



PMAV Application Guide

(for PMAVs made under Section 20C of the *Vegetation Management Act 1999*)

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1.0 Purpose

This document provides guidance to landholders and consultants when preparing a Property Map of Assessable Vegetation (PMAV) application made under section 20C of the *Vegetation Management Act 1999* (VMA).

2.0 Legislation

Queensland's Vegetation Management Framework comprises of the VMA, the Vegetation Management Regulation 2023 (VMR), the *Planning Act 2016*, the Planning Regulation 2017, and associated policies and codes.

A PMAV is a property-scale map that shows the boundaries of vegetation categories on the property. A PMAV is made through agreement between you and the Department of Resources (Department). Once the PMAV is certified, it replaces the regulated vegetation management map for determining the location and extent of the areas of vegetation regulated under the vegetation management framework on your property.

Key sections of legislation relevant to PMAVs include:

- Section 20C of the VMA – When owner may apply for PMAV
- Section 20CA of the VMA – Process before making a PMAV
- Section 111 of the VMA – Change to category C areas on freehold land or indigenous land.

3.0 Related documents

Related guidance material is available online at www.qld.gov.au by searching the document title:

- Guideline for determining category C areas, Department of Resources
- Methodology for surveying and mapping regional ecosystems and vegetation communities in Queensland, Queensland Herbarium.

4.0 Introduction

A PMAV is a certified map which shows vegetation category areas on a property or area. In some instances, a PMAV may also show regional ecosystem numbers and boundaries for particular areas. PMAVs can be used to:

- a) Confirm, correct or refine a vegetation category area currently shown on the State-wide certified Regulated Vegetation Management Map (RVMM);
- b) correct or refine a regional ecosystem number or a regional ecosystem boundary.

A PMAV is made through agreement between the applicant and the Department. Once the PMAV is certified, it replaces the RVMM for determining the location and extent of the vegetation category areas.

A PMAV can also be placed by the Department over an area of land for other reasons, for example to allow an area to regenerate when it has been unlawfully cleared or to protect an offset area. These PMAVs are made under section 20B of the VMA.

5.0 Background

The vegetation category areas for a property are shown on the RVMM. Table 1 details the general descriptions for the 5 vegetation category areas defined in the VMA. The assessment of vegetation categories through the PMAV process follows a hierarchical order and evidence must be provided that demonstrates the necessary tests as outlined in Section 6.

Table 1. Hierarchical order of categories: If an area is not category B, a check is first made if category C applies, then if category R applies, and if neither apply, it is made category X.

Category A area (Red)	Area identified as a declared area, offset area or an area related to a compliance matter made in accordance with the VMA
Category B area (Dark Blue)	Remnant vegetation. Vegetation that has never been cleared or the vegetation has been historically cleared and the vegetation has grown back & reached the remnant criteria. The VMA defines remnant vegetation as vegetation where the predominant canopy covers more than 50% of the undisturbed predominant canopy and averages more than 70% of the vegetation's undisturbed height and is composed of species characteristic of the vegetation's undisturbed predominant canopy.
Category C area (Light Blue)	High Value Regrowth Vegetation. An area that has not been cleared for at least 15 years and contains an endangered, of concern or least concern regional ecosystem.
Category R area (Yellow)	Regrowth watercourse and drainage feature area. Areas within 50 metres of a watercourse or drainage feature in Great Barrier Reef catchments.
Category X area (White)	Areas that are non-remnant, category C or category R areas. Area has generally been historically cleared and often maintained. Areas shown on a PMAV as Category X may also contain significant vegetation.

The RVMM and the vegetation category areas are based on the Queensland Herbarium's regional ecosystem vegetation mapping. To ensure a consistent approach to the mapping of regional ecosystems, the Queensland Herbarium developed the *Methodology for Survey and Mapping of Regional Ecosystems and Vegetation Communities in Queensland*.

The scale at which the Queensland Herbarium's state-wide vegetation mapping has limitations associated with the array of data and methods used to create the mapping which may result in some inaccuracies at a property scale, both in relation to the boundaries of vegetation and the regional ecosystems as they exist on the ground. A PMAV can be used to correct these inaccuracies or confirm vegetation category areas and/or regional ecosystems at the property scale.

Once a PMAV is made it becomes the point of truth for the subject area. The RVMM is updated monthly to reflect new PMAVs.

6.0 Application

6.1 Who can apply for a PMAV

Section 20C of the VMA states that an owner of land may apply to the chief executive to make a PMAV for the land or part of the land. Under the VMA, for PMAV purposes, the owner of land includes:

- a) for freehold land—the registered owner;
- b) for a lease, license or permit under the *Land Act 1994*—the lessee, licensee or permittee;
- c) for indigenous land—the holder of title to the land;
- d) for any tenure under any other Act—the holder of the tenure.

All owners of land registered on the title must sign the PMAV application form. Where a company or trust is the registered owner, the person who signs the form must have the authority to sign on behalf of the legal entity. The name must be the legal name of the entity i.e., the full name associated with the Australian company number (ACN), not the Australian business number (ABN).

PMAVs cannot be accepted for tenures to which the VMA does not apply e.g., National Parks, State Forests etc. (see section 7 of the VMA).

The PMAV application must include:

- a) A completed approved application form; and
- b) The correct fee where required; and
- c) The information prescribed under a regulation (supporting information for the proposed areas and boundaries).

6.2 Application form

The PMAV application form is updated from time to time and can be found on the Department's website. The form contains information requirements and provides options regarding the type of assessment that may be required:

Option 1

To show the vegetation category areas (i.e., Categories A, B, C, R and X) as shown on the RVMM over subject lot/s.

The applicant 'agrees' with the RVMM and is just seeking to confirm the category areas as currently mapped. This type of PMAV provides landholders with a level of security over their vegetation category areas through section 20H of the VMA.

This option will result in a PMAV being made under s20C of the VMA.

Option 2

To modify the vegetation category areas (i.e., Categories B, C, R and X) or confirm/modify the regional ecosystems mapped over subject lot/s. The vegetation category areas and the scale of the PMAV will be based on the supporting information provided.

The applicant requests to change the categories on the RVMM, or the regional ecosystems on the Vegetation Management Regional Ecosystem map. Attachment 2 outlines tools that can be used to supply evidence for PMAV changes. Attachment 3 provides guidance on aerial imagery interpretation.

This option will result in a PMAV being made under s20C of the VMA.

Option 3

To correct an obvious map error in the RVMM. This option results in a PMAV only being made over the area where the Department has confirmed that there is an obvious map error, not the entire extent of the subject lot on plan/s.

An obvious error only applies to areas where it can be clearly shown that the area has not contained any woody vegetation for a long period of time (crop or pasture) and the area was lawfully cleared, or solely contains vegetation that is a plantation, orchard or is non-native vegetation. Please confirm with the Department that your request is an obvious map error prior to lodging your application.

This option will result in a PMAV being made under s20B of the VMA.

Option 4

To voluntarily change a category X area on a PMAV to a category A area. Note: a PMAV will only be made over the confirmed category A area.

This option will result in a PMAV being made under s20C of the VMA.

6.3 PMAV application fee

The application fee can be found on the Department's website or in Schedule 2 of the VMR (shown as a fee unit). The application fee can be waived where the Department reasonably believes there is an error in the part of the RVMM for the area (see Option 3 in Section 6.2 above). Please confirm with the Department that your request is an obvious map error prior to lodging your application.

6.4 Information submitted with the application form

The application form identifies relevant information to be provided with the application such as:

- a) a map showing the proposed vegetation category areas and boundaries of the areas proposed for the PMAV; and
- b) information to demonstrate that the boundaries of the proposed vegetation category areas are accurate and the proposed vegetation category areas are consistent with the floristic composition and structure of the regional ecosystem or vegetation in the area.

Tip:
adding the date of the vegetation management report, or the version of the RVMM or RE data is useful. If your map is different from ours, the date can help us explain why.

The type of information to submit with the application depends on the request made.

For a change of vegetation category area (e.g., category B to X), the applicant needs to submit the following information:

- WHERE the change is located (e.g., a list with all parcels, a map or digital spatial file that outlines the area proposed to be changed);
- WHAT to change the area to (e.g., a map or spatial file with the proposed category);
- WHEN the area was cleared - approximate dates (e.g., two air photos that outline the area of proposed change, one where trees are present, the next trees are gone);
- HOW the area was cleared (the type/purpose of clearing, and not the result of a natural event);
- WHY the area was cleared, and the authorisation for the clearing (e.g., details of permits, codes or exemptions that applied at the time of change over the contested area); and
- WHAT the vegetation status is on-ground by providing evidence that the area no longer meets the VMA definition for that category, e.g.
 - a representative reference site for each regional ecosystem to be changed, including height and/or canopy cover data for the predominant canopy
 - representative “disturbed” sites for the area requested to be changed, including height and/or canopy cover data for the predominant canopy
 - a transect and/or other site data for both reference sites and disturbed sites that confirms the regional ecosystem (landzone, soil, geology, vegetation species description, vegetation structure and/or vegetation dominance)
 - photos to support the transect and/or site data with:
 - GPS point
 - Direction of view (e.g., north)
 - Description of what the photo shows (species, weeds, rock type, landzone)
- any other relevant evidence provided by the applicant including historical records of the area being contested.

Tip:
When using air photos or Qld Globe imagery, please add the date and name of the images used.

Please note that we cannot measure tree height from air photos or satellite imagery, therefore site data may still be required.

Tip:
When providing GPS coordinates, please also provide which datum they were recorded in, such as GDA2020, GDA94, WGS84 or AGD66.

Incorrect datums can lead to inaccuracies.

For a change of regional ecosystem, the applicant needs to submit the following information:

- WHERE the change is (e.g., a list with all parcels, a map or digital spatial file that outlines the area proposed to be changed);
- WHICH regional ecosystem to change the area to; and
- WHAT supports the proposed regional ecosystem:
 - A transect and/or other site data that describes landzone, soil, geology, vegetation species description, vegetation structure and/or vegetation dominance
 - Photos to support the transect data with:
 - GPS point
 - Direction of view (e.g. north)

- Description of what the photo shows (species, weeds, rock type, landzone)
 - Air photos that show different vegetation colour/composition/densities for each outlined area
- any other relevant evidence provided by the applicant including historical records of the area being contested.

6.5 Evidence for a request to change any area to a category X area

6.5.1 Evidence that clearing has occurred

The department cannot change an area to category X if the clearing is a result of natural causes such as burning, flooding, drought or cyclones.

Please describe roughly when the clearing occurred, and the purpose of the clearing (e.g., clearing for infrastructure, clearing under a high value agriculture development approval). This may require an analysis of historical imagery (available from QImagery: qimagery.information.qld.gov.au/), providing maps, providing site photos (e.g. evidence of cut stumps or ringbarking), and a description referring to the imagery, maps and photos (see figure 1).

Where there is no evidence of clearing or the clearing was not lawful the area will remain as mapped and no changes will be made.

6.5.2 Evidence that the clearing was lawful

Please note that areas where clearing under a development approval, area management plan or accepted development vegetation clearing code has occurred for the following reasons cannot be changed to category X:

- Fodder harvesting
- Managing thickened vegetation
- Clearing for encroachment
- Control of non-native plants or declared pests
- Necessary environmental clearing
- Native forest practice.

Also, an area may not be changed to category X if it has been unlawfully cleared.

To be cleared lawfully the vegetation must have been cleared:

- a) On freehold land, including freeholding leases under the *Land Act 1994*, prior to 15 September 2000 (the date that the VMA commenced); or
- b) Under a development approval and in accordance with any conditions allowing the removal or requiring the protection of assessable vegetation. Please note that the *Land Act 1994* and similar repealed legislation applied to leased land prior to 15 September 2000; or
- c) Under an exemption – the date of the clearing event, legislation in force at the time of the clearing and class of the vegetation at the time of the clearing is critical for determining the applicability of an exemption; or

- d) Under an accepted development vegetation clearing code – the date of the clearing event, the code applicable at that time, the existence of a notification for the clearing, and class of the vegetation at the time of the clearing is critical for determining the applicability of a code.

6.6 Evidence for a request to change a category B area to a category X area

In addition to the information described in section 6.5, the application should also provide information that supports that the predominant canopy of the requested change is below the thresholds compared to the predominant canopy of undisturbed vegetation. This could include:

- **Imagery** prior to the clearing event, and after the clearing event, showing that the (outlined) areas no longer contain a canopy (see figure 2)

The VMA definition of “remnant” compares the predominant canopy of an undisturbed site to the predominant canopy of the disturbed site.

When the predominant canopy is less than 50% in cover, or 70% in height, the area may be non-remnant.

Tip:

Please do not average reference sites since the lowest reference site is still a remnant site. Regional ecosystems naturally have structural variation. Therefore it's best to discuss which reference site the disturbed site is best compared with.

- **Transects** in the areas of requested change, as well as transects in undisturbed areas (reference sites), that match each of the regional ecosystems of the requested change, with sufficient information that the observed regional ecosystem can be confirmed; a note of which structural layer is identified as the predominant canopy; the range and average vegetation heights and/or canopy cover for each of the strata; photos; and GPS points.

The preferred location of the reference sites is:

1. On the same property as the requested change; or
2. On a nearby property, with a description showing that this property has the same environmental influences as the subject property.

If [technical description](#) data is used as evidence, please note that this displays a range of structural variation, therefore please consult with the Queensland Herbarium to find the site most representative of the subject property and areas requested to be changed. If no comparison is made to the subject property, the department will use the lowest value in the height or canopy cover range of the predominant canopy.

Please check the current version of the Queensland Herbarium's *Methodology for survey and mapping of regional ecosystems and vegetation communities in Queensland* to assist with recording site data and observations.

- **Photos** displaying evidence of ringbarking, tordoning, stumps from historic timber harvesting, standing dead trees, clearing contractor receipts etc. The photos should have GPS coordinates, or their location added to a map. A description that includes the direction they are taken in (e.g., north) and what it is evidence of (e.g., species you identified, landzone, weeds) is very helpful. If photos are used as evidence of height, please include an object of known height in the photo (car, human, measuring stick, see figure 1), and show both the base and top of the tree. Please note that a photo of a single tree stump is not sufficient of a clearing event to non-remnant status, since it could be the result of selective harvesting. If changes are made over a large area, please inspect air photos to identify if the transects are representative of all requested areas and provide comments about the representativeness of the chosen sites as part of the application.

Tip:
If the regional ecosystem (RE) of the reference site is different from the RE of the disturbed site, we cannot use the reference site to calculate a percentage. Therefore providing species or landzone descriptions is required even when changing to category X.



Figure 1. Good evidence photo showing the bottom and top of the tree, and containing an object of known height (a person)

Please note that when the vegetation is found to be non-remnant, the department will first consider a change to a category C area or category R area where relevant prior to a change to a category X area.

An area cannot be made category X where the area has been subject to a matter mentioned in section 20AH of the VMA. This includes:

- the area is a declared area or an offset area or an exchange area; or
- the chief executive has made a PMAV for the area under section 20B (1)(e) – restoration or enforcement notice, (g) – reasonable belief or (h) – Land Act tenure conversion; or
- the area contains forest products under the *Forestry Act 1959* (FA) and—
 - a. has been defined by agreement with the FA chief executive as an area in which the State has an interest in commercial timber; or
 - b. is an area in which the State has carried out harvesting of commercial timber; or
 - c. has been cleared under section 70A; or
- the area has been unlawfully cleared; or
- the area is a regional ecosystem that—
 - a. has a predominant canopy not dominated by woody vegetation; and
 - b. has not been cultivated for 15 years; and
 - c. contains native species normally found in the regional ecosystem; and
 - d. is not dominated by non-native perennial species; or
- the area has been subject to a native forest practice.

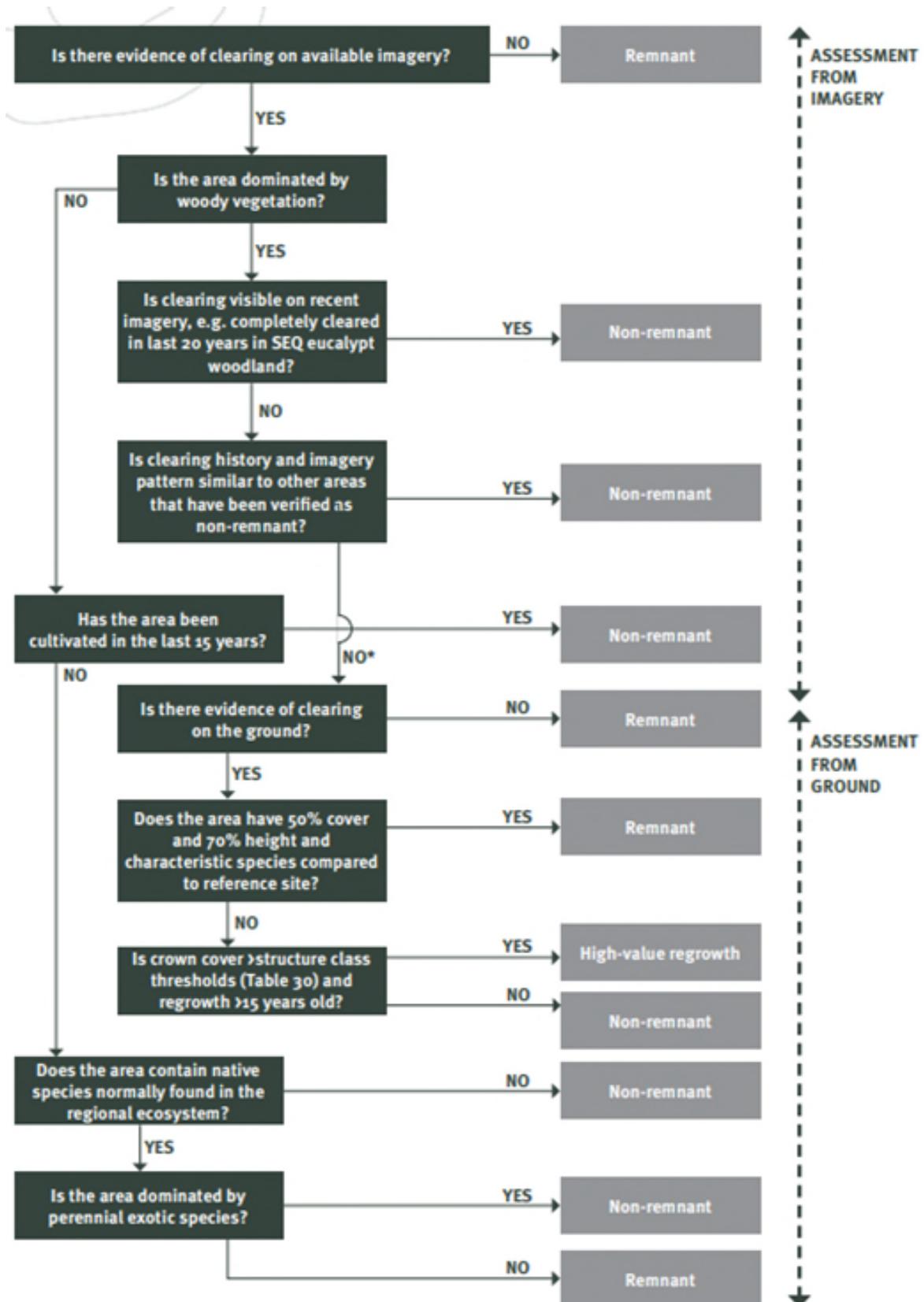


Figure 2. Flowchart showing assessment sequence for mapping vegetation cover from Queensland Herbarium's Methodology for survey and mapping of regional ecosystems and vegetation communities in Queensland.

* Areas mapped as remnant until ground assessment is carried out

6.7 Evidence for a request to change a category C area to a category X area

The department has prepared a guide to assist you when preparing a PMAV application to modify category C areas. Please refer to the guide, available from www.qld.gov.au.

6.8 Evidence for a request to change a category R area to a category X area

Category R area is a regrowth watercourse and drainage feature area which is an area located within 50m of a watercourse or drainage feature located in the Burdekin, Burnett-Mary, Eastern Cape York, Fitzroy, Mackay Whitsunday or Wet Tropics catchments represented on the vegetation management watercourse and drainage feature map.

These areas are based solely on a set distance from the defining bank of the watercourse/drainage feature regardless of vegetation class or vegetation presence and, as such, cannot usually be 'contested'. Category R areas can only be contested when there is no watercourse or drainage feature present. However, the area can be more accurately located or defined.

Tip:

Category R areas can be devoid of vegetation. If there is a watercourse or drainage feature within 50m, it cannot be changed to a category X area.

- If you would like to move the category R area to the correct location, please provide information that defines the bank of the watercourse or drainage feature by providing LiDAR or other contour data; air photos or satellite imagery.
- If there is no watercourse or drainage feature present on the ground, please provide a history of the site (e.g. laser levelling); air photos or satellite imagery; and site photos with GPS point and direction (e.g. north) showing there is no runoff and/or relief in the vicinity of the mapped watercourse or drainage feature.

Note that this will not change the vegetation management watercourse and drainage feature map, only the category R areas associated with those features.

For a request to change the watercourse and drainage feature, you must include evidence to show that the watercourse is not present over the identified area. It is important to note that watercourses may also be regulated under the *Water Act 2000*.

6.9 Evidence for a request to change the regional ecosystem number for an area

If the mapped regional ecosystem is incorrect or inaccurately delineated, you must provide sufficient information to support the proposed change. This could include:

- site photos with GPS coordinates and a description of what the photo demonstrates,
- vegetation transects and/or a map showing the areas to be changed,
- what is the proposed regional ecosystem; and
- if changing the landzone, provide evidence of landzone, landform, soil and/or geology to support this change.

Tip:
When providing GPS coordinates, also provide which datum they were recorded in, such as GDA2020, GDA94, WGS84 or AGD66. Incorrect datums can lead to inaccuracies.

The VMA defines a regional ecosystem as *a vegetation community in a bioregion that is consistently associated with a particular combination of geology, landform and soil*. The regional ecosystem number (e.g. 11.3.2) is the number established under the Vegetation Management Regional Ecosystem Description Database (VM REDD) for an individual regional ecosystem and generally comprises three aspects – bioregion, landzone and vegetation community described by the vegetation in the predominant strata (vegetation layer e.g. large trees).

In order for an expedient assessment of the proposed regional ecosystem amendment, the applicant should provide sufficient evidence to support their argument that one, two or all three elements comprising the regional ecosystem classification is incorrect.

Note: The applicant should refer to the most recent version of the Queensland Herbarium's Methodology for survey and mapping of regional ecosystems and vegetation communities in Queensland to assist with recording site data and observations.

6.9.1 Bioregion

There are 13 bioregions in Queensland. See <https://apps.des.qld.gov.au/regional-ecosystems/> for the location and extent of bioregions in Queensland. Generally, the bioregion is not in question when a change to the regional ecosystem is proposed. However, when a property is located close to a bioregional boundary or bioregional boundaries traverse a property there can be outlier regional ecosystems. Outlier regional ecosystems are regional ecosystems that are spatially located within one bioregion but have the regional ecosystem number from an adjacent bioregion. The Department is unable to change bioregional boundaries via the PMAV process. The Queensland Herbarium are responsible for determining Bioregion boundaries.

6.9.2 Landzone

There are 12 different landzones in Queensland. See <https://www.qld.gov.au/environment/plants-animals/plants/ecosystems/descriptions/land-zones> for more information on landzones. Landzones represent major differences in geology and associated landforms, soils and physical processes that gave rise to the landforms.

To change landzones, the applicant should provide the following information to support their request;

- a) Site data including all recordings and observations of landzone, landform, soil and/or geology;
- b) Test pits clearly identifying the landzone and any transition zones where the landzone changes within the landscape;
- c) Aerial imagery, including the use of a stereoscope to assist in delineating landzone boundaries based on topography.

6.9.3 Dominant vegetation

The third part is the ecosystem number and denotes different vegetation. For the purposes of requesting changes to regional ecosystems, applications need to focus on the predominant canopy with understorey species used to provide a more definitive identification of the regional ecosystem if necessary.

Vegetation communities are highly influenced by landzone, aspect and slope. An applicant should consider all three when requesting a regional ecosystem amendment as well as include the following:

- a) Site observations in a format which is sufficient for the assessing officer to determine the dominant and subdominant canopy species and vegetation community.
- b) Transitional zones between landzones and vegetation communities.
- c) Structural variation within the regional ecosystem.
- d) Any observations which may be impacting the observed vegetation community, i.e. drought, fire, dieback, non-native weeds.

7.0 The PMAV map scale

The Queensland Herbarium mapping, on which the RVMM is based, was created at a 1:100 000 scale generally, with some bioregions such as the Wet Tropics and South East Queensland created at a 1:50 000 scale. This means that, for a 1:100 000 scale, one hundred metres on the ground is represented by 1 millimetre on the map.

Under the PMAV process the vegetation category areas and regional ecosystems can be mapped at a property scale. To make the mapping meaningful at a property scale, table 2 below identifies the minimum polygon size, linear widths, image resolution and observation densities which should be used when creating a PMAV. These minimums are applied where they meet both the minimum area and the minimum width. It is recommended not to make a PMAV below 1:25,000 assessment scale as it is not seen as achievable given the many variables that effect the accuracy of the imagery and interaction with less accurate datasets such as the digital cadastral data base (DCDB).

Please note that if you base your assessment on air photos only, the scale of the PMAV cannot be better than the scale of the air photos used and must take into consideration the angle at which the air photo was captured.

Table 2: Recommended data resolution for various assessment scales.

Adapted from the Queensland Herbarium's Methodology for survey and mapping of regional ecosystems and vegetation communities in Queensland– table 4.

Feature	Size on map	Assessment scale			
		1:25 000	1:50 000	1:100 000	1:250 000
Surface area of the smallest mapped feature	2 x 2 mm	0.25 ha	1.0 ha	4 ha	25 ha
Minimum width for linear features	1 mm	25 m	50 m	100 m	250 m
Precision of line work	+/-0.5 mm	25 m	50 m	100 m	250 m
Resolution of imagery		≤1 m	≤5 m	≤10 m	≤25 m
Observation density for on ground surveys per 100ha*		4	1	0.25	0.04

* Refer to section 4.5 of the Queensland Herbarium's *Methodology for survey and mapping of regional ecosystems and vegetation communities in Queensland* for more information on site density considerations.

8.0 Process of assessment

Once the evidence has been assessed, the Department either sends a certified PMAV by registered post or email if all requested changes were made. If the Department has not made all the requested changes, a draft PMAV is sent showing what changes were agreed to, and a notice explaining why other changes could not be made.

The landowner will have 20 business days from receiving the letter or email, to let the Department know they:

- Accept the contents of the draft PMAV for certification;
- are willing to provide more information for the areas, for re-assessment; or
- refuse the draft PMAV and withdraw the application.

Please note that all landowners are required to sign the form that states their response.

9.0 Provisions for a Review of a PMAV Decision

If an applicant is not satisfied with a decision that has been made by the Department after the PMAV has been certified, they can apply to the Department for an internal review which allows for that decision to be reviewed. More details are provided with the decision.

10.0 References

Most recent version of the *Methodology for survey and mapping of regional ecosystems and vegetation communities in Queensland*, Queensland Herbarium, Queensland Government.

Attachment 1 – Things to be aware of

1. **Satellite imagery provided in application without polygons or description**

When providing imagery as evidence of clearing please clearly identify where the observed changes are and explain why the changes are clearing and not a result of a natural event. Please provide an image before and after the clearing event for evidence as to when it was cleared.

2. **Satellite imagery shows a fire went through an area**

Historical air photos or satellite imagery that shows a fire scar is not sufficient evidence to demonstrate clearing and to change an area to a category X area. A fire scar can be a result of fuel load reduction burn where native trees remained intact; a fire that targeted weed species; a hot fire where established trees survived (e.g. mature *Gidyea* can survive a fire); a wildfire that is a natural event and therefore not clearing; a targeted fire to destroy and clear trees; or a fire that cleaned up after mechanical clearing. Therefore, please also provide on-site photos and a description why/how it was cleared if fire was used to clear.

3. **Satellite imagery shows clearing occurred, but trees remain**

If historical air photos show that only some trees were cleared, but other trees remain, the historical clearing could have been weed management, managing thickened vegetation, or selective harvesting. If the area was not cleared to non-remnant status in the past, it cannot be changed to non-remnant status.

4. **The most recent satellite imagery on Queensland Globe shows a canopy cover**

If the most recent satellite imagery on Queensland Globe, or air photos on QImagery show an area has been cleared and no trees remain (e.g. for a track), imagery or air photos can be used as evidence.

However, when a canopy cover is seen on the most recent satellite imagery or air photos (which could be two years ago) but that vegetation is immature, and/or the vegetation has since been cleared, please provide on-site photos (with an object of known height), accompanied with GPS points and a description in what direction the photos were taken.

Vegetation height cannot be determined from satellite imagery, nor can satellite imagery identify what part of the canopy is the predominant canopy.

5. **Lawful historical clearing occurred, but significant time has allowed regeneration**

Areas of mapped category B areas may have been cleared lawfully. But because the clearing event occurred many years ago and has regenerated, the area is likely to be remnant or high value regrowth. Significant evidence would be required to determine if the area is vegetated with non-native species or meets the definition of high value regrowth. A historic lawful clearing (e.g. 1950s to 1990s) event does not automatically define the area as a category X area.

6. **Only an average and range is provided of the T1 but includes weeds**

The Queensland's Herbarium's *Methodology for survey and mapping of regional ecosystems and vegetation communities in Queensland* describes methods for undertaking transects. The structure is described using E (emergent), T1, T2 (tree layers) and S1, S2 (shrub layers). The definition in the *Vegetation Management Act 1999* refers to the "predominant canopy", which in most cases is the T1 layer.

The *Vegetation Management Act 1999* applies to native trees and plants. Therefore, the native vegetation in the predominant canopy of the disturbed site needs to be compared to the native vegetation in the predominant canopy of the reference site. If non-native species are included in the predominant canopy description, and the site description only includes a range (and not heights of individual trees/species) the average or range are influenced by the weed species and the true value of native species could be higher or lower. Taking out the weed species could change which layer has the predominant canopy.

Please note: weed species overtaking native species to the point native species have disappeared is not part of the definition for "clearing". Also see section 20AH of the VMA.

7. The average height of the predominant canopy includes T2 trees

The Queensland Herbarium's *Methodology for survey and mapping of regional ecosystems and vegetation communities in Queensland* describes methods for undertaking transects. The structure is described using E (emergent), T1, T2 (tree layers) and S1, S2 (shrub layers). The definition in the *Vegetation Management Act 1999* refers to the "predominant canopy", which in most cases is the T1 layer.

When species of the T2 layer are included in the T1 layer, the average value of the T1 layer is lower than it should be. Please check the chapter on *structural information* and the *summary of rules for determining layers/strata in vegetation* in the Queensland Herbarium methodology.

8. A presence/absence list is provided instead of a transect

This evidence does not describe: canopy cover, tree heights, which vegetation is part of the predominant canopy, and which vegetation is dominant within the predominant canopy; therefore cannot be used as evidence. Please check the Queensland Herbarium's *Methodology for survey and mapping of regional ecosystems and vegetation communities in Queensland* to assist with recording site data and observations.

Attachment 2 – Glossary

<p>Legislation</p>	<p>What is it?</p> <p>The vegetation management framework includes:</p> <ul style="list-style-type: none"> • <i>Vegetation Management Act 1999</i> (VMA) • <i>Vegetation Management Regulation 2023</i> (VMR) • <i>Planning Act 2016</i> (PA) • <i>Planning Regulation 2017</i> <p>What is it used for?</p> <p>The VMA</p> <ul style="list-style-type: none"> • provides definitions • provides landowners with the ability to lodge PMAV applications and have appeal rights • provides for the ability to replace PMAVs • provides for regional ecosystems under the vegetation management framework to be identified in the <i>Vegetation Management Regional Ecosystem Description Database</i> (VM REDD) <p>The VMR</p> <ul style="list-style-type: none"> • gives effect to prescribed accepted development vegetation clearing codes • prescribes the fee for making a PMAV <p>The PA (and superseded <i>Sustainable Planning Act 2009</i> (SPA) and <i>Integrated Planning Act 1997</i> (IPA))</p> <ul style="list-style-type: none"> • identifies clearing activities that are not assessable development (exempt clearing activities) <p>Where can it be found?</p> <ul style="list-style-type: none"> • Queensland Legislation website (https://www.legislation.qld.gov.au/)
<p>The Regulated Vegetation Management Map</p>	<p>What is it?</p> <p>This is the statutory map that shows vegetation category areas for the state;</p> <ul style="list-style-type: none"> • category A areas • category B areas • category C areas • category R areas • category X areas <p>What is it used for?</p> <ul style="list-style-type: none"> • Identifying the category area to determine requirements for exemptions, permits etc for specific activities <p>Where can it be found?</p> <ul style="list-style-type: none"> • Queensland Globe (https://qldglobe.information.qld.gov.au/)

	<ul style="list-style-type: none"> Downloaded in a vegetation management report for a specific lot (https://www.resources.qld.gov.au/qld/environment/land/vegetation/vegetation-map-request-form)
<p>The vegetation management regional ecosystem map</p>	<p>What is it?</p> <p>This mapping shows:</p> <ul style="list-style-type: none"> polygons which identify the regional ecosystem numbers of the regional ecosystems that are mapped as occurring within category A, B and C areas. The polygons can contain a single regional ecosystem (homogeneous polygon) or multiple regional ecosystems (heterogeneous polygon) the class (using a colour code) of the regional ecosystem for homogeneous polygons and the colour code of the highest class regional ecosystem for heterogeneous polygons. percentages of each regional ecosystem for heterogeneous polygons wetlands identified on the vegetation management wetlands map watercourses and drainage features identified on the vegetation management watercourse and drainage feature map essential habitat for threatened species shown on the essential habitat map <p>What is it used for?</p> <ul style="list-style-type: none"> Identifying what regional ecosystems might exist within certain areas Identifying what watercourses and drainage features might be present in an area <p>Where can it be found?</p> <ul style="list-style-type: none"> Queensland Globe (https://qldglobe.information.qld.gov.au/) Downloaded in a vegetation management report for a specific lot (https://www.resources.qld.gov.au/qld/environment/land/vegetation/vegetation-map-request-form)
<p>The Vegetation Management Regional Ecosystem Description Database (VM REDD), the Queensland Herbarium Regional Ecosystem Description Database and regional ecosystem technical descriptions</p>	<p>What are they?</p> <p>The VM REDD is an online database that lists regional ecosystems under the Vegetation Management framework, making it easy to find relevant information about regional ecosystems and their class.</p> <p>You can search the VM REDD online, or you can download the entire database into an excel spreadsheet so you can access it offline. Relevant information within the database includes:</p> <ul style="list-style-type: none"> Regional ecosystem number i.e. bioregion – landzone - plants VMA class i.e. least concern, of concern and endangered Long description of the regional ecosystem – detailed information about the regional ecosystem such as species (including understorey species), variants of the regional ecosystem, and may include information about soils, geology and landforms. Short description of the regional ecosystem – basic information such as the predominant canopy species, canopy cover structure (eg. grassland, open woodland, woodland, open forest etc) VMA Structure category (eg. sparse, dense) <p>The VM REDD will usually be updated annually with scientific information received from the Queensland Herbarium. The updates will align to reflect the regional ecosystem</p>

	<p>numbers, descriptions and classes for regional ecosystems in the Queensland Herbarium Regional Ecosystem Description Database (Queensland Herbarium REDD), however, the regional ecosystems will reflect the class requirements set out under the VMA.</p> <p>The Queensland Herbarium REDD is used for a number of other planning and management applications, and may contain additional information and supplementary data such as references to documentation that has been used to create the regional ecosystem.</p> <p>The Queensland Herbarium's regional ecosystem technical descriptions provide a detailed description of the normal range in structure and floristic composition of remnant regional ecosystems and their component vegetation communities. They should be used in conjunction with the fields from the VM REDD for a normal description of the regional ecosystem.</p> <p>Technical descriptions include the attributes of tree canopy height* and cover* and native plant species composition of the predominant layer, which are used to assess the class of vegetation under the <i>Vegetation Management Act 1999</i>. However, as technical descriptions reflect the normal range in structure and floristic composition across the climatic, natural disturbance and geographic range of the regional ecosystem, local reference sites should be used where possible.</p> <p>They are only available for some regional ecosystems in some bioregions (Brigalow Belt, Einasleigh Uplands, Central Queensland Coast, South East Queensland and Capricornia Cays).</p> <p>What are they used for?</p> <p>They can be used to:</p> <ul style="list-style-type: none"> • search information about regional ecosystems • determine whether a grassland regional ecosystem is unregulated ('grassland' structure category) or regulated ('woody grassland' structure category) • find additional information and supplementary data about regional ecosystems • assess on-ground data for meeting remnant criteria <p>Where can they be found?</p> <ul style="list-style-type: none"> • VM REDD (https://www.qld.gov.au/environment/land/management/vegetation/maps/regional-ecosystems-lookup) • Queensland Herbarium REDD (https://apps.des.qld.gov.au/regional-ecosystems/) • Regional ecosystem technical descriptions* (https://publications.qld.gov.au/dataset/re-technical-descriptions) <p>*Note the lower value in any range of values should be used for comparison</p>
<p>Preclear regional ecosystem maps</p>	<p>What is it?</p> <p>Regional ecosystems are vegetation communities in a bioregion that are consistently associated with a particular combination of geology, landform and soil. They are mapped by the Queensland Herbarium and are certified for use under the VM framework periodically.</p> <p>The Herbarium have also produced a 'preclear' regional ecosystem map that identifies the regional ecosystems as they would have been prior to broadscale development occurring in Queensland (1960s). This mapping is useful where areas are mapped as non-remnant (category C, R and X) to provide information on the possible regional ecosystems present on site.</p>

	<p>What is it used for?</p> <p>It can be used to:</p> <ul style="list-style-type: none"> • identify the possible regional ecosystems in the survey area (both current and 'preclear') • identify possible reference sites <p>Where can it be found?</p> <ul style="list-style-type: none"> • Queensland Globe (https://qldglobe.information.qld.gov.au/) • Downloaded in a vegetation management report for a specific lot (https://www.resources.qld.gov.au/qld/environment/land/vegetation/vegetation-map-request-form)
<p>Land zones in Queensland</p>	<p>What is it?</p> <p>Land zones are categories that describe the major geologies and associated landforms and geomorphic processes in Queensland. The differences between land zones result in marked differences in the function of ecosystems and their associated biodiversity and this is due in part to the effects that geology (lithology, structure, alteration) has on landform, hydrology and landscape processes (geomorphology and soil formation).</p> <p>What is it used for?</p> <p>They can be used to:</p> <ul style="list-style-type: none"> • Inform which regional ecosystem should be mapped, or why a regional ecosystem is mapped at a location • determine appropriateness of reference sites and survey sites <p>Where can it be found?</p> <ul style="list-style-type: none"> • https://www.qld.gov.au/environment/plants-animals/plants/ecosystems/descriptions/land-zones
<p>Watercourse and drainage feature mapping</p>	<p>What is it?</p> <p>The Vegetation Management Watercourse and Drainage Feature Map, as defined by s20AB of the <i>Vegetation Management Act 1999</i>, identifies those features of interest in VM assessments.</p> <p>What is it used for?</p> <p>It can be used to:</p> <ul style="list-style-type: none"> • identify landform features that may inform landzone • identify areas subject to category R provisions <p>Where can it be found?</p> <ul style="list-style-type: none"> • Queensland Globe (https://qldglobe.information.qld.gov.au/) • Downloaded in a vegetation management report for a specific lot (https://www.resources.qld.gov.au/qld/environment/land/vegetation/vegetation-map-request-form)
<p>LiDAR</p>	<p>What is it?</p> <p>LiDAR (<i>Light Detection and Ranging</i>) is a remote sensing method that uses light in the form of a pulsed laser to map the ground surface and objects present on the surface of the</p>

	<p>Earth. These light pulses generate precise, three-dimensional information about the shape of the Earth and its surface characteristics.</p> <p>What is it used for?</p> <p>It can be used to:</p> <ul style="list-style-type: none"> • Identify slope changes to inform landzone • Identify drainage patterns and high and low banks of watercourses and drainage features to inform the accurate location of category R areas
<p>Topographic maps</p>	<p>What is it?</p> <p>Topographic maps show detailed, accurate graphic information about the shape of the land and include both natural features and built structures such as:</p> <ul style="list-style-type: none"> • cultural: roads, buildings, urban development, railways, airports, names of places and geographic features, administrative boundaries, state and international borders, reserves • hydrography: lakes, rivers, streams, swamps, coastal flats • relief: elevation, mountains, valleys, contours and cliffs, depressions • vegetation: wooded and cleared areas, vineyards and orchards. <p>What is it used for?</p> <p>They can be used to:</p> <ul style="list-style-type: none"> • determine slope and changes in slope to inform landzone • identify landform features to inform landzone • determine aspect to identify appropriateness of reference sites and survey sites • identify features such as swamp areas as evidence for vegetation type <p>Where can it be found?</p> <ul style="list-style-type: none"> • Queensland Globe (https://qldglobe.information.qld.gov.au/) • QTopo (https://www.business.qld.gov.au/running-business/support-assistance/mapping-data-imagery/maps/topographic-maps) • Geoscience Australia (http://www.ga.gov.au/scientific-topics/national-location-information/topographic-maps-data)
<p>Geology mapping</p>	<p>What is it?</p> <p>A geological map is a special-purpose map made to show geological features such as rock units or geologic strata, bedding planes as well as structural features such as faults, folds, foliations, and lineations which give these features' three-dimensional orientations.</p> <p>What is it used for?</p> <p>They can be used to:</p> <ul style="list-style-type: none"> • determine underlying geology to inform landzone • identify landform features from changes in geology to inform landzone • determine appropriateness of reference sites and survey sites <p>Where can it be found?</p> <ul style="list-style-type: none"> • GeoResGlobe (https://georesglobe.information.qld.gov.au/)

	<ul style="list-style-type: none"> • QDEX (https://www.business.qld.gov.au/industries/mining-energy-water/resources/online-services/qdex-data) <p>*Note, the actual hard copy geology map may provide additional details, such as deep weathering, that may not show in a spatial dataset. These can be downloaded from QDEX.</p>
Soil mapping	<p>What is it?</p> <p>Soil mapping identifies the dominant soil in a particular area. Over 150 soil and land resources mapping projects have been carried out in Queensland since the mid-1950s. These projects were conducted for different purposes and are different survey types and scales.</p> <p>What is it used for?</p> <p>They can be used to:</p> <ul style="list-style-type: none"> • determine soil type and depth to inform landzone • identify landform features from changes in soil to inform landzone • determine appropriateness of reference sites and survey sites <p>Where can it be found?</p> <ul style="list-style-type: none"> • QSpatial (specific to survey) • Queensland Globe (https://qldglobe.information.qld.gov.au/) • Soil survey and soil series information (https://data.qld.gov.au/dataset/soils-series)
Bore records	<p>What is it?</p> <p>Bore records are records that the driller must supply to the department when a bore is drilled. They often include a description of strata, water levels and water quality.</p> <p>What is it used for?</p> <p>They can be used to:</p> <ul style="list-style-type: none"> • determine underlying geology to inform landzone <p>Where can it be found?</p> <ul style="list-style-type: none"> • Queensland Globe (https://qldglobe.information.qld.gov.au/)
Stereoscope analysis	<p>What is it?</p> <p>Stereoscopy is a technique for creating or enhancing the illusion of depth in an image. It creates the illusion of three-dimensional depth from two slightly different two-dimensional images. It exaggerates depth and uses aerial photography.</p> <p>What is it used for?</p> <p>It can be used to:</p> <ul style="list-style-type: none"> • identify landform features from changes in topography observed through the stereoscope to determine landzone
Aerial photography and orthophotos	<p>What is it?</p> <p>Air photos are generally high resolution imagery with orthophotos being images where the distortions of the Earth (being a sphere) are removed providing an accurate representation of the Earth. The Queensland government has more than 1 million air photos of Queensland from the 1930s. Recent imagery can be found on the Queensland Globe while QImagery houses a catalogue of historical air photos.</p>

	<p>What is it used for?</p> <p>It can be used to:</p> <ul style="list-style-type: none"> • Determine vegetation cover change over time • Provide visualisation of conditions at a point in time <p>Where can it be found?</p> <ul style="list-style-type: none"> • Queensland Globe (https://qldglobe.information.qld.gov.au/) • QImagery website (https://qimagery.information.qld.gov.au/)
<p>Satellite imagery</p>	<p>What is it?</p> <p>Satellite imagery is imagery taken from a satellite and can be of varying resolution. The following are the most common used:</p> <ul style="list-style-type: none"> • LandSat – generally low resolution but good for a quick look • QSat (PlanetLab) – a near daily feed of high resolution (3m) images covering the whole of Queensland • SPOT • Earth-i • Sentinel <p>What is it used for?</p> <p>It can be used to:</p> <ul style="list-style-type: none"> • Determine vegetation cover change over time • Provide visualisation of conditions at a point in time <p>Where can it be found?</p> <ul style="list-style-type: none"> • Queensland Globe (https://qldglobe.information.qld.gov.au/) • QSpatial (http://qldspatial.information.qld.gov.au/catalogue/custom/index.page) • GloVis for LandSat (https://glovis.usgs.gov/)
<p>CSIRO Land Research Surveys</p>	<p>What is it?</p> <p>The CSIRO undertook surveys in western Queensland from 1946 and published them from 1977. Each land system map is accompanied by a report that outlines topography, vegetation, soils, climate, geology and geomorphology.</p> <p>What is it used for?</p> <p>It can be used to:</p> <ul style="list-style-type: none"> • Determine underlying geology to inform landzone • Identify landform features that may inform landzone • Identify vegetation (groups) that may inform a requested vegetation change <p>Where can it be found?</p> <ul style="list-style-type: none"> • http://www.publish.csiro.au/cr
<p>Reference books</p>	<p>What is it?</p> <p>Reference books can provide valuable information regarding vegetation and site characteristics where site data is not known or requires confirmation.</p>

	<p>What is it used for?</p> <p>It can be used to:</p> <ul style="list-style-type: none"> • Identify vegetation • Determine tree heights • Determine vegetation structure • Determine landzones <p>Where can they be found?</p> <ul style="list-style-type: none"> • Library services <p>Common references include:</p> <ul style="list-style-type: none"> • Australian Soil and Land Survey Handbooks including the 'yellow' book (http://www.publish.csiro.au/books/series/44) • Landzones of Queensland (https://www.ehp.qld.gov.au/assets/documents/plants-animals/ecosystems/land-zones-queensland.pdf) • Brooker and Kleinig's <i>Field guide to eucalypts</i> • Eric Anderson's <i>Plants of central Queensland</i> (http://www.publish.csiro.au/book/7305) • Jenny Wilson's <i>Trees and shrubs of north-west Queensland</i> • John Beasley's <i>Plants of Cape York</i> and <i>Plants of Tropical North Queensland</i>
<p>Technical expertise</p>	<p>What is it?</p> <p>Asking an expert can save time and frustration. Environmental consultants, botanists, branches of Native Plants Queensland, and staff at the Queensland Herbarium might be willing to share their knowledge and expertise on a matter.</p> <p>What is it used for?</p> <p>They can be used to provide advice on:</p> <ul style="list-style-type: none"> • Landzones • Vegetation • Survey sites • Imagery interpretation • Location of additional information • Compare to their specimen collection • Onground experience <p>Where can they be found?</p> <ul style="list-style-type: none"> • https://www.qld.gov.au/environment/plants-animals/plants/herbarium • https://www.jcu.edu.au/australian-tropical-herbarium • https://npq.org.au/ • Search the internet or phone book

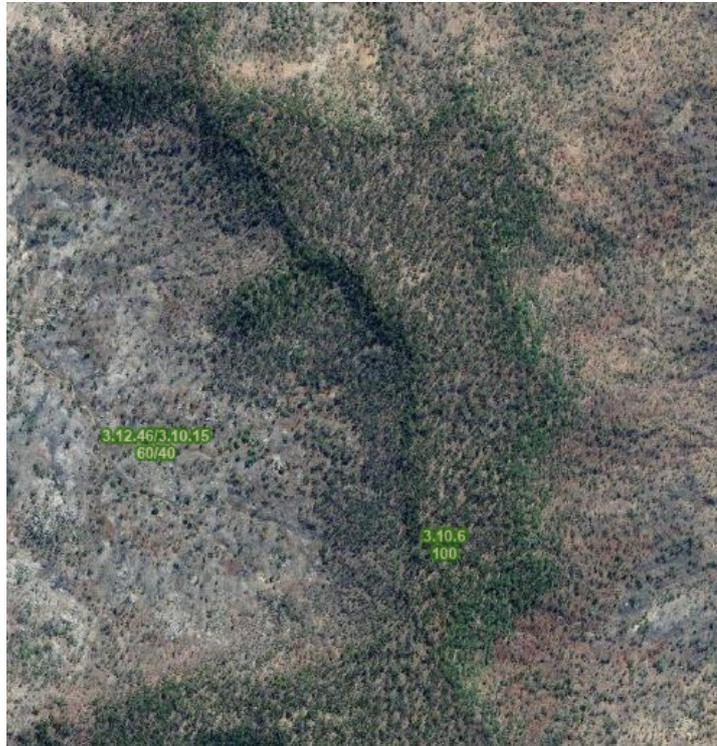
Attachment 3 – Guidance for Aerial Imagery Interpretation

Delineating between regional ecosystems

Textures, patterns and colour can help interpret satellite imagery and aerial photos.

The first image clearly shows different textures and colours, and therefore different regional ecosystems (REs). The denser and darker RE is 3.10.6 – a Darwin stringybark woodland on sandstone plateaus. The sparser and lighter coloured RE is 3.12.46/3.10.15, with numbers 60/40 underneath. This means this polygon (area within the lines) has:

- 60% RE 3.12.46 (Melaleuca shrubland on exposed igneous headlands and hills), and
- 40% RE 3.10.15 (Green-leaf box low open woodland on sandstone hillslopes)



A transitional zone may exist where there will be a mixture of both Darwin stringybark and Melaleuca or box.

The mapped regional ecosystem is influenced by a number of factors including:

- Soil type
- Soil depth
- Change in slope
- Aspect
- the underlying landzone (landzone 10 or 12 in the example shown).

The second image shows the Vegetation Management Regional Ecosystem Map.

RE 3.12.46/3.10.15 is orange, which means the class is “of concern”. RE3.10.6 is green, which means the class is “least concern”.