

## ENVIRONMENTAL SITE INSPECTION REPORT

### INDICATIVE TARGETED VEGETATION ASSESMENT

#### Lot 27 Tredrea Road Environmental Offset Area

SITE INSPECTION DETAILS		
<b>Date:</b>	11/3/2021	
<b>Location:</b>	Lot 27 Tredrea Road, Myalup	
<b>Region:</b>	Southwest	
<b>Purpose:</b>	To map the location and extent of the Tuart ( <i>Eucalyptus gomphocephala</i> ) woodlands and forests of the Swan Coastal Plain ecological community.	
<b>Attendees:</b>	Botanist #1	Senior Environment Officer, Main Roads Has 14 years of experience in environmental consulting and scientific research with specialist experience in ecological survey and environmental monitoring.
	Botanist #2	Senior Environment Officer, Main Roads Has more than 20 years' experience conducting flora and vegetation assessments on the southern Swan Coastal Plain.
BACKGROUND		
<p>Lot 27 Tredrea Road is located in Myalup, approximately 24 kilometres north of Bunbury (Figures 1 and 2). The site has been secured by Main Roads as an offset for the Bunbury Outer Ring Road project in relation to the Tuart (<i>Eucalyptus gomphocephala</i>) woodlands and forests of the Swan Coastal Plain (Tuart Woodlands) which is listed under the Commonwealth <i>Environment Protection and Biodiversity Conservation Act 1999</i> as a critically endangered Threatened Ecological Community (TEC) and a Priority three Priority Ecological Community (PEC) by the Department of Biodiversity, Conservation and Attractions (DBCA).</p> <p>DBCA have mapped the Tuart Woodlands TEC/PEC as potentially occurring on the site (Figure 3) (DBCA-048 dataset), and it was also known from previous visits to the site that the community was present onsite. The extent of the community had not been mapped however, therefore an indicative targeted survey to assess the status of the vegetation was required.</p> <p>Occurrences of Tuart Woodlands TEC/PEC are determined through assessment against key diagnostic characteristics as defined by the Threatened Species Scientific Committee (TSSC) (2019) (Table 1). Once the presence of Tuart Woodlands TEC/PEC has been confirmed at a site, a 'patch assessment' must be undertaken according to the methodology described in TSSC (2019) to identify how many individual areas of the TEC/PEC are present. Patches may extend beyond the defined survey area. Patches larger than 5 ha do not require survey to determine that they are the Tuart Woodlands TEC/PEC, but survey may assess in impact assessment and planning (TSSC 2019).</p>		

Table 1. Tuart Woodlands TEC/PEC key diagnostic characteristics.

#### Key diagnostic characteristics

Patch occurs in the Swan Coastal Plain bioregion.

Primarily occurs on the Spearwood and Quindalup dune systems, but can also occur on the Bassendean dunes and Pinjarra Plain. It can also occur on the banks of rivers and wetlands.

The presence of at least two living established *Eucalyptus gomphocephala* (Tuart) trees in the uppermost canopy layer, although they may co-occur with trees of other species.

There is a gap of no more than 60 m between the outer edges of the canopies of adjacent Tuart trees.

#### SITE DESCRIPTION

Lot 27 is approximately 40 ha. It is adjoined to the south and east by mostly cleared farmland, and to the north and west by remnant vegetation (Figure 2). It contains both upland and wetland landforms and associated vegetation, with the majority of the site being upland. In the west, it is situated on the Quindalup dunes and in the east, on the Spearwood dunes. A linear wetland orientated north-south is present in the western third of the site, this is associated with the swale at the interface between the two dune systems.

Throughout the site, the canopy of upland vegetation is dominated by Tuart (*Eucalyptus gomphocephala*) and Jarrah (*Eucalyptus marginata*) woodland. *Corymbia calophylla* (Marri) and *Eucalyptus decipiens* are present in places. The canopy of low lying areas are dominated by *Melaleuca raphiophylla*, *M. huegelii* and *Agonis flexuosa*, with Tuart present along the wetland margin.

#### SITE VISIT DETAILS AND METHODOLOGY

The site had previously been visited by Main Roads officers in November, 2020, and the areas potentially comprising Tuart Woodlands TEC were identified at this time. The site was re-visited by the same Main Roads officers on 11 March 2021 in order to confirm and map the extent of the TEC/PEC.

As the purpose of the survey was to map the presence of Tuart Woodland TEC/PEC, a detailed flora survey involving the use of quadrats was not conducted. Also due to time constraints, not all of the individual Tuart trees present onsite could be mapped. Instead, mapping of individual Tuart trees was conducted where this was required to confirm the presence and extent of a patch, which was within vegetation in the eastern third of the site. The condition of vegetation was also recorded according to EPA (2016) and additional notes taken according to Table 2 of the TSSC (2019) conservation advice.

Only vegetation containing Tuart was mapped during the site assessment.

## RESULTS

### Vegetation types

There are five areas of Tuart-dominated vegetation on site; a Tuart-Jarrah-Peppermint-Banksia woodland and a degraded very open Tuart-Peppermint woodland in the east, an upland Tuart-Peppermint woodland in the central portion, a lowland Tuart-Peppermint woodland in the western portion associated with a dune swale wetland, and an upland Tuart woodland adjacent to the western boundary (Figure 4).

### Vegetation condition

The condition of vegetation varies across the site.

The lowland Tuart-Peppermint woodland was rated as Very High according to the scale defined by the TSSC (2019) and Excellent according to the EPA (2016). The Tuart-Jarrah-Peppermint-Banksia woodland rated as High-Very High/Good-Very Good (TSSC/EPA), while the upland Tuart-Peppermint woodland rated as Moderate-High/Good-Very Good (TSSC/EPA). The very open Tuart-Peppermint woodland rated as Poor/Degraded (TSSC/EPA) and the upland Tuart woodland was not assessed due to time constraints (Figure 5).

The very open Tuart-Peppermint woodland comprises of a highly disturbed area associated with historic sand extraction activities. It is highly likely that this area supports Tuart Woodlands TEC/PEC although this could not be confirmed during the site assessment. If this area is confirmed to be TEC/PEC, the Tuart-Jarrah-Peppermint-Banksia woodland and upland Tuart-Peppermint woodland, currently mapped as two separate patches, would be considered a single patch featuring a Degraded central portion.

### Tuart Woodlands TEC/PEC

At least 31.6 ha of vegetation on Lot 27 meets the TSSC (2019) criteria and is considered to represent Tuart Woodlands TEC/PEC. The TEC/PEC is present onsite within three patches (Figure 6). A patch assessment has been completed for each patch, as presented in Tables 2-4. Figure 7 shows the foot traverses travelled during the survey, and also each Tuart tree mapped within Patch 1.

Table 2. Patch 1 assessment.

Criteria	Assessment
Area (ha) within survey area	12.74 ha
Estimated total patch size	>23 ha. Patch extends beyond the survey area to the south
Vegetation type	Open forest of <i>Eucalyptus gomphocephala</i> with occasional <i>Eucalyptus marginata</i> over <i>Agonis flexuosa</i> and <i>Banksia attenuata</i>
Vegetation condition	High-Very High
Number of Tuart trees present	Approximately 167
Structural form and size (diameter at breast height (DBH)) of Tuarts	Occurs as an open forest. Tuart tree DBH ranges from 15 to >150 cm DBH
Landscape, habitat and regeneration evidence	Provides a landscape function of being within 100 m of another patch of native vegetation. Evidence of smaller trees at 15 cm DBH that have recruited from a previous disturbance event.

<b>Outcome of patch assessment</b>	Meets the key diagnostic characteristics of the Tuart Woodlands TEC/PEC as the patch is > 5 ha and therefore there is no condition threshold required to be met. Patch 1 represents Tuart Woodlands TEC/PEC.
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Table 3. Patch 2 assessment.

Criteria	Assessment
Area (ha) within survey area	15.12 ha
Estimated total patch size	Approximately 19 ha. Patch extends beyond the survey area to the north and south.
Vegetation type	Open forest of <i>Eucalyptus gomphocephala</i> over <i>Agonis flexuosa</i>
Vegetation condition	Moderate-High
Number of Tuart trees present	More than 150 Tuart trees in the patch over 15 cm DBH
Structural form and size (diameter at breast height (DBH)) of Tuarts	Occurs as an open forest. Tuart tree DBH ranges from 15 to >150 cm DBH
Landscape, habitat and regeneration evidence	Provides a landscape function of being within 100 m of another patch of native vegetation. Evidence of smaller trees at 15 cm DBH that have recruited from a previous disturbance event.
<b>Outcome of patch assessment</b>	Meets the key diagnostic characteristics of the Tuart Woodlands TEC/PEC as the patch is > 5 ha and therefore there is no condition threshold required to be met. Patch 2 represents Tuart Woodlands TEC/PEC.

Table 4. Patch 3 assessment.

Criteria	Assessment
Area (ha) within survey area	3.77 ha
Estimated total patch size	Approximately 5.8 ha. Patch extends beyond the survey area to the north.
Vegetation type	Open forest of <i>Eucalyptus gomphocephala</i> over <i>Agonis flexuosa</i>
Vegetation condition	Very High
Number of Tuart trees present	More than 20 Tuart trees in the patch over 15 cm DBH
Structural form and size (diameter at breast height (DBH)) of Tuarts	Occurs as an open forest. Tuart tree DBH ranges from 15 to >150 cm DBH
Landscape, habitat and regeneration evidence	Provides a landscape function of being within 100 m of another patch of native vegetation. Evidence of smaller trees at 15 cm DBH that have recruited from a previous disturbance event.
<b>Outcome of patch assessment</b>	Meets the key diagnostic characteristics of the Tuart Woodlands TEC/PEC as the patch is > 5 ha and therefore there is no condition threshold required to be met. Patch 3 represents Tuart Woodlands TEC/PEC.

## DISCUSSION AND CONCLUSION

Lot 27 contains more than 31.6 ha of Tuart Woodlands TEC/PEC in three confirmed patches.

Two additional areas also potentially meeting the criteria defined by the TSSC (2019) for the TEC/PEC were unable to be assessed but are considered highly likely to represent the TEC/PEC. These areas are shown on Figure 6, and comprise:

- The very open upland Tuart-Peppermint woodland vegetation type, located between patches 1 and 2 that was previously partially cleared and disturbed for sand mining (which is confirmed, would join patches 1 and 2 into a single patch), and

- The upland Tuart woodland vegetation, located along the western boundary, which appears to be in Good-Very Good condition and is connected to a very large (> 100 ha) expanse of intact Tuart woodland vegetation on the adjoining land to the west .

Upland Tuart-dominated vegetation in the west is likely to represent floristic community types (FCT) as defined by Gibson *et al.* (1994) FCT30b (Quindalup *Eucalyptus gomphocephala* and / or *Agonis flexuosa* woodlands PEC) and in the east FCT25 (Southern *Eucalyptus gomphocephala*-*Agonis flexuosa* woodlands PEC), although this would need to be confirmed through a detailed spring survey and subsequent multivariate analysis.

Natural regeneration of both canopy and understorey species is present throughout Tuart-dominated vegetation onsite.

## REFERENCES

Department of the Environment and Energy (DotEE) (2019). *Approved Conservation Advice (incorporating listing advice) for the Tuart (Eucalyptus gomphocephala) woodlands and forests of the Swan Coastal Plain ecological community.*

Department of Conservation and Land Management (2003) Tuart Woodlands (Tuart Atlas DBCA-048) accessed via <https://catalogue.data.wa.gov.au/dataset/tuart-woodlands>

Environmental Protection Authority (2016) *Technical Guidance: Flora and Vegetation Surveys for Environmental Impact Assessment.* Environmental Protection Authority, Western Australia.

Gibson N, Keighery BJ, Keighery GJ, Burbidge AH and Lyons MN (1994). *A floristic survey of the southern Swan Coastal Plain: report to Heritage Council of W.A. and Australian Heritage Commission.* Department of Conservation and Land Management, Western Australia

Main Roads Western Australia (2020) *Technical Guidance Factsheet Threatened Ecological Community Tuart (Eucalyptus gomphocephala) Woodlands and Forests of the Swan Coastal Plain.*

## **Figures**

**Figure 1. Site Location Map**

**Figure 2. Survey Area**

**Figure 3. Predicted Tuart Woodlands Extent (DBCA-048)**

**Figure 4. Vegetation Types**

**Figure 5. Vegetation Condition**

**Figure 6. Tuart Woodlands TEC/PEC Extent**


**Figure 7. Traverses and Individual Tuart Trees**

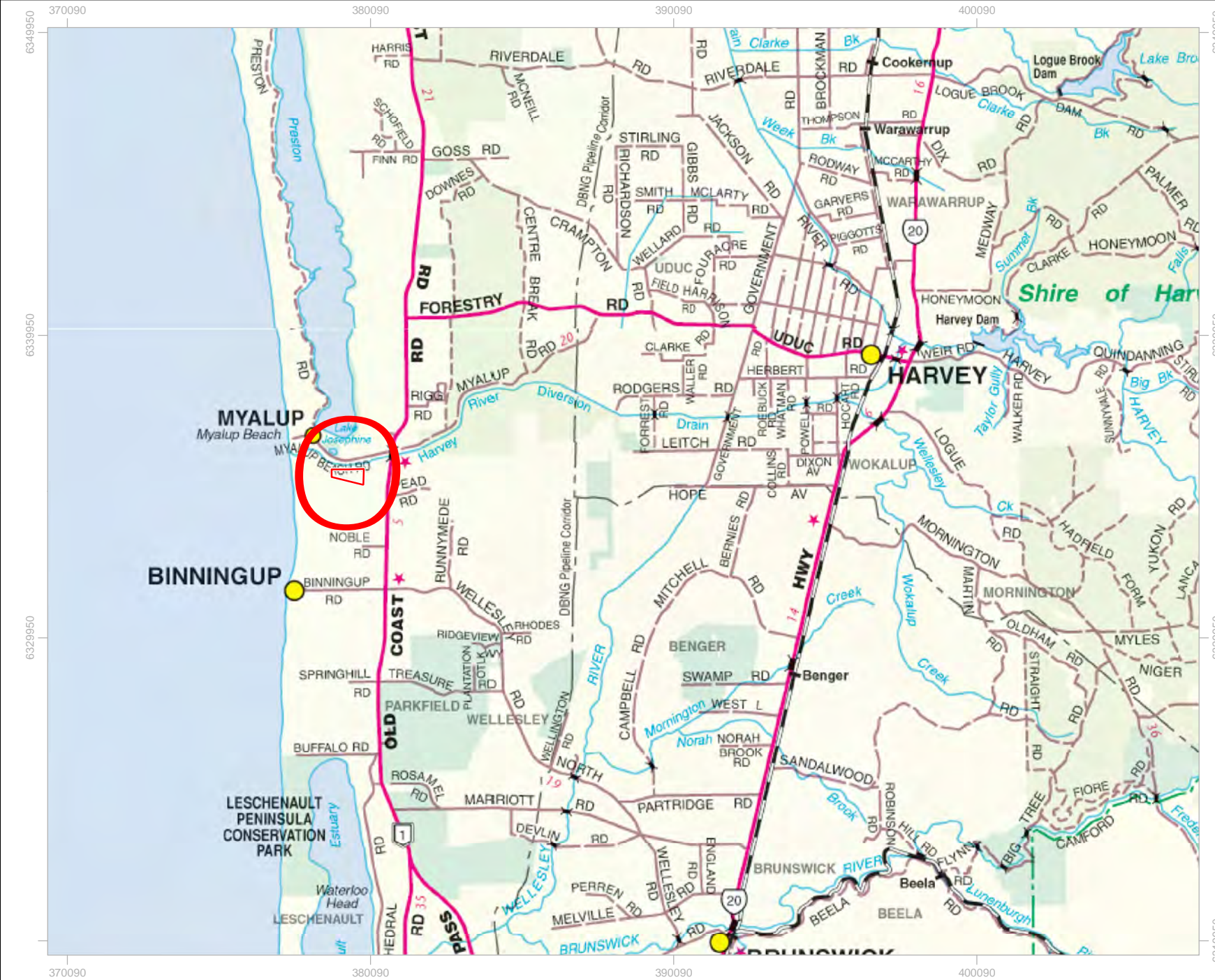
**Figure 1**

**Lot 27 Tredrea Road, Myalup**

Offset Area

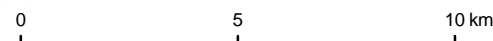
**Legend**

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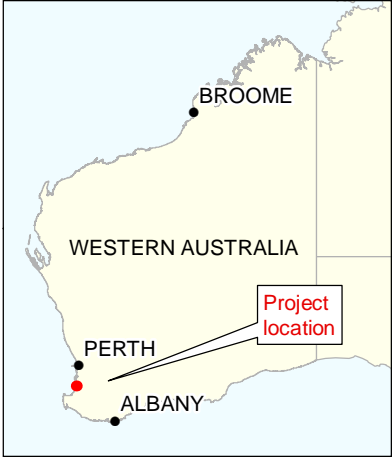
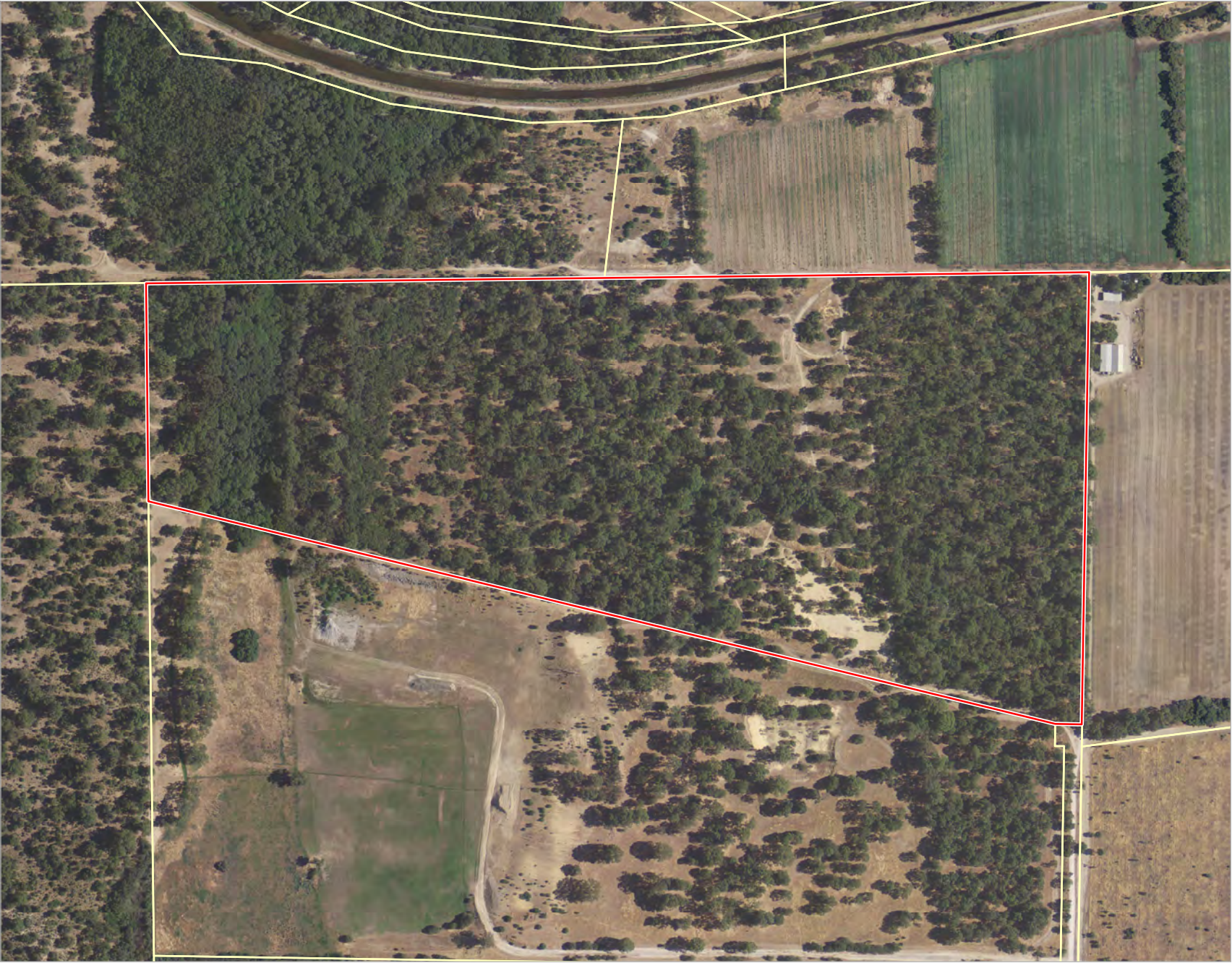
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Lot 27 Tredrea Road, Myalup

Offset Area

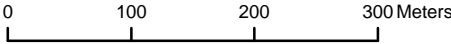
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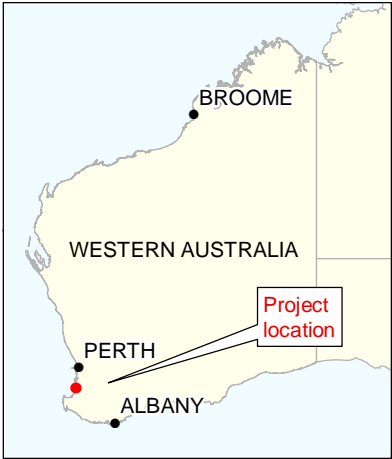
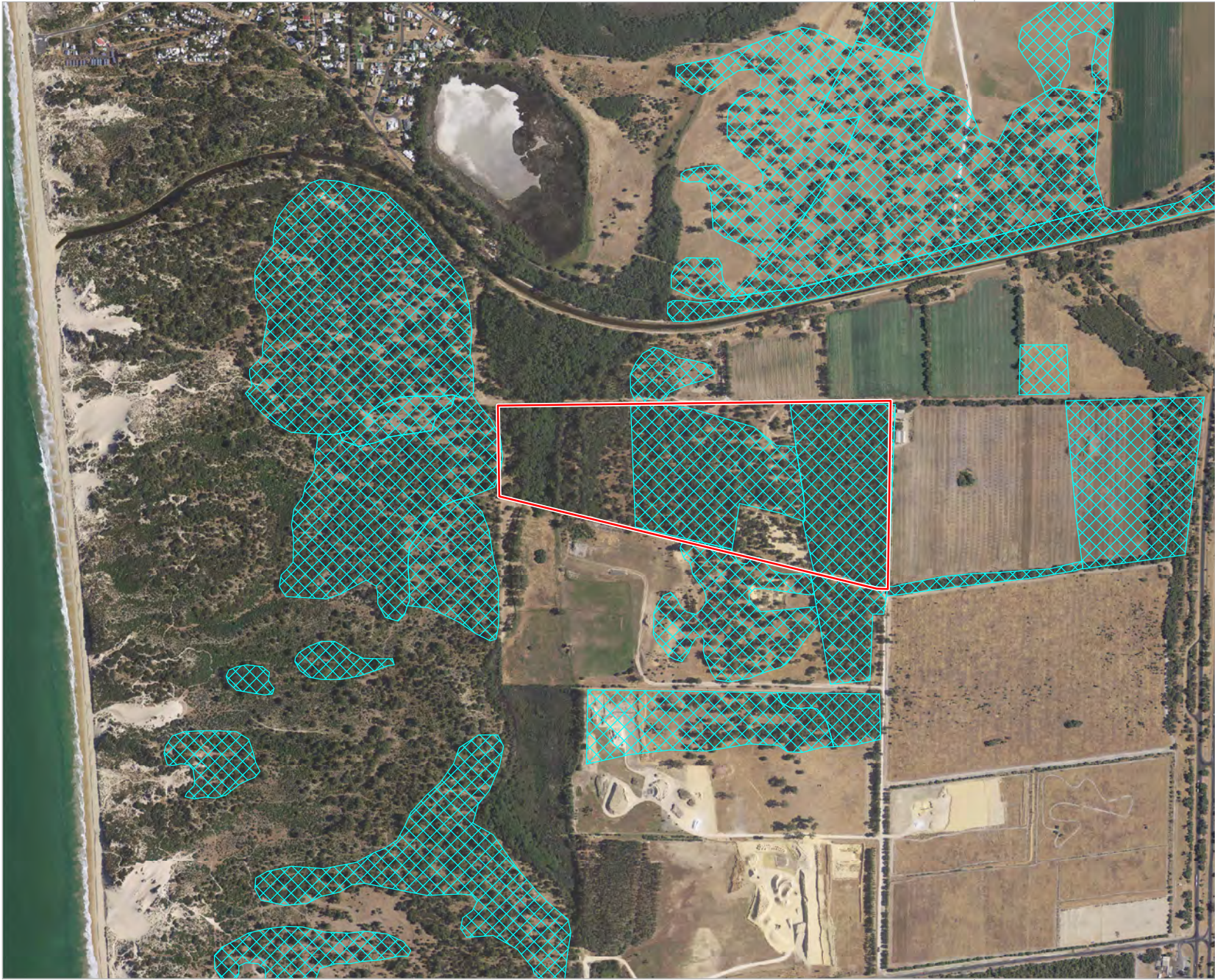
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Lot 27 Tredrea Road, Myalup

Offset Area

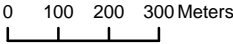
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- Survey Area
- Predicted Tuart Woodlands extent [DBCA\_048]



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Figure 4

Lot 27 Tredrea Road, Myalup

Offset Area

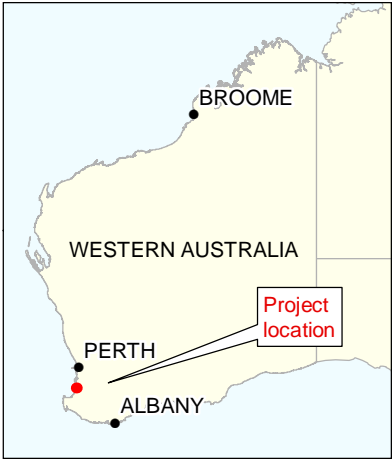
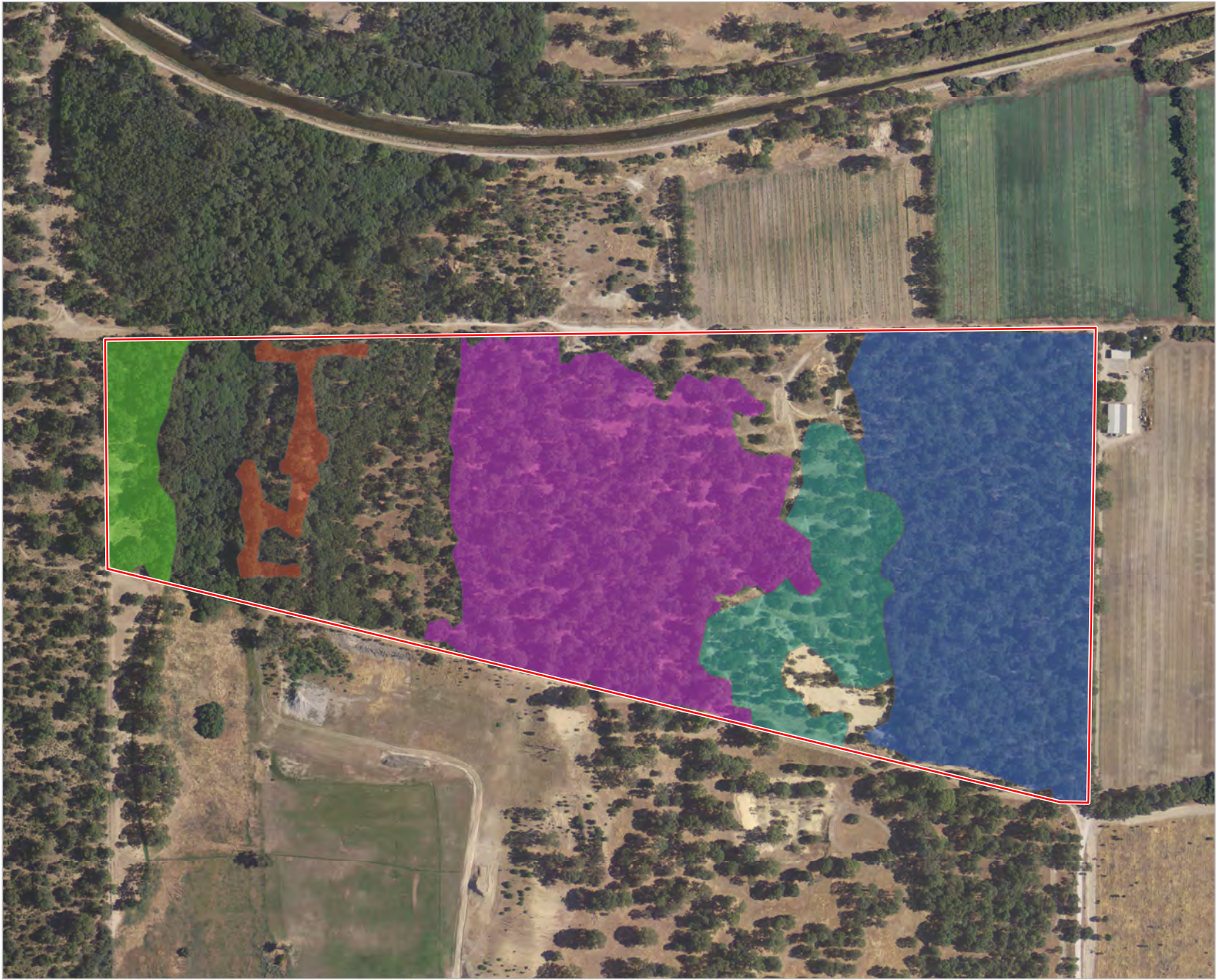
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Survey Area

Tuart Woodlands

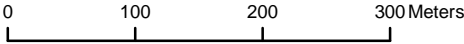
Vegetation Type

- Tuart-Jarrah-Peppermint-Banksia woodland
- Very open Tuart-Peppermint woodland
- Upland Tuart-Peppermint woodland
- Lowland Tuart-Peppermint woodland
- Upland Tuart woodland



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Figure 5

Lot 27 Tredrea Road, Myalup

Offset Area

Legend

Survey Area

Tuart Woodlands

Vegetation Condition  
(EPA 2016/TSSC 2019)

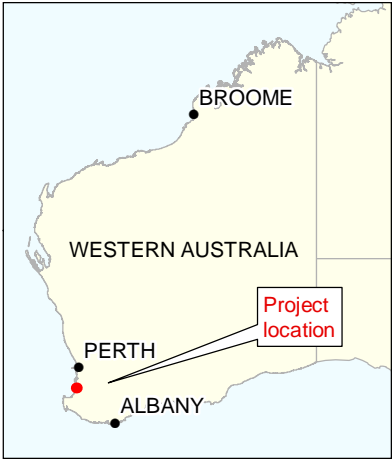
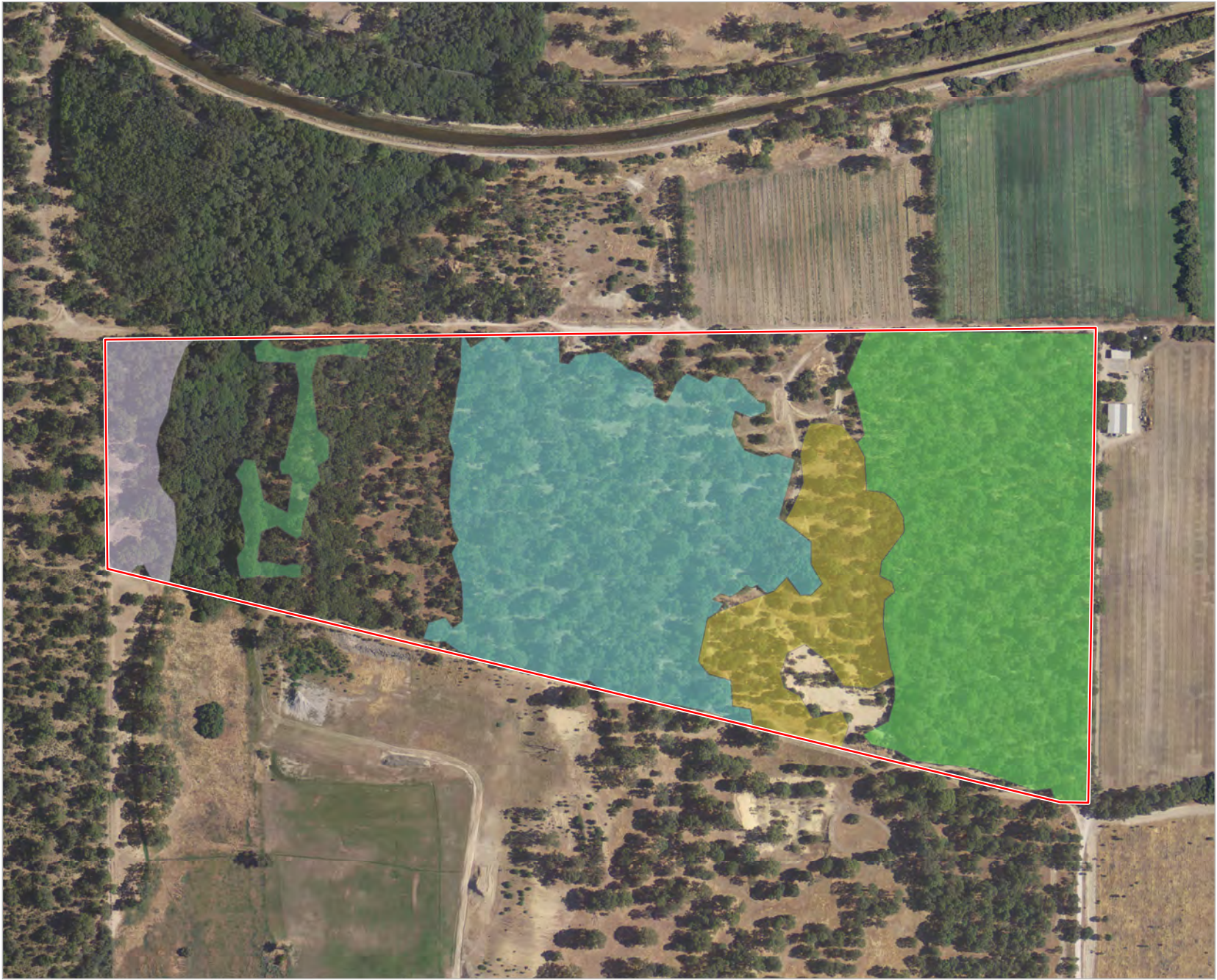
Excellent/Very High

Good-Very Good/High-Very High

Good-Very Good/Moderate-High

Degraded/Poor

Unconfirmed



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**Figure 6**

**Lot 27 Tredrea Road, Myalup**

Offset Area

**Legend**

 Survey Area

**Tuart Woodlands**

**TEC Status**

 Confirmed

 Unconfirmed



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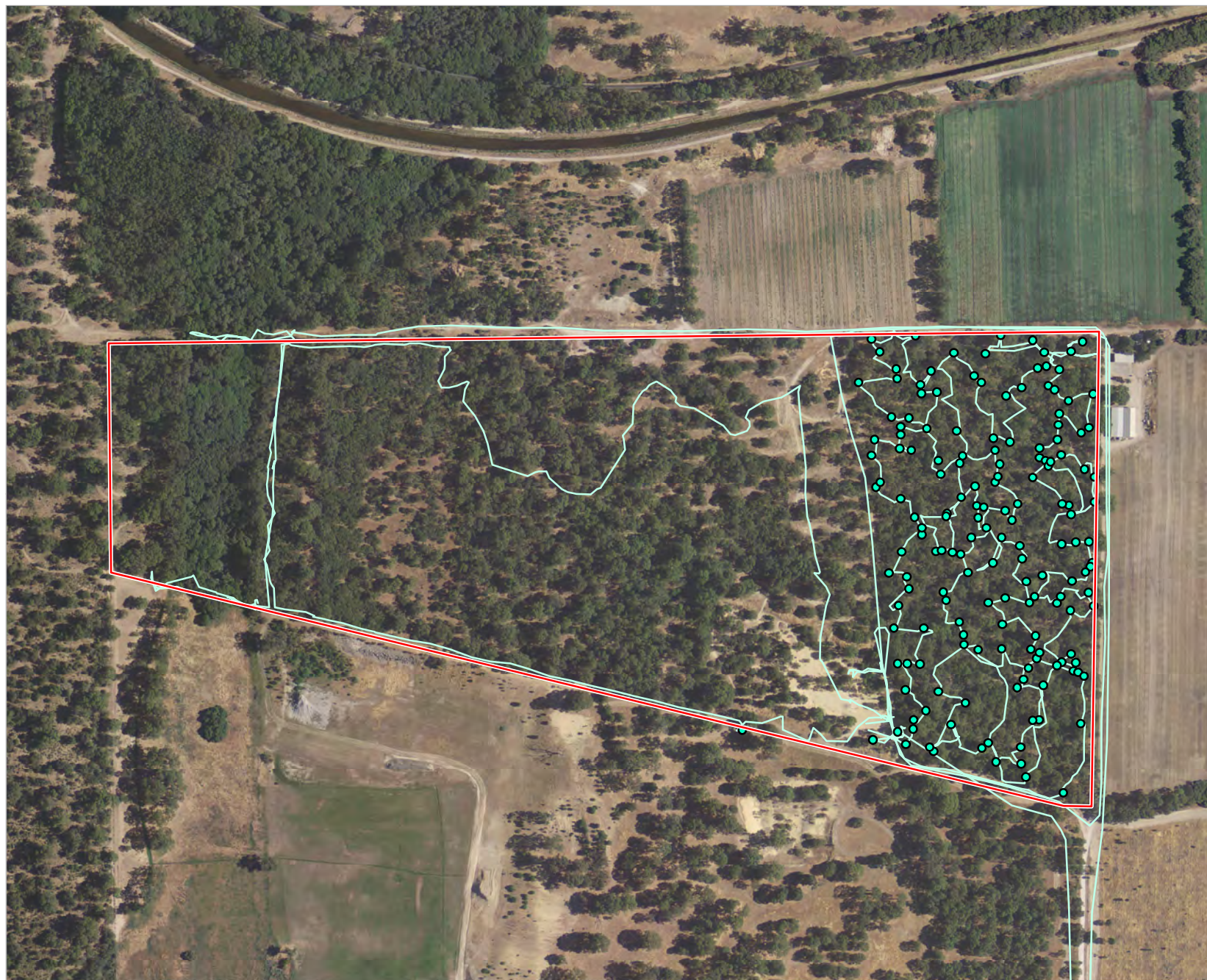
# Figure 7

Lot 27 Tredrea Road, Myalup

Offset Area

## Legend

-  Survey Area
-  Individual Tuart trees
-  Traverses



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