Memorandum T154

Client:	**Sathya Olive Company**
Attention:	Mrs Tanuja Sanders 7553 Forrest Highway Parkfield WA 6233
From:	Ecoedge Environmental Services Debbie Brace Director debbie@ecoedge.com.au 0484 771 825
Date:	6 October 2023
Subject:	T154 Sathya Olive farm Tuart Ecological Community assessment, 2023.

1 Introduction

Reference: CPS 9989/1

On 22 November 2022, Mrs T Sanders applied for a clearing permit under section 51E (1) of the *Environmental Protection Act 198*6 (the EP Act) for the clearing of approximately 3.2 hectares (ha) (the 'survey area') (**Figure 1**), of native vegetation for the purpose of horticulture – olive trees plantation. The Department of Water and Environmental Regulation (DWER) has requested additional information to make an assessment for this clearing permit application.

DWER advised that there may be Tuart (*Eucalyptus gomphocephala*) woodlands and forests of the Swan Coastal Plain ecological community[1] (Tuart TEC PEC) within the area and that this should be investigated to ascertain whether there are any constraints in this regard.

Mrs Sanders engaged Ecoedge Environmental Services (Ecoedge) to confirm the presence/absence of the Tuart TEC PEC. The surrounding areas will also be surveyed to determine the size of potential Tuart patches.

This memo provides the results of this investigation.

[1] The State lists the Tuart (*Eucalyptus gomphocephala*) woodlands and forests of the Swan Coastal Plain ecological community as a Priority 3 ecological community.

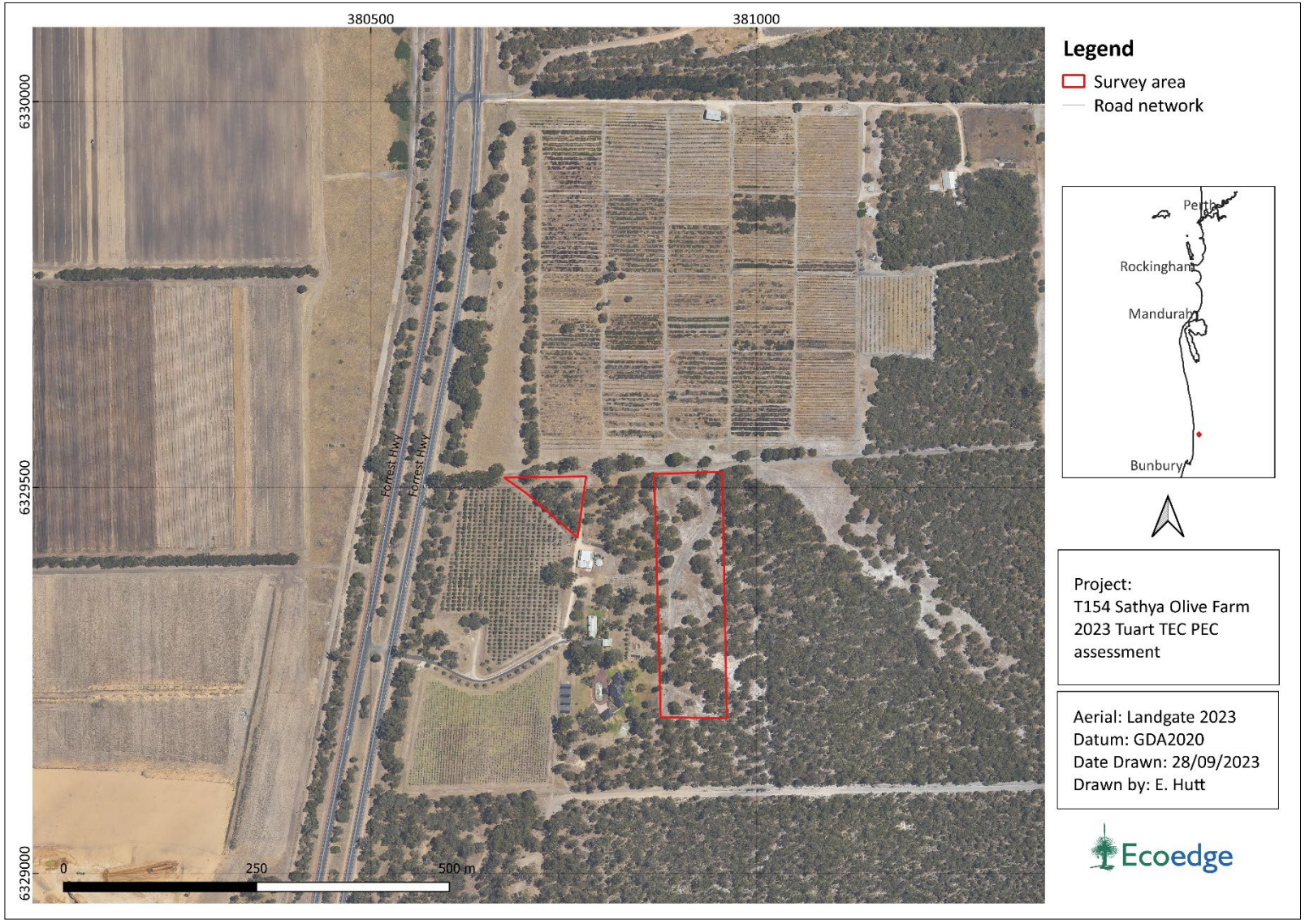

Figure 1. Location of the proposed clearing permit area/survey area.

2 Methods

The assessment/survey was carried out by suitably qualified botanists who undertook the survey in accordance with the Department of Climate Change, Energy, the Environment and Water (DCCEEW) "Approved Conservation Advice (incorporating listing advice) for the Tuart (*Eucalyptus gomphocephala*) woodlands and forests of the Swan Coastal Plain ecological community" (DoEE, 2019). All patches[2] of Tuart were investigated as potential occurrences of the Federally[3] listed critically endangered (CR) and State priority 3 (P3) ecological community.

The survey was conducted on 4 September 2023 by Russell Smith (flora permit FB62000500) and Colin Spencer (flora permit FB62000169) who both hold tertiary qualifications in environmental science and have combined 35 years' experience undertaking flora and vegetation surveys within the Swan Coastal Plain (SCP) bioregion.

The canopy boundaries of Tuart trees observed to be on the edge of a patch were marked in the field with a Garmin GPS receiver (general accuracy +-3 m). The distance between canopy boundaries of observed patches of Tuart trees was measured. Where a gap of > 60 m was determined using GPS receiver a separate patch was determined to be present.

Potential Tuart patches were traversed, by foot, to determine the presence, size and density of established Tuart trees[4] to get an understanding of the overall variations of the vegetation community and to map vegetation condition.

Note: that areas east and south adjacent the survey area were visually inspected with no tuarts found, hence no tracklogs in this area because it could be easily seen from the survey area, and classified Banksia woodland with no Tuarts.

Condition threshold assessments (using the Keighery scale, **Appendix 1**) were conducted for each patch through a combination of 10 x 10 m Tuart assessment site and general observations of the survey area. The attributes collected for each assessment site are presented in **Table 1**.

Post-survey, the boundaries of the Tuart trees were mapped using QGIS software and then buffered by 30 m. Any intersecting buffer areas were regarded as being part of a single patch. Gardens, cleared farmland and long stretches of road are excluded from the patch areas. Patch areas were calculated on the remaining areas.

The location of tuart tree location and track logs are shown in **Figure 2**.

Table 1. Attributes collected at each Tuart assessment site.

Attributes
Site ID and location
Patch Number/ID
Longitude and latitude
Date
Landform
Topography
Soil
Condition rating using scale in EPA (2016)

[2] A Tuart patch comprises of two or more tuart trees less than 60 m from each other.

[3] The description, area and condition thresholds that apply to the EPBC-listed TEC, also apply to this Priority ecological community.

[4] Trees with a diameter of >= 15 cm diameter at breast height (DBH).

Disturbances (e.g. fire, grazing, clearing, weeds, hydrological change, drought)
Approximate number of Tuart trees in patch (can be estimated from patch mapping)
Structural form and size (DBH) of Tuart
Percentage cover of native understorey present (includes ground layer and upper shrub layer to 3 m)
List of native understorey species present (includes ground layer and upper shrub layer to 3 m)
Weed cover (%) and dominant weed species
Size of patch (in ha) within and outside of the survey area
Indicators of important landscape, habitat or regeneration evidence (including photographs)
Any other field notes
Photograph

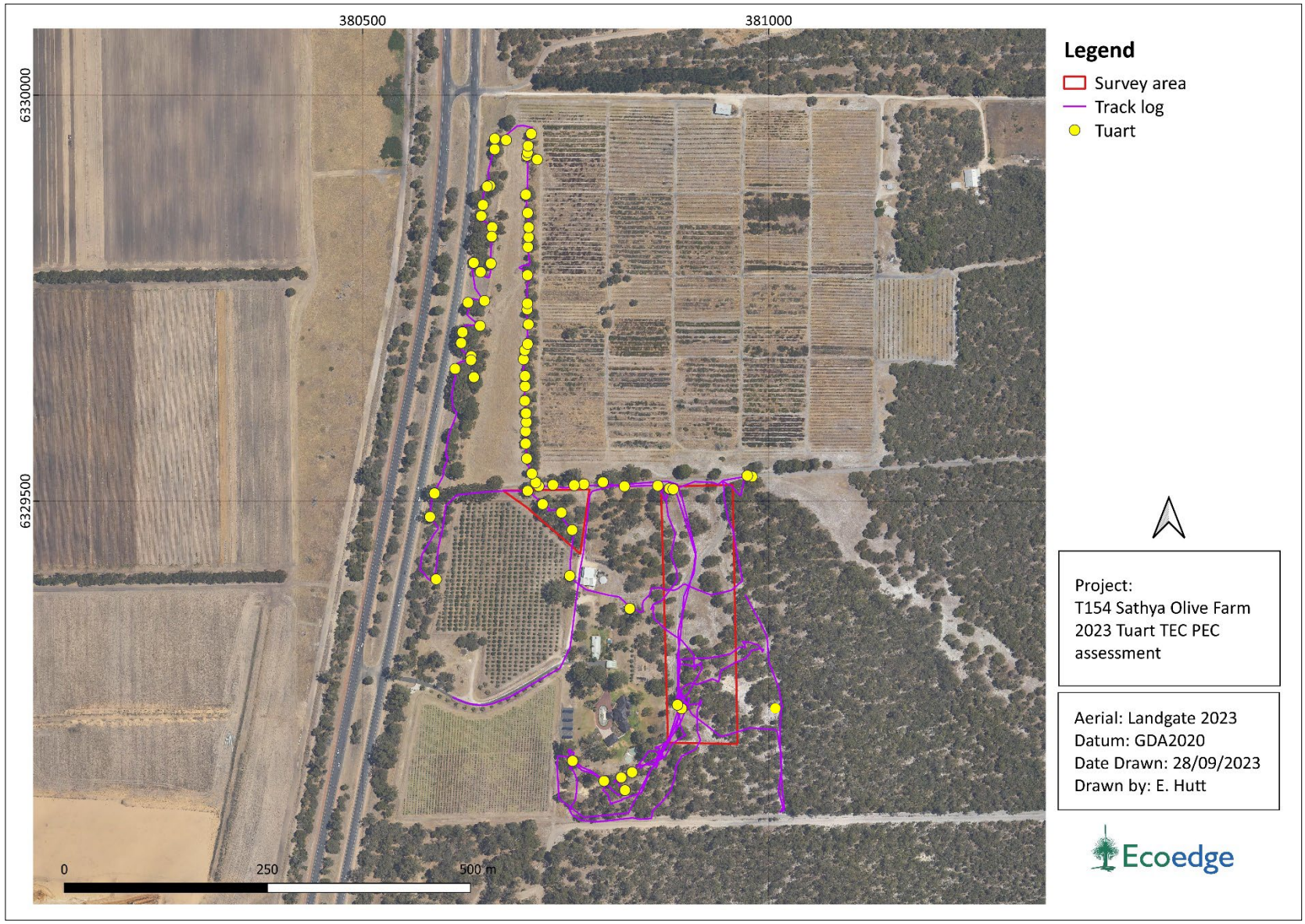

Figure 2. Survey track logs and tuart trees.

3 Results

Four patches meeting the key diagnostics characteristics (**Table 2**) of Tuart woodland (Patch 1, Patch 2, Patch 3 and Patch 4) were found during the site survey. Of these only Patch 1, Patch 2 and Patch 4 intersected the survey area. These intersecting patches were assessed in accordance with the TEC area and condition thresholds to determine their TEC status.

The results of the ten Tuart TEC PEC assessment sites are summarised in **Table 3**. This information was used to determine the condition of these patches.

Patch 1 (3.69 ha) had less than 50% native understorey species, greater than 70% weed cover and three or less native species per assessment site. The vegetation for this patch was classified as Completely Degraded according to the Keighery scale (**Appendix 1**) and 'Poor' according to the condition scale in the Tuart TEC conservation advice (Table 1, page 25 TSSC, 2019, **Appendix 2**). The results are presented in **Table 4**.

Patch 2 (1.8 ha) was rated as almost (98%) Completely Degraded or Degraded, using the Keighery scale with less than 50% (CS01 >=50%) native species and between 30-70% weed cover. The three assessment sites installed in this Degraded or Completely Degraded vegetation (SAN01, SAN02 and SAN04) had 3, 6 and 3 native species respectively. Only a small portion of the patch was rated as Good (CS06) and had twelve native understorey species. The results are presented in **Table 5.**

Patch 3 (0.44 ha) is not connected with the survey area, in completely degraded condition.

Patch 4 (0.31 ha) had two tuart trees, with the 30 m buffer just within the survey area and was in a completely degraded vegetation condition.

Note: All occurrences of Tuart trees that could be seen occurring adjacent or within the survey area were investigated. There are no track lines adjacent to the survey because it was clear from within the survey area, that there were no Tuarts there. Notes were taken during the survey for this area describing it as Banksia woodland, absent in Tuart.

The full data sets, including photographs, for each assessment site are provided in **Appendix 3**.

Figure 3 shows the Tuart 30 m buffer, patches of potential Tuart TEC PEC and vegetation condition of these areas.

Table 2. Key diagnostic characteristics of the Tuart Woodland EC.

Key diagnostic characteristics	Assessment outcome within survey area
Patches occur in the Swan Coastal Plain bioregion.	Yes
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.	Yes occurs on Spearwood soils
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.	Yes Tuart trees identified on site with a diameter at breast height greater than 50 cm
There is a gap of no more than 60 m between the outer edges of the canopies of adjacent Tuart trees.	Yes Some trees had a gap less than 60 m

Table 3. Summary of Tuart patch assessments within the survey area.

Patch	Site assessment code	Condition on site (Keighley scale)	% of native understorey	% Weed cover	Number understorey natives	Conservation advice - condition category
1	CS01	Completely degraded	<50%	>70%	1	Poor
	CS02	Completely degraded	<50%	>70%	1	Poor
	CS04	Completely degraded	<50%	>70%	3	Poor
	CS05	Completely degraded	<50%	>70%	1	Poor
2	CS06	Degraded	>=50%	30-70%	12	Very high
	San01	Degraded	<50%	30-70%	6	Moderate
	San02	Degraded	<50%	>70%	3	Poor
	San03	Good	<50%	30-70%	18	Very high
	San04	Degraded	<50%	>70%	3	Poor
3	CS03	Completely degraded	-	-	-	Less than 0.5 ha
4	Relevé	Completely degraded	-	-	-	Less than 0.5 ha

Table 4. Patch 1 assessment site summary.

Patch No.	Patch 1
Patch assessment sites	CS01, CS02, CS04, CS05
Vegetation condition (Keighery scale)	Completely degraded
Area within the survey area	0.484 ha
Total estimated patch size	3.69 ha
% of understory natives	<50%
% of weed cover	>70%
Does the patch meet condition and area thresholds	No
Summary of Comments Patch 1 is not an occurrence of the Tuart TEC PEC. This patch was completely degraded, with less than 50% understorey vegetation being native. All of the assessment sites in this patch had 3 or less native understorey species.	

Table 5. Patch 2 assessment summary.

Patch No.	Patch 1
Patch assessment sites	CS06, SAN01, SAN02, SAN03, SAN04
Vegetation condition (Keighery scale)	Completely Degraded/Degraded with a small patch of Good (0.074 ha)
Patch within the survey area	0.43 ha
Total estimated patch size	1.8 ha
% of understory natives	<50% or >= 50%
% of weed cover	30-70% or >70%
Does the patch meet condition and area thresholds	No
Summary of Comments Patch 2 is not an occurrence of the Tuart TEC PEC. This patch ranged from Completely Degraded to Good in condition, with the majority of the patch in a Degraded to Completely Degraded condition. Less than 50% of all understory vegetation is native. The three assessment points in the Degraded and Completely Degraded vegetation had less than 8 native species. Two small patches of Good condition were recorded, each with greater than 12 species but these areas only made up 2% of the total patch and could not be considered representative of the total patch.	

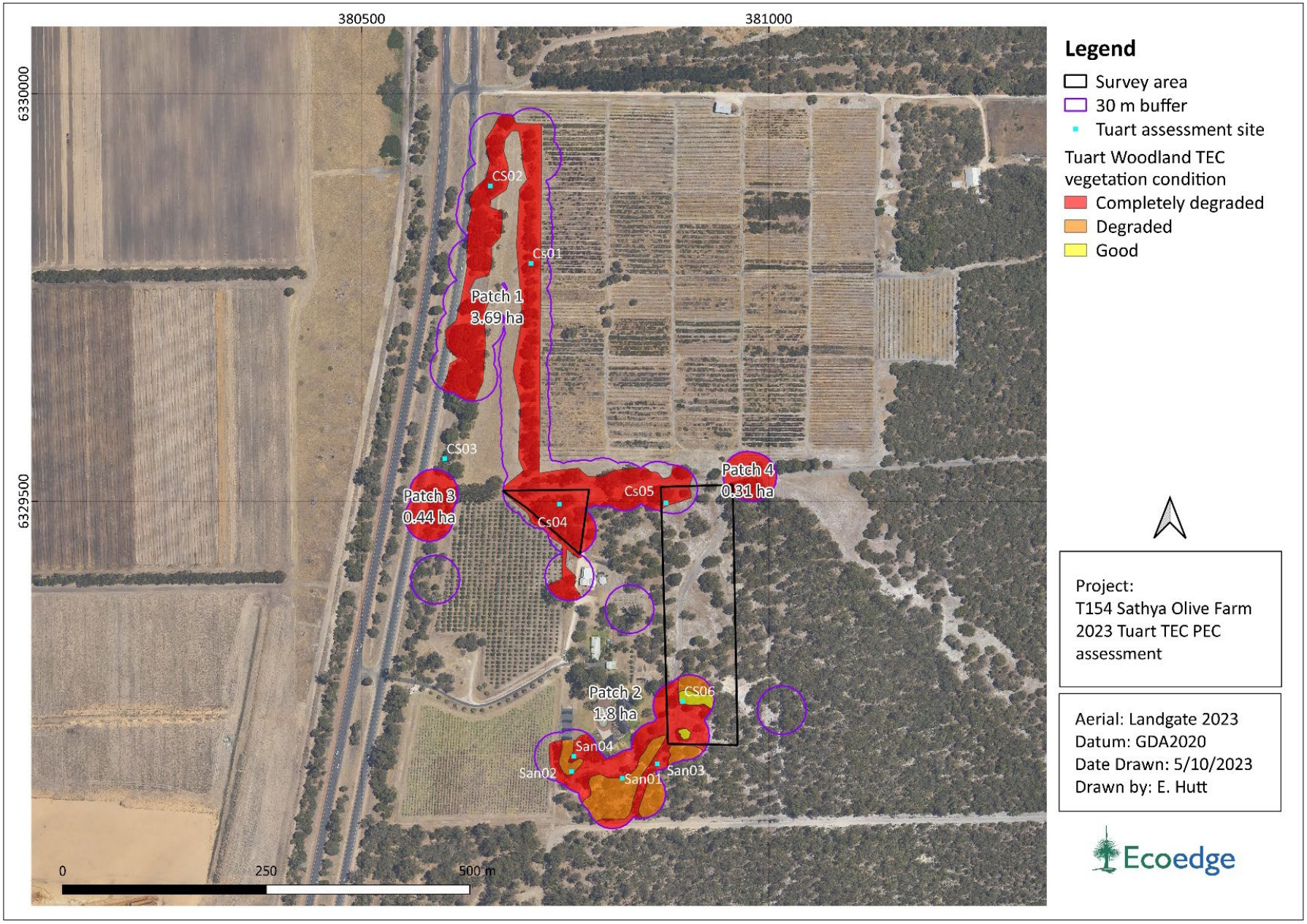

Figure 3. Location of patches of Tuart Woodland within the survey area.

4 Conclusions

No Tuart (*Eucalyptus gomphocephala*) woodlands and forests of the Swan Coastal Plain TEC (or State-listed PEC) were found during this survey. Therefore, there is no obligation to notify the Commonwealth Department of Climate Change, the Environment, Energy and Water (DCCEEW) under the Commonwealth EPBC Act.

Clearing of all native vegetation within Western Australia requires a permit from DWER.

5 References

Department of Environment and Conservation (DEC) (2013). *Definitions, categories and criteria for threatened and priority ecological communities*. Department of Environment and Conservation, Perth, Western Australia.

Department of the Environment and Energy (DotEE) 2019. *Tuart Woodlands and Forests of the Swan Coastal Pain: A Nationally Significant Ecological Commonwealth of Australia, 2019*.

Environmental Protection Authority of WA (2016). Technical Guidance Flora and Vegetation Surveys for Environmental Impact. EPA, Perth, Western Australia. http://www.epa.wa.gov.au/sites/default/files/Policies_and_Guidance/EPA/Technical/Guidance/FloraandVegetationsurvey_Dec13.pdf

Threatened Species Scientific Committee (TSSC, 2019). Approved Conservation Advice (incorporating listing advice) for the Tuart (*Eucalyptus gomphocephala*) woodlands and forests of the Swan Coastal Plain ecological community. Available from: http://www.environment.gov.au/biodiversity/threatened/communities/pubs/153-conservation-advice.pdf

6 Appendix

Appendix 1. Vegetation condition scale (EPA 2016).

Vegetation Condition	South West and Interzone Botanical Provinces
Pristine	Pristine or nearly so, no obvious signs of disturbance or damage caused by human activities since European settlement.
Excellent	Vegetation structure intact, disturbance affecting individual species and weeds are non-aggressive species. Damage to trees caused by fire, the presence of non-aggressive weeds and occasional vehicle tracks.
Very Good	Vegetation structure altered, obvious signs of disturbance. Disturbance to vegetation structure caused by repeated fires, the presence of some more aggressive weeds, dieback, logging and grazing.
Good	Vegetation structure significantly altered by very obvious signs of multiple disturbances. Retains basic vegetation structure or ability to regenerate it. Disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds, partial clearing, dieback and grazing.
Degraded	Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management. Disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds at high density, partial clearing, dieback and grazing.
Completely Degraded	The structure of the vegetation is no longer intact and the area is completely or almost completely without native species. These areas are often described as 'parkland cleared' with the flora comprising weed or crop species with isolated native trees and shrubs.

Appendix 2. Extract from the TSSC, 2019 conservation advice.

3.3.1 Condition categories and thresholds for patches of Tuart woodlands and forests

Table 2. Condition categories and thresholds

All patches ≥5 ha are part of the nationally protected ecological community, regardless of their understorey condition. That is, thresholds in this table do not apply to patches ≥5 ha, but the key diagnostic characteristics and patch definition must be met.

Patch size → Biotic thresholds ↓	≥2 ha <5 ha	≥0.5 ha <2 ha
Very high condition ≥80 % of all understorey^ vegetation cover is native# Or At least 12 native understorey^ species per 0.01 ha (10 m x 10 m plot or equivalent sample unit)	Medium sized patches with very high condition understorey. PART OF THE PROTECTED ECOLOGICAL COMMUNITY	Smaller patches with very high condition understorey. PART OF THE PROTECTED ECOLOGICAL COMMUNITY
High condition ≥60 % of all understorey^ vegetation cover is native# Or At least 8 native understorey^ species per 0.01 ha (10 m x 10 m plot or equivalent sample unit)	Medium sized patches with high condition understorey. PART OF THE PROTECTED ECOLOGICAL COMMUNITY	Smaller patches with high condition understorey. **AND** That either: have an important landscape role (≤100 m to native vegetation)* OR have a habitat role (≥2 very large trees per 0.5 ha)* OR show regeneration (≥15 seedlings and/or saplings per 0.5 ha)* PART OF THE PROTECTED ECOLOGICAL COMMUNITY
Moderate condition ≥50 % of all understorey^ vegetation cover is native# Or At least 4 native understorey^ species per 0.01 ha (10 m x 10 m plot or equivalent sample unit)	Medium sized patches with moderate condition understorey. **AND** That either: have an important landscape role (≤100 m to native vegetation)* OR have a habitat role (≥2 very large trees per 0.5 ha)* OR show regeneration (≥15 seedlings and/or saplings per 0.5 ha)* PART OF THE PROTECTED ECOLOGICAL COMMUNITY	NOT PART OF THE PROTECTED ECOLOGICAL COMMUNITY (but may be a focus for local protection or restoration)
Poor Has minimal or no native cover and species richness. That is: <50 % of all understorey^ vegetation cover is native# And Less than 4 native understorey^ species per 0.01 ha (10 m x 10 m plot or equivalent sample unit)	NOT PART OF THE PROTECTED ECOLOGICAL COMMUNITY (but may be a focus for local protection or restoration)	NOT PART OF THE PROTECTED ECOLOGICAL COMMUNITY (but may be a focus for local protection or restoration)

^ * – Table notes follow on the next page.

Appendix 3. Full assessments of tuart patches.

Patch name:	CS01
Latitude:	-33.1641
Longitude:	115.7207
Date:	2023-09-04
Estimated size of patch:	<5 ha
Site photo:	85d2c3e1-5552-4a0d-9597-e51c047f78cf
Photo direction:	South East
Landform system:	Spearwood
Topographic position:	Upland
Condition:	Completely degraded
Soil colour	Grey-brown
Soil type:	Sand
Structural form of tuart:	Single stem
Estimated number of Tuarts in patch:	70 in patch 1
Diameter at breast height:	>50 cm
% Cover native understory cover:	<50%
Disturbances:	
Weed cover:	>70%
Evidence of fire:	no
Time since fire:	-
Evidence of tuart dieback:	no

Level of dieback impact	-
Indicators of important landscape, habitat or regeneration features:	
Patch contains a mean of >= 2 trees >=50 cm DBH per half ha of any native tree:	yes
Other comments:	Most tuart are planted as part of windrows

List of species

Taxon Name
**Briza maxima*
**Ehrharta calycina*
Acacia cyclops
Agonis flexuosa
**Trachyandra divaricata*
**Melilotus indicus*
**Lupinus angustifolius*
**Ursinia anthemoides*

* Denotes non-native species

Patch name:	CS02
Latitude:	-33.1632
Longitude:	115.7201
Date:	2023-09-04
Estimated size of patch:	<5 ha
Site photo:	4a226387-2e5e-452b-84b3-afe4c2fa7ea8
Photo direction:	South
Landform system:	Spearwood
Topographic position:	Upland, Dry flat
Condition:	Completely degraded
Soil colour	Grey-brown
Soil type:	Sand
Structural form of tuart:	Single Stem
Estimated number of Tuarts in patch:	70 in patch 1
Diameter at breast height:	>50 cm
% Cover native understory cover:	>=50%
Disturbances:	
Weed cover:	>70%
Evidence of fire:	no
Time since fire:	-
Evidence of tuart dieback:	no
Level of dieback impact	-

Indicators of important landscape, habitat or regeneration features:	
Patch contains a mean of >= 2 trees >=50 cm DBH per half ha of any native tree:	yes
Other comments:	Some planted tuart

List of species

Taxon Name
Grevillea thelemeniana
**Briza maxima*
**Ehrharta calycina*
**Ehrharta longiflora*
**Avena barbata*
**Lupinus cosentinii*
**Lupinus angustifolius*

* Denotes non-native species

Patch name:	CS03
Latitude:	-33.1663
Longitude:	115.7195
Date:	2023-09-04
Estimated size of patch:	<5 ha
Site photo:	7471292f-a356-482c-bba6-1d73c3bdc677
Photo direction:	North East
Landform system:	Spearwood
Topographic position:	Dry flat
Condition:	Completely degraded
Soil colour	Grey-brown
Soil type:	Sand
Structural form of tuart:	Single Stem
Estimated number of Tuarts in patch:	3
Diameter at breast height:	>50 cm
% Cover native understory cover:	<50%
Disturbances:	
Weed cover:	>70%
Evidence of fire:	no
Time since fire:	-
Evidence of tuart dieback:	no

Level of dieback impact	-
Indicators of important landscape, habitat or regeneration features:	
Patch contains a mean of >= 2 trees >=50 cm DBH per half ha of any native tree:	yes
Other comments:	

List of species

Taxon Name
Caladenia latifolia
**Lupinus cosentinii*
**Euphorbia terracina*
**Cynodon dactylon*
**Avena barbata*
**Ehrharta longiflora*
Calothamnus quadrifidus
Grevillea sp.

* Denotes non-native species

Patch name:	CS04
Latitude:	-33.1668
Longitude:	115.721
Date:	2023-09-04
Estimated size of patch:	<5 ha
Site photo:	9f5bd536-62d2-4131-b4bb-8cb5df184afb
Photo direction:	North West
Landform system:	Spearwood
Topographic position:	Upland, Dry flat
Condition:	Completely degraded
Soil colour	Dark-brown
Soil type:	Sand
Structural form of tuart:	Single Stem
Estimated number of Tuarts in patch:	9 in CS04 with 70 in patch 1
Diameter at breast height:	>50 cm
% Cover native understory cover:	<50%
Disturbances:	
Weed cover:	>70%
Evidence of fire:	no
Time since fire:	
Evidence of tuart dieback:	no

Level of dieback impact	
Indicators of important landscape, habitat or regeneration features:	
Patch contains a mean of >= 2 trees >=50 cm DBH per half ha of any native tree:	yes
Other comments:	

List of species

Taxon Name
Agonis flexuosa
Banksia attenuata
**Briza maxima*
**Ehrharta longiflora*
Olea europaea subsp. europaea
**Euphorbia peplus*
**Trachyandra divaricata*
Caladenia latifolia
Alyxia buxifolia
**Romulea rosea*
**Trifolium repens var. repens*
Dichopogon capillipes

* Denotes non-native species

Patch name:	CS05
Latitude:	-33.1668
Longitude:	115.7224
Date:	2023-09-21
Estimated size of patch:	<5 ha
Site photo:	960c17bd-6c51-47a3-9ed0-7a03822f6aee
Photo direction:	South
Landform system:	Spearwood
Topographic position:	Dry flat
Condition:	Completely degraded
Soil colour	Grey-brown
Soil type:	Sand
Structural form of tuart:	Single Stem
Estimated number of Tuarts in patch:	70 in patch 1
Diameter at breast height:	>50 cm
% Cover native understory cover:	<50%
Disturbances:	
Weed cover:	>70%
Evidence of fire:	no
Time since fire:	-
Evidence of tuart dieback:	no
Level of dieback impact	-

Indicators of important landscape, habitat or regeneration features:	
Patch is less than 100 m from bushland > 1ha in at least good condition with >=50% native species:	yes
Patch contains a mean of >= 2 trees >=50 cm DBH per half ha of any native tree:	yes
Other comments:	Native bush in good or better condition to east of survey area

List of species

Taxon Name
Macrozamia riedlei
**Ehrharta calycina*
**Trachyandra divaricata*
**Ehrharta longiflora*
**Trifolium dubium*
**Trifolium repens var. repens*
Agonis flexuosa
**Briza maxima*
**Oxalis pes-caprae*

* Denotes non-native species

Patch name:	CS06
Latitude:	-33.169
Longitude:	115.7226
Date:	2023-09-04
Estimated size of patch:	0.5 - 2 ha
Site photo:	3ad0585d-5665-40aa-a6e7-789e92398dc2
Photo direction:	North West
Landform system:	Spearwood
Topographic position:	Dry flat, Upland
Condition:	Degraded
Soil colour	Grey-brown
Soil type:	Sand
Structural form of tuart:	Single Stem
Estimated number of Tuarts in patch:	7
Diameter at breast height:	>50 cm
% Cover native understory cover:	<=50%
Disturbances:	
Weed cover:	30-70%
Evidence of fire:	no
Time since fire:	-
Evidence of tuart dieback:	no
Level of dieback impact	-
Indicators of important landscape, habitat or regeneration features:	

Patch is less than 100 m from bushland > 1ha in at least good condition with >=50% native species:	yes
Patch contains a mean of >= 2 trees >=50 cm DBH per half ha of any native tree:	yes
The patch displays evidence of natural regeneration of at least a mean of 15 eucalypts seedling / saplings (<15 cm DBH) per half ha:	yes
Other comments:	

List of species

Taxon Name
Sowerbaea laxiflora
**Ehrharta calycina*
**Trachyandra divaricata*
**Trifolium dubium*
**Trifolium repens var. repens*
Hardenbergia comptoniana
Dichopogon capillipes
Leucopogon racemulosus
**Ursinia anthemoides*
**Oxalis pes-caprae*
**Ehrharta longiflora*
**Arctotheca calendula*
**Romulea rosea*
Macrozamia riedlei
Sowerbaea laxiflora
Caladenia latifolia
Bossiaea eriocarpa
Drosera porrecta
Acacia pulchella var. glaberrima
Desmocladus flexuosus
Centrolepis mutica
Lepidosperma squamatum

* Denotes non-native species

Patch name:	San01
Latitude:	-33.1698
Longitude:	115.7218
Date:	2023-09-04
Estimated size of patch:	<0.5 ha
Site photo:	bb930aaa-401e-499e-bed6-3ff87800ae58
Photo direction:	South West
Landform system:	Spearwood
Topographic position:	Upland
Condition:	Degraded
Soil colour	Grey-brown
Soil type:	Sand
Structural form of tuart:	Single Stem
Estimated number of Tuarts in patch:	7
Diameter at breast height:	>50 cm
% Cover native understory cover:	<50%
Disturbances:	
Weed cover:	30-70%
Evidence of fire:	yes
Time since fire:	>10 years
Evidence of tuart dieback:	no
Level of dieback impact	-

Indicators of important landscape, habitat or regeneration features:	
Patch is less than 100 m from bushland > 1ha in at least good condition with >=50% native species:	no
Patch contains a mean of >= 2 trees >=50 cm DBH per half ha of any native tree:	yes
The patch displays evidence of natural regeneration of at least a mean of 15 eucalypts seedling / saplings (<15 cm DBH) per half ha:	no
Other comments:	Most tuart are planted as part of windrows

List of species

Taxon Name
Eucalyptus gomphocephala var. gomphocephala
Agonis flexuosa
Hardenbergia comptoniana
Daviesia divaricata subsp. divaricata
Sowerbaea laxiflora
Lomandra micrantha subsp. micrantha
Dichopogon capillipes
Burchardia congesta

Patch name:	San02
Latitude:	-33.1697
Longitude:	115.7211
Date:	2023-09-04
Estimated size of patch:	<0.5 ha
Site photo:	546ff7bf-9b31-409e-942b-78e45c3579db
Photo direction:	South West
Landform system:	Spearwood
Topographic position:	Upland
Condition:	Degraded
Soil colour	Grey-brown
Soil type:	Sand
Structural form of tuart:	Single Stem
Estimated number of Tuarts in patch:	7
Diameter at breast height:	>50 cm
% Cover native understory cover:	<50%
Disturbances:	
Weed cover:	>70%
Evidence of fire:	yes
Time since fire:	>10 years
Evidence of tuart dieback:	no
Level of dieback impact	
Indicators of important landscape, habitat or regeneration features:	

Patch is less than 100 m from bushland > 1ha in at least good condition with >=50% native species:	no
Patch contains a mean of >= 2 trees >=50 cm DBH per half ha of any native tree:	yes
The patch displays evidence of natural regeneration of at least a mean of 15 eucalypts seedling / saplings (<15 cm DBH) per half ha:	yes
Other comments:	

List of species

Taxon Name
Eucalyptus gomphocephala var. gomphocephala
Agonis flexuosa
Dichopogon capillipes
Rhagodia baccata
Eucalyptus marginata
Conostylis aculeata

Patch name:	San03
Latitude:	-33.1697
Longitude:	115.7211
Date:	2023-09-04
Estimated size of patch:	<0.5 ha
Site photo:	55409b0b-cddc-4453-b588-e5b311a7d18e
Photo direction:	South West
Landform system:	Spearwood
Topographic position:	Upland
Condition:	Degraded
Soil colour	Grey-brown
Soil type:	Sand
Structural form of tuart:	Single Stem
Estimated number of Tuarts in patch:	7
Diameter at breast height:	>50 cm
% Cover native understory cover:	<50%
Disturbances:	
Weed cover:	>70%
Evidence of fire:	no
Time since fire:	
Evidence of tuart dieback:	no
Level of dieback impact	
Indicators of important landscape, habitat or regeneration features:	

Patch is less than 100 m from bushland > 1ha in at least good condition with >=50% native species:	no
Patch contains a mean of >= 2 trees >=50 cm DBH per half ha of any native tree:	yes
The patch displays evidence of natural regeneration of at least a mean of 15 eucalypts seedling / saplings (<15 cm DBH) per half ha:	no
Other comments:	

List of species

Taxon Name	Naturalised
Pterostylis sp.	
Hardenbergia comptoniana	
Macrozamia riedlei	
Kennedia prostrata	
Hovea trisperma var. trisperma	
Sowerbaea laxiflora	
Conostylis aculeata	
**Oxalis pes-caprae*	
Microlaena stipoides	
**Ehrharta calycina*	
Drosera erythrorhiza	
Corymbia calophylla	
Dichopogon capillipes	
Drosera pallida	
Gompholobium tomentosum	
**Ehrharta longiflora*	
Trachymene pilosa	
Daviesia divaricata subsp. divaricata	
Lomandra micrantha subsp. micrantha	
Drosera stolonifera	
Caladenia flava subsp. flava	
**Ursinia anthemoides*	
Burchardia congesta	

* Denotes non-native species

Patch name:	San04
Latitude:	-33.1696
Longitude:	115.7212
Date:	2023-09-04
Estimated size of patch:	0.5 - 2 ha
Site photo:	1a9c4887-a315-4019-be81-a2f94469288d
Photo direction:	East
Landform system:	Spearwood
Topographic position:	Upland
Condition:	Degraded
Soil colour	Grey-brown
Soil type:	Sand
Structural form of tuart:	Single Stem
Estimated number of Tuarts in patch:	7
Diameter at breast height:	>50 cm
% Cover native understory cover:	<50%
Disturbances:	
Weed cover:	>70%
Evidence of fire:	no
Time since fire:	
Evidence of tuart dieback:	no
Level of dieback impact	
Indicators of important landscape, habitat or regeneration features:	

Patch is less than 100 m from bushland > 1ha in at least good condition with >=50% native species:	no
Patch contains a mean of >= 2 trees >=50 cm DBH per half ha of any native tree:	yes
The patch displays evidence of natural regeneration of at least a mean of 15 eucalypts seedling / saplings (<15 cm DBH) per half ha:	no
Other comments:	

List of species

Taxon Name
Rhagodia baccata
Corynotheca micrantha var. micrantha
**Avena barbata*
**Ehrharta calycina*
**Trifolium campestre var. campestre*
Dichopogon capillipes
**Olea europaea subsp. europaea*
**Oxalis glabra*

* Denotes non-native species

Appendix 4. Statement of limitations

Reliance on data

In the preparation of this report, Ecoedge has relied on data, surveys, analyses, designs, plans and other information provided by the Client and other individuals and organisations, most of which are referred to in the report. Unless stated otherwise in the report, Ecoedge has not verified the accuracy or completeness of the data. To the extent that the statements, opinions, facts, information, conclusions and/or recommendations in the report are based in whole or in part on the data, those conclusions are contingent upon the accuracy and completeness of the data. Ecoedge will not be liable in relation to incorrect conclusions should any data, information or condition be incorrect or have been concealed, withheld, unavailable, misrepresented or otherwise not fully disclosed to Ecoedge.

Report for the benefit of the client

The report has been prepared for the benefit of the Client and no other party. Ecoedge assumes no responsibility and will not be liable to any other person or organisation for or in relation to any matter dealt with or conclusions expressed in the report or for any loss or damage suffered by any other person or organisation arising from matters dealt with or conclusions expressed in the report (including, without limitation, matters arising from any negligent act or omission of Ecoedge or for any loss or damage suffered by any other party relying on the matters dealt with or conclusions expressed in the report). Other parties should not rely upon the report or the accuracy or completeness of any conclusions and should make their own enquiries and obtain independent advice in relation to such matters.