

Environmental management

on the

Urban fringe



Property management plan

A framework for environmental management



Department of
Environment and
Conservation (NSW)

Acknowledgements

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Disclaimer

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This Property Environmental Management Plan is a guide only. Suitable advice should be sought prior to undertaking any on-ground works.

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Department of Environment and Conservation (NSW)
59-61 Goulburn Street
Sydney NSW 2000
PO Box A290, Sydney South NSW 1232

Phone: (02) 9995 5000 (switchboard)
Phone: 131 555 (information and publications requests)
Fax: (02) 9995 5999
TTY: (02) 9211 4723
Email: info@environment.nsw.gov.au
Website: www.environment.nsw.gov.au

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This template draws on a wide range of related publications. These include Farming for the Future, Property Management Planning Workshop Series (1997), Farmers Assessing Their Resource Management – Self Assessment Workbook (2002), Planning for Biodiversity Management Workshop Series (2002), and Caring for your Land – A Guide for Small Landholders (1999).

Introduction *benefits to property owner*

A Property Environmental Management Plan ('the Plan') will provide a framework for the environmental management of your property. It can help you work towards best practice and sustainable land management practices. The Plan will assist you to document management practices employed on your land. It can be used to identify and develop practices to maximise conservation of the native flora and fauna, and their environmental benefits. It can also help to minimise the impact of the activities conducted on the property, on the environment, the local community and surrounding developments.

It is hoped that the benefits gained from implementing actions outlined in your Plan will include:

- a greater understanding of your local environment;
- clear identification of the nature and state of natural resources on your property;

- identification of problem areas for future management activities;
- enhancement of the use and benefits you get from your property; and
- enhancement of the overall condition of your property for future generations.

The format of this template has been developed to allow property or business owners to devise a Plan without in-depth knowledge of natural resource management or environmental protection and enhancement. Resources and information provided in this document and in the references at the end of this guide, are available to assist in the completion of the initial Plan. Officers from your local council are also valuable contacts for information about your local area.

How to use this plan

The Plan is a tool that can be used for a wide variety of properties including those involved in hobby farming, grazing, horticultural and agricultural operations, leisure horing activities and other rural businesses. The issues identified in the Plan relate to water, land, vegetation, fauna and operational management. Not all aspects of the plan will be applicable to all properties, so it is important to choose only those issues that are relevant to your property.

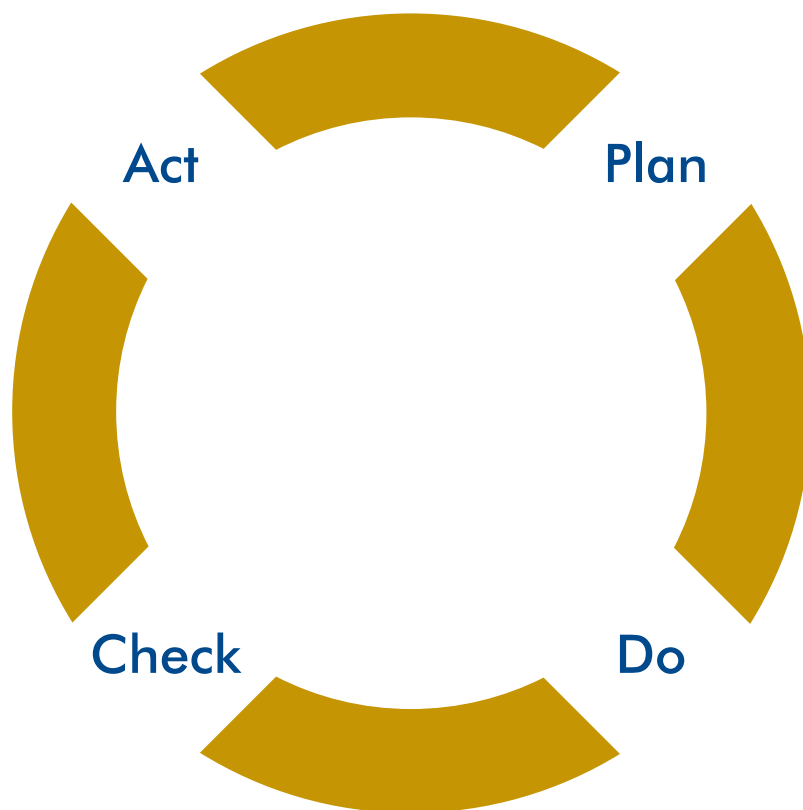
The step-by-step nature of the Plan template is designed to guide you through the systematic consideration of issues related to your property.

You can complete each of the sections contained in the Plan to the degree of detail that you choose. It is advisable that once you have completed all of the sections, you read through the plan again to check that all relevant information has been supplied. Attach any specifications or plans you have at the back of the Plan, make a copy, store in a safe place, and refer to it regularly to guide management decisions for your property.

Ongoing use of plan

Repeated use of the Plan template will allow you to monitor improvements in the environmental health of your property, and to evaluate improvements that you make in your daily activities. Your Plan should be flexible, allowing for the addition of proposed activities and changing of timeframes according to

your changing circumstances. Through revision, your Plan can help to identify and resolve new problems and issues as they arise. Periodic review and revision will also allow you to incorporate best management practice and new technology in any proposed actions.



Beginning the plan

Description of property use

Identify and describe the location, operation and history of land use on the property.

Address: _____

Size of land: _____ Principal activity: _____

Area of land used for principal activity: _____ Years of operation: _____

Description of current operation: _____

Describe the history of land use on or around the area: (e.g. agricultural, tannery, waste depot, rural residential, etc.). _____

Current infrastructure

The existing infrastructure includes features on your property that are man-made and thus can be changed in the future. The items listed below could potentially be changed to make the property run more smoothly or to minimise the risk of degrading the property's natural resources:

- existing fence lines and gates;
- sheds and houses;
- access tracks, paths and driveways;
- windmills, water tanks, dams, water troughs, irrigation pipes;
- soil conservation banks;
- constructed waterways;
- firebreaks, paddocks/ cropped areas; and
- stables and stockyards.

What infrastructure exists on your property? _____

What is the state of the infrastructure (i.e. excellent, good, fair, poor etc.)? What repairs are required?

Natural and cultural resource management issues

Before planning for improvements, it is important to identify the resources or characteristics of your property and assess their state. The natural features of your land will impact on the suitability of any particular land use or activity. On the other hand, the activities carried out on your property can also have impacts on the condition of the natural environment.

Water, climate and catchment issues

Drought is an important issue for property management in the Australian environment. Planning for water conservation and reuse can assist in management of your property.

Whether you are currently using town or tank water, it is worth considering alternative water sources to conserve available resources. The alternatives available will depend on the natural resources and landforms on your property. Common alternative sources include:

- Rivers, streams, springs, swamps, and other watercourses;
- Rainwater run-off from roofs stored in tanks;
- Groundwater/bore water; and
- Run-off collected in dams.

Activities undertaken on your property may impact on the water obtained from these alternative sources. Each property is located within a catchment, and water quality management can also affect the surrounding environment and waterways. In order to appropriately manage the environmental health of your property, you must consider how water is used on your property, what happens to the water as it passes over your land, and the impact that it may have on the downstream environment in your property plan. The following questions will help in this assessment.

What are the characteristics of the climate? Are there any notable environmental extremes? Mention any variables such as temperature and precipitation: (i.e. annual rainfall, monthly rainfall distribution, wind pattern, frosts, incidence of storm and lightning, temperature [min/max])

What water resources do you have on your property? Include any permanent or intermittent creeks, dams, bores, wetlands or water bodies: _____

How reliable is the water supply and quality? _____

How do your water resources match the demands of your property? Do you practice water conservation or reuse? _____

What happens to the water as it passes over your property? What catchment is your property in?

Is there excessive growth of algae or waterweeds in the waterways?

Could you manage your water differently to improve the quality of runoff, and if so, how?

Topography, geology and soils

In order to effectively manage your property, it is important to know the characteristics of the soils that are present. Soils are derived from the weathering of the parent rocks or geology. The position of the property in the surrounding topography will also affect soil, for example properties on a ridgeline may have more shallow soils. Soil characteristics will dictate the type of vegetation that originally occurred and ultimately what will successfully grow on your land. The following questions will guide you towards determining your soil characteristics.

If your plants are not growing as well as you think they should, it may be worthwhile having the soil tested. Two relatively simple tests are soil pH and soil salinity. Soil pH measures the degree of acidity or alkalinity. Nutrient availability is very dependant on pH. Salinity is measured as electrical conductivity. Salt (sodium chloride) is a natural toxic component of some soils. A number of nurseries, agronomists and commercial soil testing laboratories can advise you on soil testing and provide an interpretation of the results.

What geology occurs on the property? (i.e. Black Cracking Clay, Hawkesbury Sandstone, Wianamatta Shale etc. – Geological information can usually be sourced from geological maps or from your local council)

What position does the property occupy in the landscape, and what landforms occur? (i.e. property is on a riverflat, landforms include undulations/ hills/ gullies, etc.)

Using the soil texture guide in Appendix 3, determine the texture of soils on your property and record your results below.

Are there areas of exposed soils?

Yes

No

If yes, which areas and what is the total area exposed? _____

What does the exposed area look like? (i.e. is there a crust, is there evidence of soil movement, erosion etc)

Are there any creekline erosion or bank stability issues?

NA

Yes

No

Is there any evidence in the soil of worms or soil microfauna? _____

Vegetation

Provenance native vegetation includes any tree, shrub, groundcover or grass that naturally occurs in a specific local area. It provides significant benefits to property owners through shading, shelter for stock, windbreaks or firebreaks, habitat for native fauna and pest control. It also assists in stabilising soils and the prevention of erosion (NSW Farmers Association, undated). Protection and extension of both provenance and remnant native vegetation should be a priority in the management of your property.

What is the broad type or structure of native vegetation on the property? Look at the height and spacing between the dominant plants: (i.e. closed forest or rainforest, open forest, woodland, open scrub, open heath, native grassland, etc). [See Appendix 4]

What species of plants are dominant (floristics) in each main layer of vegetation? Refer to Appendix 4, Council or other vegetation assessments, and reference books for your area:

Trees: _____

Tall Shrubs/ Small Trees: _____

Shrubs: _____

Ground covers: _____

Are there any records of rare or threatened plants, endangered ecological communities or endangered populations on or near the property? (NPWS, council or other maps and databases may provide information, personal records)

What is the condition of the native bushland? What led to this condition?

Native fauna and habitat issues

Have you observed native fauna on the property such as birds, fish, mammals, reptiles, frogs or invertebrates (or do you have evidence of their tracks or signs)?

Are there any records of threatened species or endangered populations of fauna near the property? (Use NPWS references, council and other maps/databases, personal records)

Are there any habitats on your property and what is their condition? (These can include foraging areas – food sources, trees with hollows, abundant ground cover and fallen trees, caves, rock overhangs, crevices, permanent or intermittent waterways, wetlands, water bodies, etc.)

What are the threats, and what actions are necessary to increase numbers of native fauna and habitat? (e.g. plant corridors to link adjoining vegetation/along streams, retain logs, allow regeneration of flowering food plants, control foxes and rabbits, reduce spray drift, fence from stock access, etc.)

Bush Fire

What is the fire history of the property? (Describe the area and date of major fire events including direction of fire, and prescribed burns – Ask your local Rural Fire Brigade for advice).

Do you have defined Asset Protection Zones (APZs)? (a buffer zone between the hazard and habitable buildings, access roads etc. They may include special features that should not be burnt such as Aboriginal sites, habitat trees, rainforest or alpine vegetation. Information on APZs can be found in Planning for Bushfire Protection 2001 by RFS and Planning NSW –see excerpt in Appendix 5)

Do you have a knowledge of what fuel levels are on your property and what fuel levels are recommended for your APZ (Inner Protection Area plus Outer Protection Area)?

Have you planned safe access routes for your family and fire fighters? (This should be within the Asset Protection Zone). **Do you have an evacuation plan?**

Do you have adequate water supply infrastructure for use in times of emergency?

How do you plan to create Asset Protection Zones without impacting upon the bushland, biodiversity, soil and water resources on your property? (i.e. manual raking, mineral earth zones around special trees, Aboriginal sites and riparian filter strips prior to burning, etc.)

Determine the intensity and frequency of fire preferred by the plants and animals on your property. Can these be incorporated into asset protection works? (See Appendix 6 – excerpt from draft Bushfire Environmental Impact Assessment Code 2003 by RFS)

Aboriginal or European heritage

Does Aboriginal or European heritage exist on your property? Yes No

How are you managing this heritage? _____

Aerial photo and overlays

As part of developing a clear plan for your property, use aerial photographs and overlays to allow for monitoring of progress over time. By following the process outlined below, you will be able to develop a two-dimensional model of your proposed property layout/ design which will be instrumental in influencing the objectives for your property over the next 5 to 10 years.

When viewing the aerial photo and overlay maps related to your property, you will begin to see that many factors influence the condition of your property. Although you cannot change some factors like climate or soil type, you can change their effect by designing your property to make the most of its strengths and to minimise its weaknesses.

Base map – aerial photograph

Obtain either an aerial photograph or topographic map of your property and calculate the scale. It is important to inquire when the photo was taken – old photos may not show more recent property developments. If this is the case, the most recent photograph should be sought.

Aerial photos may be obtained from a number of locations including:

Department of Lands
Air Photo Sales Section
PO Box 143
BATHURST NSW 2795
Phone: (02) 6332 8200

Department of Infrastructure Planning and Natural Resources

Air Photo Sales
23 –33 Bridge Street
SYDNEY
Phone: (02) 9228 6111

Should you have difficulty in obtaining aerial photographs for a smaller property, maps or sketch plans may suffice. Your local council is also a great source for local maps and photos for your area, and may be of assistance.



Hornsby Residents participating in a 2-day Property Planning Course

Map features of your property (BLACK PEN)

Draw a DRAFT map of your property, including the existing features on your transparent overlay.

Place the overlay over the base map (aerial photograph or topographic map) and scribe two orientation marks on both the map and the overlays, to ensure repeated accuracy. This will apply to each overlay as well as the following:

- scale in metres;
- true north orientation;
- property boundaries;
- location of houses, buildings, fences, roads;
- irrigation areas;
- onsite sewage management system and disposal area;
- dams and wetlands;
- native vegetation areas (draw a line around the patch and identify vegetation type if known or number the remnants R1, R2 etc.);
- scattered trees (mark each tree or if there are many mark 'ST' next to the paddock);
- creeks/rivers;
- major ridgelines and catchment divides;
- wildlife sightings (mark locations of wildlife sightings or nest trees etc.);

- special features (such as rare plants, geological formations, cultural heritage);
- planted areas (such as tree lots, shelter belts, crops, improved pasture, revegetated areas [name each on map]); and
- Aboriginal or European heritage sites.

Soil resources overlay (optional)

Map the following (if known)

- soil type
- pH
- EC (electrical conductivity)

Vegetation and waterbody condition map (clear transparencies)

Map the assessment rating for:

- regular cropping areas (mark on map as RC);
- occasional cropping areas (mark on map as OC);
- pastures (mark on map as PP [perennial pasture], SP [semi improved pasture] or NP [native pasture]);
- each patch of vegetation;
- each scattered tree or groups of trees; and
- each waterbody.

by shading parts of each patch

- GREEN (healthy),
- BLUE (good),
- YELLOW (fair) or
- RED (poor).

Date the overlay sheet; changes in condition can then be assessed and added over time.

Planning maps (clear transparency)

Show the future draft plans for the property. Information contained on the overlay/s may include proposed management actions such as:

- future clearing, tracks, land use changes, irrigation lines, troughs;
- windbreaks, wetlands, creekline restoration areas, vegetation buffers around waterways, vegetation clumps or corridors to be retained, any proposed regeneration or revegetation works; or
- fire management (dominant wind direction, boundary of greatest fire risk, asset protection zones, perimeter or access roads and bays, water storage, areas for prescribed burning or specialised fuel reduction treatments).

Mapping symbols for farm planning

To help identify various features on your overlays, it is useful to use symbols to represent various features. It is important that these symbols are easy to read and recognisable.

Fences	
Boundary	—————
Internal fences	----/----/----/----
Gate	X
Shed, house	▲ □
Public road	=====
Farm track	--- - - - - - - - -
Culvert	—C—
Power lines	—^—^—^—^—
Direction of critical winds	▲ ▲ ▲
North	▲ N
Dam	◎
Soil conservation bank	^ ^ ^ ^ ^ ^ ^ ^
Stock yards	□ S
Gully (eroding)	⌋

Step 2 Setting your goals

Now that you have identified the natural and infrastructure resources, impacts and management issues associated with your property, they can be integrated with your goals for the future environment, productivity and management of your property.

Personal Goals: Outline your personal goals for the property (i.e. how do you see your friends and family using and enjoying the property in the future?)

Short term: _____

Long term: _____

Management Goals: Outline broadly what you want to do with the property in the future.

Short term: _____

Long term: _____

Broad Ecological Goals: What types of biodiversity (native plants and animals) do you want to see on your property in the future?

Short term: _____

Long term: _____

A SWOT analysis can help you to build on the good things about your property, and to take advantage of available opportunities such as funding programs. Sometimes problems can be turned into advantages. Looking at some of the threats, may lead you to identifying other ways of achieving your outcomes.

Before you start implementing any changes, a useful exercise is to list all the changes that need to take place on your property. You may wish to do some of the smaller, less expensive alterations first that tackle the important issues. By undertaking the SWOT analysis and general assessment activities above, you have begun to develop your property environmental management plan.

Management planning summary – top ten actions

Number	Action <i>(i.e. List broad-scale main actions such as erosion control or revegetation)</i>	Person Responsible	Materials Required <i>(e.g. seed, labour)</i>	Approximate Cost \$	Time Frame
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					

A key element of stormwater and biodiversity management is to **retain** the natural vegetation that remains on the property. Disturbed areas can be **restored** at lower cost and better result than replanting. Other areas such as dams, creek lines and patches of remnant vegetation can often be **protected** from damage simply by fencing. In some cases **revegetation** and **rehabilitation** may be required to best manage creek lines and biodiversity.

Taking these elements on board as the basis for sound environmental management will provide a property with 'environmental services' such

as natural pest control and more sustainable production. Use these key elements as the backbone of good design for your land. It is at this stage that you may find you need to redesign part or all of your property layout. Although there are many factors to consider when determining a new property layout, it is important to explore all the options with your 'ideal' property in mind. It is also important to get the design right the first time to avoid costly changes in the future.

Action plans

Key Issues <i>(e.g. Sedimentation of creekline and unstable creekbanks)</i>		Key Goal <i>(e.g. We will stabilise the creekbank with jute matting and planting of local native species)</i>	
Approach to be taken <i>(e.g. research most appropriate native vegetation establishment technique and species for the site)</i>			
Action <i>(e.g. obtain list of local native species from Council, seed collection onsite, peg in jute matting, plant specimens)</i>		Completion Date	Person Responsible
Signs of Improvement <i>(e.g. plant establishment in area and no erosion occurring)</i>			Time Frame

See Appendix 7 for blank Action Plan Sheets

Your legal responsibilities

In New South Wales, there are several pieces of legislation that landholders need to consider when making management decisions on their property. The legislation is designed to protect farmers, the wider community and the environment that supports us. A list of the relevant legislation and a description of each has been outlined in Appendix 2. Along with legislative obligations, property owners are required to obtain planning approvals and the appropriate licences prior to undertaking works.

Planning approvals

Before you carry out modifications to your existing buildings, construct new buildings or structures, or undertake land modification such as clearing etc, you may need to obtain development approval from your local council or State government. Councils are given the responsibility under planning and local government Acts for the majority of decisions pertaining to properties. Generally, the conditions are similar across all parts of the state but individual councils may have special requirements.

Some councils need to provide approval for dams, fences, removal of trees, and the construction of retaining walls and roads. Most have a requirement for approval before establishment of intensive agricultural activity such as horticulture, feedlots or piggeries. The Department of Infrastructure Planning and Natural Resources may need to provide approval for works within 40 metres of the top of a bank of any stream, for clearing of State protected lands or for developments clearing certain native vegetation. Approach your local council and relevant State government departments early in your planning to ensure you have obtained all the information you are likely to need.

License requirements

A license may be required from the Department of Environment and Conservation (air, water, noise and waste), Department of Infrastructure, Planning and Natural Resources (irrigation licence, water licence), Sydney Water (trade waste), National Parks and Wildlife Service (threatened species) or Work Cover Authority. Contact details for each of these agencies are in Appendix 1.

Step 5 Evaluate

Evaluation of original goals

This plan is a working document. Over the course of your future ownership of the property, new ideas and technology will come along and new problems will arise that will shift your priorities. Therefore, your property environmental management plan may have to be altered over time.

Through evaluation of your plan you should in this step:

- reflect back on your original goals and determine if they have changed;
- reprioritise incomplete actions;
- adjust timeframes for priority actions; and
- consider preparing a new overlay if future plans for the property have changed significantly.

Review program

This plan has considered the physical attributes of your property and prompted you to consider the future management of your land. By reviewing the plan you can assess the progress of the best practice options you have started to implement. You will then be able to judge the success or otherwise of the plan itself.

Ways to measure the success of each project and the overall plan include:

- Use before and after shots of every project, keep photo reference points to reflect your improvements. Keep a record of your photographs, a description of where they were taken from and what they are looking at.
- Regularly monitor the pH and nutrient levels of your soils.
- Take note of the species of wildlife returning to your property or visiting for the first time, including their identity and numbers. An increase in the number and diversity of species signals better environmental conditions.

- Monitor improved water quality on your property by reviewing turbidity in the creek, river or dam. Note such improvements as reduction in the number and abundance of weed species, and an increase in the variety of water bugs present in the waterways.
- Determine if ground cover vegetation has returned to bare areas, and whether new native species have germinated.
- Analyse your budget to determine if a project cost more than was allowed and if this affected other work planned on the property.
- Revisit the assessment questions under the natural resources section. The answers can be used as benchmarks with which to assess the on-going health of the property.

Where to from here?

- Have you considered the help and information available from other government organisations? A contact list can be found in the Appendices.
- Would you like additional skills and training in property management planning? If yes, contact your local office of the Department of Infrastructure, Planning and Natural Resources, the NSW Department of Primary Industries, the NSW National Parks and Wildlife Service or the NSW Farmers Association for further information about available courses.
- Is there a local environmental group in your area? Some issues that may be best addressed at a communal level are:
 - Regional weed control;
 - Feral animal control; and
 - Catchment wide revegetation and planting through Landcare etc.

References

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NSW Environment Protection Authority, (EPA)¹ , (1995), *Irrigation Farm Management*, Environment Protection Authority, Sydney.

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Polain and Bell Consultants Farming for the Future, (undated), *Your Small Farm's Future: A 2 day Property Management Planning Workshop for small area landholders*, NSW Agriculture, DLWC, NPWS, NSW Farmers Training.

Western Australia Agriculture, (undated), *Property Care: A Guide To Maintaining And Improving Your Property*, Western Australia Agriculture, Perth.

¹In September 2003 the EPA became part of the Department of Environment and Conservation (NSW)

Appendix 1 Contact information

Contact Organisations for Further Advice and Funding Assistance

Organisation	For advice or funding assistance <i>(funding programs appear in bold type)</i>	Contact details
Australian Association of Bush Regenerators	Bush regeneration methods Weed list, identification and control	Website: www.zipworld.com.au/~aabr/
Conservation Volunteers Australia (CVA)	Green Corps – a Commonwealth program to provide assistance to land managers and community groups with priority environmental projects; gives young Australians the opportunity to demonstrate their commitment to the environment while being provided with quality accredited on the job training	Contact Australian Trust for Conservation Volunteers Phone: 1800 032 501 Website: www.conservationvolunteers.com.au
Department of Environment and Conservation (NSW) [DEC]	Preventing pollution Reporting pollution Environmental Trust ■ Funding for environmental restoration and rehabilitation programs, environmental education and environmental research.	General enquiries/Pollution Line: 131 555 Business Partnerships Section (02) 8837 6000 Environmental Trust Administrator PO Box 644, Parramatta NSW 2124 Phone: (02) 8837 6093 E-mail: envirotrust@environment.nsw.gov.au
Department of Infrastructure, Planning and Natural Resources, NSW	Registered and unregistered Property Agreements and Property Management Program and Native Vegetation Management Fund ■ Management agreements and property agreements for native vegetation, supported by funding for fencing, feral animal and weed control, and revegetation. Agreement for specified periods. NSW Wetland Management Incentive Scheme ■ Funding for rehabilitation of wetlands, development of management plans for wetlands and innovative projects. Annual program for individuals and community groups that requires 50/50 contribution.	Windsor: (02) 4577 4243 Sydney: (02) 9762 8320 Gosford: (02) 4323 7000 Newcastle: (02) 4926 2566 Wollongong: (02) 4224 9450 Parramatta: (02) 9895 7633 Grafton: (02) 6642 0622 Queanbeyan: (02) 6297 6911 Western NSW: (02) 9762 8051 Website: www.dipnr.nsw.gov.au

<p>Department of Infrastructure, Planning and Natural Resources, NSW</p>	<p>NSW Rivercare Soil conservation strategies Water use and quality Buffer zones and waterways Native vegetation Landcare Land clearing along waterways Designing, building and managing farm dams Water Licenses</p>	
<p>Easy Grants Information Service</p>	<p>A yearly subscription that includes a list each month on the grants and opportunities available. The subscription does have an annual fee.</p>	<p>Phone: (03) 9419 1833 Email: strategicaustralia@bigpond.com</p>
<p>Environmental Trust (see DEC)</p>		
<p>Greening Australia (A not for profit, non government, community based organisation)</p>	<p>Community native provenance plant nursery.</p> <p>Remnant Vegetation Fencing Incentives Scheme – reimbursements to fence remnant native vegetation, technical and management advice.</p> <p>Other programs are done as a fee for service:</p> <ul style="list-style-type: none"> ■ Bushland regeneration works ■ Seed collection and storage ■ Direct seeding ■ Revegetation and planting schemes ■ Commercial and Training/community workshops ■ Research programs ■ Technical consultancy ■ Commercial nursery ■ Land planning/management plans ■ Trial designs 	<p>Head Office: (02) 9560 9144</p> <p>Community Nursery in Nurragingy Reserve, Knox Road Doonside 2767 (02) 9672 4009</p> <p>Richmond (commercial) Nursery: (02) 4570 1375</p> <p>Website: www.ga.org.au</p>
<p>Green Corps (see CVA)</p>		

Landcare	Coastcare and Landcare grant programs Environmental repair projects Funding and awareness	Contact your local Department of Infrastructure, Planning and Natural Resources office.
Local Councils	Farm dams Environmental planning policies Landuse Threatened species in your area On-site sewage management systems Development applications Controlling noxious weeds Companion animals Tree preservation rules	Contact your local council
National Parks and Wildlife Service, NSW	Wildlife Refuge Agreements Voluntary Conservation Agreements ■ for management of areas with significant native plants, animals and rare and endangered species. Incentives include advice, fencing materials, rate reductions and tax deductions. Land for Wildlife program	Head Office: (02) 9585 6444 Wildlife refuges, Voluntary Conservation Agreements, Land for Wildlife: (02) 9585 6671, (02) 9585 6040 Threatened species: (02) 9585 6827 Sydney North Region: (02) 9472 8949 Parramatta: (02) 9895 7440 Website: www.npws.nsw.gov.au
National Heritage Trust (jointly administered by the Australian Government Department of Agriculture, Fisheries and Forestry and the Environment and Heritage)	Natural Heritage Trust ■ a regionally based grants program offering funding for various programs that meet selection criteria.	Phone: (02) 9228 6346 Website: www.nht.gov.au 1800 065 823
NSW Department of Primary Industries	Crop and stock management Sustainable agriculture Disease control Noxious weeds Pastures and rangelands program Environmental Management Systems Irrigation Management Water Management Practices	Bathurst: (02) 6330 1200 Goulburn: (02) 4828 6600 Menangle: (02) 4640 6333 Windsor: (02) 4577 0600 (02) 6626 1237 (Windsor Only) (Windsor Only) Website: www.agric.nsw.gov.au

NSW Farmers Association	<p>FarmBI\$ – Skilling Farmers for the Future Funding towards landholder training including financial management, marketing, human resource management and natural resource management.</p>	<p>Phone: NSW Rural Assistance Authority:0438 191 275 Website: www.nswfarmers.org.au/nht Phone: (02) 8251 1700 Goulburn: (02) 4821 7059</p>
NSW Rural Assistance Authority	<p>The NSW RAA provides low interest loans to farmers for a number of schemes. Schemes which may apply to farmers are:</p> <ul style="list-style-type: none"> ■ NSW FarmBI\$ provides assistance by enhancing business management skills to increase and improve productivity, profitability and sustainability. ■ Disaster Relief Scheme provides loan funds to farmers and small business to allow them to continue their normal farm operations immediately following a natural disaster. ■ Rural Adjustment Scheme (Exceptional Circumstances provisions) assists eligible farmers to overcome difficulties due to industry downturns, or because of their location in areas suffering the effects of specific exceptional circumstances. ■ Special Conservation Scheme: an incentive based scheme aimed at promoting improved land management practices in NSW. ■ Irrigated Agricultural Water-Use Efficiency Scheme helps irrigators to plan, adopt and monitor best irrigation practices and water efficient technology for a more sustainable and viable irrigated agricultural sector in NSW. ■ Irrigation and Drainage Management Plan Grants: (Waterwise on Farms Program) funding for preparation of farm irrigation and drainage management plans for licensed irrigators. 	<p>Phone: 1800 678 593 Website: www.raa.nsw.gov.au email: rural.assist@raa.nsw.gov.au</p>
Rural Fire Service, NSW	<ul style="list-style-type: none"> ■ Reducing bush fire hazards ■ Controlling bush fires ■ Bush fire danger season/total fire bans ■ Personal safety equipment 	<p>Contact your local bush fire control centre or the RFS. Website: www.bushfire.nsw.gov.au Phone: 1800 679 737</p>
Rural Lands Protection Board	<ul style="list-style-type: none"> ■ Controlling pest animals ■ Controlling diseases in livestock 	<p>Goulburn: (02) 4821 2522 Camden: (02) 4655 9165 Website: www.rlpbnsw.org.au</p>
Sydney Water	<ul style="list-style-type: none"> ■ Land use allowed in catchment areas 	<p>General Enquiries: 13 20 92 Website: www.sydneywater.com.au</p>

Threatened Species Network	NHT and World Wide Fund (WWF) for Nature TSN Community Grants to support and inspire community work to provide seed funding for community groups to take long term responsibility to conserve and recover populations of nationally threatened species and ecological communities.	Phone 1800 032 551 Website: www.wwf.org.au/tsn NSW TSN Coordinator
WorkCover	<ul style="list-style-type: none"> ■ Chemical Storage ■ Safe working practices 	Goulburn: (02) 4824 1500 Dangerous Goods Licensing Hotline (02) 4321 5500 Head Office Gosford: (02) 43215 000 Parramatta: (02) 9841 8550

Appendix 2 Legislation

There are several pieces of NSW-based legislation that landholders need to be aware of when making decisions about their property. A list of relevant legislation and a description has been outlined below. Legislation continues to evolve over time so you need to be aware of changes. Information can be obtained from Government Departments who can advise on which legislation applies to your property and enterprise.

Legislation	Description
<i>Contaminated Land Management Act 1997</i>	NSW legislation administered by EPA ¹ for matters relating to seriously contaminated land sites in NSW that are presenting significant risk of harm to human health or the environment.
<i>Environment Protection and Biodiversity Conservation Act 1999</i>	Commonwealth legislation administered by Environment Australia which requires approval of the Commonwealth for certain kinds of development which are considered to be of national environmental significance: <ul style="list-style-type: none"> ■ World Heritage properties ■ Ramsar wetlands of international significance ■ Nationally listed threatened species and ecological communities ■ Listed migratory species ■ Commonwealth marine areas ■ Nuclear actions (including uranium mining).
<i>Environmental Planning and Assessment Act 1979</i>	NSW legislation administered by Planning NSW and local councils for matters relating to planning, development and activities carried out on land and environmental management through development. Also involves State Environmental Planning Policies, Regional Environmental Planning Policies and Local Environmental Planning Policies.
<i>Environmentally Hazardous Chemicals Act 1985</i>	Commonwealth legislation administered by EPA for matters relating to assessment, registration and use of chemicals. May include chemical control order application that prohibits certain activities related to storage, processing, transporting and disposal of chemical waste.
<i>Fisheries Management Act 2004</i>	The Act provides protection for aquatic animals and marine vegetation, for the listing of threatened species, populations and ecological communities and key threatening processes, declaration of critical habitat and the preparation of recovery plans and threat abatement plans. It also has cognate provisions in the EPandA Act, i.e. when Council assesses a proposal for a development or an activity under Part 4 or 5, it must consider the impact of the proposal on the environment of listed biota.
<i>Local Government Act 1993</i>	NSW legislation administered by Local Council for matters relating to management of council owned and controlled land including septic management.

¹ In September 2003 the EPA became part of the Department of Environment and Conservation (NSW).

<i>National Parks and Wildlife Act 1974</i>	NSW legislation administered by National Parks and Wildlife Service. Specifies opportunities for private land conservation through voluntary conservation agreements and wildlife refuges (Sections 68-71).
<i>Native Vegetation Conservation Act 1997</i>	The Act aims to prevent inappropriate clearing of native vegetation in the State and assist the in sustainable management of native vegetation that remains.
<i>Noxious Weeds Act 1993</i>	NSW legislation administered by NSW Agriculture, local councils, and Department of Sustainable Natural Resources for matters relating to identifying and controlling noxious weeds in each NSW council area. Weeds are categorised according to associated problems, with the land occupier being responsible for control of weeds or prevention of their spread. S18 weed control notice requires action within 24 hours.
<i>Occupational Health and Safety Act 2000</i>	NSW legislation affecting all employers. It aims to secure the health, safety and welfare of persons at work, and to protect people at a place of work against risks to health and safety which arise out of activities of persons at work.
<i>Pesticides Act 1999</i>	NSW legislation administered by the EPA for matters relating to storage, use and disposal of pesticides to prevent harm to the environment or to human health. Includes strict record keeping procedures.
<i>Protection of the Environment Operations Act 1997</i>	NSW legislation administered by EPA for matters relating to environmental offences such as pollution of water and air and including odour and noise pollution. Includes penalties for committing offences. Requires licence for application of chemicals to water bodies.
<i>Rivers and Foreshores Improvements Act 1948</i>	NSW legislation administered by DIPNR requiring approval of works within 40 metres of the bank of a stream.
<i>Rural Fires Act 1997</i>	NSW legislation administered by Rural Fire Service pertaining to bush fire protection, operational matters and risk management planning.
<i>Soil Conservation Act 1938</i>	NSW legislation administered by DIPNR for matters relating to soil conservation and erosion prevention. Notice can be issued if a landholder has done or is likely to do something that will lead to land degradation and consent is required to clear protected land.
<i>Threatened Species Conservation Act 1995</i>	NSW legislation administered by NPWS and local councils. The Act was introduced to provide protection for all threatened plants and animals that are native to NSW. The Act has obligations for councils due to the cognate provisions it makes under the EPandA Act (where council assesses impacts of development proposals on listed threatened species, populations and ecological communities and, under certain circumstances, consults with the NPWS or NSW Fisheries). The Act establishes the NSW Scientific Committee which lists threatened species, populations and endangered ecological communities. The Act provides for listing of key threatening processes, for declaration of 'critical habitat', and the preparation of Recovery Plans and Threat Abatement Plans.

<p>Water Management Act 2000</p>	<p>NSW legislation administered by the DIPNR. The object of the Act is the sustainable and integrated management of the State's water for the benefit of both present and future generations.</p>
<p>Other</p>	<p>Detailed Guidance</p>
<p>Australian Standard 1940</p>	<p>Standard for storage and handling of fuel:</p> <ul style="list-style-type: none"> ■ minor storage 5000 L petrol, 10 000 L diesel ■ emergency planning ■ signs ■ spill prevention, control and clean-up ■ fire extinguishers ■ bunding <p>Larger than minor storage must have strict procedures in place as indicated by Sect. 9.</p>
<p>WorkCover NSW Code of Practice No. 422 Safe Storage and Use of Chemicals.</p>	<p>To meet health and safety obligations. Includes chemical storage and use guidelines:</p> <ul style="list-style-type: none"> ■ maintain labels on chemical containers ■ storage and disposal of unlabelled containers ■ MSDS sheets available for all chemicals ■ risk assessment – prevent environmental and human exposure ■ record keeping – site assessment (annual) ■ details of application procedures ■ transport (incl. dangerous goods) ■ chemical storage shed design <ul style="list-style-type: none"> - roof ventilation - concrete floor, door sills and block walls ■ emergency preparation ■ clean-up procedures ■ personal protective equipment ■ disposal of containers
<p>Australian Standard 1547: 2000 On-site domestic-wastewater management</p>	<p>The objective of this Standard is to provide the requirements for primary and secondary-treatment units. It applies to all persons and agencies involved with sustainable and effective on-site domestic-wastewater management.</p>

Feel your soil texture



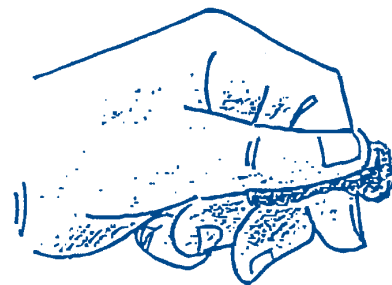
1. Take a small handful of soil



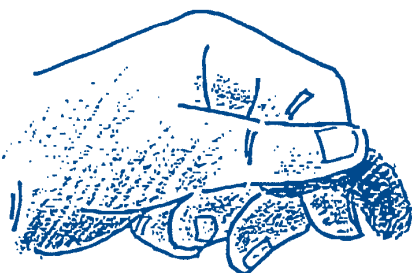
2. Add enough water to make a ball. If you can't make a ball, the soil is very sandy. If the ball is too wet, add more soil



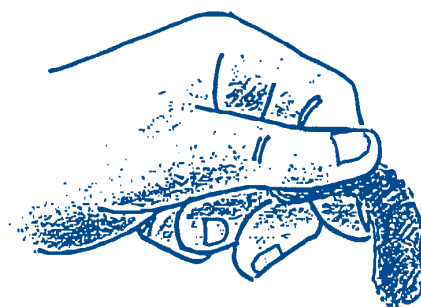
3. Feel the ball with your fingers to find out if it is gritty (sand), silky (silt) or plastic/sticky (clay)



4. Roll the ball and with your thumb gently press it out over your forefinger to make a hanging ribbon.



5. If you can make a short ribbon your soil texture maybe loamy, a mixture of sand and clay



6. The longer the ribbon the more clay is in your soil

Once you have determined the feel of the soil (plastic, silty, sandy, or smooth) and made a ribbon, compare the length of the ribbon on the table over page to find out your soil type.

Guide to common soil textures

Field texture Grade	Behaviour of moist bolus (soil ball)	Ribbon length (mm)	Approx clay content %
Sand	Coherence nil to very slight, cannot be moulded; sand grains of medium size, single sand grains stick to fingers	nil	<5%
Loamy sand	Slight coherence; sand grains of medium size; can be sheared between thumb and forefinger to give minimal ribbon of about 5 mm	About 5mm	About 5%
Clayey sand	Slight coherence; sand grains of medium size; stick to fingers; discolours fingers with clay stain	5-15mm	5 to 10%
Sandy loam	Bolus coherent but very sandy to touch; will form ribbon; dominant sand grains of medium size and are readily visible	15-25mm	10 to 20%
Loam	Bolus coherent and rather spongy; smooth feel when manipulated but with no obvious sandiness or 'silkeness'; may be somewhat greasy to touch if much organic matter present	25mm	About 25%
Sandy clay loam	Strongly coherent bolus; sandy to touch; medium size sand grains visible in finer matrix	25-40mm	20 to 30%
Clay loam	Coherent plastic bolus, smooth to manipulate	40-50mm	30 to 35%
Light clay	Plastic bolus; smooth to touch; slight to moderate resistance to ribboning shear	50-75mm	35 to 45%
Light medium clay	Plastic bolus; smooth to touch; slight to moderate resistance to ribboning shear	75mm	40 to 50%
Medium clay	Smooth plastic bolus; handles like plasticine and can be moulded into rods without fracture; has moderate resistance to ribboning shear	>75mm	45 to 55%
Heavy clay	Smooth plastic bolus; handles like stiff plasticine; can be moulded into rods without fracture; has firm resistance to ribboning shear	>75mm	55% +

SOURCE: Adapted from McDonald et al., 1990, *The Australian Soil and Land Survey: Field Handbook 2nd edition*, Inkata Press, Melbourne.

Appendix 4 Describing native vegetation

Excerpt from NSW Department of Land and Water Conservation "Rural Land Production and Native Vegetation Conservation – Adding value to the natural assets of NSW" published by Murray Catchment Management Committee/DLWC Nov 1998



VegNotes



ADDING VALUE TO THE NATURAL ASSETS OF NEW SOUTH WALES

SERIES 1 • GETTING TO KNOW YOUR NATIVE VEGETATION

1.2 Describing native vegetation

Scrub ain't scrub!

Across NSW, there is a huge variation in native vegetation. Even within small districts, there can be dozens of different types of native vegetation. This variation arises from different geologies and soil types, climate, elevation, drainage and aspect.

It is important to be able to accurately describe and know the native vegetation we are working with, because some vegetation types may be more 'significant' than other vegetation types. Also, different vegetation types often respond in different ways to a given management.

There are two main ways in which vegetation can be classified or described:

1. Structure; and
2. Floristics.

Structure

Structure refers to the physical characteristics of a vegetation community, such as the height of the vegetation, and the spacing (or 'foliage projection') between the dominant plants.

Structural classes are known as 'formations' and include 'open forest', 'woodland', 'shrubland', and 'grassland'.



"Structure" refers to the height and spacing of dominant plants in an area of native vegetation
Diagram from *Greening Australia* (1995)

Floristics

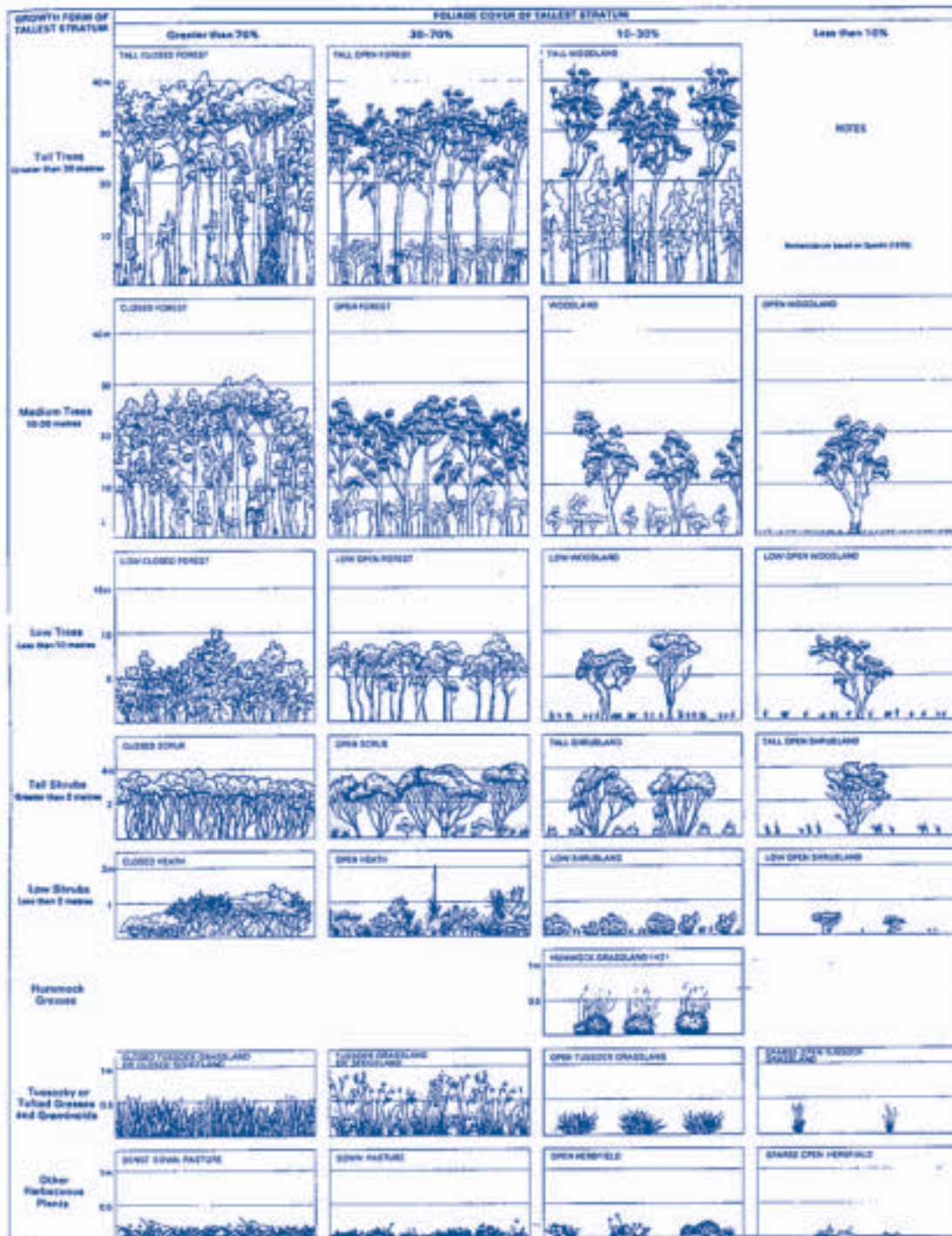
Floristics refers to the species of plants which are present. Usually, the plants which are dominant in the vegetation are the most important for the purpose of a description. In a forest, the dominant plants will be the trees, but in a shrubland, shrubs will be dominant. Simply name the species that make up the dominant layer. Sometimes, there may be two or three species that are equally dominant.

Floristic classes are known as 'associations' and include 'Tumbledown Gum- Currawang Association', 'Spotted Gum-Yellow Stringybark Association', and 'Yellow Box- Blakely's Red Gum Association'.



"Floristics" refers to the species of plants that are dominant
Diagrams from *Costermans* (1993)

Structural vegetation types



Reproduced from AUsLIG - Atlas of Australian Resources- Vegetation

Giving a name to a vegetation type

Vegetation types are named by using both the structural 'formation' and the floristic 'association' together.

1. Using the table opposite, describe the structure of the vegetation that is on site.
2. Consider which species are the dominant ones on the site. Often, only one species will be dominant. Commonly, however, there will be two or more species that will be equally dominant.

The names of these dominant species will form the basis of the 'floristic association'.

If you don't know the names of the species on site, you may need to refer to plant identification books that are relevant to your local area. These books may be available at your local library, or contact your local DLWC office for more information.

3. Combine (1) and (2) into a description for the vegetation community.

Some examples

An Open Forest in which Spotted Gum (*Corymba maculata*) is the sole dominant species would be described as a "Spotted Gum Open Forest".

A grassland which is dominated by Kangaroo Grass (*Themeda spp.*) would be described as a "Themeda Grassland".

Tumbledown Gum (*Eucalyptus dealbata*) and Currawang (*Acacia doratocylon*) grow together as equally dominant species in woodlands in the Central West of NSW. The community would be accurately described as a "Tumbledown Gum - Currawang Woodlands".

Some other important things to describe

In describing a vegetation community to others, whether in a written report or verbally, there are some other important factors apart from simply naming the community. Two of the more important factors are the composition of the understorey, and a description of the condition of the site.

Understorey

The understorey is sometimes also described in naming a vegetation type. This is important, as similar vegetation communities can often have different understoreys.

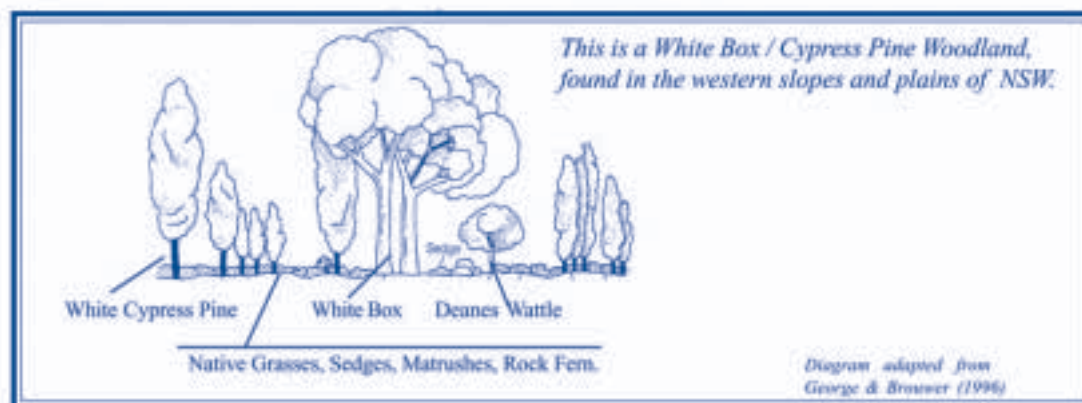
A common understorey species in Spotted Gum Open Forests is the 'Burrawang' or 'Zamia Palm' (*Macrozamia spiralis*). Where this occurs, the description would be "A Spotted Gum Open Forest with an understorey of Burrawangs."

Another example of such a description would be "A Tumbledown Gum - Currawang Woodland with an understorey of native peas and heaths".

Condition of the vegetation

Sometimes a description of the condition (see VegNote 1.3) is also given. This is a very important consideration before management of the area is decided.

Add the description of the condition after the name of the vegetation community and the description of the understorey. An example would be "A Tumbledown Gum - Currawang Woodland with an understorey of native peas and heaths in modified condition due to invasion of St. John's Wort and removal of many of the mature trees."



Using descriptions of vegetation communities

An accurate description of vegetation types:

- is essential in communication amongst and between all members of the community, particularly landholders and government staff;
- allows much greater site-specific advice to be given regarding its management; and
- indicates where the vegetation fits into the landscape (i.e., whether it is in a valley or on a ridge).

For example, a description which just says "a piece of scrub", or even "a patch of native vegetation on farmland" says almost nothing about the site.

On the other hand, knowing that the vegetation community is a "Yellow Box Woodland", for instance, is an immediate indication that the site is on a valley floor, that it is a community that has been extensively cleared and, that it may be important habitat for some threatened birds and mammals.

Mapping vegetation communities

When preparing a vegetation map of your property, or other areas you manage, it is important to indicate the type of vegetation community.

Firstly, prepare a basic map of your property with areas of native vegetation marked, as described in VegNote 1.1. Secondly, make a list of all the types of vegetation communities present in the area. Assign each of these types a color code.

Place a plastic overlay over your map. Trace the boundaries of each area of native vegetation from your map onto the overlay. Using the color codes for each vegetation type, color in these patches.

Are there any vegetation types which are locally or regionally uncommon on your property? These are likely to be valuable as seed sources for revegetation projects.

What vegetation types may have once existed in areas which are now cleared? It is important that if cleared areas are to be revegetated, then the plants which were found in the now-cleared vegetation types are used.



Native vegetation communities in their original, natural condition have a wide diversity of species.

In many cases, they also have a great diversity of 'structural components', including trees, shrubs, understorey, and a ground layer of native grasses and herbs.

In many parts of the NSW, the original native vegetation, where it remains, has lost much of its species diversity and its structural diversity. In other words, it has been 'modified' or 'degraded'.

To assess the condition of native vegetation, refer to VegNote 1.3.

References and further reading

- Australian Surveying and Land Information Group (1990) *Atlas of Australian resources - vegetation*. AUSLIG, Canberra.
- Costermans, L. (1993) *Native trees and shrubs of south-east Australia*. Rigby, Melbourne.
- George, D. & Brouwer, D. (1996) *Nature conservation on farms*. NSW Agriculture.
- Groves, R.H. (1994) *Australian vegetation*. Cambridge University Press, Melbourne.
- Greening Australia (1995) *Local greening plans*. Greening Australia, Canberra.
- Read, I. (1994) *The bush - a guide to the vegetated landscapes of Australia*. UNSW Press, Sydney.
- Specht, R.L. (1970) Vegetation, in Leeper, G.W. *The Australian environment*. CSIRO and Melbourne University Press, Melbourne.
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- Walker, J. & Hopkins, M.S. (1990) Vegetation, in McDonald, R. *et al. Australian soil and land survey - field handbook*. Inkata Press, Melbourne.

Appendix 5 Asset protection zones

Excerpts from Planning for Bushfire Protection (2001) NSW Rural Fire Service and Planning NSW.

This table should be read in conjunction with Planning for Bushfire Protection 2001. Asset Protection Zones are only one of a number of strategies for bushfire protection.

Glossary

Asset Protection Zones (APZ) – Often referred to as a fire protection zone. Aims to protect human life, property and highly valued public assets and values. Comprises Inner Protection Area (IPA) and Outer Protection Area (OPA). An area surrounding a development managed to reduce bushfire hazard to an acceptable level. The width of the APZ will vary with slope and construction level.

Chapter 4 of Planning for Bushfire Protection sets out the requirements for Asset Protection Zones that are to be implemented at the Development Application Stage. Specifications for APZs are set out in Table 4.1 for Residential Purposes (below) and 4.2 for Special Protection Developments. They should be read in conjunction with Appendix 2 of Planning for Bushfire Protection.

Table 4.1 Minimum Specifications for Asset Protection Zones (APZ) for Recreational Purposes in Bushfire-prone Areas.

Forests (See standard vegetation types on page 33 for a forest description)		
Slope		APZ = IPA + OPA
>5°	Upslope	20m = 20m + 0m
5–0°		30m = 20m + 10m
>0–5°	Downslope	40m = 30m + 10m
>5–10°		50m = 40m + 10m
>10–15°		60m = 50m + 10m
>15–18°		70m = 60m + 10m
Woodlands, heaths, open scrub(See standard vegetation types on page 33 for woodlands, heaths, and open scrub description)		
Slope		APZ = IPA + OPA
>5°	Upslope	20m = 20m + 0m
5–0°		30m = 20m + 10m
>0–5°	Downslope	35m = 25m + 10m
>5–10°		40m = 30m + 10m
>10–15°		50m = 40m + 10m
>15–18°		60m = 50m + 10m
Rainforests, grasslands, open woodlands(See structural vegetation types on page 33 for rainforests, grasslands, and open woodlands description)		
<i>Minimum separation distance of 20 metres (cleared/managed vegetation) required regardless of construction level for all slopes. Fire trail recommended.</i>		
IPA – Inner Protection Area		
OPA – Outer Protection Area		

For further information on Asset Protection Zones contact the local Rural Fire Service or your local Council.

Appendix 6 Minimum fire intervals for vegetation

Excerpt from RFS draft Bush Fire Environmental Assessment Code – June 2003 Page 18 – Bush Fire Assessment Code for Asset Protection Zones and Strategic Fire Advantage Zones Appendix A – Minimum Fire Frequency for Strategic Fire Advantage Zones*

Formation	Minimum Fire Interval (years)	Description
A. Rainforests	No prescribed Fire	Vegetation association displaying canopy cover generally greater than 70% with or without emergent trees, and includes species recognised as rainforest species (may include lianas and/or epiphytes) and does not exclude areas of dry rainforest.
B1. Wet sclerophyll forests	25	Tall forests dominated by straight-trunked eucalypts with dense understories of shrubs with broad soft leaves, ferns and herbs. Relatively fertile soils in high rainfall parts of coast and tablelands.
B2. Semi-mesic grassy forests	10	Tall forests dominated by straight-trunked eucalypts, with mixed grassy understories and sparse occurrences of shrubs with broad soft leaves. Coast and tablelands in high rainfall regions and along major inland watercourses on relatively fertile soils.
C. Swamp sclerophyll forests	7	Forests of hard-leaved trees (eucalypts, paperbarks, casuarinas) with scattered shrubs and continuous groundcover of water-loving sedges and herbs. Flood prone flats and plains and riparian zones principally along the coast and inland rivers.
D. Sclerophyll grassy woodlands	5	Woodlands of eucalypt trees, with dry understories of grasses, herbs and sometimes scattered shrubs. Rolling terrain with fertile soils and moderate rainfall on the coast, tablelands and western slopes.
E1. Dry sclerophyll shrub/grass forests	5	Eucalypt forests with mixed understories of hard-leaved shrubs and grasses. Moderately fertile soils in moderate rainfall areas of the coast, tablelands and western slopes.
E2. Dry sclerophyll shrub forests	7	Low forests and woodlands dominated by eucalypts, with understories of hard-leaved shrubs and sparse groundcover (few grasses or sedges). Regions receiving high to moderate rainfall on the coast, tablelands and western slopes, often in steep areas.

F. Semi-arid woodlands	10	Open woodlands dominated by eucalypts, acacias and casuarinas, with open understories of hard-leaved shrubs, grasses and forbs, including many ephemeral species. Low – moderate rainfall regions of the near western plains, including infrequently flood-prone sites.
G. Heathlands	7	Dense to open shrublands dominated by shrubs with small, hard leaves and sedges. High rainfall regions of the coast and tablelands on infertile soils, often in exposed topographic positions.
H. Alpine complex	No prescribed Fire	Mosaics of low herbfields, grasslands and shrublands. High, snow- prone parts of the southern ranges.
I. Grasslands	2	Closed tussock grasslands with a variable complement of herbs and few if any woody shrubs or trees. Fertile soils of the tablelands and western floodplains.
J. Freshwater wetlands	6	Swamp forests, wet shrublands or sedgeland, usually with a dense groundcover of sedges. Throughout NSW on peaty or gleyed soils with impeded drainage.
K. Estuarine and saline wetlands	No prescribed Fire	Low forests, shrublands and herbfields of mangroves, succulent shrubs (saltmarsh) or marine herbs (sea grasses). Coastal estuaries and saline sites of the western plains.
M. Arid and semi-arid shrublands	10	Open shrublands of hard-leaved shrubs, hummock or tussock grasses and ephemeral herbs. Low rainfall regions of the far western plains.

* Note: This schedule has been prepared for the specific purpose of this code and should not be used for other purposes. It can be anticipated that the use of these frequencies will result in biodiversity loss within the landscapes for which it is applied.

Management planning

Appendix 7 Management planning sheets

Action Plan No: _____

Key Issues		Key Goal
Approach to be taken		
Action	Completion Date	Person Responsible
Signs of Improvement		Time Frame

Action Plan No: _____

Key Issues		Key Goal	
Approach to be taken			
Action		Completion Date	Person Responsible
Signs of Improvement			Time Frame

Soil

- Anon. (undated). Tensiometer Tips. NSW Agriculture.
- Greenslade, R and Williams, David. (2002). Soil water monitoring: list of devices and distributors, NSW Agriculture Orange.
- Williams, David. (2002). Soil water monitoring: choosing the right device Agfact, NSW Agriculture Orange.

Pumps

- Smith, Peter, and Richards, Alan. (2003). How much does it cost to pump? NSW Agriculture Orange.
- Richards, Alan. and Smith, Peter. (2003). How efficient is your pump? NSW Agriculture Windsor.

Agriculture/horticulture

- NSW Agriculture, 1997, *Best Practice Guideline: For Growing Vegetables*, NSW Agriculture, Orange.
 - NSW Agriculture, 2002, *Best Practice Guidelines: Horticulture in the Sydney Drinking Water Catchment*, NSW Agriculture, Orange
 - R.T. Williams and J.J. Walcott, *Sustainable agriculture - using best practice to manage the paradoxes facing land managers and agronomists*, Bureau of Resource Science, Kingston ACT.
 - NSW Department of Agriculture – www.agric.nsw.gov.au
 - NSW Department of Agriculture, 2002, *Sustainable Horticulture AGFACT 2002*, NSW Department of Agriculture, Mid North Coast.
 - These guidelines have been prepared by NSW Agriculture to help vegetable growers and other horticulturists avoid conflicts between growers and others.
 - Planning the Best Farm Layout
 - Best Soil Management Practices
 - Best Irrigation Practices
 - Best Crop Fertilisation Practices
- Available online www.agric.nsw.gov.au/reader/8049 20 May 2003

Irrigation

- Anon. (2002). Why prepare an irrigation and drainage management plan?, NSW Agriculture.
- NSW Agriculture WaterWise staff, (2002), *IDMP Guidelines – how to prepare an irrigation and drainage management plan*, NSW Agriculture WaterWise on the Farm Orange.
- Wedd, Steve., (2000), *An Introduction to Irrigation Management course*, NSW Agriculture Windsor.

Nursery

- Nursery Industry Association – Best Practice Guidelines Nursery Industry Association of Australia (1997), *Nursery Industry Water Management Best Practice Guidelines*, Nursery Industry Association, Sydney NSW.
- Integrated Pest Management in Ornamentals: Information Guide and Field Identification Guide, NSW Agriculture, 2nd Edition 2002.
- G Cresswell and D Hutt, 1996, *Managing nursery run-off – techniques to reduce nutrient leaching from pots*, NSW Agriculture.

Viticulture

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