

Part C: Vegetation condition

Note: Part C of the RAM assessment is based on the presumed natural type of the vegetation that occurred on a site (e.g. pre-European). For example, many areas have had their overstorey vegetation (mostly) removed resulting in only remnant scattered trees or shrubs over a more or less modified derived native grassland. These modified sites are to be assessed in Part C as being either naturally treed or shrubland for scoring purposes, with only natural grasslands using the grassland scoring.

Advice and references for natural grasslands will be provided at a regional scale through supplementary materials and fact sheets.

The vegetation condition assessment (Part C) is the field assessment component of the RAM and involves the application of a standard method to score a range of vegetation elements characteristic of the site. The RAM vegetation condition assessment is:

- A practical method that was developed to enable, with adequate training, all relevant field staff and others involved in native vegetation and land management, the ability to undertake assessment.
- Broadly similar to previous rapid assessments undertaken on TSRs and some roadside reserves and seeks to capture important growth stage characteristics e.g. tree and shrub regeneration that are difficult to identify remotely.

The basic competencies required will be the ability to use existing GIS spatial data systems and in the field the application of basic vegetation identification skills (e.g. main tree species and whether the ground layer is mostly native perennial grass or weedy).

Initially, the assessor is required to go through a simple decision pathway to determine which method of vegetation condition scoring is used, being:

1. Decide which of the 16 NSW vegetation formations in NSW does the site fall into.
Refer to www.environment.nsw.gov.au/research/Visclassification.htm for more information.
2. Apply the correct vegetation structure assessment (Table 1) into either naturally treed, shrubland/heathland or grassland.

The same form is used for all assessments and scoring occurs automatically based on the chosen vegetation structure category selected. Sites are scored for either naturally treed, for shrubland/heathland with the large tree component excluded and for grasslands **with the** vegetation structure and large tree components excluded.

The field assessment score provides a vegetation condition rating at a point in time which can be, along with photo points, monitored over time to determine vegetation condition change. The condition assessment informs a modified Vegetation Assessment State and Transition (VAST) rating shown in Table 3.

The modified VAST model is used because it summarises the degree of change that has occurred to native vegetation relative to its estimated undisturbed condition. It is a useful model for land managers because it also incorporates an estimate of the regenerative capacity of modified native vegetation.

For further reading see:

Thackway R and Lesslie R (2006). Reporting vegetation condition using the Vegetation Assets, States, and Transitions (VAST) framework. Ecological Management and Restoration 7(Supp. 1) 1 53-62.

Table 3. Modified VAST indicative table for woodland habitat

VAST					
Condition rating	Vegetation cover	Regeneration potential	Trees and shrubs	Ground layer	Attributes
High quality	RESIDUAL Native vegetation community near natural	Excellent potential for natural regeneration	All vegetation layers (stratum) present	Ground layer has high species diversity	Very rare, only small fragments remain
	MODIFIED A Native vegetation community intact	Good potential for natural regeneration	Most vegetation layers present	Ground layer has mostly high species diversity	Best examples of local native vegetation Few weeds are present
	MODIFIED B Native vegetation community mostly intact	Reasonable potential for natural regeneration	Overstorey vegetation present	Ground layer has low species diversity	Good examples of local native vegetation Weeds < 50 % and mostly annual pasture grasses and herbaceous weeds
Moderate quality	TRANSFORMED A Native vegetation community significantly altered	Some potential for natural regeneration	Overstorey vegetation mostly present	Ground layer has low species diversity	Moderate examples of local native vegetation Weeds > 50 % of groundlayer
	TRANSFORMED B Native vegetation community significantly altered	Little potential for natural regeneration	Dominant overstorey patchy	Ground layer has few native species Most groundlayer species are absent	Poor examples of local native vegetation Groundlayer dominated by weeds
Low quality	REPLACED Native vegetation replaced	No potential for natural regeneration	Natural vegetation layers absent	Native species absent-sparse	Native species absent-sparse Groundlayer dominated by weeds

Undertaking the RAM vegetation condition assessment

Note: Prior to undertaking the RAM vegetation condition assessment, regional training provided by a suitably qualified consultant or Local Land Services staff member is recommended.

The practical measures required to undertake a successful RAM assessment include:

Site overview and familiarisation

Where possible traverse the reserve/assessment zone in a vehicle using tracks, and stopping occasionally to look more closely at finer detail (e.g. general level of groundlayer weediness the main overstorey species etc).

Identifying the vegetation

Consider the TEC (if present) assigned by the GIS data and note if the information is not correct. If further clarification of the TEC occurrence is required then seek advice from someone with appropriate knowledge of local vegetation communities.

Characterising the vegetation

Identify a suitable location to complete and score the vegetation condition assessment and where there is a distinct feature that you want to monitor e.g. tree or shrub regeneration. Refer to Appendix 2 for more information.

Select assessment/monitoring point(s)

At least one photo should be taken at each site, preferably with a view of a distinct feature. Its location will automatically be recorded and may become a permanent photo monitoring point. If the site is a TSR, refer to the LLS TSR Monitoring and Audit Strategy for guidance on monitoring requirements for that site.

Completing the assessment

Is the TEC spatial layer correct? If not, state correct type(s).

The TEC spatial layer in Part A of the RAM is derived from inferred mapping and this field assessment provides verification or correction. If further clarification is required then refer to local a list of TECs and their key diagnostic features or seek advice from someone with knowledge of local vegetation communities.

Vegetation structure

Vegetation structure can differ across the state and the most appropriate settings should be compiled at a regional level with examples of local Vegetation Formations provided to assist assessors to best answer vegetation structure.

For example, in general, vegetation structure conditions for:

- Treed habitats consist ideally of several components, including trees of several age classes e.g. mature trees – young saplings, more or less scattered shrubs including regrowth and mostly tussocky native grass understorey with native forbs (herbaceous flowering plants).
- Shrubland habitats have an overstorey of more or less tall and dense shrubs with regrowth and an understorey that can vary from tussocky native grass with native forbs through to mostly sub-shrubs and bare ground.
- Natural grassland habitats mostly lack woody plants and consist of tussocky native grass with native forbs.

Four vegetation structure ratings are provided being; intact/natural, mostly intact, partially intact and sparse or absent.

Assign the most accurate of the four vegetation structure ratings:

Rating	Vegetation type
Intact/natural =6	All vegetation layers e.g. Mature trees and shrubs, some younger trees and shrubs and regeneration
Mostly intact =4	Most vegetation layers present but missing elements e.g. few mature trees or no shrubs
Partially intact =2	Missing two or more structural layers e.g. large trees, shrubs and regeneration
Sparse or absent =0	Only occasional or no trees or shrubs

Further information on vegetation structure and assessment is available at www.nrm.gov.au/publications/vegetation-assessment-guide.

These different vegetation structure condition ratings are depicted below in Figures 3-6 using examples from the NSW Riverina and are only indicative in this landscape.

Figure 3. Intact/natural – all vegetation layers present



Figure 4. Mostly intact – Most vegetation layers present



Figure 5. Partially intact – Missing 2 or more structural layers



Figure 6. Sparse or absent – Only occasional or no trees or shrubs



Large trees (mature hollow bearing trees)

Large old trees are irreplaceable habitat elements, especially those with hollows that often take centuries to develop and provide vital habitat resources for many wildlife including parrots, owls, possums and bats. TSRs and roadside reserves are often the best areas for these old trees because they were not actively removed for agriculture.

Heading	Heading
Common	Common =3
Sparse	Scattered or occasional patches = 1
Absent	Absent = 0

Non-indigenous woody weeds and vines

Woody weeds and vines are often invasive and if left uncontrolled can spread throughout natural habitats changing the structure of the vegetation. Early detection and intervention is ideal allowing relatively inexpensive eradication or control.

Heading	Heading
Absent	Absent = 3
Sparse	Scattered or occasional patches = 2
Common/abundant	Common = 0

Groundcover

The quality of the ground cover is very important because its condition often influences the resilience of a site, i.e. its capacity to self-regenerate. Groundcover is made up of two elements weediness and nativeness (native species diversity) as below.

Weediness # (exotic grass and herbaceous plants)

The overall cover of grass and herbaceous weeds in the groundlayer has a major influence on the capacity for a site to self-regenerate. The weeds compete for space with preferred native plants and limit opportunities for germination.

Weediness	Groundcover
Sparse	Weeds sparse or patchy throughout = 4
Common in parts	Weeds only common in parts and generally sparse elsewhere = 3
Common throughout	Weeds found commonly throughout =2
Abundant	Weeds dominate groundlayer and native grasses sparse at best =0

Nativeness # (general abundance and species diversity of native understorey)

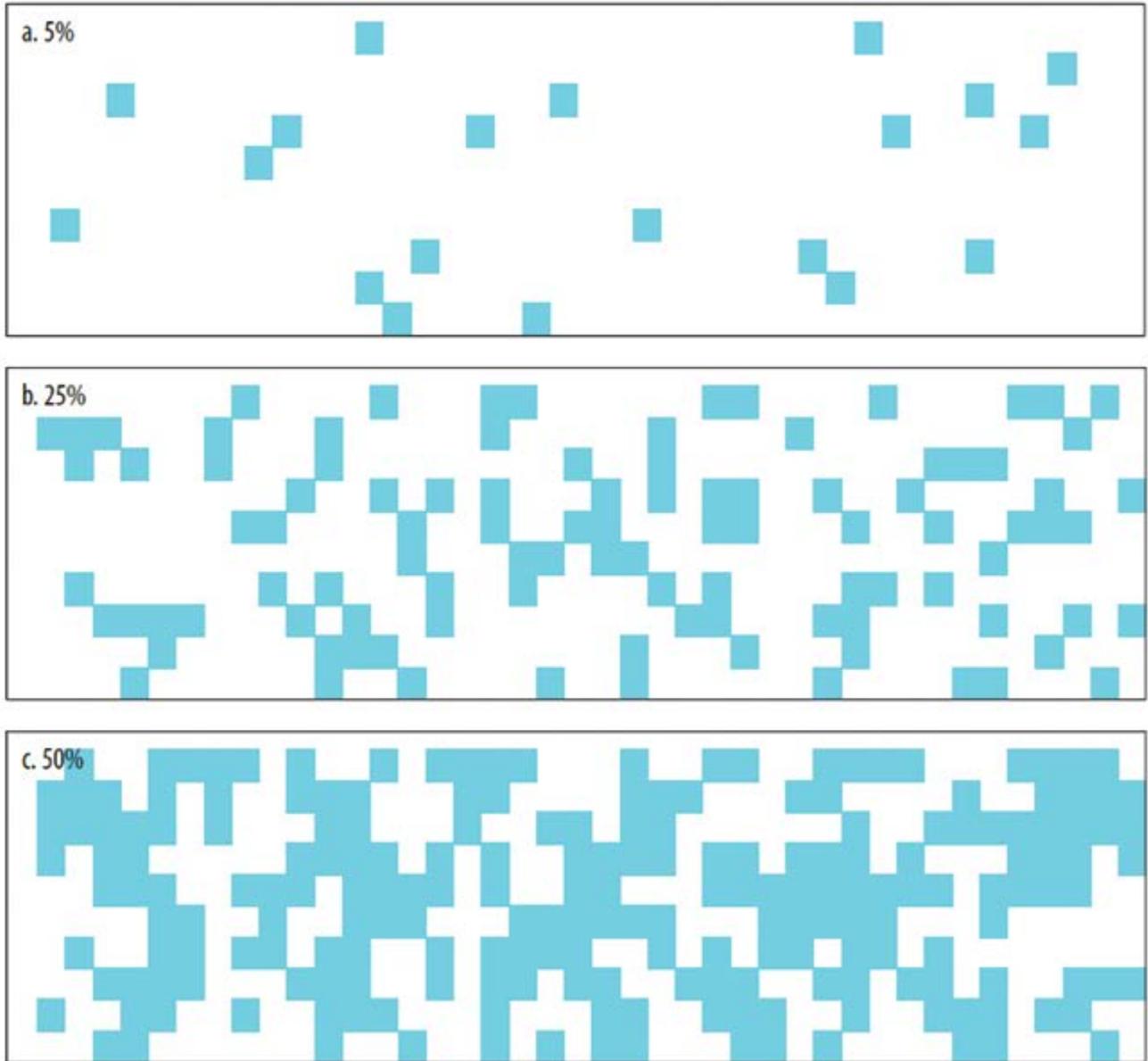
Sites where native species dominate the groundlayer have lower management requirements because it limits weed spread, provides ideal seed bed for native plant germination, provides higher quality feed year-round and compared with exotic pasture grasses has lower fire fuel hazard.

Nativeness	Groundcover
Diverse throughout	Mostly native species with many native grass and forb types (herbaceous flowering plant) = 4
Diverse in patches	Areas with many native grass and native forb types and mostly surrounded by areas of native grass with few species = 3
Few species common throughout	Mostly native grass with few species = 2
Patches only	Patches of native grass amongst otherwise exotic pasture grasses = 1
Absent/sparse	Only scattered or no native grass throughout = 0

Notes:

1. For the purposes of rapid assessment field measurements are generally best avoided following wet cool season rains (e.g. winter and early spring) when exotic annual grasses can be prolific and mask the underlying native perennial grass base; and best undertaken in summer or autumn when the annuals have "hayed-off" or as advised by local experts.
2. For non-rapid assessment surveys, e.g. general flora and targeted threatened species surveying, spring is the best time to coincide with flowering native forbs.
3. Note the abundance ratings applied in the habitat and vegetation values for large trees, non-indigenous woody weeds and vines, groundcover weediness and nativeness of sparse, common, abundant are illustrated in Figure 7.

Figure 7. Indicative visual guide of plant density a = sparse, b = common and c = abundant



Adapted from diagram on page 31 <http://weeds.ala.org.au/WoNS/serratedtussock/docs/stbpmm.pdf>

Scoring the RAM vegetation condition assessment

Scoring vegetation condition is divided into three categories determined from the vegetation structure category and vegetation formation assessment into either naturally treed, shrubland/heathland or grassland.

The same format is used for scoring assessments across all categories of vegetation formation. In the case of naturally treed formations all components are included, while for shrubland/heathland the large tree component is excluded and vegetation structure and large tree components are excluded for grasslands.

The total score for the RAM vegetation condition assessment (Table 4) is the sum of all relative component scores above and provides the overall RAM vegetation condition rating of high, moderate or low quality.

Further, the condition assessment score informs a modified Vegetation Assessment State and Transition (VAST) rating shown previously in Table 3.

Table 4. RAM vegetation condition assessment

Naturally treed vegetation	
HIGH QUALITY:	17+ = Residual or Modified A; 14-16 = Modified B
MODERATE QUALITY:	9-13 = Transformed A; 6-8 = Transformed B
LOW QUALITY:	0-5 = Replaced
Shrublands / heathlands	
HIGH QUALITY:	14+ = Residual or Modified A; 11-13 = Modified B
MODERATE QUALITY:	8-10 = Transformed A; 6-7 = Transformed B
LOW QUALITY:	0-5 = Replaced
Grasslands	
HIGH QUALITY:	7+ = Residual or Modified A; 5-6 = Modified B
MODERATE QUALITY:	4 = Transformed A; 3 = Transformed B
LOW QUALITY:	0-2 = Replaced

The conservation value assessment matrix

The scores from the three components Part A, B and C of the RAM are integrated into a conservation value assessment matrix calculated automatically in the app, to provide an overall conservation value.

Table 8 in Appendix 3 illustrates the conservation value assessment matrix.

Additional RAM information to be recorded

Other important information (non-scored) relevant to land management e.g. vegetation and habitat features and threats and disturbances that cannot be determined remotely are also recorded in the field. In many cases the advice to be collected will be informed by local fact sheets which will be provided as part of the training.

Other information recorded as part of RAM field component includes:

Major weed species present

List the main local weed species for each category e.g. woody weeds and vines, exotic grasses and herbaceous weeds.

Native species

List using free text:

- Main tree 1-5 species
- Main shrub 1-5 species (if known)
- Main understorey 1-5 genus (if known)

Other habitat features

Table 6 below, allows the collection of abundance measures of a range of important habitat features that are best recorded in the field.

Tick correct abundance rating e.g. abundant, common, sparse and if absent leave blank.

Table 6. Habitat features abundance

Habitat features	Sparse	Common	Abundant
Tree regeneration – regeneration is defined as a tree with a trunk diameter of less than 10 cm or a canopy height less than 50 % of adult trees.			
Shrub cover – woody plants, non-eucalypt and usually < 5 m e.g. wattles, saltbush.			
Shrub regeneration – shrub regeneration is defined as a shrub with a canopy height less than 50 % of adult shrubs.			
Logs and fallen timber – logs and fallen timber is defined as timber with a diameter greater than 10 cm lying on or adjacent to the ground.			
Wetlands/springs/gilgais – landforms that hold water during wet periods and are known to be important habitat features.			
Rocky outcrops – landforms with exposed rock and are known to be important habitat features.			
River/creek banks – drainage channels.			
Mistletoe – habitat features important to many wildlife.			
Cryptogams – non-flowering plants that are known as important indicators of soil crust health e.g. mosses, algae, ferns, lichens, and fungi.			
Rare plants – rare plants from the local list that are incidentally recorded. Note species in free text.			

Threats / disturbances

Note with a tick, obvious land management threats and disturbances to assist in local action planning.

Table 7. Site threats and disturbances

Threat/disturbance	Action priority	
	Minor	Significant
Illegal grazing e.g. free feeding		
Illegal firebreak e.g. ploughed fire break		
Illegal track(s) e.g. new earth works		
Illegal drainage e.g. drainage earthworks		
Cropping e.g. ploughed area		
Feral animals e.g. goat browsing		
Timber removal e.g. recently felled trees		
Active erosion e.g. active gullies forming		
Invasive weed e.g. identification and removal of minor infestation		
Flood/fire damage e.g. damaged fences		
Other (list)		

Cultural heritage

Use free text to record any potential cultural heritage observed on the site

Current management regime

Use free text, if known, to describe comments on grazing, fire and other management practices