 - any covenants or agreements on the property that protect certain areas?
- Are there any derelict mine shafts on the property? If so, are they fenced to ensure safety?

- Are any threatened species of flora and fauna known to live on the property?

After you have satisfactorily answered all these questions, will the property meet your needs and desired lifestyle?

Living in the region

The Adelaide and Mount Lofty Ranges (AMLR) region

The AMLR region supports a mosaic of remnant bushland, farming land, urban development, hills and plains, diverse marine environments and 364 kilometres of spectacular beaches and coastline.

The region covers a vast area, including a significant area of ocean. As shown on the map in the introduction, the region extends from north of Kapunda and Mallala through the Northern Adelaide Plains and Barossa Valley and down to the Southern Vales and Fleurieu Peninsula.

Services available to landholders

The owners of small- and medium-size parcels of land make up a significant proportion of landholders in the region. They are often new to the land and have not come from a farming or rural background. There are a number of staff throughout the region whose role is to help new and existing landholders manage their land in a productive and sustainable way.

Your local District Officer has intimate knowledge on managing natural resources in your local area. District Officers can provide advice and support with issues such as declared weed control, watercourse or native vegetation management and revegetation projects. They can provide this support over the phone or on site and the service is free of charge.

Your local Sustainable Agriculture Officer has extensive knowledge of agricultural practices and issues and can provide advice and support on issues such as grazing, soil, and pasture management, livestock management, water resources management and property planning. Sustainable Agriculture Officers can provide free advice over the phone or on site. These officers also regularly organise land management courses, workshops and field days for landholders on a variety of topics. Contact your local natural resources centre for further details (see the 'Local information' chapter).



Local government

The rural area within the AMLR region incorporates 13 local government areas consisting of:

Adelaide Hills Council

Alexandrina Council

Barossa Council

City of Mitcham

City of Onkaparinga

City of Playford

City of Tea Tree Gully

City of Victor Harbor

District Council of Mallala

District Council of Mount Barker

District Council of Yankalilla

Light Regional Council

Town of Gawler

Your local council can assist you with a range of issues including development applications, dog registrations, waste collection and much more. Contact details for local governments can be found in the 'Local information' chapter.

For more information about local governments, visit the Local Government Association website at www.lga.sa.gov.au.

Landholder's duty of care

Section 9 of the *Natural Resources Management Act 2004* identifies a general statutory duty for all people to act reasonably in relation to the management of natural resources in the state. This is termed a 'duty of care'.

Good practices on your rural property will benefit you, the environment and the prosperity of the region. By looking after the water, soil, plants and animals you will benefit not only the natural environment, but also your chosen enterprise or land use, as well as other landholders in the area. Good practices will also help to ensure that your property is maintained for future generations.

This handbook will help you learn about good environmental and occupational safety practices. Neighbours and other landholders in the region can also be good sources of advice. Talk to them, join groups such as Landcare and the local CFS brigade, and contact local authorities such as Natural Resources AMLR, your local council and state government agencies for advice.



Get to know local agricultural, business, tourism and industry activities. These combine to support the society and economy of the region and you can play your part as a rural landholder.

What is the Adelaide and Mount Lofty Ranges Natural Resources Management Plan?

At the cornerstone of our efforts to better manage our natural resources is the *Adelaide and Mount Lofty Ranges Natural Resources Management (NRM) Plan*.

The plan was developed by the Adelaide and Mount Lofty Ranges NRM Board – following extensive consultation with the community and stakeholders – to provide leadership, encourage community action, foster partnerships and identify where investment is required.

The NRM Plan is a long-term plan for all of us and our collective futures – one that will lead to thriving communities caring for our hills, plains and seas. The plan includes long-term goals and targets for the condition of natural resources in the region. The board's investment priorities are defined over a three-year period and are delivered through a range of strategic actions.

The plan is presented in two volumes:

Volume 1: The strategic plan for the region – provides information on natural resources of the region, and is intended to guide the action of all stakeholders involved in managing natural resources

Volume 2: Business and operational plan – outlines the strategic actions the board will undertake and how they will be funded.

It can be downloaded from:

www.naturalresources.sa.gov.au/adelaideandloftyranges



Planning and managing your property

Property plans can help you to achieve your rural living goals by setting up the basis for efficient and sustainable property management. A plan will help you play a part in supporting a healthy landscape and prosperous region. Property plans take a whole-of-property approach and are useful for all rural landholders.

Beginning your property plan

A number of methods, documents and property planning consultants can help you develop a property plan. A basic guide is provided below.

Property plan guide

1. What do you want to achieve on your property? What is your vision? For example, do you want to run a grazing enterprise, preserve and restore biodiversity or develop a horticultural enterprise?
2. Obtain a good map of your property. Aerial photographs are very useful, as well as surveyor's boundary plans, topographic and cadastral (boundaries and ownership) plans. The map needs to be to a metric scale large enough to clearly show the features of the property.

Visit www.naturemaps.sa.gov.au to create quality property maps, or contact your local natural resources centre to obtain one.

3. After obtaining a map of your property, you will need to identify the following:
 - soil types and soil characteristics (e.g. pH, salinity, erodibility, phosphorus and nitrogen content)
 - slope (in degrees)
 - areas of remnant vegetation and vegetation type (e.g. stringy bark woodland, tea tree wetland)
 - watercourses, gullies, drainage lines and dams
 - areas prone to seasonal waterlogging
 - erosion and salinity-prone areas
 - stock water infrastructure and shade areas for stock
 - rock outcrops
 - water supply
 - climate, rainfall and seasonality
 - landscape types and physical features
 - current land uses
 - permanent infrastructure.

4. Carry out a SWOT analysis of the property's capabilities as follows:
 - What **Strengths** does the property have that you can take advantage of (e.g. areas of high-quality soils)?
 - What **Weaknesses** will need attention before they cause problems (e.g. existing weed infestations)?
 - What **Opportunities** are there to develop your resources further (e.g. moving fence lines to improve management)?
 - What **Threats** exist that could affect the property (e.g. potential erosion areas)?
5. On an overlay (a clear plastic film that can be drawn on) of the map, illustrate the permanent features such as the property boundary, watercourses, native vegetation, infrastructure, land types (i.e. from the most productive soils to the least) and contours.
6. Use this information as a base. On a second overlay, draw where you want features, such as fences, productive paddocks, shelterbelts, woodlots, dams, troughs, lanes and gates. (Rearranging fences according to land features can help you to use the land more efficiently.) Work out where planting needs to go to achieve maximum effectiveness for windbreaks, erosion control and repair, shelter, salinity reduction and to provide habitat for native birds and animals.
7. Write notes about:
 - proposed land use
 - planning for houses, sheds, stockyards, windbreaks, dams, roads and fence realignments
 - methods to control and prevent weeds and pest animals
 - methods to sustain or improve water quality for stock and downstream users
 - methods to control stormwater movement and prevent erosion
 - reducing bushfire hazards, conserving soil, preserving trees
 - treating and disposing of effluent and rural rubbish
 - legal and planning requirements
 - methods to improve stock management or alternative water sources for stock
 - methods and timing for proposed revegetation of disturbed areas.
8. Use the information in this handbook to help you understand issues and best practices in these areas and to set goals and actions. Develop a realistic plan that takes into account your available time and resources for achieving these goals.
9. Prioritise your actions and then set out to achieve them. Remember that certain activities (such as weed control and revegetation) should be timed to take into account seasonal conditions.
10. Constantly monitor, improve and reshape your goals as necessary along the way. Your initial plan will change over time.
11. Make sure you regularly monitor and maintain the areas where you have worked to address any issues quickly.

More information

The Department for Environment and Water has an interactive mapping website that enables users to create maps showing aerial images, property boundaries, native vegetation and more. This website can be found at www.naturemaps.sa.gov.au

Natural Resources AMLR staff can help you develop your property plan and let you know of training courses in plan development. These resources are funded by the Australian Government and managed by the Adelaide and Mount Lofty Ranges NRM Board. For more information, contact your local natural resources centre (see the 'Local information' chapter).



Case study

Wes and Margaret Seeliger

Property location:	Flaxman Valley, Barossa Ranges
Property size:	560 ha (plus 40 ha leased)
Current enterprise:	Dairy (managed by son Steven and his wife Verica)
Rainfall:	670 – 751 mm (approx)
Soil type:	Sandy loam over clay
Features:	12 ha native vegetation; established 11 km of shelter belts; some fenced and revegetated watercourses; an average of 186 ha of pasture cut for hay.

Wes Seeliger has played an active role in land management over the years. The Seeligers' dairy is one of the few thriving operations remaining in the area – and their success is the result of dedication and well-managed perennial pastures. Wes' interest in pastures goes right back to when he left school in 1954 and started his own plot trials with different species. It wasn't long before his father became interested and became one of the first in the district to recognise the importance of soil nutrients (particularly phosphorus and molybdenum) and soil acidity. This was the start of a professional approach to pastures that continues today.

The foundation of the Seeligers' pastures has always been perennial grasses – mainly cocksfoot, phalaris and perennial rye with sub-clover. South Australia's Mediterranean climate encourages many land managers to think of a growing season that starts in April and ends in October, however, every year we have summer storms, and every year the perennials respond. On the other hand, annual grasses deteriorate with the rain and leave you with little more than a fire risk.

Weeds are always a threat, particularly broadleaf weeds following summer rain. The Seeligers work on the principle that the best way to beat these weeds is to provide competition. Recently, annual grasses such as barley grass and silver grass began creeping into a couple of paddocks. These will be sprayed in autumn at a rate that doesn't kill the perennials. The Seeligers still have good perennial pastures that were sown 30 years ago – the secret is: they look after them. Rotational grazing is the key to achieving this, as set stocking proved a recipe for disaster.

Key points learnt over time:

- perennial pastures, although expensive to establish, are worth the investment in the long term
- to manage the land to its capability and to fence appropriately to help make this possible
- maintaining native vegetation and revegetating has landscape-wide benefits
- soil fertility is the foundation of all good land management.

There is no doubt that much of the Seeligers' success comes from getting the basics right. Pastures need to be well managed to recover the cost of establishment and continue to contribute to farm profitability.

The underlying principle that Wes applies is managing different areas on his property according to their capability.

This management principle has helped him overcome problems such as waterlogging and salinity, as well as reducing the likelihood of soil erosion. Weed infestations are also reduced through successful competition from more desirable grazing species.

The Seeliger farm makes extensive use of shelter belts. While some land managers are reluctant to 'give up' productive land for trees, animals sheltered from cold winds need less feed, and pastures sheltered from drying winds are more productive. The trees in the shelter belts also benefit native wildlife, by providing shelter, a food source and a safe corridor for movement.

2 | Natural resources

- Water
- Soil
- Native vegetation and animals
- Fire
- Weeds
- Pest animals

Water

Water management is an integral part of successful property management. Using water efficiently will minimise your costs while preserving flows for the environment. Managing watercourses and dams effectively will improve water quality on your property and for downstream users.

Water legislation

The Adelaide and Mount Lofty Ranges Natural Resources Management Board (the board) manages surface water resources, including activities in and around watercourses and dams, under the *Natural Resources Management Act 2004*. Ground water resources in South Australia, including bores and wells, are managed by the Department for Environment and Water (the department).

Most of the board's area is (or will be) covered by statutory Water Allocation Plans (WAP). These plans may affect how you can take or use water on your property. Information on each adopted WAP is available at www.naturalresources.sa.gov.au/adelaidemtloftyranges or from the Eastwood Natural Resources Centre (see the 'Local information' chapter).

What are water affecting activities?

Water affecting activities (WAA) are those that can potentially have adverse impacts on the health and condition of water resources, on other water users and on the ecosystems that depend on water resources. These water resources include watercourses, lakes or dams, floodplains, groundwater, springs, wetlands, waterholes and catchment landscapes, among others. Management of water affecting activities is needed to protect our natural systems and water-dependent ecosystems, maintain water quality, and minimise impacts on other water users.

The board regulates WAAs in accordance with its *Adelaide and Mount Lofty Ranges Natural Resources Management Plan*, and where applicable in accordance with a WAP if one has been adopted for the area.



Activities requiring a permit

Activities requiring a permit include, but are not limited to:

- the construction or enlargement of dams or structures to collect or divert water
- drilling, deepening and backfilling wells, bores and groundwater access trenches
- building structures obstructing or depositing solid materials in a watercourse, lake or floodplain (e.g. erosion control; construction of water crossings; or dumping material)
- excavating material from a watercourse, dam, lake or floodplain (e.g. excavating or cleaning dams, waterholes and on-stream dams)
- removing any vegetation (exotic or native plants) in a watercourse, dam or riparian zone
- draining or discharging water or brine into a watercourse or dam (e.g. desalination waste, stormwater/urban discharge, drainage and salinity control)
- the use of effluent or water imported to an area for commercial activities (e.g. irrigation).

Landholders, property managers, local government, industry and organisations must lodge permit applications with the board for any of the activities listed above.

There are instances where the board has worked towards cutting red tape and a permit is not required. For example, if you want to desilt your dam or there are certain species of weeds you want to tackle on your watercourse, then please visit our water affecting activities web page to view the information under 'Cutting red tape': www.naturalresources.sa.gov.au/adelaidentloftyranges.

For bores/wells permit applications visit www.environment.sa.gov.au/licences-and-permits

Riparian zones

The riparian zone is the area directly influenced by a river, creek, watercourse or drainage line. The zone generally extends from the normal water level to the floodplain.

Healthy riparian vegetation – trees, shrubs and groundcovers – will make your watercourse banks more stable and help prevent erosion. The vegetation will also filter out nutrients from surrounding paddocks, support wildlife and create habitat for native wildlife.

Causes of riparian zone degradation include:

- allowing stock access to watercourses
- invasion and competition from pest animal species (e.g. rabbits) and weed species (e.g. Willows and Blackberries)
- recreational activities
- building
- channel realignment.

Effects of riparian zone degradation include:

- unstable banks
- erosion of watercourses
- flow restriction
- weed invasion
- reduced water quality
- reduced biodiversity of both aquatic and terrestrial flora and fauna
- reduced aesthetic value.

The following activities are essential to reduce degradation and loss of riparian vegetation:

- fence riparian areas to protect them from stock; alternative water sources and shade/shelter must be provided
- encourage the regeneration of native vegetation
- minimise the number of tracks and trails leading to your riparian area; this will reduce the amount of sediment and nutrient-rich runoff from the tracks into the watercourse
- minimise ground disturbance during weed removal activities in the riparian zone
- minimise herbicide and pesticide use; ensure that pesticides and herbicides are registered for use near water
- revegetate degraded and eroded riparian areas with suitable local native vegetation.

Managing farm dams

The primary use of farm dams is to provide water for stock and domestic purposes. If not properly managed, farm dams can have an impact on the water quality on your property, and affect downstream users and the environment. All dams, new and existing, should be managed to maximise stock safety and health and to minimise impacts on the environment. Note that a water allocation plan for the area may limit taking of water from a dam, and/or may require the installation of a bypass for low flows.



Native plants and grasses help stabilise dam banks

Here are some hints for improving dam health:

- Use fencing to limit stock access to one or two locations at the dam. Best practice is to completely exclude stock from dams and provide alternative watering points. This prevents stock from fouling the water and minimises erosion. The result should be good water quality and a long lasting dam which benefits both stock and the environment.
- Prevent nutrients from entering the dam by leaving an unfertilised strip where water flows into the dam. This will help minimise the chances of a blue-green algae outbreak.
- Avoid using fertilisers, herbicides and pesticides around dams and watercourses.
- Encourage native plants to grow in and around the dam – reeds, sedges and rushes at the water's edge and grasses and shrubs on the banks; native vegetation will filter out sediments and nutrients and provide habitat for native animals.
- Don't plant trees on the dam wall, as their roots may weaken it. It is best to have permanent grass cover on dam walls to reduce erosion.
- Maintain dam spillways well, as they are crucial to dam stability.

Rainwater tanks

In our Mediterranean climate of hot and dry summers and wet winters, collecting and storing as much rainfall as possible is important. As climate variability increases, capturing and storing rainfall becomes increasingly important. Collecting and storing rainwater in tanks is a sustainable way of reducing your reliance on mains, ground or surface water supplies.

For every millimetre of rainfall and square metre of roof area, one litre of rainfall can be collected. For example, if your total roof area is 200 m², 200 L of water can be collected for each mm of rainfall. Calculating your water requirements and collection area will help you decide the size of tank you need.

Reducing household water use

Saving water in and around your home benefits the environment and there are many ways to do this. People who live in rural areas have developed water saving methods through necessity and experience.

Try these tips for using less water inside your house:

- install dual flush toilets with a high star rating
- use water-saving shower heads with a high star rating
- install water efficient washing machines and dishwashers with a high star rating; only use washing machines and dishwashers when full
- ensure that there are no leaks in your plumbing system and repair any dripping taps promptly
- install water-efficient taps and tap aerators.

The SA Water website provides useful tips for saving water with a few simple changes to your everyday activities. Visit www.sawater.com.au to find out more.

Outside water use

Outside water use for gardens, lawns and watering stock on an average rural residential block (e.g. 2 ha) can be 125–250,000 L per year.

Stock requirements

As a guide, stock usually require the following amounts of water (on average):

- horse – 17,000 L per year (47.5 L/day)
- sheep (adult – dry feed) – 2500 L per year (7 L/day)
- beef cattle – 21,000 L per year (57.5 L/day)
- dairy cattle – 26,500 L per year (72.5 L/day)
- dog – 3000 L per year (8 L/day)
- pig (boar or dry sow) – 5000 L per year (13.5 L/day).

Please note that stock water requirements vary greatly depending on factors such as the life-stage of the animal (e.g. a lactating cow on grass may need up to 250 L per day), the time of the year, the moisture in the pasture, and water quality (e.g. animals drink more water if it is salty). It is critical that animals have access to reliable and clean water at all times.

Garden requirements

Gardens can potentially need a lot of water, especially during the hotter months, but there are many ways to reduce that need.

For example:

- plant drought-tolerant species – use local native plants where possible
- install a drip irrigation system
- mulch all garden areas to a depth of 75 mm
- compost household and garden waste and use it to improve soil condition and organic matter content
- keep lawn to around 5 cm in height to reduce evaporation (the blades shade each other)
- infrequent watering improves the drought resistance of your plants by encouraging deep roots – water less often, but for longer periods at slow rates
- install a rainwater tank – rainwater tanks can supply a substantial proportion of household water
- use greywater in the garden – greywater is the wastewater from baths, showers, hand basins and washing machines' final rinse; do not use water from toilets, or kitchen wastewater. Use greywater in a controlled way to avoid adverse health impacts – it should not be stored for more than 24 hours. Contact your local council or the Office of the Technical Regulator for guidelines on applying to use greywater.

More information

For more information about water resources, water affecting activities and to apply for permits, visit www.naturalresources.sa.gov.au/adelaidemtloftyranges.

For more information on water saving, visit the SA Water website at www.sawater.com.au.

For information and advice on funding available to landholders for watercourse restoration work, contact your local natural resources centre (see the 'Local information' chapter).

For more information on the installation and use of greywater systems, contact your local council.

Soil

Your soil is a valuable resource containing nutrients for pastures and crops and for the growth of native species.

The greatest threat to your soil is erosion from wind and water. Soil erosion can be exacerbated by animals, vehicles and vegetation removal. Erosion removes valuable soil from your property, reduces the productivity of your land, and pollutes watercourses, dams and reservoirs with turbid water that is full of nutrients and silt.

The best protection against erosion is adequate groundcover. Remnant native vegetation and perennial pastures provide the most durable protection for your soil. If using native grasses, careful management is required for them to persist.

Carefully consider pasture improvement management strategies as they can impact areas of native grasses. Herbicides and grazing management can safely be used to control weeds and maintain permanent grass cover, providing they are used appropriately.



Erosion

Some soils are very susceptible to the various forms of water erosion. Factors such as slope, rainfall intensities and natural groundcover influence natural erosion rates, as can overstocking or over-cultivating paddocks.

You can help minimise erosion and retain topsoil on your property by using the following good land management practices:

- Provide adequate vegetation cover, particularly at ground level. Ground vegetation should provide at least 70 per cent groundcover all year round.
- Understand the grazing patterns of the livestock you keep. For example, horses do not evenly graze paddocks and alpacas are fussy eaters. An understanding of the grazing habits of your animals will enable you to manage your pastures and avoid overgrazing.
- Rotate your activities to rest the land and maintain continuous grass cover in grazing paddocks.
- Seek professional advice about revegetating the property using appropriate local native species by establishing windbreaks and native vegetation along watercourses and farm roads. This will help filter out sediment and nutrients as well as provide stability and habitat for native fauna. Note: determine your landscape type prior to undertaking revegetation works. Dense planting of trees in an open grassland for example, can detrimentally affect the value of that habitat and local native fauna.
- Protect and enhance existing native vegetation. When choosing plants, local native species will grow well, provide habitat and not become weeds. It is well worth joining a local Landcare group which can help with plants propagated from locally collected seed indigenous to your area.
- Cultivate and plant along contour lines. Don't cultivate steeply sloping land as this can lead to erosion.
- Construct access roads along the contour on gentle slopes wherever possible and avoid waterlogged areas.
- Find out about your land's capabilities. Contact your local natural resources centre for a fact sheet about the Land Capability Classification System. Altogether, there are eight capability classes and it is recommended that you don't cultivate land in Classes 5–8.

You can also prevent soil loss and erosion by controlling water runoff with devices such as contour banks, sediment traps, flumes, straw bales and mulches.

It is important to obtain technical advice from the relevant authorities before undertaking any of these works. There may be erosion control structures already on your property. If so, they should be maintained and not disturbed to ensure their continuing operation. Contact your local natural resources centre for more assistance (see the 'Local information' chapter).

Soil acidity

Many of our soils are naturally acidic but light-textured soils in high rainfall areas are at particular risk. Soil acidity is a gradual process that is best corrected before the implications become irreversible.

The effects of soil acidity include:

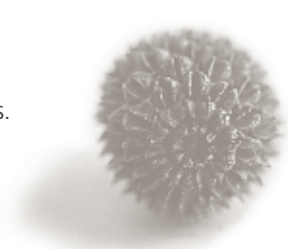
- reduced agricultural production and viability
- increased production costs due to the costs of treatment
- groundcover decline, increasing the likelihood of erosion and declining water quality
- reduced water use by vegetation contributing to salinity.

Some causes of soil acidity include:

- natural pH decline through leaching
- high legume content of pastures contributing to nitrate leaching
- removal of alkaline plants (especially hay), animal produce and waste products speed up the acidification process
- 'nitrate leaching' – lack of deep-rooted grasses to catch the nitrogen produced before it leaches
- application of nitrogen fertilisers.

There are three basic strategies for managing acid soils:

1. Use deep-rooted perennial pastures to improve nitrogen recycling and slow the rate of acidification.
2. Use lime to raise soil pH (most useful if only the topsoil is acidic).
3. Use plants that are tolerant of acid soil conditions.



Contact your local natural resources centre for more information about the causes of soil acidity and help with treatment options (see the 'Local information' chapter).

Dryland salinity

Dryland salinity occurs naturally when groundwater discharges or seeps to the surface, bringing soil salts with it. Salt can also be drawn to the surface by capillary action. When the water balance is disturbed by the removal of deep-rooted perennial vegetation, dryland salinity is accelerated. Dryland salinity can cause vegetation loss and stream salinisation and be a precursor to soil erosion.

Causes of dryland salinity include:

- removing deep-rooted perennial vegetation and replacing it with shallow-rooted pastures and crops – this raises the water table, which brings salt to the surface
- blocking natural groundwater flow (e.g. by roads or dams).

Some effects of dryland salinity include:

- loss of desirable vegetation
- growth of salt-tolerant species
- reduced crop and pasture production
- waterlogged soil
- soil erosion
- increased salt loads in rivers and streams
- reduced surface and groundwater quality
- declining soil structure
- damage to buildings, roads, septic systems and pipes.

These impacts of dryland salinity can affect your property. When considering methods to manage dryland salinity, it is important to get technical advice from the relevant authorities. See 'More information' at the end of this section.

Sodicity

Sodic soils contain enough exchangeable sodium to adversely affect soil stability and plant growth. As a result, clay particles in the soil lose their tendency to stick together when wet. This leads to unstable soils that may erode or become impermeable to both water and plant roots.

Sodicity is a more widespread form of land degradation than salinity. It affects nearly one third of all soils in Australia, causing poor water infiltration, surface crusting, erosion and waterlogging. Runoff from sodic soils carries clay particles into watercourses, causing environmental problems in rivers and wetlands. This runoff is more likely to carry higher levels of nitrogen and phosphate which contribute to algal blooms in watercourses.

Applying gypsum to the affected soil can treat topsoil sodicity. Large quantities of gypsum are usually required for more than a short-term effect. The best way to treat sodic subsoil is to stop the subsoil from being exposed. It is important to get technical advice before treating your soil.

More information

For more information on soil management, contact your local natural resources centre or contact Primary Industries and Resources South Australia (see the 'Local information' chapter).

Native vegetation and animals

Remnant native vegetation

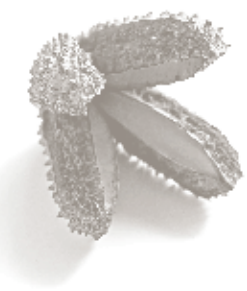
Remnant native vegetation is an area's remaining indigenous vegetation, including forests, woodlands, shrublands and native grasslands. Much of the original native vegetation in the AMLR region has been cleared for agriculture since European settlement. In some instances, this has resulted in problems including soil erosion, loss of soil structure, weed invasion, increased salinity, reduced water quality and loss of biodiversity.

Protecting and promoting native vegetation can enhance the value of your property and increase productivity, by providing shade and shelter for stock, windbreaks for crops and pasture, habitat for native wildlife and stabilising soils to reduce erosion.

If conserving biodiversity is one of your goals, use the following priorities to help you decide where to start:

Priority 1: Protect remnant native vegetation

- Exclude stock from native vegetation by ensuring you have good fencing.
- Control feral animals such as rabbits, foxes, deer, goats and cats.



- Consider whether and how you will need to manage overabundant native grazing animals (e.g. kangaroos).
- Control weeds using the following principles:
 - a. accurately identify plants so that natives are not accidentally removed or damaged
 - b. use minimal disturbance techniques
 - c. start in the best areas of bushland and work outwards
 - d. concentrate on high-threat weeds first.

Priority 2: Encourage natural regeneration

Many areas have the capacity to naturally regenerate – provided they are carefully managed. Regeneration is far cheaper than revegetation and is more likely to represent the original genetic and species diversity of the site.

Encouraging natural regeneration generally requires the same management activities as for protecting remnants. However, a higher level of weed control will usually be needed, and carefully managed grazing is sometimes useful in promoting native grasses over introduced pastures and pasture weeds.

Priority 3: Revegetate

Revegetate using local native species, with the range and rationing of species selected to represent the original vegetation association.

When planning a replanting program, always try to:

- use seed that is sourced locally wherever possible
- use plants that have been grown locally to ensure they acclimatise to local conditions
- select a range and ratio of species to represent the original vegetation association as closely as possible.

Thick strips of native trees (about five trees wide) and shrubs can provide shelter for stock and protection against drying winds, moderate temperature extremes, prevent pollution of streams by nutrient runoff, and impede windblown weed seeds.

How good is that piece of bush?

Rule of thumb: Any patch of native vegetation is valuable. A minimum of 30 per cent cover of native vegetation across a rural property will help maintain ecosystems and improve productivity. Your neighbour's bush and others nearby may help contribute a viable local core habitat area or 'corridor' of vegetation for native animals.

Most native plant diversity is in the groundcover layer. Spring is the best time to appreciate a range of native wildflowers that may be dormant for much of the year.

Remember to:

- avoid fragmenting existing areas of native vegetation, including remnant grasslands. If you are building new fencelines, roads or services, consider building them around areas of native vegetation rather than through them
- ensure that plant species are correctly identified when spraying weeds (many native species can be easily misidentified as weeds).

Native Vegetation Act 1991

Remnant native vegetation is protected from clearance under the *Native Vegetation Act 1991*. Strict exemptions exist for certain situations such as for maintaining roadsides, fencelines, firebreaks and developments.

For more information contact your local natural resources centre (see the 'Local information' chapter).



Environment Protection and Biodiversity Conservation Act 1999

This Commonwealth Act is designed to protect nationally threatened species and ecological communities from direct and indirect threats. Four ecological communities that occur in the AMLR region are protected under this Act.

They are:

- Fleurieu Peninsula swamps
- Peppermint box grassy woodland
- Iron-grass natural temperate grassland
- Grey box grassy woodlands and derived native grassland.

Native animals

All native animals in South Australia are protected (except those specifically listed as “unprotected” under the *National Parks and Wildlife Act 1972*). This means that it is illegal to trap, kill or harm them unless licensed otherwise. Although we would like to live in unison with native animals, sometimes they can pose a threat to our safety or activities. It is important to understand how to correctly manage these situations on your property.

A few native animals can become a nuisance if not managed appropriately. For instance, kangaroos often show a strong liking for planted native seedlings. It is crucial to fence off revegetation areas as well as gardens, which native animals such as kangaroos will also often target.

Possums can sometimes become nuisances in roof spaces. In such cases, it is best to provide nest boxes for the possums outside the house, remove them from the roof, and seal entrance holes. Possums are territorial, so removing them from your property can result in death of the animal and injury to others.

Your legal requirements:

- you need a permit
- trapped possums must be released within 24 hours of capture (at sunset on the day of capture).
- they must be released within 50 metres of where you caught them.

Find out more on how to deal with possums at: www.environment.sa.gov.au. Some councils also hire out possum traps (see the ‘Local information’ chapter).

Several species of venomous snakes could live in your area. Most snake bites recorded in South Australia happen to people who try to catch or kill them. Give snakes some space and they will generally leave the area.

The snake season usually lasts from late October to early March. The following actions can reduce the chance of snake bite:

- Store loose sheets of iron, timber, and other materials off ground level (e.g. on pallets).
- Mow frequently trafficked areas and those around buildings.
- Wear enclosed leather shoes or gaiters when walking in long grass or near creeks or farm dams.
- Wear long trousers and leather gloves if handling vegetation.
- Let snakes pass through and away from your house or paddock, but if they decide to take up residence contact a snake catcher to relocate them.
- If you see a snake, stand still and allow it to continue on its path.

Providing a fauna-friendly property

If you would like to encourage small birds and other wildlife, such as bats, around your property, here are some ways to attract them:

- Leave dead trees with hollows intact, whether standing or on the ground.
- Plant a variety of local native shrubs, especially dense or prickly ones. Use mainly white, pink or yellow flowering shrubs and keep red flowering shrubs in smaller numbers. Large numbers of red flowering shrubs can attract noisy mynah birds and larger honeyeaters that actively exclude other smaller birds from the area.
- Provide bird baths and other watering points.
- Build and maintain nest boxes where few hollow trees remain.
- Manage your animals to ensure that they don’t interfere with native fauna. For example, if you own a cat, ensure that it doesn’t stray and attach a bell attached to its collar to alert native birds.
- Do not remove mistletoes – they are an excellent source of food and habitat for a range of animals.

Feeding native animals and birds can be an issue as it may make them dependent. Human foods may also cause problems for native animals; for example, bread can cause lumpy jaw in kangaroos.



Frogs are desirable animals to have living on your property.

The following actions will encourage frogs to stay or colonise:

- use ponds or pools as part of your garden landscaping
- place logs or other large timber off-cuts around the edge of open water bodies
- plant native reeds, rushes and sedges in clumps around water bodies
- plant tussock-forming vegetation a short distance from dams so frogs can shelter and forage.

A pond, dam or creek full of life not only creates a healthy environment but can provide many peaceful hours for you and your family to explore.

More information

For information on managing native vegetation, contact your local natural resources centre (see the 'Local information' chapter). Natural Resources AMLR staff can also visit your property and give you advice.

Further information on native species in the Adelaide and Mount Lofty Ranges region can be found at www.naturalresources.sa.gov.au/adelaidemtloftyranges.

Fire

Living in a rural setting is a lifestyle choice for many South Australians. The benefits are enormous; but the risks are real.

All people living in the bush, including those in peri-urban fringe areas of Adelaide and regional South Australia, are vulnerable. It is therefore vital that you have a practical Bushfire Survival Plan.

Legislation

Fire and Emergency Services Act 2005

The purpose of this Act, which established the South Australian Fire and Emergency Services Commission, is to:

- provide for the continuation of a metropolitan fire and emergency service, a country fire and emergency service, and a state emergency service
- provide for the prevention, control and suppression of fires
- handle certain emergency situations.

Key points:

- landowners are obliged to manage fuel levels on their properties
- if council believes that conditions on private land in a fire district may cause an unreasonable risk of the outbreak of fire on the land, or the spread of fire through the land, the council may issue a written notice specifying action(s) that the landowner must undertake within a specified time.



Fire danger ratings

The Fire Danger Rating is issued on a daily basis for each Fire Ban District. The rating reflects the risk of a bushfire spreading and is based on factors that contribute to fire behaviour such as temperature, wind speed and humidity. The categories from lowest risk to highest are: Low-Moderate, High, Very High, Severe, Extreme and Catastrophic. Total fire bans are issued on days that are rated Severe or higher.

Daily updated fire danger ratings for your area can be found on the CFS website, www.cfs.sa.gov.au.

Bushfire warnings

A new bushfire advice and warnings system was implemented in South Australia in 2010. This system, agreed to nationally, will help you decide what actions you need to take depending on the predicted fire danger. Three levels of messaging will help you make informed decisions about what actions you need to take to survive a bushfire. They are:

1. Advice – no immediate threat but messages will keep people informed about low-level incidents
2. Watch and act – people need to take action to protect themselves, their family and neighbours
3. Emergency warning – highest level of risk to life.

Emergency warning messages will be broadcast over ABC local radio accompanied by the Standard Emergency Warning Signal. These warnings can also be accessed through AlertSA (www.alert.sa.gov.au) or the smartphone app.

Bushfire survival plan

Your Bushfire Survival Plan outlines the work required to help safeguard your property and, most importantly, what actions you and your family will take on high fire risk days and if a fire threatens.

If you live in the bush, the suburban fringe or regional South Australia, then you are in danger of experiencing a bushfire.

The decision whether to 'stay and defend' your home, or 'go early' for each of the Fire Danger Rating levels is critical and should be made before the fire danger season – and well before a bushfire arrives.

If you plan to 'stay and defend' your property, you will need to consider the following:

- Are you physically fit to fight spot fires in and around your home for up to 10 hours or more?
- Are you mentally and emotionally able to cope with the intense smoke, heat and noise of a bushfire, while implementing your plan?
- Are you able to implement your plan while caring for young children, elderly or disabled people in your home?
- Do you have the resources and equipment to effectively fight a fire – a water supply of at least 5000 L (a water tank, pond, dam, creek or swimming pool) and a petrol/diesel powered firefighting pump with adequate hose length?
- Does your home have a defensible space of at least 20 m cleared of flammable materials and vegetation?
- Is your home in a location that puts it at higher than normal risk or makes it difficult to defend, such as on a steep slope or in close proximity to bushland?

Bushfire Survival Plans can be downloaded from the CFS website (www.cfs.sa.gov.au). Once you have completed your plan, practice it regularly and keep it in a safe and easily accessible place for quick reference, e.g. on the fridge.

Property protection

A home can ignite in various ways during a bushfire – from radiant heat ahead of the fire front, burning debris falling on the building, and direct flame contact. However, research has shown that the biggest ignition source is sparks and embers that travel through the air before, and hours after, the fire front has passed. Sparks and embers enter a home wherever there is a gap, such as under roofing tiles, under the floor, in crevices, window sills, vents and under verandahs.

Some basic measures will improve your home's fire safety:

Smooth surfaces – no nooks and crannies where leaves and debris can gather.

Roofing – well-secured metal roofing is preferable, a tiled roof needs to be well fitted with fire-resistant sarking (i.e. fibreglass-based aluminum foil).

Walls – non-flammable wall materials such as brick, mud brick and fibre cement are necessary as vinyl weatherboards, rough timber, and other wall claddings can warp or catch fire.

Windows, crevices and vents – spark-proof your home with metal flywire screens on windows and doors, or install fire-resistant metal shutters. Cover all wall cavities in fine wire mesh.

Skylights – install wire-reinforced glass or a thermo plastic cover on skylights as plastic can melt and glass can break in strong heat.

Property access – gateways should be at least 4 m wide with vertical clearance of 4 m. Provide clear access with a turnaround point for firefighting vehicles.

Gutters – regularly clean gutters and remove leaves and bark from any areas where they may become trapped.

Prepare a 20 m defensible zone around your house by minimising the amount of fuel close to it. This will prevent fires from burning close to the house and minimise the effect of radiant heat and direct flame impact.

Sprinkler system – a home bushfire sprinkler system that directs water over the roof, windows, doors and exposed under floor areas is one

of the most effective ways to protect against radiant heat, direct flame and ember attack. Seek professional advice for design and installation.

Machinery maintenance

Landholders need to take precautions to ensure that every item of equipment on their property which generates heat in one form or another is in good working order and not likely to ignite crops, pastures or any other flammable substances during the fire danger season.

When the machinery is in the field, always carry a full knapsack or water extinguisher, and a rake or shovel. This precaution is mandatory when harvesting a flammable crop, spreading lime or fertiliser, or moving a flammable crop after harvest.

Livestock protection

Identify the safest paddock on your property and consider moving stock into this paddock on high fire danger days. Your safe paddock should:

- have a reliable water supply
- have clear access
- be well grazed with minimum fuel to carry fire
- be well fenced.

If animals do sustain burns, the best form of immediate first aid is to sponge the affected area with cold water until proper veterinary care is available.

Fire ban information

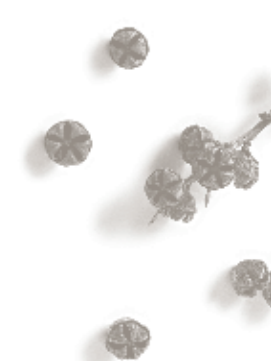
Fire danger seasons change from year to year, depending on seasonal conditions. Check the CFS website (www.cfs.sa.gov.au) for the current dates for your fire ban district.

Total fire bans can be declared at any time of the year, not just during the fire danger season. With a few exceptions, no fires can be lit in the open on a Total Fire Ban day.

More information

For more information visit the CFS website www.cfs.sa.gov.au or call the Bushfire Information Hotline on 1800 362 361.

For information about fire prevention, contact your local council's fire prevention officer (council contact details are in the 'Local information' chapter).



Weeds

Weeds can be a major problem to rural properties because of the impact they have on agricultural production, biodiversity, water quality and soil conservation. They often have a high level of reproductive ability with easy dispersal and are highly competitive, with a lack of natural controls.

Weeds can be introduced and/or spread to your property in a variety of ways, including:

- in contaminated stock feed which may contain weed material such as seeds and poisonous plants
- on animals and livestock which may carry weeds on their fur, wool, in their guts or on their hooves
- on farm machinery and vehicles which may carry weeds around wheels, in the engine bay, underneath the body and even inside the vehicle on floor mats
- by water, wind, in soil and in garden waste
- deliberate introductions (e.g. willows planted for bank stabilisation)
- land managers' lack of awareness, an inability to identify weeds and respond effectively
- poor land management such as overgrazing often leads to bare ground that is readily invaded by broad leaf weeds and annual grasses.

Declared weeds

Some weeds are known as declared weeds. They are declared under the *Natural Resources Management Act 2004* because they have been deemed a risk to agriculture, the environment or

public safety. Landowners are required to control 'declared weeds'. Declared (and undeclared) plant policies are available on the Primary Industries and Regions SA website, along with the complete list of declared plants <http://pir.sa.gov.au/biosecurity>.

Natural Resources AMLR staff are available to carry out free property visits and advise on the most appropriate methods to control weeds on your property. Some staff are also authorised to issue notices directing landholders to control declared weeds on their properties.

Weed control

The aim of control is to remove the weed, stop its spread, deplete the seed reservoir and prevent re-establishment.

Most weeds were introduced from other countries – some arrived by accident while others were brought in for various reasons. The natural enemies that kept the plants under control in their native countries are not present in Australia.

Impacts of weeds include:

- loss of native flora and fauna
- reduced land productivity
- reduced water quality
- increased control costs (as they spread and become established)
- soil degradation and erosion.



Salvation Jane infestation

Weed control is most effective when a variety of methods are used. An integrated approach to weed management may include using techniques such as strategic grazing, pasture improvement, herbicides, biological control agents, cultivation, slashing, mulching and hand pulling. Using an integrated weed control approach increases the chances of success. Herbicides are often an important part of an integrated plan to control weeds but should not be the only control technique.

More information

Contact your local natural resources centre for identification and control advice for all declared and non-declared weeds (see the 'Local information' chapter). Your local centre can provide advice for most situations including pasture, native vegetation, watercourses and roadsides.

Pest animals

Pest animals and insects cause serious economic losses to agricultural production, unacceptable risk of exotic disease, threaten the survival of many native species and cause environmental degradation, including erosion.

Under the *Natural Resources Management Act 2004*, rabbits, foxes, feral goats and deer are declared pest animals in South Australia and property owners have a responsibility to control them.

Rabbits, for example, can cause a lot of damage, even in low numbers. They remain a major concern despite the impacts of the rabbit calicivirus disease. Foxes and cats are considered major threats to biodiversity within the Mount Lofty Ranges because of their impact on native animals.



Rabbits can cause a lot of damage, even in low numbers

Targeted baiting programs can help mitigate the impacts of both rabbits and foxes. Rabbit baits can be obtained from most agricultural retailers and natural resources centres. Baiting is most successful in the hot summer months when rabbits are most vulnerable. Fox baits are available from natural resources centres. (Please phone ahead to ensure they are available and you understand the legislated requirements. Contact details are in the 'Local information' chapter). For foxes, optimal baiting times vary.

Best practice pest management

Here is a suggested action list for pest management:

- 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.
- Keep an eye out for and identify any pest animals on your property, including signs of their presence.
- Contact your local natural resources centre for recommended methods and strategies for controlling pest animals on your property. Methods recommended will depend on your property location (e.g. properties near urban areas may need different strategies to those used in rural areas).
- Employ the recommended pest animal control strategies for each type of pest animal on your property. This may mean carrying out particular activities at specific times of the year, or at times when animal numbers reach a certain level.
- Regularly monitor pest animal activity and modify your control programs accordingly.



Fox. Credit: Lee Allen, Invasive Animals CRC

Domestic dogs and cats

Domestic dogs and cats can also have negative effects on the environment and farming practices. Both can kill and maim native animals, and dogs injure or kill livestock. To reduce this risk, put a bell around your cat's neck and keep it indoors, and keep dogs chained up or within a secure yard. You must register dogs through your local council.

Any unwanted animals should be taken to the Royal Society for the Prevention of Cruelty to Animals (RSPCA), or your veterinarian.

Pets and other stock must be kept within your property boundary. Wandering animals can upset neighbours and you are liable for any damage or stock losses your animals might cause. In public areas, dogs must be kept on a leash. Bury dead animals promptly and away from watercourses so that they do not cause pollution.

More information

For more information and fact sheets about the control of pest animals, visit the Natural Resources Adelaide and Mount Lofty Ranges website at www.naturalresources.sa.gov.au/adelaidentloftyranges, or contact your local natural resources centre (see the 'Local information' chapter). For more information about dogs and cats, contact your local council (also in the 'Local information' chapter).



3 | Property management

- Waste management
- Effluent management
- Chemicals
- Wood smoke and heating
- Livestock management
- Fences
- Farm safety
- Rates
- Absentee landholders
- Developing your property
- Improving your knowledge
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Waste management

It is important to dispose of waste in an environmentally responsible way. Rural properties produce a wide range and significant amount of waste typically including domestic waste, solid waste (e.g. wire or old whitegoods), farm chemicals and occasionally dead stock. Dumping waste in eroded gullies is not acceptable.

Domestic waste

Weekly domestic waste collection and occasional hard rubbish collection is available in many council areas. Remember that many items are not suitable for disposal in domestic waste including toxic substances such as paints and chemicals. (Contact your local council or the Environment Protection Authority for further advice (see the 'Local information' chapter).

If you generate more waste than can be handled through your domestic rubbish bin, contact your local council for information about waste transfer stations in your area.

Composting

Almost half of our domestic waste consists of kitchen and garden waste. Most of this material can be composted.

Composting returns nutrients to the soil that would otherwise be lost, improves soil structure, and increases the water holding capacity of the soil.

Items suitable for composting Include:

- 'greens' grass cuttings, non-woody garden prunings, weeds that have not gone to seed, leaves, flowers and vegetable remains, kitchen waste (including egg shells and bread), herbivore animal manure – horse, chicken, cow, sheep, goat and alpaca
- 'browns' including paper and cardboard, wood fire ash, sawdust and wood shavings, vacuum dust and hair.
- Feeding food scraps to chicken and then composting the chicken manure is also a great option.

You can make compost either in a heap or a bin, depending on quantity. Your local hardware store will sell a range of composting bins. Composting moisture balance depends on whether you wish to compost anaerobically or aerobically. A simple internet search will provide you with the perfect formula and great DIY compost bin construction options for the types of items you will be composting.

Recycling and reuse

In most areas you can recycle a large number of materials, including:

- paper
- cardboard
- some plastics
- steel cans (including aerosol cans and paint tins)
- aluminium cans and foil
- glass jars and bottles
- juice and milk cartons.

Contact your local council for information about recycling services.

Create less waste

- Much household waste begins at the shop. Become a waste-conscious consumer and only buy what you need.
- Single use plastics, e.g. plastic bags, disposable nappies, plastic food wraps persist in landfills, rivers and oceans indefinitely, harming water quality and wildlife. Refuse single use plastics whenever possible.
- Refuse, repair, reuse and recycle items.

Burning

Burning waste, such as household rubbish and garden clippings, has a negative impact on air quality. Laws have been introduced over time to control backyard and other open air burning. These have been successful in reducing levels of particulate air pollution.

Some burning of garden waste may be permitted. You should carry out any burning in a way that prevents or minimises air pollution. For example don't burn green garden waste, and only burn in favourable wind conditions.

Restrictions apply during the fire ban season October to April. Contact the CFS (see the 'Local information' chapter) for further details. For all queries relating to burning waste, contact your local council's fire prevention officer.

Dead stock disposal

Disposing of dead stock, whether it's one animal or several, carries the risk of polluting watercourses, producing odours, attracting vermin, spreading disease and interfering with community amenity. If possible, carcasses should be utilised or rendered.

If the animals are to be slaughtered, contact a local abattoir or butcher to investigate the economies of getting them to do the work. Your local vet may also have good suggestions.

If you must dispose of carcasses on the farm it is important to do the job quickly and thoroughly. Burning is rarely satisfactory – burying is better. However, in the case of certain exotic diseases, burning may be mandatory. Contact Biosecurity SA if you suspect an animal may have been affected by an exotic disease.

To reduce swelling during decomposition; the abdomens and paunches of the carcasses should be opened to allow gases to escape. Carcasses should be heaped at least 50 m from watercourses. The heap can then be buried, (so long as burying does not create erosion or pollution issues) or burned in accordance with council and CFS burning restrictions.

More information

For more information on waste management, contact your local council or the Environment Protection Authority (EPA) (see the 'Local information' chapter).

Effluent management

You are required by law to ensure that your onsite effluent management system is operating properly.

Septic systems

Failing on-site effluent management systems release dangerous levels of sewage pollution into the environment. This can contaminate water, spread disease and lead to environmental degradation.

If you live in a non-sewered area you will need an effluent management system. There are two main types available in South Australia – conventional and aerobic. In more recent years the range of systems approved by SA Health has broadened slightly to include some composting systems as well as on-site greywater treatment systems. Any system installed must be on the SA Health approved products list as well as comply with SA Health's Wastewater Systems Code. For further information visit www.sahealth.sa.gov.au.

Septic tank systems

A conventional septic tank system may be either all-purpose or a water closet (WC) only. Both systems function in the same manner. They consist of two components – the septic tank and a soil absorption field or soakage trench. The tank is installed in the ground, with a shaft over the lid opening to allow access for the tank to be pumped out (every two to four years). The trench system is also underground and will only be visible via a breather pipe or vent pipe.

A septic system takes all household wastewater. The solids settle at the bottom of the tank, while the fats float to the surface. The liquid portion (effluent) gradually moves into the trench (leaving the solids and fats behind) where it then soaks into the soil. If the tank is not pumped regularly to remove the solids, they also begin to migrate through to the soakage trench. This is the main reason these systems break down. The solids and fats cannot be absorbed into the soil but, rather, clog it, which in turn prevents the effluent from soaking away. The only way the effluent can then escape is to break through to surface level, where it becomes a health hazard.

Aerobic systems

Aerobic systems fall into two categories: aerobic wastewater treatment systems and aerobic sand filter systems. The functioning of aerobic systems differs from conventional septic systems in that they provide a secondary treatment and disinfection process, as well as the primary treatment (settling of solids). The reclaimed water can then be used to irrigate a designated area of the property.

Aerobic wastewater treatment systems

Aerobic wastewater treatment systems may consist of a one or two tank system. They include a primary treatment component and a secondary treatment component, where the wastewater is aerated and clarified before being stored in a pump chamber. The pump chamber is where disinfection occurs prior to the reclaimed water being discharged to the designated irrigation area. These systems require quarterly servicing by an accredited agent or properly trained person to ensure the reclaimed effluent complies with standards as stipulated by SA Health.

Aerobic sand filter systems

The aerobic sand filter system consists of a septic tank for primary treatment and a sand bed for secondary treatment. On leaving the septic tank, the wastewater enters a distribution sump, which allows its even distribution across a bed of sand. It is then filtered through the sand by gravity to a collection point at the base of the sand bed, before flowing to a pump chamber where disinfection occurs. This disinfected water is then discharged to the designated irrigation area. Aerobic sand filters have few working parts and therefore do not require quarterly servicing. However, monitoring is still needed to ensure that the reclaimed water complies with discharge criteria. The primary treatment component also requires regular pumping out to keep it functioning effectively.

Which system do you require?

It is important that you understand the type of septic system you have when moving into a new property so that you can undertake any required maintenance and minimize the risk of a pollution event. Replacement and installation of new systems must be done in conjunction with your local council and in line with SA Health's Wastewater Systems Code.

It should be noted that this information is intended as a guide only and does not incorporate all possible circumstances.

Chemicals

Chemicals such as fuel, fertiliser and pesticides are commonly used to help run rural properties. These chemicals are often dangerous, some are flammable, most are poisonous, and all can be harmful to the environment if used incorrectly. They can also pollute watercourses, particularly if they are stored or used near them.

The user has an obligation and a legal requirement to read the label and follow all directions. This is necessary to ensure your safety and that of your family, your livestock and the local wildlife and native vegetation. Considerable fines can be imposed for failure to properly transport, store, apply and dispose of chemicals and containers.



A range of common chemical brands

Storing chemicals

You need to be careful when using chemicals and store them correctly. Keep all chemicals in an area designed for this purpose. Safe storage maximises the life of pesticides, and protects people, animals and the environment.

A suitable chemical storage needs to:

- have a separate, well-ventilated cupboard or building used only for this purpose. It should be located away from houses, pumps, tanks, waterways and animals, and preferably be fireproof
- contain a manifest, copies of labels and Material Safety Data Sheet
- allow for cool and dry storage
- provide spillage containment
- ensure that liquids are not stored above solids
- have a locked storage area
- have warning signs on the outside of the storage area, e.g. 'Chemical Store – Keep Out' and a 'No Smoking' sign should be installed.

Transporting farm chemicals

Everyone transporting farm chemicals has a duty of care and a responsibility to carry out tasks in a manner that will not cause harm or injury to themselves, other people, their property, animals or the environment. Information about the transport requirements of individual chemicals are often found on the label or Material Safety Data Sheet. It is a good idea to check this information before moving them.

When collecting new containers of chemicals, check carefully for damage and tighten lids to prevent leaks. Make sure your vehicle is roadworthy and can safely transport chemicals. Put them inside a tray of some kind that will contain any spillage. Do not put chemicals in the same compartment as the driver and passengers, food or drinks, or animals. Vapours and spills can cause illness.

Do not transport items classified as Dangerous Goods in large quantities. Pack the load securely so items can't move or fall over and store different classes of chemicals apart. Take the most direct route back.

If any spills occur, clear the vehicle immediately. The main steps for dealing with a spill are to isolate, contain, decontaminate and dispose. Make sure you use appropriate clothing and safety gear to protect your skin and face, and to avoid ingesting vapours.

On arrival, transfer the containers straight into the chemical store. Make sure containers are not damaged.

Disposal of farm chemicals and containers

After chemicals have been applied according to the label directions you must dispose of empty containers and any unused chemicals in an environmentally responsible manner.

drumMUSTER

One of the greatest problems facing users of crop production and animal health products is the disposal of empty chemical containers. drumMUSTER is a national program set up for the collection and recycling of cleaned, eligible, non-returnable chemical containers. DrumMuster has standards around chemical container cleanliness which must be adhered to prior to dropping off containers. These standards are clearly stipulated on their website www.drummuster.org.au/container-recycling/drummuster-standard.

Visit www.drummuster.com.au or call 1800 008 707 to find out about drop off points in your area. Alternatively, contact your local council to find out more about this program.

DO NOT PUT CHEMICALS IN ANY FORM INTO DRAINS, GULLIES OR WATERCOURSES.

More information

The Environment Protection Authority (EPA) has produced a useful and free booklet titled *Safe and effective pesticide use*. To obtain a copy of this booklet visit www.epa.sa.gov.au.

For training in the use of farm chemicals, contact ChemCert Australia (SA) on 1800 444 228.

For general pesticide information and for details of licensed contractors, contact your local natural resources centre (see the 'Local information' chapter).

Wood smoke and heating

Smoke from wood heaters adds to air pollution. Poorly operated or inefficient solid fuel heaters are one of several sources of fine particles which contribute to the haze sometimes seen on still winter mornings. In the Adelaide Hills wood smoke may be the dominant cause of poor winter air quality.

The following measures will help to minimise pollution, improve local air quality, care for people's health, and save money.

Tips for efficient wood burning and minimising pollution:

- Always burn small logs of aged, dry hardwood. Unseasoned (green) wood has a higher moisture content and will produce more smoke.
- Store wood under cover in a dry, ventilated area and away from buildings.
- Freshly cut wood needs to be stored for 8–12 months before burning.
- Never burn rubbish, driftwood or treated or painted wood. It can pollute the air and be poisonous.
- When lighting a cold heater, use plenty of dry kindling to establish a good fire quickly.
- Stack wood loosely in your firebox so air can circulate; don't cram the firebox.
- Keep the flame lively and bright. Your fire should only smoke for a few minutes when you light it and when you add extra fuel. Open the air controls fully for five minutes before, and 15–20 minutes after, reloading.
- Do not let your heater smoulder overnight. Keep enough air in the fire to maintain a flame.
- Check your chimney regularly. If there is smoke coming from it, increase the air supply to your fire.
- Clean the chimney every year to prevent creosote build-up.

Solar power, or other sources of green power (electricity produced from renewable energy sources) are 'cleaner' alternatives.

For up to date information on energy savings and government energy efficiency programs visit www.sa.gov.au/topics/energy-and-environment.

More information

The EPA regulates the sale, installation and operation of solid wood heaters. For further information visit www.epa.sa.gov.au.

Livestock management

Managing livestock remains a popular enterprise on many small farms, but for new landholders it can sometimes be quite daunting. Sheep, cattle, horses and alpacas are often grazed throughout the Mount Lofty Ranges. If managing animals for the first time, make sure you have the appropriate yards, watering points and fencing and seek advice from a reputable source. It is important to maintain the soil on your property and retain maximum cover of good pasture.

Tactical grazing is an important strategy for managing pastures and controlling weeds, so establishing a number of paddocks on a property is generally a good idea for all types of livestock. Tactical grazing means using different techniques, moving your stock around according to the seasonal conditions and the needs of your livestock, finding the balance between utilizing pasture while maintain ground cover.

All properties grazing more than one animal – sheep, cattle, horses or alpacas require a property identification code (PIC). Property registration is mandatory under the *Livestock Act 1997*. It is part of a national agreement to maintain a register of the locations of livestock and property owner, or manager contact details.

The code records data about property owners, property information, species of animals on a property, and number of animals on a property.

The property identification code is used in cases of:

- disease outbreaks
- bushfires
- animal emergencies.

For more information, contact Primary Industries and Regions South Australia (see the 'Local information' chapter).



Sheep management

For many landholders, grazing sheep in the Mount Lofty Ranges provides one of the best ways to manage land. Sheep play an important role in good pasture management and weed control. They are lighter than cattle and horses and consequently do less damage to soil during the wetter months. Sheep also tend to be less selective grazers and will clean up a variety of weeds very effectively.

Inexperienced landholders will find sheep relatively easy to handle and health checks are straightforward, provided the property has suitable yards. Sheep require a safe environment, good pasture, clean reliable water, regular inspections, a sound disease prevention program, annual crutching and shearing and prompt treatment for sickness or injury. Note that some breeds of sheep shed their fleece and do not require crutching or shearing. They include Dorpers, Damaras, Wiltshires and Wiltipolls.

All sheep must be identified with a National Livestock Identification System (NLIS) ear tag. For more information contact PIRSA (see the 'Local information' chapter).

Cattle management

Cattle have always been one of the most popular livestock enterprises in the Mount Lofty Ranges and, if managed correctly, can be less demanding than sheep. However, they are large animals and inexperienced landholders should handle them with care. They require significantly more acreage than sheep as one beast will generally require ten times more acreage than one sheep. Cattle yards with a suitable crush or head bail are necessary. Like sheep, cattle require a safe environment, good pasture, clean reliable water, regular inspections, a sound disease prevention program and prompt treatment for sickness or injury.

All cattle must be identified with a National Livestock Identification System ear tag and Property Identification Code. For more information contact PIRSA (see the 'Local information' chapter).

Alpaca management

Alpacas are part of the camelid family originating from South American areas of high altitude. Their ability to withstand temperatures varying from freezing to extremely hot has enabled them to adapt well to Australian conditions.

They generally have a gentle nature which makes them easy to handle and, under normal conditions, will interact well with their human handlers.



Alpacas are intelligent animals which prefer to be with a herd, although they socialise well with other livestock species. Alpacas are fiercely protective of their territory and families, which is why they have gained a reputation as excellent guard animals for livestock, mostly sheep, vulnerable to fox attack.

They require a safe environment, good pasture, clean reliable water, regular inspections, a sound disease prevention program, annual shearing and prompt treatment for sickness or injury.

Horse management

There are thousands of horses on properties throughout the Mount Lofty Ranges. Keeping them can be very rewarding, but they are high-maintenance animals. Horses generally require extensive infrastructure such as stables, yards and good-quality fencing.

They are selective feeders and will avoid weeds in pastures. Therefore, where horses are the only grazing animals, weeds will often flourish. Horses can also be quite harsh on the soil and often create tracks, holes, and bare areas which promote weed growth and increase the risk of soil erosion.

They require careful attention, so nutrition and hand feeding may be necessary at certain times of the year. Horses need a good-quality pasture, clean reliable water, adequate shade and shelter, careful attention to their health and prompt treatment for sickness or injury.

Be aware that horse keeping is also regulated by local councils and you will need permission to keep them on your property.



Animal welfare

The RSPCA promotes 'Five freedoms of animal welfare':

1. freedom from hunger and thirst
2. freedom from discomfort
3. freedom from pain, injury or disease
4. freedom to express normal behaviour
5. freedom from fear and distress.

Owners can be prosecuted by the RSPCA if they don't meet the needs of their animals.

More information

Contact your local natural resources centre for further information on land management for livestock.

For animal health enquiries, contact your local vet, PIRSA Animal Health or the RSPCA (see the 'Local information' chapter).

Horse SA has an excellent range of resources on keeping horses and land healthy. Your local natural resources centre can also provide a range of information regarding land management for livestock (see the 'Local information' chapter).

Fences

Fences have various functions on rural properties and are vital to the successful management of your property. The quality, location, and upkeep of fencing is one of the most essential factors for good livestock and land management. You should consider the layout of fences, races and gates in a whole-of-property approach by developing a property plan (see the 'Buying your property' chapter for property planning information).

You can use fences for a range of purposes, including:

- defining the boundaries of your property
- grazing and stock management
- protecting the environment (keeping stock out of native vegetation and away from watercourses or revegetated areas)
- controlling pest animals
- increasing property value
- controlling erosion.



Fence construction methods will depend on what you are building the fence for and what type of animals you intend to keep in or out. Electric fences can be cost-effective, however they require regular inspection and maintenance and are not suitable for sheep. For fences to do their job properly, you need to maintain them, and keep gates shut. If you intend to lock your property don't forget that some service providers, such as the CFS, Telstra, SA Power Networks etc., may require an access key.

Wildlife-friendly fences

Fences are used not only for stock control, but also to protect vegetation and sensitive areas. What can you do to make fences suitable for stock and more wildlife-friendly?

- Use plain wires instead of ring lock or hinge joint.
- If possible use white horse sighter wire on the top strand and white caps on steel posts, or treated pine posts.
- Leave 300 mm between the top wire and the next one down. This is important to avoid kangaroos catching and trapping their legs between the two top wires.
- Don't use barbed wire. If existing fences have barbed wire consider taking that wire out, particularly the top strand.
- Keep fences at a moderate height (approximately 1.2 metres).
- Keep the bottom wire 15 centimetres above ground level. This will allow native animals such as echidnas to pass underneath.
- Place electric wires at heights that will deter stock but allow native animals to pass through.

- Structures such as wombat gates and pipe underpasses can help wildlife pass without damaging the fences.

Livestock control near watercourses

Stock should be excluded from watercourses wherever possible to avoid extensive erosion, land management and water quality issues.

Stock should also be kept out of watercourses because they:

- eat, trample and destroy the vegetation that protects banks from erosion
- compact the soil, making plant growth difficult
- make tracks that cause erosion
- stir up mud that can destroy aquatic habitat and reduce water quality
- add excess nutrients with manure
- destroy native aquatic life.

It is best practice for stock to be watered by troughs placed in a firm and stable location. Stock should only be allowed access to the watercourse for drinking as a last resort. If it's absolutely necessary, access should be confined to a relatively flat and stable area.

Restricting stock access to watercourses prevents erosion and degradation of the riparian (water's edge) zone vegetation and protects water quality. Occasional grazing between September and March may be an acceptable means of controlling weeds and grasses.

Declared weeds in and around watercourses need to be controlled (as in the surrounding paddocks), however special care is required when using herbicides near watercourses. Contact your local natural resources centre for advice (see the 'Local information' chapter).

Flood-prone fencing designs

Carefully consider the design of your fencing around waterways (i.e. in riparian zones). In flood-prone areas, you should consider:

- designing paddocks to avoid fencing across waterways
- placing fences above the floodplain and floodprone areas
- using temporary electric fencing instead of permanent fencing
- minimising the use of vertical structures. In flood-prone areas, plain wire fences tend to need less maintenance than ring lock or hinge joint structures as debris is less likely to catch in them.

Dividing fences

The *Fences Act 1975* sets out how the cost of a dividing fence is shared between adjoining landowners where an owner wants to erect a dividing fence or wants work done on an existing dividing fence. The Act sets out minimum requirements and owners may agree to arrangements exceeding these requirements.

The Act also sets out the procedure to resolve disputes about the cost, type and position of a fence.

The Legal Services Commission of South Australia has produced useful information regarding fences (www.lawhandbook.sa.gov.au). It explains landholders' rights and responsibilities when dealing with dividing fences. Contact the commission to obtain a copy of this booklet (see the 'Local information' chapter).

More information

Watercourse restoration, including fencing is a high priority in the AMLR region. Contact your local natural resources centre for more information about incentives available to landholders for watercourse restoration (see the 'Local information' chapter).

Farm safety

Rural properties can be dangerous places to live and work. Potential hazards include vehicles, tractors and attachments, motorcycles and all-terrain vehicles (ATVs), working from heights and the potential for manual handling injuries.

Injuries to part-time farmers, or farmers on small properties are a concern. Often these people do not have the necessary skills or equipment and can sustain injuries as a result.

Children are particularly at risk on farms because of easy access to water/dams and vehicles, including motorbikes and tractors.

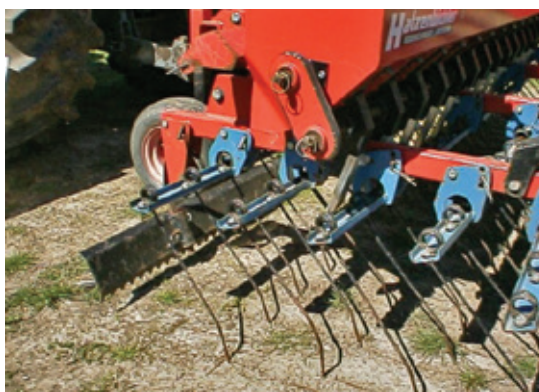
Preventing rural injuries

There are legal requirements to ensure that a farm is a safe workplace – just as there are for all work environments. Farms, too, are covered under the *Occupational Health and Safety Act 2000*. Be aware that ordinary house and contents insurance does not cover public liability or worker's compensation, and farm employees must be registered with WorkCover.

Rural injuries can be largely prevented by paying attention to seven major risk areas.

1. tractor and machinery safety
2. farm vehicle safety
3. farm motorcycle safety (including ATVs)
4. working from heights safely
5. chemical safety
6. manual handling safety and strain injury prevention
7. farm animal handling.

SafeWork SA has information on preventing injuries on rural properties. See the *Farmers' guidebook to work health and safety* at www.safework.sa.gov.au.





Livestock on roads

All rural landowners who own even just a few livestock must ensure that their roadside fences are kept in good condition. The owner of straying livestock is liable for any damage caused by the animals roaming at large. Stock owners should ensure they have appropriate insurance cover (public liability). Straying stock on public roads may be dealt with by council.

Is your farm safe for kids?

Farms are great places for kids when a safe environment has been created. You need to identify the specific hazards and risks your farm poses for children and visitors. Practice and teach safe behaviours, and reduce hazards and design for safety wherever possible.

Key recommendations for child safety on farms include:

- create a securely fenced house yard for children to play
- develop safety rules that everyone knows and follows
- confine children to the safe play area unless an adult can closely supervise them on the farm
- wear seatbelts and restraints when in cars, utes and trucks
- do not allow children to ride on tractors, ATVs or in the back of utes
- always wear helmets when riding bikes and horses
- teach children to be 'snake aware'.

More information

For further information and resources contact SafeWork SA (see the 'Local information' chapter).



Rates

Council rates are based on the Valuer-General's valuation of your property and on the rate per dollar set by the council when it finalises its annual budget. Tax and rate payments are not directly related to services that you may receive but rather to the needs of the local community as a whole.

The valuation process

Under the *Valuation of Land Act 1971* the State Valuation Office annually revalues all properties in the state with the new values taking effect from 1 July each year. Both site and capital values are determined. In essence the 'site value' is the value of the land excluding structural improvements, while the 'capital value' is the value of the land including improvements.

The values determined for a property are used by rating authorities as a basis for the levying of rates and taxes. Rating authorities may use either site or capital values. The rating authorities that use property values are:

- SA Water (for water and sewerage rates)
- Revenue SA (for land tax and emergency services levy)
- local councils (for council rates).

How are property values determined?

Sales of all property types are analysed to determine market movements. This analysis of sales happens throughout the year and occurs both for site values (land only) and capital values (improvements). Market movements can vary among different property types and locations.

A property database, central to the valuation process, is kept for all properties within the state. This database includes information on land use

(e.g. residential, commercial, industrial) and the physical details of the land and improvements (e.g. building size, construction and condition).

This information is updated regularly with changes identified from a range of sources, including development approval, information from councils, and manual inspection programs by valuation field staff.

The property value is then calculated by comparing the property data with that for similar properties that have sold (adjustments being made for any differences). Details of relevant property sales are available from the South Australian Integrated Land Information System or visit www.sailis.sa.gov.au/home/public.

Natural resources management levy

Everyone who lives and works in the region has an impact on the environment. As such, we all share a responsibility to take care of our precious soil, water, landscapes, marine environments, native animals and plants and ecosystems. Your contribution through the natural resources management (NRM) levy helps fund the vital work needed to care for and enhance these environmental assets. In the AMLR region, the NRM levy is charged to every rateable property. NRM levies also apply to landholders in other regions.

Councils collect the levy on behalf of your regional NRM board (as required under the *Natural Resources Management Act 2004*), but act only as a revenue collector and do not retain any levy income.

More information

Contact your local council for more information about your council rates and for more information on NRM levies contact your local natural resources centre (see the 'Local information' chapter).

Absentee landholders

As a landholder you are responsible for ensuring that you don't create environmental problems on your land or the land of others.

People often take ownership of properties without a full understanding of what land management involves, over-extend themselves, and end up damaging the land and the environment.

Many rural properties do not have permanent residents. They may be purchased as retreats for the owners to get away from the city and then left vacant for large portions of the year. This raises potential management problems, including:

- weeds and pest animal
- erosion
- unchecked fences
- failure of the effluent management system due to lack of use
- fuel build-up causing a potential bushfire hazard
- straying stock
- inadequate care of stock.

These problems can affect neighbouring properties and cause land degradation and tension between neighbours. The local council may impose notices and fines on such properties.

If you are an absentee landholder, to avoid these problems, consider some of the following options:

- visit your property on a regular basis
- make arrangements with farm contractors or a farm manager to undertake maintenance works on your behalf
- negotiate with surrounding landholders to carry out work on your property, perhaps in return for livestock agistment or other collaborative farming opportunities.

More information

Contact your local council about absentee landholders' issues (see the 'Local information' chapter).

Developing your property

The rural landscape is facing development pressure as the urban area encroaches. This pressure is affecting both urban and rural land. Rural land is increasingly being used for purposes other than traditional farming, such as rural residential developments, mining, intensive agriculture such as chicken farming, and even manufacturing. Conflicts can arise when land use changes.

Council's role in development

Councils are mostly responsible for determining land use zones, in consultation with government agencies and their communities. State government can influence land use zones through Ministerial Development Plan Amendments. While not everyone might agree with the final outcome, everyone has the opportunity to have their say. There are rigorous procedures to evaluate land before approval is given to change land use.

When you purchase your rural block you should ask your local council a number of questions about the land uses of your block and those surrounding it. These questions could include:

- Are any development applications current for the nearby area?
- Have other developments been approved but not started?
- Are there any restrictions on obtaining approval to build a house or other buildings on your block, or to develop certain desired land uses?
- Do any heritage agreements, or other forms of covenants and easements apply to the land?

While you might have purchased a block of land in a rural area, subdivision of adjacent land is possible. Your outlook could change if subdivision is approved.

Building

Council assesses building and development proposals against development regulations, including the Building Code of Australia. If you are preparing a development application, contact your council to ensure that documentation meets its standards – and for any other help.

Development approval

All development, as defined by the Act and Regulations (Section 4 of the *Development Act 1993* and Schedule 2 of the *Development Regulations 2008*), requires the lodgment of an application to seek development approval from the relevant authority.

Generally, a development must receive planning and building consent before development approval will be granted. Applications for planning and building consent can be lodged concurrently or separately, but applications for building consent must be consistent with the planning consent.

Building consent can be obtained from the council or private certifier, whereas planning consent can only be obtained from the council.

Development applications are required so that council can assess your plans and information, inspect your property and determine whether your proposal is appropriate. Remember – if you are in doubt, ask your local council, as questions asked early may avoid delays later.

Types of development

There are various forms of development that require planning consent from the relevant authority. These might range from complying development, non-compliant development, merit development and exempt development.

It is important that your local council correctly categorises the development, as applicants or third parties can apply to the ERD Court for a review with respect to the nature of the development, or a decision about public notice and consultation.

More information

Contact your local council (see the 'Local information' chapter) for further advice about development on your property, or visit www.saplanningportal.sa.gov.au.

Improving your knowledge

Knowledge about sustainable land management is growing rapidly. Getting up-to-date, accurate information will help you enjoy your land. Landcare and producer groups provide a good way of building knowledge and sharing experience, and there are many quality publications available as well as online 'how-to' videos, webinars and social media platforms sharing knowledge.

Your local natural resources centre runs regular field days and workshops on a wide range of issues, including weed management, pasture management, animal management, pest management and many more. More extensive land management courses are also conducted for one evening per week for six to eight weeks. Topics covered during the courses include:

- soil management
- native vegetation management
- land capability
- property planning
- weed identification and control

- pasture management
- watercourse management
- fire planning and prevention.

Most of the events are free of charge, but the courses attract a small fee.

To keep up to date with events in your area, contact your local natural resources centre to be added to the calendar of events email list.

The NRM levy and the Australian Government fund a quarterly technical newsletter called Small Talk. This excellent and free resource provides local and information on managing natural resources. Visit www.naturalresources.sa.gov.au/adelaidemtloftyranges/subscribe or contact your local natural resources centre to subscribe.



Other training opportunities

TAFE SA conducts a range of rural studies courses. Topics currently include:

- horticulture
- agriculture
- forestry.

Workers Educational Association SA may hold courses and workshops relevant to rural landholders (see the 'Local information' chapter).

More information

For more information about the region's land management field days, workshops and courses visit www.naturalresources.sa.gov.au/adelaidemtloftyranges. Alternatively, contact your local natural resources centre (see the 'Local information' chapter). For more information about TAFE courses contact TAFE SA (see the 'Local information' chapter).

Further reading

A legal guide for South Australian primary producers, The Law Society of South Australia, 1999

Direct seeding of trees and shrubs – a manual for Australian conditions, Dalton, G. 1993, Primary Industries South Australia

Economic trees and shrubs for South Australia, Bonney, N. 1997, Greening Australia (South Australia) Inc

Farm tree planting, Heinjus, D. 1992, Department of Agriculture South Australia

Hoofprints – a manual for horse property management, Foyel, J. 2001, Primary Industries and Resources South Australia

It's blue with five petals – wildflowers of the Adelaide region, Prescott, A. 1994, Openbook Publishers

Managing horses on small properties, Meyers, J. 2005, Landlinks Press

Plants of the Adelaide Plains and Hills, Dashorst, G. & Jessop, J. 2006, The Board of the Botanic Gardens of Adelaide and State Herbarium

Re-greening the Eastern Hills – direct revegetation guidelines, Miles, C. and Munday, B. 2009, Tungkillio Landcare Group

Stock and waterways: a manager's guide, 2006, Land and Water Australia

Stop bushland weeds – a guide to successful weeding in South Australia's bushland, Robertson, M. 2005, The Nature Conservation Society of South Australia Inc

Weeds in Australia, Lamp, C. & Collet, F. 1996, Inkata Press

Weeds: the ute guide southern edition, Version 2, Moerkerk, M., Wurst, M., & Yeatman, T. year unknown, PIRSA Publishing Service

What seed is that? A field guide to the identification, collection and germination of native seed in South Australia, Bonney, N. and Miles, A. year unknown, Finsbury Press Pty Ltd

4 | Local information

- Revegetation
- Declared plants
- Endangered fauna
- Endangered flora
- Local contacts
- Local government contacts



Revegetation

If conserving biodiversity is one of your goals, it's a good idea to focus on protecting existing remnant native vegetation and encouraging natural regeneration before embarking on a revegetation project (see the 'Natural resources' chapter for further details). Well-designed revegetation projects will have biodiversity and land management benefits.

When planning a replanting program, always try to:

- use seed that is sourced locally
- use plants that have been grown locally to ensure they acclimatise to local conditions

- select a range and ratio of species to represent the original vegetation association as closely as possible.

Revegetating cleared land will stabilise the soil, slow water runoff, attract animals and birds and increase the general health of your property. The result should be a more balanced ecosystem.

Thick strips of native trees, usually five trees wide, and shrubs can provide shelter for stock; protection against drying winds; moderate temperature extremes; prevent nutrient runoff from polluting streams; and provide effective barriers against windblown weed seeds.



Seedlings are often propagated in plastic sleeves and are then known as 'tubestock'. Tubestock can be planted in difficult-to-access areas where seeds might struggle.

An alternative method of revegetation is direct seeding. A direct seeder pulled by a tractor or ute sows seeds in rows spaced about four metres apart. Locally collected seed can be used to re-create a natural looking planting. An advantage of direct seeding is that some seeds will remain dormant in the soil and success is therefore less dependent on adequate rainfall in the first season. Plants grown from seed are generally more robust than those planted as tubestock. Direct seeding requires good vehicle access and is suited to larger revegetation projects.

Successful revegetation projects rely on sound planning, good weed control prior to planting, and ongoing weed and pest management.

Contact your local natural resources centre for advice and support with planning and managing your revegetation project so that the maximum biodiversity and land management benefits are achieved.

A variety of local nurseries can supply local native species for revegetation projects; some are listed in the 'Local information' chapter. Contact your local natural resources centre for a full list or visit www.naturalresources.sa.gov.au/adelaidentloftyranges.

Declared plants

Declared plants are significant weed threats to our state's primary production industries, natural environments and public safety. As a landowner you have a legal responsibility to manage declared plants on your property.

Plant species may be declared under various sections of the *Natural Resources Management Act 2004*, relating to:

Movement – Some declared plants must not be moved on a public road (e.g. as a cutting, seed or potted specimen). Inadvertent movement of the plant on animals, soil, vehicles, machinery or produce may also be illegal.



Calomba Daisy is a declared plant

Sale – Many declared plants must not be sold at any outlet including nurseries, pet shops and market stalls. Sale of any animal, soil, vehicle, machinery or produce contaminated with the plant may also be illegal.

Notification – The presence and locations of some declared plants on your land must be reported to the Adelaide and Mount Lofty Ranges Natural Resources Management Board.

Control – As a landowner you are required to take action to destroy or control many declared plant species present on your property, regardless of whether it is used as a business, residence or for other purposes. The board also controls certain declared plants on road reserves and can recover costs of control from adjoining landowners.

Find out what provisions of the Act apply to each declared plant in your area by contacting your local natural resources centre. Local staff are also available for over-the-phone or on-site weed control advice.

Declared plants found in the region

Declared (and undeclared) plant policies are available on the Primary Industries and Regions SA (PIRSA) website, along with the complete list of declared plants. Note that this list is reviewed regularly and is subject to change. To see fact sheets that contain a full description, images and control options for these weeds visit the Natural Resources AMLR website at www.naturalresources.sa.gov.au/adelaidentloftyranges. For all weed identification and control enquiries, contact your local natural resources centre (see the 'Local information' chapter).

Endangered fauna

The Adelaide and Mount Lofty Ranges region has a diverse range of native fauna. Some of these species are quite common while others are threatened as a result of the destruction of their habitat since European settlement.

The presence and interaction with native birds, mammals and other wildlife is often one of the main reasons people decide to live on rural properties. You can protect and enhance the habitat and food sources on your property to attract and maintain native animals.

The following table is an example of just one threatened fauna species in the Adelaide and Mount Lofty Ranges per class. For information on these species and more visit www.naturalresources.sa.gov.au/adelaideandloftyranges.



Southern Brown Bandicoot. Credit: Kirstin Abley

Endangered fauna in the region

One example, per class, of endangered fauna in the region

Class	Common name	Scientific name
Amphibian	Brown Toadlet	<i>Pseudophryne bibronii</i>
Bird	Orange-bellied Parrot	<i>Neophema chrysogaster</i>
Fish	Climbing Galaxias	<i>Galaxias brevipinnis</i>
Mammal	Southern Brown Bandicoot	<i>Isodon obesulus obesulus</i>
Reptile	Heath Goanna	<i>Varanus rosenbergi</i>



A Fleurieu Peninsula swamp near Deep Creek Conservation Park. Credit: Alys Stevens

Endangered flora

All remnant native vegetation is protected from clearance under the *Native Vegetation Act 1991*. There are exemptions for certain situations such as for maintaining roadsides, fencelines, firebreaks and developments, but they are strict.

Under the *Environment Protection and Biodiversity Conservation Act 1999*, nationally threatened species and ecological communities are protected from direct and indirect threats.

Four ecological communities that occur in the region are protected under this Act:

- Fleurieu Peninsula swamps
- Peppermint Box grassy woodland
- Iron-grass natural temperate woodland
- Grey Box grassy woodlands and derived native grassland.

More information

Further information about native flora and fauna in your area is available from your local natural resources centre. Alternatively, visit www.naturalresources.sa.gov.au/adelaidemtloftyranges.

Local contacts

Adelaide and Mount Lofty Ranges natural resources centres

Eastwood

8273 9100
DEW.AMLR@sa.gov.au

Gawler

8115 4600
DEW.AMLRGawlerOffice@sa.gov.au

Black Hill

8336 0901
DEW.AMLRBlackHillOffice@sa.gov.au

Willunga

8550 3400
DEW.AMLRWillungaOffice@sa.gov.au

www.naturalresources.sa.gov.au/adalaidemtloftyranges

SA Murray-Darling Basin Natural Resources Centre

Mount Barker

8391 7500
www.naturalresources.sa.gov.au/samurraydarlingbasin

Community-run natural resource centres

Adelaide Hills Natural Resource Centre

1 Crescent Drive, Norton Summit SA 5136
8390 1891
www.ahnrc.org

Adelaide Sustainability Centre

111 Franklin Street, Adelaide SA 5000
7123 2166
www.adelaidesustainabilitycentre.org.au

Barossa Bushgardens Natural Resource Centre

653 Research Road, Nuriootpa SA 5355
8563 8330
www.barosabushgardens.com.au

Gawler Environment Centre

8 Adelaide Road, Gawler South SA 5718
8115 4620
www.nrcgawler.org.au

Mount Pleasant Natural Resource Centre

132 Melrose Street, Mount Pleasant SA 5235
8568 1907
www.barossa.sa.gov.au

Normanville Natural Resource Centre

3/50 Main Road, Normanville SA 5204
8558 3644
www.nnrc.com.au

Port Environment Centre

27 North Parade, Port Adelaide SA 5015
0488 229 925
portenvironmentcentre.org.au

South Coast Environment Centre

9/46 Ocean Street, Victor Harbor SA 5211
8552 9423
www.scecentre.com.au

Willunga Environment Centre

15 High Street, Willunga SA 5172
8556 4188
www.willungaenviro.org.au

Country Fire Service (CFS)

Bushfire Information Hotline: 1800 362 361
Mount Lofty Ranges Headquarters: 8391 1866
www.cfs.sa.gov.au

Department of the Environment and Energy (Federal Government)

1800 803 772
www.environment.gov.au

Department for Environment and Water

8204 1910
www.environment.sa.gov.au

SA Health

8226 6000
www.sahealth.sa.gov.au

Environment Protection Authority (EPA)

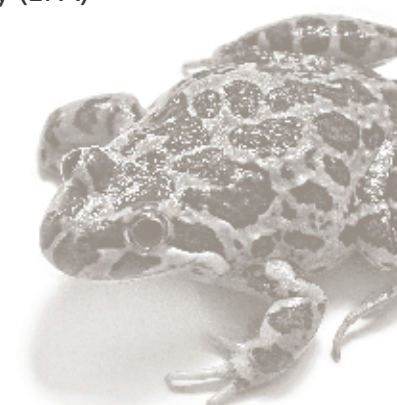
8204 2004
www.epa.sa.gov.au

HorseSA

0402 488 306
www.horsesa.asn.au

Legal Services Commission

1300 366 424
www.lsc.sa.gov.au



Primary Industries and Regions SA (PIRSA)

8226 0995
www.pir.sa.gov.au

Royal Society for the Prevention of Cruelty to Animals (RSPCA)

1300 477 722
www.rspcasa.asn.au

SA Water

1300 729 283
www.sawater.com.au

SafeWork SA

1300 365 255
www.safework.sa.gov.au

State Flora

Belair nursery: 8278 7777
Murray Bridge nursery: 8539 2105
www.stateflora.sa.gov.au

TAFE SA

1800 882 661
www.tafesa.edu.au

Trees For Life

8406 0500
www.treesforlife.org.au

WEA

8223 1979
www.wea-sa.com.au

Local government contacts

Adelaide Hills Council

8408 0400
mail@ahc.sa.gov.au
www.ahc.sa.gov.au

Adelaide Plains Council

8527 0200
info@mallala.sa.gov.au
www.apc.sa.gov.au

Alexandrina Council

8555 7000
alex@alexandrina.sa.gov.au
www.alexandrina.sa.gov.au

Barossa Council

8563 8444
barossa@barossa.sa.gov.au
www.barossa.sa.gov.au

City of Mitcham

8372 8888
mitcham@mitchamcouncil.sa.gov.au
www.mitchamcouncil.sa.gov.au

City of Onkaparinga

8384 0666
mail@onkaparinga.sa.gov.au
www.onkaparingacity.com

City of Playford

8256 0333
playford@playford.sa.gov.au
www.playford.sa.gov.au

City of Tea Tree Gully

8397 7444
customerservice@cttg.sa.gov.au
www.teatreegully.sa.gov.au

City of Victor Harbor

8551 0500
localgov@victor.sa.gov.au
www.victor.sa.gov.au

District Council of Yankalilla

8558 0200
council@yankalilla.sa.gov.au
www.yankalilla.sa.gov.au

Light Regional Council

8525 3200
light@light.sa.gov.au
www.light.sa.gov.au

Mount Barker District Council

8391 7200
council@mountbarker.sa.gov.au
www.dcmtbarker.sa.gov.au

Town of Gawler

8522 9211
council@gawler.sa.gov.au
www.gawler.sa.gov.au

Acronyms



AMLR	Adelaide and Mount Lofty Ranges
ATV	All-terrain vehicle
CFS	Country Fire Service
DAP	Development Assessment Panel
DEW	Department for Environment and Water
DPA	Development Plan Amendments
EPA	Environment Protection Authority
ERD Court	Environment, Resources and Development Court
MHRDC	Maximum harvestable right dam capacity
MSDS	Material safety data sheet
NLIS	National livestock identification service
NRM	Natural resources management
PIRSA	Primary Industries and Regions South Australia
RSPCA	Royal Society for the Prevention of Cruelty to Animals
WAA	Water affecting activities
WAP	Water allocation plan



Becoming a rural resident – even a part-time one – can bring much enjoyment, but it also involves many responsibilities and inevitably raises many questions. Even the smallest rural blocks will provide a challenge if you have never encountered ‘declared weeds’, prepared for the bushfire season or managed farm animals.

The Adelaide and Mount Lofty Ranges Natural Resources Management Board has produced this handbook to inform you about the many resources available to landholders in this region – and to outline your responsibilities.

Keep this booklet as a handy reference. It provides useful information about:

- » buying your property
- » managing natural resources
- » managing a rural property
- » local information for the Adelaide Plains, Mount Lofty Ranges and Fleurieu Peninsula.

**[www.naturalresources.sa.gov.au/
adalaidemtloftyranges](http://www.naturalresources.sa.gov.au/adalaidemtloftyranges)**



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