Calculating the number of stock for each paddock

Key actions

- Map property and paddocks into land types.
- Describe land types based on soil type and dominant vegetation.
- Determine use and relevance of photo standards and photo points for monitoring land condition.

Why is it important to understand the natural resource base on your property?

Natural resources are your natural assets and the foundation of your production system. They include:

- soil
- vegetation
- water (surface and underground)
- biodiversity

How does this module assist you?

Every property has a unique combination plant species, soils, topography and climate; which together make up land type and land capability.

This module will help you to understand and manage vegetation, water, soil and landscape health to achieve sustainable production from the grazed area of your property.

To achieve sustainable production you need to:

- define the capacity and limits of natural resources that are used by mapping and describing water sources and pasture zones based on land type
- monitor trends in vegetation and land condition to enable long term sustainable use (using photo points and photo standards)

Linkages to other modules

This module describes your property natural resources and condition status for use in Module 1: Setting directions.

Vegetation condition links directly to Module 3: Managing your feedbase and indirectly to Module 5: Maximising weaner throughput and Module 7: Meeting market specifications. It is also linked to Module 6: Herd health and welfare through nutritional problems that can arise from particular native vegetation and weed species and/or seasonal growth conditions.

Principles of natural resource management

The natural resources on your property are made up of soil, vegetation, water resources and biodiversity, and these are all interlinked (see Figure 1). Together the natural resources allow you to produce beef and if just one of these resources is in poor condition or supply, production can be severely limited.

The pasture component of vegetation is what cattle (stock) eat and thrive on: the plants grow in the soil and water is vital for both drinking water and for plant growth. A diverse mix of vegetation and associated native fauna (biodiversity) is necessary to keep the whole system operating, including soil microbes, insects which pollinate plants and birds that eat and control pests.

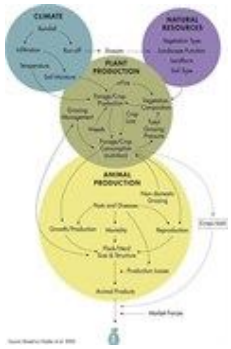

Figure 1: Interactions between climate, natural resources, plant production/growth and animal production.

Procedures for achieving best practice, sustainable natural resource management

- Procedure 1 - Understanding your natural resources
- Procedure 2 - Mapping and describing your natural resources
- Procedure 3 - Monitoring your natural resources and land condition

Understanding your natural resources

The arid zone is defined as areas which receive an average rainfall of 250mm or less.

Soil

The soils on your property will have different textures, rates of water infiltration, drainage and water holding capacity, and organic and nutrient levels. Soil type is closely linked to vegetation type and some plants are very specific about what soils they will grow on. For example, pearl bluebush only occurs on soils with high levels of lime and pH. Other plants however, may be more adaptable and grow on range of soil types.

The main mineral components of all soils are sand, silt and clay. Soil types are often described by the major mineral component and this description helps to explain the main characteristics of that soil. For example:

- Sands have large particle sizes and therefore large gaps between particles, allowing for rapid infiltration and drainage of water. Sands do not retain organic matter or dissolved nutrients well.
- Clays have very small particle sizes. These particles have strong bonds between each other and so will become sticky when wet but clod together when dry. As there is little space between the particles, water moves through the soil profile slowly, making these soils prone to water logging. However the strong particle bonds means that dissolved nutrients and organic matter are not easily washed away, meaning these soils have high fertility.
- Loams have roughly equal parts of sand and clay. This means loams combine the good characteristics of sand and clay, in that they readily drain water but have good water holding capacity and nutrient levels.

Another important descriptor for soils is pH. This describes if the soil acidic, neutral or alkaline and at either end of the pH scale, the availability of nutrients for plant growth can be limited.

Vegetation

Vegetation is usually described in terms of vegetation ‘communities’, each classified by the dominant plant(s), as well as the density and structure of the community, for example a bladder saltbush shrub land.

Soil and vegetation interact in a number of ways to produce the different land types. Management of vegetation is most important for sustaining production and soil protection. It is important to remember that many factors affect the health of vegetation including:

- grazing by domestic livestock
- grazing by other animals including feral (rabbits, goats, pigs) and native animals (kangaroos). Total grazing pressure is the sum of these animals and domestic livestock
- competition from weed species
- fire
- climatic conditions (including past and present trends)
- previous management

Your grazing management decisions will affect the vegetation on your property and its condition.

Water resources

Water includes surface and underground supplies. It is not only quantity of water that can affect your production system but also quality. Domestic livestock have a low tolerance to poor quality water, especially when grazing plants that have a high salt content, such as saltbush.

Good management of water resources includes choosing the number and appropriate placement of watering points, controlling access to water points and adequate monitoring of supply and quality. It is important that each water point can adequately supply the number of cattle that are expected to drink there at any one point. This is means matching pumping and storage capacity to demand.

It is also important to consider what are the most efficient pumping and storage options (if applicable) for that particular water point. On sandy soils, it makes sense to use tanks rather than dams or ground tanks. You should also consider if it is possible to use solar pumping rather than windmills or generators.

What are the sources of water (water point types) and quality of water on your property? Have any of these water resources been mapped? Could the storage and pumping facilities be improved? Could the placement of water points be improved? Are they monitored, if so, how and how regularly?

Remotely monitoring watering points using **telemetry systems** can allow for increased management of watering points while saving

money. Telemetry is a technology that allows data to be gathered and recorded without having to be at the location. Information is instead transmitted from measuring devices (such as flow meters) using radio or cellular phone technology.

Telemetry systems are currently capable of:

- switching pumps or irrigation systems on and off
- starting generators and monitoring pressure, temperature, voltage, etc
- monitoring dam or tank levels
- recording rainfall
- real time monitoring of security devices with an instant alarm if break-in occurs
- monitoring and controlling operation of electric fences
- remote reading of instruments such as weather and water flow gauges
- monitoring the status of gates at remote locations
- medicating water
- GPS vehicle tracking.
- remotely accessing digital cameras or a closed circuit television camera

Telemetry can be used to:

- reduce travel costs
- save time and labour
- reduce wear and tear on vehicles
- manage infrastructure that is hard to get to (due to, for example, wet season inaccessibility)
- create more security for remote infrastructure

The process of enquiring about a telemetry system involves:

- deciding which water points are to be monitored (either now or in the future)
- collecting GPS coordinates for each water point (taking information from maps or Google if suitable)
- prioritising the order of installation

Biodiversity

In Australia, intricate relationships have developed over hundreds of thousands of years between the plants, animals and other organisms present in soil, water and environment in which they all live. Together they are called an ecosystem: a biological community of interacting species and their physical environment.

Biodiversity is therefore the degree of variation in life and in ecosystems. Species biodiversity is defined in terms of the number and type of different species, the individual uniqueness within the same species and a range in ages. To survive and cope with everyday living but also major change, it is important that not every plant and animal is the same age and type. For example, if a disease were to strike a plant or animal population and if it were all the same, it could potentially wipe out the lot.

An ecosystem which has a variety of species with mixed genetic makeup is considered healthier and more resilient to natural disasters and disease than systems with low diversity. This equates to a better chance of survival and also the ability to adapt to change.

If a key species is removed from within a community, one that is vital as a key source of food, then its removal or extinction will vastly affect the workings of the whole system. Do you know of any examples on your property where this has happened?

Mapping and describing your natural resources

Natural resource mapping in the arid zone is based on a tiered system that starts at the more general bioregion level, through to land systems (also called range types) and down to land units (with smaller, more detailed descriptions).

Mapping your natural resources is important to assist in understanding and identifying areas that may require different types of grazing management.

Bioregions of the arid zone

Bioregions are defined as a land area composed of a cluster of interacting ecosystems, repeated in similar form across the landscape. The bioregions are based on factors associated with climate, geology, landforms and vegetation and are applied at a continental scale (1:1,000,000), see Figure 2.

Figure 2: Interim bioregions for Australia

Below are brief descriptions of the 24 bioregions in Australia's arid zone.

Broken Hill Complex (BHC)	Hills and alluvial fans with desert loams and red clays and calcareous red earth; supporting chenopod shrublands of *Maireana* spp. (bluebush), *Atriplex* spp. (saltbush) shrublands and open mulga (*Acacia aneura*) shrublands.
Burt Plain (BRT)	Plains and low rocky ranges of granites with mulga and other acacia woodlands on red earths.
Carnarvon (CAR)	A mosaic of saline alluvial plains with samphire and saltbush low shrublands, Bowgada low woodland on sandy ridges and plains, snakewood scrubs on clay flats, and tree/shrubs over hummock grasslands on and between red sand dune fields. Limestone with *Acacia* spp. shrublands in the north.
Channel Country (CHC)	Low hills on sediments; forb fields and Mitchell grass downs and intervening braided river systems of coolibah woodlands and lignum shrublands, includes small areas of sand plains.
Coolgardie (COO)	Mallees and shrubs on sandplains. Diverse woodlands rich in endemic eucalypts, on low hills, valley alluvials and broad plains of calcareous earths.
Davenport Murchison Ranges (DMR)	Low, rugged rocky hills, formed from folded volcanics and sandstone, siltstone and conglomerates, which contrast with the flat sandplain surrounds of the Tanami bioregion. Vegetation includes hummock grasslands and low open woodlands dominated by eucalypt and *Acacia* species.
Finke (FIN)	Arid sandplains, dissected uplands and valleys with spinifex hummock grasslands and acacia shrublands on red earths and shallow sands.
Flinders Lofty Block (FLB)	Ranges, alluvial fans and plains and some outcropping volcanics, supporting native cypress, black oak (belah) and mallee open woodlands, *Eremophila* and *Acacia* shrublands, and bluebush/saltbush chenopod shrublands on shallow, well-drained loams and moderately-deep, well-drained red duplex soils.
Gascoyne (GAS)	Rugged low sedimentary and granite ranges divided by broad flat valleys. Open mulga woodlands occur on shallow earthy loams over hardpan on the plains, with mulga scrub and *Eremophila* shrublands on the shallow stony loams of the ranges. In the east, characterised by extensive salt lake features supporting succulent steppes.

Gawler (GAW)	Semi-arid to arid, flat topped to broadly rounded hills of the Gawler Range Volcanics and sediments. Slopes, erosional and depositional plains and salt encrusted lake beds, with black oak (belah) and myall low open woodlands, open mallee scrub, bluebush/saltbush open chenopod shrublands and tall mulga shrublands on shallow loams, calcareous earths and hard red duplex soils.
Gibson Desert (GID)	Lateritised upland on flat-lying sandstones of Canning Basin. Mulga over *Triodia basedowii* on 'buckshot' plains. Mixed shrub steppe of *Acacia*, *Hakea* and *Grevillea* over *Triodia pungens* on red sand plains and dune fields. Alluvial plains associated with drainage features support coolabah woodlands over bunch grasses.
Great Sandy Desert (GSD)	Mainly tree steppe grading to shrub steppe in south; comprising open hummock grassland of *Triodia pungens* with scattered trees of *Owenia reticulata* and Bloodwoods, and shrubs of *Acacia* spp., *Grevillea wickhamii* and *G. refracta*, on red longitudinal sand dune fields. *Casuarina decaisneana* (desert oak) occurs in the far east of the region. Gently undulating uplands support shrub steppe such as *Acacia pachycarpa* shrublands over *Triodia pungens* hummock grass. Extensive salt lake chains with samphire low shrublands, and *Melaleuca glomerata, M. lasiandra* shrublands.
Great Victoria Desert (GVD)	Sand-ridge desert of deep aeolian sands. Tree steppe of *Eucalyptus gongylocarpa*, mulga and *E. youngiana* over hummock grassland dominated by *Triodia basedowii*.
Little Sandy Desert (LSD)	Red dune fields with sandstone ranges. Shrub steppe of acacias, and grevilleas over on sandy surfaces. Sparse shrub-steppe over *Triodia basedowii* on stony hills, with river gum communities and bunch grasslands on alluvial deposits in and associated with ranges.
MacDonnell Ranges (MAC)	High ranges and foothills covered with spinifex hummock grassland, sparse *Acacia* shrublands and woodlands along watercourses.
Mitchell Grass Downs (MGD)	Undulating downs on shales and limestones; *Astrebla* spp. grasslands and *Acacia* low woodlands on grey and brown cracking clays.
Mulga Lands (MUL)	Undulating plains and low hills on sediments; red earths. *Acacia aneura* shrublands and low woodlands.
Murchison (MUR)	Mulga low woodlands, often rich in ephemerals, on hardpan washplains. Surfaces associated with the drainage occur throughout with hummock grasslands on sandplains, saltbush shrublands on calcareous soils and samphire low shrublands. Areas of red sandplains with mallee-mulga over hummock grasslands.
Nullarbor (NUL)	Tertiary limestone plain; with bluebush - saltbush steppe in central areas; low open woodlands of myall over bluebush in peripheral areas, including *Myoporum platycarpum* and *E. oleosa*.
Pilbara (PIL)	Mulga low woodland over bunch grasses on fine textured soils and snappy gum over *Triodia brizoides* on skeletal sandy soils of the ranges. Alluvial plains, river frontages and Salt marsh, mulga-bunch grass, and short grass communities on alluvial plains.
Simpson Strzelecki Dunefields (SSD)	Arid dunefields and sandplains with sparse shrubland and spinifex hummock grassland, and cane grass on deep sands along dune crests. Large salt lakes, notably Lake Eyre and many clay pans dispersed among the dunes. Several significant arid rivers terminate at Lake Eyre, Cooper Creek and Warburton River. They are fringed with coolibah and redgum woodlands.
Stony Plains (STP)	Arid stony silcrete tablelands and gibber and gypsum plains with sparse low chenopod shrublands on duplex soils and calcareous earths, dissected by large arid drainage systems with coolibah and redgum on cracking clays along riverbanks of numerous creeks and rivers.
Tanami (TAN)	Mainly red sandplains overlying exposed hills and ranges. The sandplains support mixed shrub steppes of *Hakea suberea*, desert bloodwood, *Acacia* and *grevillea* over *Triodia pungens* hummock grasslands. Wattle scrub over *T. pungens* hummock grass communities occur on the ranges. Alluvial and calcareous deposits occur throughout.

Yalgoo (YAL) This region is an interzone between south-western bioregions and Murchison. It is characterised by low woodlands to open woodlands of *Eucalyptus*, *Acacia* and *Callitris* on red sandy plains.

Land systems

Land systems are the most common way to describe vegetation communities in the Australian arid zone. Land systems group together land units of common vegetation, soil and slope at a scale appropriate for land management. Land system maps and the descriptions and assessments of land condition have become primary information for pastoralists enabling the land to be managed according to the types of country. Each land system, with its soils and vegetation, responds differently to seasonal rainfall as well as to impacts from grazing, other land use pressures, events and destabilising influences.

Land systems across the arid zone have been progressively classified and mapped, according to the geomorphology (land forms), soil and vegetation. Successive surveys used vegetation mapping, geological survey maps and information from various other surveys. Land system mapping has also been improved through the use of spatial information from remote sensing, including Landsat and other satellite data.

The basis of the land system groupings has evolved over the years to meet practical land use and management considerations.

Land system mapping is available for parts of the arid zone including WA, SA, NT, NSW and parts of Queensland.

Contact your Agriculture or Primary Industries departments to determine extent and availability of land system maps for your property.

Setting directions

Natural resources (soil, vegetation, water and biodiversity) can be monitored as simply or intensively as you choose. It is something you already do as you drive through paddocks, noticing the condition of vegetation and soil cover and using this to guide decisions on when and where to move livestock. To decide what and how to monitor, you need to be very clear about why you are monitoring.

Why do you monitor and record information about natural resources on your property?

Land condition is a term that describes the current state of the soil, and/or the diversity and cover of vegetation, usually as a relative measure (ie good, poor). Monitoring land condition involves making repeated observations about the soil's condition and vegetation cover/diversity to understand changes over time. Understanding the trends in land condition over time can then assist in making management decisions about stocking, such as what type of stock, how many, where and for how long.

How do you use/could use land condition monitoring on your property?

A monitoring plan

Key steps in developing a monitoring plan include:

- What information do you need to help you make decisions?
- What areas need to be monitored?
- What methods will work best - what is easy to use, time efficient?
- How often should each area be monitored - regular intervals or during critical periods, such as after rain events or during drought?

Once you have answered these questions, you are ready to choose a method and apply it, and then use the information to assist in making decisions (otherwise, why do it?)

Using photo standards to determine land condition

The challenge for assessing land condition in the arid zone is to distinguish seasonal changes from long term change. When determining land condition one of the key features to look for is long term resilience. To assess long term change, we are interested in:

- the general trend in condition
- is it moving from good to fair (downward trend) or upward from good to excellent?
- what are the triggers for this movement or trend?
- is it related to grazing (something you can control) or is it seasonal conditions?

Even though a site produces annual and seasonal ground cover during wet years, the reality is that with lower densities of perennial pasture species, the land is less likely to be productive during dry years and will have longer recovery time following drought.

Condition classes (see Table 1) are based on assessment of natural resource attributes such as:

- plant species composition; weeds and density/cover
- plant productivity
- soil erosion status

Land trending from Condition Class A towards Condition Class B can revert back to Condition A with an appropriate change in management, eg lowering of stock grazing impact.

However, reversing Condition C to Condition B may require a more significant change in management, depending on seasonal conditions (see Table 1).

Land in Condition C is also susceptible to rapidly falling into Condition D. Condition D will not revert back to C with just a change in management, at least not in the short term. For improvement to occur with Condition Class D requires time and management intervention e. rehabilitation/revegetation and no grazing pressure.

Table 1: Attributes for visual definition of land condition *at a site (and basis for developing photo standards)*

Attribute	Excellent (Class A)	Good (Class B)	Fair (Class c)	Poor (class D)
Plant species composition; weeds	Maximum diversity of annual and perennial species for the	Some reduction in diversity of palatable and susceptible	Significantly reduced diversity and cover, density	Dominance of annual and ephemeral species and

and density/cover	land type High concentration of palatable plant species Perennial species of various ages and regeneration apparent Very little to no evidence of introduced (weed) plant species Density is high, shrubs touching or overlapping	perennials Some unpalatable plants and presence affecting growth of palatable species Increased proportion of shorter lived species. Perennial species of various ages Minimal number and cover of introduced weed plant species Shrubs more sparse, clear spaces between shrubs (space equates to 1-5 shrubs)	and/or regeneration of palatable species High concentration of unpalatable plant species Establishment of less preferred or unpalatable species, includes some weed species Shrubs very sparse, space between equates to 6-12 plants	perennials with relatively low palatability No regeneration of desirable perennial species, existing stands degenerate Dominance of weed species Isolated shrubs, if any at all
Plant productivity	At full potential, sustained productivity	Some fluctuation; lower in drought Annual communities maintain litter cover but will not sustain production in dry seasons	Reduced overall; high productivity in good seasons only Low in drought (fluctuates markedly with season)	Impaired productivity, very seasonally dependant, low or non-existent in dry seasons
Soil erosion status	No erosion (other than natural features or processes) Plant and litter cover protect soil from wind and water in all seasons	Minor or slight erosion evident Increased susceptibility of soils to erosion in dry seasons	Moderate erosion evident Reduced density and cover of perennial and litter increases susceptibility of soils to erosion	Severe erosion High susceptibility of soils to erosion in all seasons Extent of past erosion renders site susceptible to further soil movement if grazed at any level

See Tool 3.01 for an example of photo standards for arid zone chenopod shrub lands.

Photo points

Photo points can be established as monitoring sites in paddocks to provide an indication of trends and changes in pasture and resource condition. Revisiting these sites enables the development of a photographic sequence providing an objective record of change at a site.

Through combining short term and long-term records our understanding can be improved and future grazing practices can be adapted to suit these trends. Stock records for each paddock, together with climatic information, observations of grazing on certain plants, germination events and other factors, can provide a valuable record that will assist in decision making to achieve more sustainable use.

Changes in the soil and vegetation components may follow:

- a fire
- extreme seasons, either wet or dry
- change in soil surface cover
- defoliation of shrubs (eg bladder saltbush)
- establishment of new plant seedlings
- death of shrubs or trees
- invasion by unpalatable plants or weeds
- a change in grazing regime.

See Tool 3.02 for instructions on how to set up photo points.

Photo standard example

Below are phot examples pf bladder dominant and black bluebush dominant satlbush plains in different conditions (excellent - poor).

Saltbush Plains – Bladder saltbush dominant

Excellent (A)

Diversity of annual and perennial palatable plants dominated by bladder saltbush of varying ages and with regeneration (mix of ages). Some black bluebush, thorny saltbush and also medics, creeping saltbush and a range of grasses. Good overall cover, including litter and lichen and plant density high.	Highly productive and resilient.	No erosion evident.

Good (B)

Less diversity and increase in less palatable plants i.e. black bluebush. Shrubs more sparse and more evidence of bare areas in between, indicating less forbs (small shrubs) and grasses. Some lichen and litter cover.	Fluctuating productivity, less resilient but still high in good seasons.	Very minor erosion.

Fair (C)

Reduced cover of bladder saltbush, very sparse – 6- 12 plant space between, significant bare areas. Minimal forbs and grasses between shrubs.	Productive in good seasons.	Soil disturbance in bare areas, soil exposed to erosion.

Poor (D)

Dominance of annual and ephemeral species with relatively low palatability. No regeneration of saltbush and if they exist are degenerate. Isolated small shrubs, if any at all.	Impaired productivity, very seasonally dependant, low or non-existent in dry seasons.	Severe erosion and high susceptibility of soils to erosion in all seasons.

Saltbush plains - Black Bluebush dominant

Excellent (A)

Diversity of annual and perennial palatable plants, dominated by Black Bluebush of varying ages and with regeneration (mix of ages). Some thorny saltbush. Some medics and creeping saltbush. Good overall cover, including litter and lichen and plant density high.	Highly productive and resilient.	No erosion evident.

Good (B)

Less diversity and increase in less palatable plants i.e. Black Bluebush. Shrubs more sparse and more evidence of bare areas in between, indicating less forbs (small shrubs) and grasses. Some lichen and litter cover.	Fluctuating productivity, less resilient but still high in good seasons.	Very minor erosion.

Fair (C)

Reduced cover of Black Bluebush and other perennials, very sparse – 6- 12 plant space between, significant bare areas. Minimal forbs and grasses between shrubs.	Productive in good seasons only.	Soil disturbance in bare areas, soil exposed to erosion.

Poor (D)

Dominance of annual and ephemeral species with relatively low palatability. No regeneration of Black Bluebush and if they exist they are degenerate. Isolated small shrubs, if any at all.	Impaired productivity, very seasonally dependant, low or non-existent in dry seasons.	Severe erosion and high susceptibility of soils to erosion in all seasons.

Setting directions

The location of photo points is dependent on the reason for setting it up. Some considerations include:

- stock grazing patterns
- accessibility
- being representative of dominant land types.

Dominant land type

If establishing a site in a paddock that does not have any existing sites, the site or sites should be located within the dominant land type(s). For example, do not choose an isolated black bluebush patch if it is not typical of the paddock. You should also avoid areas that are obviously atypical or are small areas of transition between different land types.

The land type chosen must also be one that gives a good indication of grazing impact and within an area that is preferred by stock.

Size and uniformity

The site should be uniform in vegetation, soil, slope and aspect, wherever possible. A site should not to include any area that is disturbed e.g. roadside. When the photo is taken it should include an area of approximately 100x100m, however you can record a larger area if you have identified other aspects of natural resource condition to be monitored.

Distance from water

When selecting sites, avoiding areas that are not regularly grazed, on stock pads and very close to watering points, unless you are specifically trying to record what is happening in these areas. The aim is to monitor areas where indicator species (usually palatable perennial plants) are present or are expected to occur. As the distance from water that cattle range from water varies greatly (depending on feed availability and animal class), a distance of between 2-4 km from watering points is an area likely to be grazed regularly and suitable for a photo point.

Access and relocation (finding the site in the future)

Sites need to be easily locatable, so it is wise record the distance from a permanent feature such as a gate or trough or you could use a GPS to capture co-ordinates for the site. It also helps if the site is located close (but at least more than 50m away) to a frequently travelled road/track.

A photo point marker, such as a peg or post, will help to relocate the site. It is also important to make sure that these posts are clearly visible to prevent being run over by vehicles or motorbikes**.**

Other influencing factors

Other factors likely to bias or influence the site vegetation should be recognised and avoided where possible. Avoid placing sites in or near the following situations:

- stock camps and cattle pads
- mechanically disturbed areas
- areas where water runs onto from roads and tracks, or where old track marks or erosion are evident.

Photo point setup

1. Designate a site name or number when you set up your photo points the first time. Using numbers in sequential order or including the name of the paddock in the site name is the simplest method. Mark the location as accurately as possible on your paddock/property map.
2. Directions to each photo point should comprise a distance and direction from a known point such as a water point or gate. Markers will consist of permanent/visible materials such as a steel picket/post.
3. A second peg, is located approximately 10 metres (12 – 17 paces) from the marker peg. This is referred to as the **sighter peg**. The photograph should be taken from the marker peg towards the sighter peg. The sighter peg is positioned in the camera view such that the photograph area does not include more than 1/3 sky. It is also important to ensure the photo is not taken, facing into the sun, and obscuring the site. With this in mind, a photo facing south is the safest option.
4. The photograph should be taken from the marker peg. Record/estimate a compass bearing between the marker peg and sighter peg. If additional photos are taken from the marker peg, the bearing should be marked with an additional sighter peg.

Taking the photograph

To take the photograph, stand behind the marker peg and centre the camera view on the base of the sighter peg as shown in Figure 3 and Figure 4.

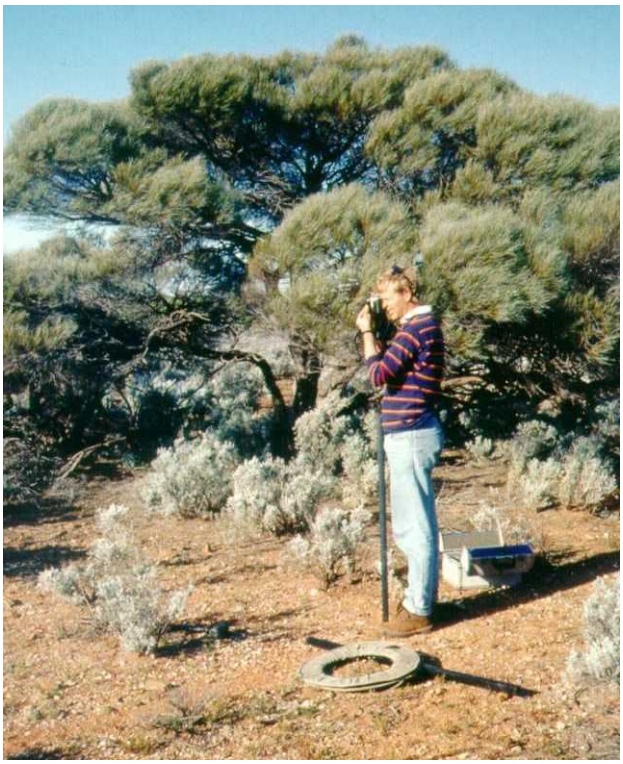

Figure 3: Taking a photograph, standing at the 1st (marker) peg

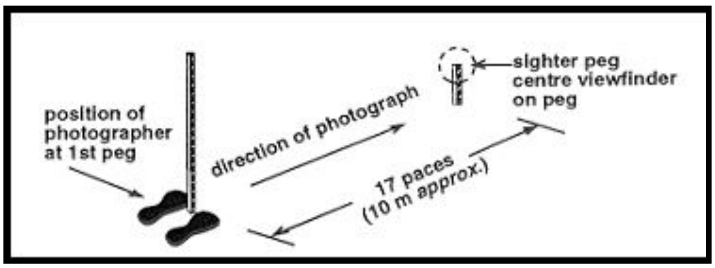

Figure 4: Directions for taking the photograph

Storing your photo point records and photos

It is important to keep a record of what and where and date the photo has been taken. With digital recording and filing systems, it is relatively easy to download your digital photos straight onto your computer. Suggested criteria for filing your photos include the following:

- site name or number – designated when you set up photo points the first time
- date (dd/mm/yyyy)
- paddock
- land type
- anything else you consider to be important.

It is best to download photos as soon as possible after taking them to ensure that this job gets done before the photos are forgotten and maybe inadvertently deleted.

Further information

Hacker, R., Beange, L., Casburn, G., Curran, G., Gray, P. & Warner, J. (2005), *Best Management Practices for Extensive Grazing Enterprises*, NSW Department of Primary Industries, Orange.

James C and Bubb A 2008, *WaterSmart Pastoralism™ Handbook*, Desert Knowledge CRC, Alice Springs.

Daryl Green, Rob Richards, Dave Hart and Ian Watson (2001), *Rangeland monitoring, condition assessment and resource inventory activities in New South Wales, Report prepared for the Rangeland Theme of the National Land and Water Resources Audit,* NSW Department of Land and Water Conservation and Department of Agriculture, Western Australia.