

Application Kit

for a

Property Map of Assessable Vegetation

Vegetation Management Act 1999

23 June 2004



This guide explains what you need to do if you want the Department of Natural Resources, Mines and Energy (NRM&E) to certify a Property Map of Assessable Vegetation (PMAV) for your property.

Table Of Contents

| | | |
|-----------|--|-----------|
| 1 | WHAT IS A PMAV? | 3 |
| 2 | WHY WOULD A LANDOWNER WANT TO APPLY FOR A PMAV? | 3 |
| 3 | WHAT CAN A PMAV SHOW? | 3 |
| 4 | WHAT DO THE CATEGORIES MEAN? | 4 |
| 5 | WHAT INFORMATION DO I NEED TO MAKE A PMAV APPLICATION? | 5 |
| 5.1 | LOCKING IN BOUNDARIES FROM THE CURRENT REGIONAL ECOSYSTEM AND REMNANT MAPPING..... | 6 |
| 5.2 | APPLYING FOR A PMAV USING OTHER SUPPORTING DATA..... | 7 |
| 5.2.1 | <i>The Map</i> | 7 |
| 5.2.2 | <i>Spatial accuracy and control points</i> | 9 |
| 5.2.3 | <i>Vegetation categories and boundaries</i> | 10 |
| 6 | SUBMITTING YOUR PMAV APPLICATION | 12 |
| 7 | REQUESTS FOR FURTHER INFORMATION | 13 |
| 8 | DECISION | 13 |
| 9 | REVIEW OF A DECISION | 13 |
| 10 | WHEN MAY A PMAV BE CHANGED? | 13 |
| 11 | WHEN MAY A PMAV BE REVOKED? | 14 |
| | APPENDIX 1 | 15 |
| 1. | GENERAL DESCRIPTION OF POLYGONS AND MAP UNITS..... | 15 |
| 2. | REMNANT/NON-REMNANT ISSUES..... | 17 |
| | GLOSSARY | 23 |

1 What is a PMAV?

A PMAV is like a regional ecosystem map. It shows the location, boundaries and status of vegetation (as categories), but at a property scale. Where a PMAV exists, it replaces the regional ecosystem (RE) mapping for determining, in part, whether a permit is required for clearing.

2 Why would a landowner want to apply for a PMAV?

A PMAV has the capability of providing greater certainty for landholders about which areas on their property can be cleared in the future. It can be prepared at a scale that can clarify the boundary between vegetation of different categories. Once certified, it effectively locks in areas (Category X) that can be cleared without a permit, both now and into the future as per Schedule 8 of the *Integrated Planning Act 1997* (IPA). It can only be changed in very strict circumstances.

An application for a PMAV can be made for all or part of a property. One application can be made for a single PMAV over several lots or leases, provided they are either directly abutting or separated by narrow linear land units such as roads or watercourses.

How to apply for a Property Map of Assessable Vegetation (PMAV)

- A. Get the relevant background information about PMAVs from NRM&E – including this guide and the State Policy on PMAVs
- B. Read the information and work out what you want a certified PMAV to show for your property
- C. Source appropriate aerial photography, satellite imagery or other spatial reference on which to base your map and gather other mapping information around your property
- D. Draft the map you propose for certification as a PMAV and establish the necessary spatial framework
- E. Gather the information needed to prove that the vegetation categories and boundaries on your proposed PMAV are appropriate and accurate
- F. Submit your proposed PMAV and the supporting information accompanied by the application form with the necessary signatures and application fee
- G. Respond to any requests from NRM&E for further information

3 What can a PMAV show?

A PMAV can show vegetation that is not remnant vegetation as Category X areas on all land tenures. Vegetation within Category X areas can be re-cleared without requiring a permit. However, unlike the regional ecosystem maps, which are updated,

a PMAV will continue to show areas as Category X into the future, regardless of how much the vegetation regrows or how old the regrowth is.

A PMAV can also show the distribution of categories of “assessable vegetation” (Categories 1, 2, 3 and 4), as well as areas that continue to be subject to a remnant map or regional ecosystem map.

A PMAV can show the distribution of these six types of areas at a property scale. However, reasonable scale limits still need to be observed and areas smaller than one hectare or less than 20 metres wide cannot to be shown on a PMAV.

4 What do the categories mean?

The precise definitions of the vegetation categories a PMAV can show are provided in the glossary at the end of this guide. The following generalisations about what the categories mean are intended to assist understanding. Applicants should check the glossary definitions to clarify any doubts.

Category 1, 2 and 3 areas are similar to ‘endangered’, ‘of concern’ and ‘not of concern’ regional ecosystems respectively on the RE maps. The category indicates the increasing extent to which the regional ecosystem has been previously cleared, and provides a basis of increasing levels of restriction on future clearing.

Category 4 only applies to agricultural and grazing leases and is used to show that vegetation in an area cleared before the end of 1989 remains assessable. Lessees can continue to apply to clear vegetation shown as Category 4 on a PMAV.

Areas covered by one of the above assessable vegetation categories on a PMAV (Categories 1, 2, 3 and 4) require permission from NRM&E before vegetation clearing can occur, unless the clearing is for purposes listed as exempt under schedule 8 of IPA.

Category X areas are like non-remnant areas on regional ecosystem maps. In most cases, vegetation clearing in these areas is exempt from the requirement to obtain a permit.

Areas within the PMAV that are not categorised as Category 1, 2, 3, 4 or X areas will still be subject to a remnant or RE map. Use of this category can save considerable effort because it means you only need to map and provide supporting information for areas you wish to clarify, not the entire property. For instance, you are mainly interested in better defining and “locking in” non-remnant areas, you need only map and describe areas proposed for Category X.

5 What information do I need to make a PMAV application?

Applicants need to provide the proposed PMAV (i.e. a map), together with supporting evidence sufficient to establish that the map is spatially accurate and shows appropriate vegetation categories based on the regional ecosystems present in the area at the time.

The extract below from the Vegetation Management Regulation lists the information a PMAV application needs to include.

Matters prescribed for an application for a PMAV

- (1) For the Act, section 20C, the following information is prescribed—
- (a) the vegetation category areas and the boundaries of the areas proposed for the property map of assessable vegetation;
 - (b) information to demonstrate that—
 - (i) the boundaries of the proposed vegetation category areas are accurate; and
 - (ii) the vegetation category areas proposed are consistent with the floristic composition and structure of the regional ecosystems or vegetation in the area.
- (2) The information mentioned in subsection (1)(a) must be supported by a map showing—
- (a) either—
 - (i) 5 or more points that correspond to identifiable fixed features; and
 - (ii) the Map Grid of Australia 1994 coordinates and zone references for each point, acquired by GPS or similar system of satellites that receives and processes information; and
 - (iii) a description of the feature that each point represents; or
 - (b) a description of the boundaries of the areas by reference to Map Grid of Australia 1994 coordinates and zone references for the areas.

In this section—

“vegetation categories” mean a Category 1 area, or a Category 2 area, or a Category 3 area, or a Category 4 area, or a Category X area as defined under the Act.

“identifiable fixed features” include road intersections, fence intersections, survey marks, built infrastructure, points with known GPS coordinates.

“GPS” means the measurement of coordinates using a unit that receives and processes information from the global positioning system or other similar system of satellites.

“Map Grid of Australia 1994” as defined in the GDA manual by the Intergovernmental Committee on Surveying and Mapping.

This means that PMAV applicants need to:

- a) make a map (a proposed PMAV); and
- b) provide control point information that will enable NRM&E to rectify the map into the relevant coordinate system (part (b) above); and
- c) provide evidence that-
 - the lines on the map are in the appropriate place; and
 - the vegetation categories (i.e. Categories 1, 2, 3, 4 and X) are appropriate for the areas in which they are proposed.

PMAV applications can involve complicated information gathering and presentation. Applicants may wish to consider professional assistance when preparing PMAV applications. Landowners also have the option to use the current regional ecosystem mapping as the basis for creating a PMAV, therefore locking in the areas that can be cleared without a permit under the current mapping. This application guide sets out procedures for applying for a PMAV in both cases.

The requirements for each of these are discussed further below. The procedure for meeting these requirements when locking in current mapping are outlined in section 5.1 below.

5.1 Locking in boundaries from the current regional ecosystem and remnant mapping

If a property owner believes that the information shown on the current RE or remnant map is accurate, and at a suitable level of detail, an application for a PMAV can be submitted using the RE mapping for that property to support the application.

In this case the applicant should take the following steps:

- Acquire a copy of a custom RE or remnant map from NRM&E
- Review the mapping for its suitability and accuracy on the property
- Include the map (or a colour copy) as the proposed PMAV. (In this case the RE map will be accepted as meeting those requirements for the PMAV application that relate to the vegetation category areas and their boundaries.)
- Provide five or more points corresponding to identifiable fixed points defined by suitable map grid coordinates to allow the boundaries of the vegetation category areas to be referenced to identifiable features on the property.

Note that provision of suitable map grid coordinates that represent locatable points on the property boundary will allow the PMAV to more accurately show the relative position of the boundaries of the vegetation category areas and the property boundary.

- Complete the PMAV Application Form and submit it along with the copy of the custom RE or remnant map and the suitable map grid coordinates referred to above.

NRM&E will agree to certify a PMAV on this basis if it is satisfied that the categories, areas and boundaries can be correctly defined from the remnant or RE mapping. In these cases a PMAV will be made at the scale of the certified remnant or regional ecosystem mapping (e.g. 1:100,000 in most areas).

NRM&E currently has two types of mapping. In the eastern and central parts of the state, the mapping defines areas as being non-remnant or part of a particular remnant

regional ecosystem (and its vegetation management status, e.g. ‘endangered’, ‘of concern’ or ‘not of concern’). This is often called regional ecosystem mapping. In the western and far northern parts of the state, the mapping only shows areas of non-remnant and remnant, and this is often called remnant mapping.

Areas mapped as remnant on current RE maps will be assigned a category on the PMAV based on the vegetation management status shown on the map. Areas mapped as remnant on current remnant mapping will not be assigned a category, and instead will be shown as areas where the remnant mapping still defines assessability. This is because this mapping cannot define the vegetation management status of regional ecosystems, and therefore cannot accurately assign Categories 1, 2 or 3.

Areas mapped as non-remnant on agricultural and grazing leases will be assigned Category 4 in cases of this type of application unless information is supplied to demonstrate that the areas were cleared after 31 December 1989. Areas mapped as non-remnant on other land tenures will be assigned Category X.

5.2 Applying for a PMAV using other supporting data

5.2.1 *The Map*

The map provided in the application must be a precise representation of the proposed PMAV drawn to a specified scale; it must not be a ‘mud map’. It is the responsibility of the applicant to produce a map they wish to have certified, not to supply reference data for NRM&E to produce a PMAV.

The proposed PMAV supplied with the application should have all of the essential properties of a sound map. These include:

- a title,
- the author(s) name;
- a border;
- a north arrow;
- a legend;
- a scale bar or scale reference;
- a brief statement on the data and techniques used to produce the map.

The map should be prepared so that all of the detail shown can be clearly and easily discerned with the naked eye. Attributes that will ensure this standard is met include:

- Production at an appropriate mapping scale for the level of detail shown on the map;
- Use of an appropriate line thickness, so that line work is easily visible, but not so large as to create confusion about the line’s position. Solid black lines of approximately 1mm thickness are often sufficient;
- Use of an appropriate technique to show vegetation categories that leaves no doubt as to the categories proposed for every part of the map. In addition to any shading or colour scheme employed, numbering every polygon and providing a table relating polygon numbers to vegetation categories is recommended. Polygon numbers also make it easier to specify particular

portions of the map when discussing the map over the phone or in written correspondence.

The proposed PMAV should only show the data asked for in the regulation, which is:

- Areas, delineated by boundaries, each assigned to the vegetation categories for PMAVs or showing that the area will not be given a PMAV category,
- Points used for geo-referencing the PMAV.

The proposed PMAV should not show any other detail¹. Examples of information that should not be shown on a PMAV include:

- Built infrastructure;
- Watercourses or Wetlands;
- Fencelines;
- Roads, tracks or railway lines;
- Topographic information;
- Information about past, present, or future land management practices or development.

Some of the features listed above such as built infrastructure or fenceline intersections might be useful as control points (see section 5.2.2 below). In such cases the control points should be shown on the PMAV as a point or a cross.

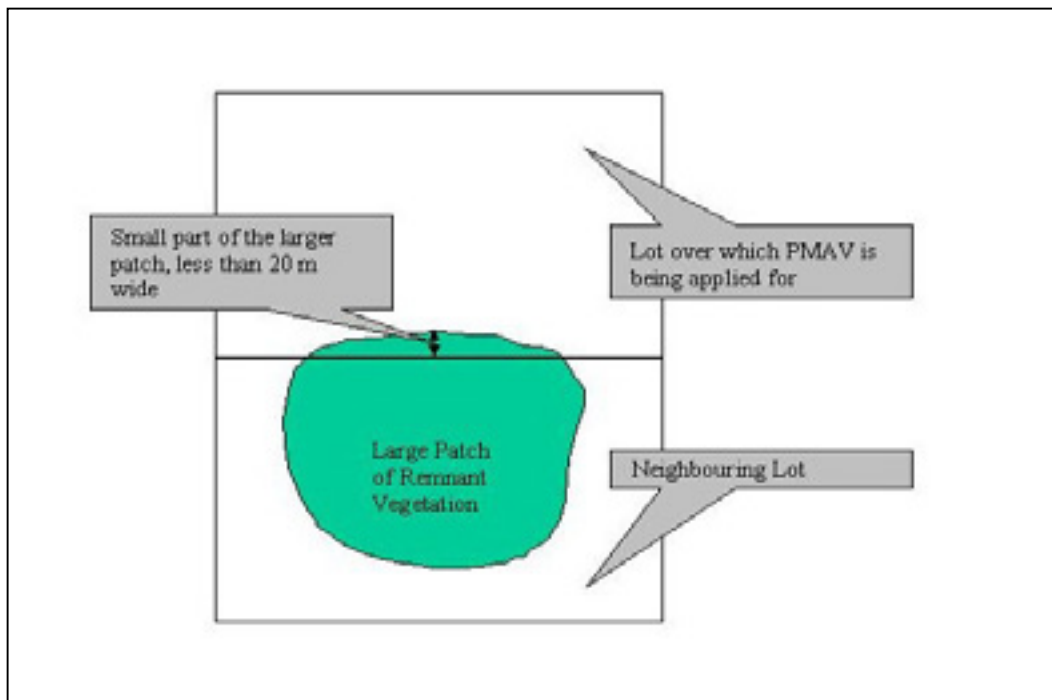
Minimum polygon size and mixed polygons

There is no limitation on the mapping scale at which proposed PMAVs can be submitted or approved. However, limits do apply to the minimum polygon size and spatial resolution for PMAVs created by agreement with landowners, as follows:

- Areas, delineated by boundaries on PMAVs (e.g. polygons) should not cover areas of less than 1 hectare;
- The boundaries for an individual area must be at least 20 metres (on the ground) from another part of the boundary for the same area. This limits the width of linear features that can be shown on a PMAV and also limits how convoluted the edges can be for features shown on the map.

An exception to these rules applies around the boundary of the PMAV area where small portions of larger patches of vegetation, that are mappable within the scale limits above, extend onto the PMAV but cover areas smaller than one hectare or less than 20 metres wide within the PMAV area. An example of this situation is illustrated in Figure 1.

¹ Where the applicant believes any of this information will be useful for supporting the PMAV, the information should be submitted on separate maps as supporting material.

Figure 1: Example of large patch of vegetation on PMAV

PMAVs should aim to assign a single category to each individual area on the map i.e. homogeneous polygons. However, where necessary PMAVs can display polygons (areas) that form any mixture of Category 1, Category 2 and Category 3. The applicant must specify the percentage of the area covered by the polygon attributed to each category, to the nearest five percent.

5.2.2 Spatial accuracy and control points

PMAV applications need to be made in a way that enables the information shown on the proposed PMAV to be referenced to its actual location on the ground using geographic coordinates. A PMAV application that cannot be referenced to a coordinate system will not be successful.

Sufficient spatial control can be achieved by either providing five or more control points to allow geo-referencing of the proposed PMAV (*parts (2)(b)i-iii in the box showing the extract from the Vegetation Management Regulation in section Five*), or by providing detailed coordinate data for each boundary on the PMAV (by providing the map in a digital GIS format, or by providing numerous waypoints or tracks from a GPS to define each boundary, (*part (2)(b)iv in the box in section Five*)).

If you decide to provide control points, the regulation requires five or more points to be shown on the proposed PMAV. In addition, you must provide a description of the fixed features that the points represent and the coordinates of each point in MGA94 map coordinates as acquired by GPS.

This requires that as part of preparing the PMAV, you locate a fixed feature on the property, and record the location of the site with a GPS unit. The applicant would then mark the exact location of these features on the PMAV.

The GPS unit should be set to record coordinates in the MGA94 system for defining map coordinates. This can be selected on your GPS unit by specifying the projection or coordinate system. The WGS84 coordinate system will also record suitable data if your GPS unit does not allow for using the MGA94 system.

To ensure that the control points are as effective as possible they must:

- a) correspond to fixed features identifiable on either satellite imagery or aerial photography; and
- b) be unambiguously defined and include an appropriately detailed description (eg point 1: junction of eastern and western boundary fences); and
- c) be scattered across the map (eg. one in each corner and one in the middle) so as to provide spatial control across the map including its edges.

The alternative to providing control points is to define every boundary on the proposed PMAV in MGA94 coordinates. This will often mean supplying a digital mapping layer, suitable for use in a GIS. Alternatively, you might identify the boundaries on the ground, establish the coordinates using GPS, and provide a track or list of waypoints that sit on the PMAV boundaries with the proposed PMAV.

Applicants are encouraged to provide digital mapping data, suitable for use in a GIS. Digital mapping is also the most suitable way of supplying mapping information that is part of the supporting information included with the application.

Where mapping information is provided in a digital format it must meet the following specifications:

- The data must be projected using the Map Grid of Australia 1994;
- File formats for line-work, polygons and points (vector data sets) must be-
 - ESRI shapefile or coverage; or
 - Mapinfo; or
 - CAD DXF.
- File formats for graphics (e.g. aerial photographs, satellite imagery, other raster data sets like DEM's) must be-
 - Tiff or GeoTiff; or
 - Jpg or GeoJpg; or
 - Erdas Imagine IMG format (noBMP); or
 - Arc grid.

5.2.3 Vegetation categories and boundaries

Applications need to include enough supporting material with their application to justify the assignment of vegetation categories and the position of the boundaries shown on the proposed PMAV. Every part of the proposed PMAV must be supported by evidence sufficient to demonstrate that the areas, and the categories assigned to them, are accurate.

The supporting material should include raw data (such as air photos, vegetation surveys and site photographs) as well as explaining how this raw data supports the proposed PMAV. NRM&E expects to be able to assess PMAV applications by reviewing the links the applicant has made between the supporting material and the

information shown on the PMAV, and then verifying the accuracy of the supporting information. Where the information supplied by the applicant does not meet this standard, further information will be requested.

The boundaries between areas of different vegetation categories shown on a proposed PMAV should be supported sufficiently to satisfy NRM&E that the boundaries are the most appropriate representation of the actual boundary between the vegetation types they represent (given the scale of the mapping and limits on polygon sizes).

Suitable supporting evidence for line work on PMAVs might include:

- recent aerial photography, satellite images or other remotely sensed data showing boundaries between remnant and non-remnant vegetation and changes in vegetation types; or
- recent detailed vegetation survey data (with spatial references sufficient to place the surveys on the PMAV); or
- recent, published, vegetation mapping, where the mapping is the most recent and accurate at that scale.

Data that would be insufficient to support the line work on a PMAV includes:

- historic aerial photos or satellite images (e.g. more than 5 years old);
- current or historic survey plans or valuations with reference to vegetation patterns;
- unpublished or old vegetation mapping or vegetation mapping that is not at the same scale as the proposed PMAV;
- any site or survey data not associated with a precisely specified location.

PMAV applications must also include supporting information sufficient to satisfy NRM&E that the categories that the applicant assigned for each area on their proposed PMAV are appropriate in accordance with the definitions of Category 1, Category 2, Category 3, Category 4 and Category X.

The definitions of Categories 1 to 3 are linked to the vegetation status of regional ecosystems. Areas assigned to these categories must be linked to particular regional ecosystems. This means that the supporting information should show the regional ecosystems present in each area on the proposed PMAV. While current RE mapping may form part of the supporting information for assigning one of these categories, it will not be sufficient on its own if the PMAV is at a different scale to the RE mapping. In these cases the assignment of a regional ecosystem, and subsequently a category on a PMAV, must also be supported by data on the subject vegetation's floristic and structural composition.

The definition for Category X requires that vegetation in an area has been cleared (other than by fire) and does not currently meet the requirement for remnant vegetation (is mapped as non-remnant, or does not meet the 50 per cent canopy cover and 70 per cent canopy height and canopy species rule discussed above). Supporting information must be sufficient to demonstrate that proposed Category X areas meet this definition. In cases where the applicant is locking in the boundaries on the current mapping, as per section 5.1, the current mapping is the only supporting information necessary. On agricultural or grazing leases, supporting information for Category X must also be sufficient to demonstrate that the area has been cleared since 31 December 1989, otherwise Category 4 will apply.

The definition for Category 4 requires that an area be subject to a lease for agriculture or grazing under the *Land Act 1994*, be of non-remnant vegetation and have been cleared before December 31, 1989. In this case only areas that are shown as non-remnant on existing certified mapping can be classified as Category 4.

The appendix to this kit sets out techniques and approaches preferred for supplying information to support the categories and line work for PMAVs in greater detail. Applicants are free to use different techniques wherever they believe they are appropriate, but will need to meet a high enough standard to satisfy NRM&E that the proposed PMAV is appropriate for certification.

6 Submitting your PMAV application

PMAV applications need to be made on the specified form. The form records details of the parcels of land subject to the proposed PMAV and must be signed by the owners of each lot included in the PMAV application to indicate their consent to the application. If there are multiple owners of a single lot, the consent of each owner of each lot is required.

If the owner of the land is a company, the Australian Company Number (ACN) should be included and accompanied by –

- The signature of either-
 - two directors of the company;
 - a director and a company secretary of the company; or
 - for a proprietary company that has a sole director who is also the sole company secretary, that director.

OR

- The company seal (for a company with a common seal), witnessed by –
 - two directors of the company;
 - a director and a company secretary of the company; or
 - for a proprietary company that has a sole director who is also the sole company secretary, that director.

The PMAV application form is available from your local NRM&E office or can be downloaded from the Department of Natural Resources, Mines and Energy website at www.nrm.qld.gov.au/vegetation.

An application fee must be paid when the PMAV application is submitted.

The NRM&E officer receiving the application will check that the map and supporting information are provided in an appropriate format and that the appropriate fee has been paid.

Applicants will be notified of the receipt of their application in writing within 10 days of their application being received for processing.

7 Requests for further information

If further information is required before a proposed PMAV can be certified, NRM&E will make a written request to the applicant. Applicants should respond to these requests in order to avoid having their application refused.

If the proposed PMAV is not modified to the satisfaction of NRM&E, or suitable information supplied to support the PMAV, it will not be certified.

8 Decision

The applicant will receive written notice within five days of a decision being made on their application. If the application is successful, they will also receive the certified PMAV. If the application is refused, the applicant will be given reasons for the refusal.

9 Review of a decision

Applicants may apply to the NRM&E chief executive for a review of the decision. An application for a review must be in writing and state, in detail, the grounds on which the applicant seeks a review of the decision. After reviewing the original decision the chief executive must make a further decision to confirm the original decision, or substitute a new decision. The applicant will be notified of the outcome in writing.

The Minister for Natural Resources, Mines and Energy will also establish a committee to review cases when landowners are not satisfied with the outcome of an internal review.

10 When may a PMAV be changed?

A PMAV that has been prepared by a landholder and submitted for certification is termed a voluntary PMAV. Voluntary PMAVs may only be changed or replaced in certain circumstances.

For areas assigned Category X, the only way this area on the map can be altered is:

- If an area has been declared to be of high nature conservation value or vulnerable to land degradation; or
- If an area has been found to have been unlawfully cleared by a court of law; or
- The owner of the land and NRM&E agree to change or replace the PMAV.

For areas assigned Categories 1, 2, 3 or 4, the PMAV can be altered in the circumstances mentioned above, as well as:

- If there has been a change in the status of a regional ecosystem included on a PMAV as Category 1, 2 or 3 vegetation; or
- If a clearing permit has been approved over the property for the landowner to carry out activities like thinning, fodder harvesting or weed control, or the landowner begins to carry out a forest practice.

11 When may a PMAV be revoked?

A voluntary PMAV made by agreement between a landowner and NRM&E may only be revoked if both the owner of the land and NRM&E agree to its revocation.

Appendix 1

Evidence supporting vegetation categories on a proposed Property Map of Assessable Vegetation

This appendix contains forms and recommendations for the provision of evidence to the Department of Natural Resources Mines and Energy (NRM&E) in support of a proposed Property Map of Assessable Vegetation (PMAV).

Reasonable levels of evidence are required to support the categorisation applied to each area delineated in the proposed PMAV.

1. General description of polygons and map units

Every polygon on a proposed PMAV should be numbered. Numbering the polygons makes it easier to specify particular parts of the map in phone conversations or written correspondence. More importantly, it makes it easier to identify the PMAV vegetation categories and underlying vegetation types present in each area on the proposed PMAV.

Proposed PMAVs should be accompanied by a list relating polygon numbers to the PMAV vegetation categories proposed for each polygon. As part of the evidence establishing that the vegetation categories proposed are suitable, applicants should also relate each polygon (using their numbers) to descriptions of the actual vegetation in the area encompassed by the polygon, including:

1. The vegetation's structure (eg. Open woodland – see table 1).
2. The main species present.
3. The landform (eg. Undulating plain – see table 2).
4. The soil (eg. Deep red sand).
5. The regional ecosystem code(s) applicable to the polygon (if remnant).
6. The proposed PMAV category(s).
7. The map unit(s) encompassed by the polygon (see below).

In many cases properties will have multiple areas on their property that have very similar vegetation types. These are referred to as map units. The idea behind map units is similar to regional ecosystems, or 'land units' from land system mapping. As such, each area of a given map unit should occupy similar combinations of landform and soil (i.e. the same land zone), should look the same on satellite imagery and aerial photography, and should be attributable to the same regional ecosystem.

Identifying and describing map units is recommended because they are useful tools to summarise and describe the vegetation covered by the proposed PMAV, and will help NRM&E to understand and check your proposed PMAV. Each map unit should be named and included in a map unit legend with a description of the typical land and vegetation type represented by each map unit, including items 1 through 6 in the above list of attributes for polygon descriptions.

If you have doubts about whether to lump broadly similar vegetation types into a single map unit or to split them into two map units, split them and provide a site for

each type – even if you are proposing that they are parts of the same regional ecosystem.

Each of the map units covered by the proposed PMAV should be described in more detail for at least one specific location, as an example. This is like “sampling” the “map units” on your proposed PMAV and provides very important evidence that the vegetation categories you are proposing are appropriate. If you are wondering what map units your proposed PMAV contains, start by looking for repeated patterns in the vegetation descriptions you have provided for each polygon.

The main reason for defining map units is to work out where more detailed data collection is needed. Map unit sites should also be numbered and the list of site numbers describing each map unit should be included in the map unit legend.

Sites provide detailed descriptions of vegetation at **specified** locations that the applicant contends are representative of a given map unit (refer to form 1). Information that must be provided for each site includes:

1. The precise location of the site – this must be marked on the PMAV application and should also be provided as coordinates measured with GPS (using the MGA94 coordinate system).
2. A verbal description of the site’s location (eg. 100m up hill north-east of ring tank).
3. The height range, average height and estimated crown cover of the upper stratum (generally trees) and mid stratum (generally shrubs) of the vegetation’s woody components (see figure 1 for guidelines for defining strata).
4. The main plant species present in the upper and mid strata.
5. The landform in which the site is situated.
6. The basic features of the top soil at the site and any obvious features relating to the underlying profile (including soil depth and underlying geology).
7. The regional ecosystem the site is held to represent.
8. At least one photograph of the site.

Figure 1. Guidelines for defining strata in vegetation

1. Four layers are generally sufficient to describe vegetation structure.
2. There is a decrease in height from the emergent stratum (E), upper stratum (U), mid-stratum (M), and lower (ground) stratum (L). The lower stratum includes all vegetation up to 1m.
3. The ranges for layers should not overlap, i.e. the top of the M layer should not overlap with the bottom of the U layer.
4. Different layers are frequently defined by the presence of different species or lifeforms, e.g. a mid-stratum of *Casuarina* in a eucalypt woodland.
5. For the tree layers, the height range will be dependent on the median height of the specific layer. The range should be less than 50% of the median height. For example, where the median height of upper stratum trees is 20 metres, the height range for the upper stratum should be no more than 10 metres; that is $20\text{m} \pm 5\text{ metres}$.
6. The height range for shrub layers should not normally exceed 5 metres.

2. Remnant/non-remnant issues

The above combination of polygon descriptions, map unit legend and supporting sites should be sufficient for most proposed PMAVs. Areas currently shown as non-remnant on regional ecosystem or remnant mapping will not need any further evidence from the applicant to support assigning Category X or Category 4. However, further information may be required for any areas to which the PMAV proponent wishes to apply Category X that contain vegetation currently mapped as remnant. Relevant information includes the management history, vegetation structure and vegetation composition. This information should be provided on Form 2.

For an area of vegetation to be considered Category X (i.e. non-remnant) it must have previously been cleared and currently have a predominant canopy (generally the tree layer) that:

1. Has less than half of the original crown cover; or
2. Has less than 70% of the original average height; or
3. Is composed of species that were not part of the undisturbed predominant canopy.

In practice, this normally means that assessing whether an area can be mapped as non-remnant involves comparing the height and crown cover of the tree layer in the proposed non-remnant area, with the height and crown cover of the tree layer in areas of the same regional ecosystem and in a similar landscape situation in which the tree layer is undisturbed. Undisturbed means that the stratum shows no signs of recent or historic clearing. The only other way for an area to be non-remnant is if the canopy stratum is composed of completely different species than those recognised in the description of the regional ecosystem.

Form 2 should be completed for each area with the same management history and current vegetation composition, in which the remnant/non-remnant status of the vegetation is at issue. Each such 'uniform' area should be given a separate polygon in the proposed PMAV, even though they may all be proposed for the same PMAV category. Breaking proposed non-remnant areas into uniform areas based on management history and/or current vegetation structure and composition is essential for effective appraisal of the level of detail required for the rest of the assessment process.

Page 1 of Form 2 should be filled out for each uniform area in which the remnant/non-remnant status of the vegetation is at issue. This page requires information on the timing and nature of previous treatment in the area that has been affected, whether it is remnant or not. Other sections allow for a brief description of vegetation in the area and an outline as to why the proponent considers the area does not satisfy the structural definition of remnant. If the area is indisputably non-remnant, simply describe the current vegetation in the area (e.g. one metre tall Brigalow), state why it is not remnant vegetation (e.g. one metre is very unlikely to be 70% or more of the undisturbed height of Brigalow in this area, therefore it does not satisfy the height criteria of remnant) and submit the form.

If the vegetation is closer to meeting the structural definition of remnant, detailed site data is required to compare the crown cover and height of the predominant stratum in the area in question with that in undisturbed areas.

Generally speaking the closer the vegetation is to the 50% canopy, 70% height and canopy species rule the more information will be required to support its determination as Category X. It is recommended that the proponent consider professional advice regarding the types of detailed vegetation measurement required for remnant/non-remnant assessment in situations where the vegetation has significant amounts of regrowth.

The second page of Form 2 should be used to submit carefully measured structural information about either the proposed non-remnant vegetation in the area, or proposed reference sites from nearby undisturbed vegetation representing the same regional ecosystem in a comparable landscape situation. One copy of page 2 should be provided for each transect or site. The bottom section of page 1 should be used to detail the site selection methods and survey methodology.

Any information provided on page 2 must be carefully measured using appropriate techniques. The techniques used must be specified on page 1. GPS must be used to measure the start and end points of each transect, or site location.

TABLE 1

Structural formation classes (in unshaded part of table) for woody plant communities

| | | | | | |
|------------------------------|--------------------------|--------------------------------|---------------------------------------|--------------------------|-----------------------|
| Vegetation cover equivalents | Foliage projective cover | 70-100% | 30-70% | 10-30% | <10% |
| | Crown separation | closed or dense | mid-dense | sparse | very sparse |
| | Field criteria | Crowns touching to overlapping | Crowns touching to slightly separated | Crowns clearly separated | Crowns well separated |
| | CROWNCOVER % | 100-81% | 81-52% | 52-20% | 20-0.2% |

| | | | | | |
|------------------------|---------------------|-------------------------------------|-------------------------|------------------------|-----------------------------|
| Growth form and height | GROWTH FORM ↓ | Structural Formation Classes | | | |
| | Trees > 30m tall | tall closed-forest | tall open-forest | tall woodland | tall open-woodland |
| | Trees 10 – 30m tall | closed-forest | open-forest | woodland | open-woodland |
| | Trees < 10m tall | low closed-forest | low open-forest | low woodland | low open-woodland |
| | Shrubs 2 – 8m tall | closed-scrub | open-scrub | tall shrubland | tall open-shrubland |
| | Shrubs 1 – 2m tall | closed-heath | open-heath | shrubland | open-shrubland |
| | Shrubs <1m tall | - | - | dwarf shrubland | dwarf open-shrubland |

TABLE 2

Simple erosional landform patterns characterised by relief and slope

| SLOPE CLASS | Level | Very gently inclined | Gently inclined | Moderately inclined | Steep | Very steep | Precipitous |
|------------------------------|--------------------|--------------------------------|-----------------------------|--------------------------|------------------------|-----------------------------|------------------------------|
| Modal slope (%) | <1% | 1-3% | 3-10% | 10-32% | 32-56% | 56-100% | 100-300% |
| RELIEF ↓ | | | | | | | |
| Very high >300m (about 500m) | - | - | - | rolling mountains | steep mountains | very steep mountains | precipitous mountains |
| High 90-300m (about 150m) | - | - | undulating hills | rolling hills | steep hills | very steep hills | precipitous hills |
| Low 30-90m (about 50m) | - | - | undulating low hills | rolling low hills | steep low hills | very steep low hills | badlands |
| Very low 9-30m (about 15m) | - | gently undulating rises | undulating rises | rolling rises | steep rises | badlands | badlands |
| Extremely low <9m (about 5m) | level plain | gently undulating plain | undulating plain | rolling plain | badlands | badlands | badlands |

FORM 1 – Map unit description site

Site Number:

Map unit name:

Regional Ecosystem:

PMAV category:

Location

| | | |
|--|------------------------|--------------------|
| GPS coordinates: Locality (inc. distance to nearest town) | / / | Datum: GDA94 or |
|--|------------------------|--------------------|

Vegetation structure summary (see figure 1 and table 1)

| Stratum | Growth form | Height interval | Average height (metres) | Estimated crown cover (%) |
|-------------------------------------|-------------|-----------------|-------------------------|---------------------------|
| U: | | m - m | | |
| M: | | m - m | | |
| | | m - m | | |
| Structural formation (use table 1): | | | | |
| Notes: | | | | |

Plant species

| | | | |
|---|---------------------------|-------------------------------|---------------------------|
| - List plant species in order of relative (numerical) dominance: d – dominant; c – codominant - Record maximum, minimum, average heights for each species. - Where heights are measured please circle them. | | | |
| <u>U: upper stratum species</u> | <u>max/min/av. height</u> | <u>M: mid-stratum species</u> | <u>max/min/av. height</u> |
| | | | |

Geology and land zone

| | | |
|-------------------|-------------------------------|--------------------|
| Geology map/scale | Geology code and rock type(s) | Field observations |
| Land zone | Notes | |

Landform and soils

| |
|----------|
| Landform |
| Soils |

Notes

| |
|--|
| |
|--|

FORM 2

REMNANT/NON-REMNANT

page 1

PMAV polygon number:

Date and description of treatment

| |
|--|
| |
|--|

Brief description of current vegetation (composition and structure) and landform (if the area is indisputably non-remnant this is sufficient)

| |
|--|
| |
|--|

Why is this area non-remnant? (outline why the area is not remnant i.e. height, cover or species composition. Detail the survey methods, including site selection where appropriate)

| |
|--|
| |
|--|

Glossary

Category 1 area – means an area that:

- (a) is an endangered regional ecosystem; or
- (b) was an endangered regional ecosystem when the chief executive was notified of a native forest practice in the area or when an approval was given for an ongoing application for the area; or
- (c) contains vegetation that, at the time of the notification or approval, was a not of concern regional ecosystem or an of concern regional ecosystem, but would, at the time a property map of assessable vegetation for the area is replaced, be considered an endangered regional ecosystem; or
- (d) is a declared area; or
- (e) has been unlawfully cleared.

Category 2 area – means an area that:

- (a) is an of concern regional ecosystem; or
- (b) was an of concern regional ecosystem when the chief executive was notified of a native forest practice in the area or when an approval was given for an ongoing application for the area; or
- (c) contains vegetation that, at the time of the notification or approval, was a not of concern regional ecosystem or an endangered regional ecosystem, but would, at the time a property map of assessable vegetation for the area is replaced, be considered an of concern regional ecosystem.

Category 3 area – means an area that:

- (a) is a not of concern regional ecosystem; or
- (b) was a not of concern regional ecosystem when the chief executive was notified of a native forest practice in the area or when an approval was given for an ongoing application for the area; or
- (c) contains vegetation that, at the time of the notification or approval, was an of concern regional ecosystem or an endangered regional ecosystem, but would, at the time a property map of assessable vegetation for the area is replaced, be considered a not of concern regional ecosystem.

Category 4 area – means an area that:

- (a) is a lease issued under the *Land Act 1994* for agriculture or grazing purposes; and
- (b) was cleared of vegetation before 31 December 1989; and
- (c) does not contain remnant vegetation at the time the property map of assessable vegetation for the area is made or replaced.

Category X area – means an area in which clearing has occurred and at the time a property map of assessable vegetation is made or replaced:

- (a) does not contain vegetation; or
- (b) is not remnant vegetation; or
- (c) contains vegetation which forms a predominant canopy which —
 - (i) has cover that averages less than 50% of the undisturbed predominant canopy; or
 - (ii) has height that averages less than 70% of the vegetation's undisturbed height; or

- (iii) is not composed of species characteristic of the vegetation's undisturbed predominant canopy; and
- (d) the area —
 - (i) was not cleared or destroyed by fire, flood, die back, drought or other natural cause; and
 - (ii) is not an area shown as a Category 1 area or a Category 2 area or a Category 3 area or a Category 4 area on a property map of assessable vegetation made under 20B(1).

Crown Cover (%) – For a stratum of vegetation (eg. the upper canopy), the crown cover (%) is the percentage of the ground surface covered by crowns of plants in the stratum. Crowns for this purpose are taken to be opaque, which means that small gaps in the crown should be disregarded. Crown cover (%) is typically measured using a line intercept method, which means recording the proportion of a tape measure, extended in a straight line over 100m or more, that intercepts the vertical projection of crowns in the stratum.

GPS – means the measurement of coordinates using a unit that receives and processes information from the global positioning system or other similar system of satellites.

Height interval – for a vegetation stratum, the height interval consists of the heights (height of the tops of the crowns) of the tallest and shortest individual plants in that stratum.

Identifiable fixed features – include road intersections, fence intersections, survey marks, built infrastructure, points with known GPS coordinates.

Land zone - A land zone is a geomorphological category comprised of a suite of similar substrates and their associated landforms. Land zones represent major differences in geology and in the associated landforms, soils, and physical processes that gave rise to distinctive landforms or continue to shape them (Sattler and Williams 1999). Land zones are generally derived by amalgamating a range of geological, land system and /or soil mapping units at 1:100,000 to 1:250,000 scale.

MGA94 – Map Grid of Australia 1994, the coordinate system to be used in PMAV applications, as defined in the GDA manual by the Intergovernmental Committee on Surveying and Mapping.

Polygon – in mapping terminology, a polygon is an area enclosed by lines on a map.

Predominant canopy – the predominant canopy in vegetation is the ecologically dominant layer (EDL); that is, that stratum of the vegetation that contains the most above ground biomass. The predominant canopy can be described in terms of growth form, height, crown cover and species. In the majority of cases, the predominant canopy is upper stratum (i.e. tree layer in a woodland or shrub layer in a shrubland etc.).

Vegetation categories – in this document, vegetation categories means Category 1 area, or Category 2 area, or Category 3 area, or Category 4 area, or a Category X area as defined under the Act.

Stratum (plural strata) – a layer in vegetation produced by the occurrence at approximately the same height of an aggregation of plants of the same habit (eg. trees, shrubs, grasses). See figure 1 for some guidelines to the recognition of strata in vegetation.

Waypoint – a term commonly used in GPS units, referring to a point at which geographic coordinates are recorded.