



**Most properties will have a range of land classes which place limitations on how the land is managed.**

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This factsheet introduces land managers to property planning and its importance in defining goals, solving problems, time management and planning a budget.

## Introduction

Property management planning is a process supporting sustainable land management which considers the personal goals of landholders, environmental issues and economic returns. Good management can lift productivity and at the same time improve the condition of natural resources.

Developing a property management plan will:

- help to focus your goals
- help you to solve problems
- allow you to plan your budget
- allow you to plan your time.

Most properties contain a range of soil types, topographical features, each with individual productive potential and management needs, so landholders will need to apply some form of classification when conducting an initial assessment of the characteristics of their property. This classification system is known as ‘land capability’.



Figure 1: Slope plays an important part in how land is managed within its capability

## Land capability

Land capability describes the ability of the land to accept a type and intensity of use with minimal risk of damage to the soil (Figure 1). Understanding land capability is at the core of responsible land use and management. Land use decisions should only be made on the basis of adequate information about the land itself.

Land capability is based on the physical attributes of the land which is called ‘land quality’.

A range of limitations (potential for land degradation) exist for different land qualities, which will influence land use. These include:

- Water erosion – steep slopes (Figure 2) create a high potential for degradation if soil cover is not adequate.
- Wind erosion – deep sandy soils in low rainfall cropping areas have the potential to erode, particularly with intense rainfall events.
- Soil acidity – highly acidic soils have the potential to reduce productivity.



Figure 2: Steep land cleared of native vegetation has resulted in severe tunnelling, due to the shallow root systems of perennial pastures and weeds



- Water absorption – some low lying areas may become waterlogged in the wetter months and will reduce the amount of land available to stock. Others are highly water repellent and can affect the quality of crop and horticultural production.
- Rocks – the degree of rockiness will affect the purpose to which the land can be used, particularly where machinery is involved (Figure 4).
- Inherent fertility – some soils are poorer in nutrients than others. While nutrients can be added to soil, it is important to decide whether the cost of fertilizers outweigh the value of the enterprise as a whole.



Figure 3: Steep inaccessible land is best suited to native vegetation

An assessment of all the attributes of the land will decide its limitations. These limitations can then be used to assign the land to particular 'land classes' (see Table 1).

Table 1: Generalised land class definitions

Land class	Description
1	Land with little risk of degradation and able to support a wide range of uses. Suitable for all types of agricultural production on a permanent basis.
2	Land with some risk of degradation but still able to support a wide range of uses. Some conservation practices required if used for cropping eg: broad rotations and/or some special cultivation practices.
3	Land with moderate risk of degradation. Special conservation practices required if used for cropping.
4	Land with moderately severe risk of degradation. Regular cropping would constitute an unacceptable risk.
5	Land with little risk of degradation but unsuitable for cropping because of soil, topography, wetness or salinity. Suitable for cultivation associated with pasture development.
6	Land with severe risk of degradation. Suitable for grazing but good management needed to preserve vegetative cover. Specialised equipment is necessary for establishment of improved pasture.
7	Land with very severe risk of degradation. Suitable for controlled grazing. Good vegetative cover is essential for protection of the land.
8	Land incapable of sustaining any form of agricultural production.

Properties can have a range of land classes which will place limitations on how the land is managed. Steep slopes have the potential to create severe water erosion if sufficient ground cover is not maintained. Cropping land is particularly vulnerable. In high rainfall areas, extreme slopes which prohibit the use of machinery and are dangerous to livestock, is best suited to native vegetation (Figure 3).

Rockiness reduces the ability to use machinery and can indicate a shallow soil depth rendering the land unsuitable for improved pasture or perennial horticulture (Figure 4). Rocky areas which have little agricultural value can be fenced off to exclude stock which will encourage natural regeneration of local native species.

Watercourses are fragile ecosystems which can be severely degraded by livestock. Water quality and biodiversity assets decline under livestock access, so all watercourses (including dams) should be fenced to exclude all livestock. Rehabilitation of degraded watercourses is an important process which contributes to the improvement of our natural resources.

Deep sand dunes are at risk of eroding if used for agricultural purposes (Figure 5). This land should be fenced off from stock and stabilised with appropriate native vegetation, or cereals such as cereal rye or triticale. Perennial veldt grass has the capacity to stabilise sand dunes, however it can become invasive if not controlled.

Using a simplified land capability approach for particular enterprises can be used as an alternative to the more complex eight-class system. For example, grazing enterprises can use the three class system (Table 2).

Table 2: Simplified land class system for grazing

All year access areas	Gentle to moderate slopes, well drained, loamy to clayey soils. All year access except when conditions become too wet or when vegetation cover becomes sparse (cover should be >70%)
Restricted access areas	Land with some risk of degradation (such as waterlogging) but still able to support a wide range of uses. Some conservation practices required if used for cropping eg: broad rotations and/or some special cultivation practices.
Prohibited areas	Extreme slopes, area affected by or prone to landslips, gulying, tunnelling, salinity, areas of native vegetation or highly sensitive areas.

The 'prohibited areas' classification needs to be considered when assessing stocking rates and the type of management required.

Identifying any limitations (such as waterlogging, extreme slopes or rockiness) will enable the property owner to achieve a more realistic assessment of the amount of grazing land available.

Allowing stock to graze waterlogged land will damage soil and pasture, making ongoing management difficult.



Figure 4: Rocks severely limit land use and capability



Figure 5: Exposed sand dunes are susceptible to erosion as is bare soil

## Four steps to develop a successful property plan

### Step 1: Assess your property

To write your property plan effectively, you will need to gather information about the property. This includes:

- natural resources – soil type, rainfall, native vegetation, water quality, water quantity, watercourse
- physical geography – slope, rocky outcrops, drainage lines
- limitations of the property – waterlogging, weeds, erosion, salinity, poor soil cover
- financial and human resources – what are the requirements of the enterprise you wish to run? Do these match the attributes of the property?

It is important to understand that the assessment of your property cannot be done in a short period of time. Landholders need to observe how the property reacts to natural events over a number of weather types and seasons (dry, wet, prevailing winds, frost etc). Your priorities and lifestyle will change over a period of time; this will affect your property plan.

Obtaining an aerial photograph of the property (Figure 7) will help by providing an overview of the existing layout, topography, native vegetation and watercourses. Land classes and existing infrastructure can be drawn on a clear overlay.

### Step 2: Identify your goals and visions

Having a clear vision for your property is important if you are to achieve your hopes and aspirations. You will need to consider goals for:

- the property and its resources
- the business
- your family
- your lifestyle.

For most property owners, lifestyle counts for a lot, however, particular enterprises can be a source of income if managed effectively. Whatever your priorities, appropriate management is critical to maximise your land's potential.

### Step 3: Develop the plan

Using a series of clear overlays will enable a realistic plan to be drawn up (Figure 9).

Overlay 1 includes all the physical and permanent features of the property which will impact on its management. (such as saline sites, rocky areas, steep slopes and native vegetation), as identified in Step 1.

Overlay 2 includes the existing layout of the property (including fences, stock troughs, raceways, etc.)

Overlay 3 is the realistic plan based upon 'best practice' land management principles and includes future plans such as new fence lines, revegetation areas or permanent structures.

The following should be considered when drawing up your realistic property plan:

- location of the house
- location of sheds and yards
- location and types of fences
- water resources including stock watering points
- trees and vegetation
- surface water management
- names or numbers of paddocks
- raceways
- number and types of enterprises
- new fences.

### Step 4: Write a detailed 'Action Plan'

The success of any property management plan will depend upon the amount of resources needed to implement the changes. Most landholders will be



Figure 7: An aerial photograph will provide an overview of your property



Figure 8: Yellow line shows different land classes. Once identified, they can be used to their capability.



Figure 9: Overlays are used to draw up a realistic plan



Figure 6: Land class mapping

## Why map land classes?

1. Land classes show where you can or cannot graze.
2. Allows fencing to land class (Figure 8).
3. Enables the assessment of carrying capacity.
4. Determines area available for grazing.
5. Shows limitations for other enterprises, for example
  - vines: need well drained soils and avoid frosts
  - farm forestry: maximum slope of 35%
  - cropping: avoid land over 12% slope
  - grazing: avoid waterlogged soils
  - strawberries: avoid saline soils
  - phalaris: avoid highly acidic soils which can cause aluminium toxicity.



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limited by time, money and technical knowledge, so a feasible action plan should be drawn up which includes appropriate management strategies to accomplish specific tasks. The action plan will need to address the following:

- prioritising issues, including location and area
- desired outcomes
- management strategies
- costs
- practical actions
- start and completion dates
- monitoring and evaluation.

**Other planning considerations**

Property management planning should lead to improvements in farm design which may result in a number of changes to infrastructure.

**Stock water**

Best practise is to exclude livestock from dams and watercourses. A reticulated watering system (Figure 10) is generally accepted as the most efficient way to provide water to livestock. This system relies on water from dams (or bores) being pumped to a header tank which then allows water to flow through underground polypipe, by the force of gravity, into stock troughs strategically placed in each paddock. A series of pressure valves and ball floats will ensure that water troughs are always full. However, these should be checked regularly.

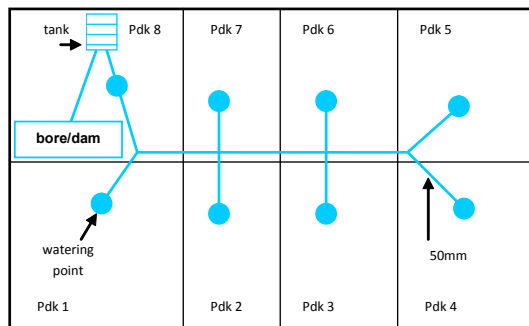


Figure 10: Example of a reticulated watering system

**Shelter belts**

Livestock require shelter from intense Summer sun and severe winter winds. New paddocks may not have adequate shelter, so it may be necessary to erect an artificial shelter, while newly planted shelter belts become established.

**Raceways**

Raceways can be an efficient way of accessing paddocks, moving livestock and machinery around the property. Having a raceway can allow for strategic gate opening allowing livestock to move from paddock to paddock with relative ease. In the event of fire, livestock can be moved quickly to safer areas.

**Fire**

In planning for fire protection, consider the total property as well as buildings, and consider the situation in relation to known hazards (for example, the proximity of vegetation). Assess the fire hazard when locating new buildings, hay sheds, water supply points, access tracks, fence lines and stock. Always prepare a bushfire survival plan.

**Fences**

Fencing to land class often means eliminating straight fences as new fences need to follow contours. Constructing electric fences is a relatively inexpensive and effective way of dealing with this issue.

**Yards**

Placement of yards is an important consideration when re-designing a property. Yards need to be situated where large trucks can manoeuvre on solid ground (Figure 11). A flat, well drained area will avoid a quagmire during the wetter months. If constructing a new yard it is well worth a few hours research to ensure that the facility meets your requirements and does not represent a danger to people or livestock.



Figure 11: Well constructed yards with road access

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