

## Reconnaissance and Targeted Flora and Vegetation Survey

Cuballing East Road 0.01 to 2.92 SLK

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Prepared for the  
Shire of Wickpin  
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## Executive summary

Ecoedge Environmental Services was engaged by the Shire of Wickepin in September 2021 to undertake a reconnaissance and targeted flora and vegetation survey of road reserve vegetation along the Cuballing East Road from 0.01 to 2.92 straight line kilometres.

The Shire is planning to install a drain along the road and required the survey in order to inform any environmental assessment and approvals processes that may be required as part of the proposal.

The flora and vegetation survey was undertaken on 19 October 2021 by Russell Smith (flora permit FB61000473) and Colin Spencer (flora permit FB62000169) in accordance with the Environmental Protection Authority (EPA) Technical Guidance - Flora and Vegetation Surveys for Environmental Impact Assessment (EPA 2016).

The total area surveyed was approximately 6.8 hectares, of which 3.1 hectares was native vegetation.

Thirty-three vascular flora taxa were identified within the survey area, of which sixteen (50%) were introduced species.

No Flora listed as Threatened under the EPBC Act or the BC Act, Priority listed species or other flora of conservation significance were found within the survey area.

All the Threatened and Priority taxa potentially occurring in the survey area were given a post-survey rating of 'unlikely'.

There were no Declared Pest Plants or Weeds of National Significance in the survey area.

Two vegetation units were observed in the survey area, these being:

- *Acacia acuminata* low woodland with isolated *Eucalyptus loxophleba* or *E. wandoo*
- *Eucalyptus loxophleba* woodland in a drainage line

A small length of verge (approximately 50 m) of vegetation unit A in the eastern part of the survey area meets the minimum condition and width criteria to be considered an occurrence of the Eucalypt Woodlands of the W.A. Wheatbelt TEC.

The majority of the native vegetation (85%) was in Completely Degraded condition because it comprises a narrow strip along the verge that has been subject to disturbance by road maintenance activities in the past, as well as an influx of weeds from adjacent pasture.

One Beard vegetation association, Association 1023, is mapped across the survey area. This association has only slightly more than 10% of its pre-European extent of native vegetation remains at all levels. The association provides a reasonable match for the vegetation units described for the survey area.

Vegetation unit B is regarded as a riparian habitat because it occurs along an ephemeral stream.

The survey area vegetation forms part of a relatively narrow and mostly sparsely vegetated vegetation corridor extending along the Cuballing East Road. At a local level, it has some value as an ecological linkage connecting some larger isolated parcels of vegetation to the more substantial corridors associated with the Codgemalaking and Commitine Brooks.

There are no ESAs within the survey area or near the survey area. The nearest ESA is located approximately 5.5 km north of the survey area.

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## 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.



## 1 Introduction

Ecoedge Environmental Services (Ecoedge) was engaged by the Shire of Wickepin (the Shire) in August 2021 to undertake a reconnaissance and targeted flora and vegetation survey of road reserve vegetation along the Cuballing East Road from straight-line kilometres (SLK) 0.01 to SLK 2.92 (the 'survey area'). The survey area is located between the Wandering Road intersection and Williams Kondinin Road, approximately 17.4 meters (m) east of the town of Cuballing, within a predominantly agricultural context (**Figure 1**).

The total area surveyed was approximately 6.8 hectares, of which 3.1 hectares was native vegetation. It is approximately 2.9 kilometres (km) in length and stretches from fence to fence on both sides of the road (**Figure 2**).

The Shire is planning to install a drain along the road and require environmental surveys in order to inform the environmental assessment and approvals processes that may be required as part of the proposal.

This report compiles the findings of the survey.

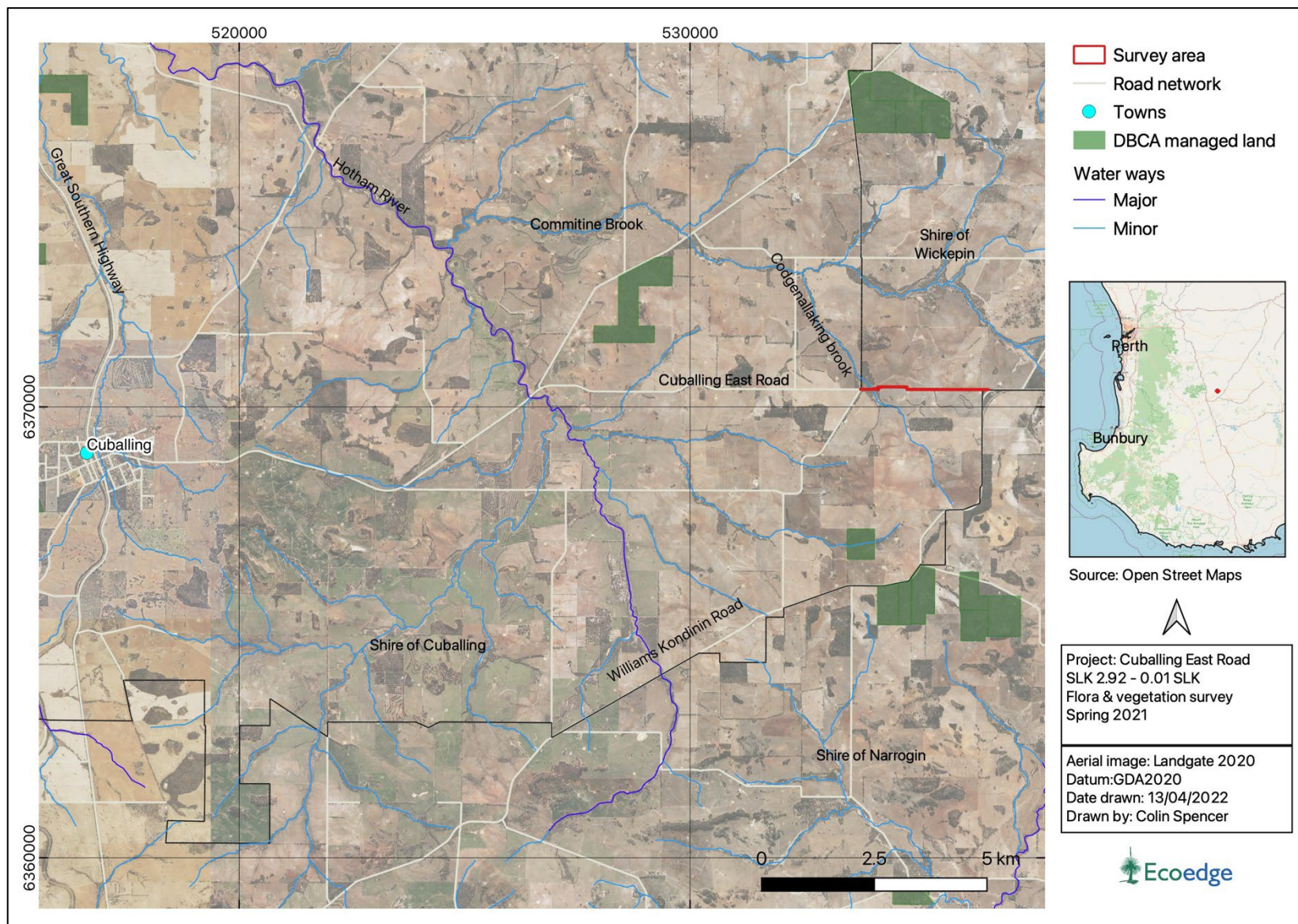


Figure 1. Aerial photograph showing the regional context of the survey area.



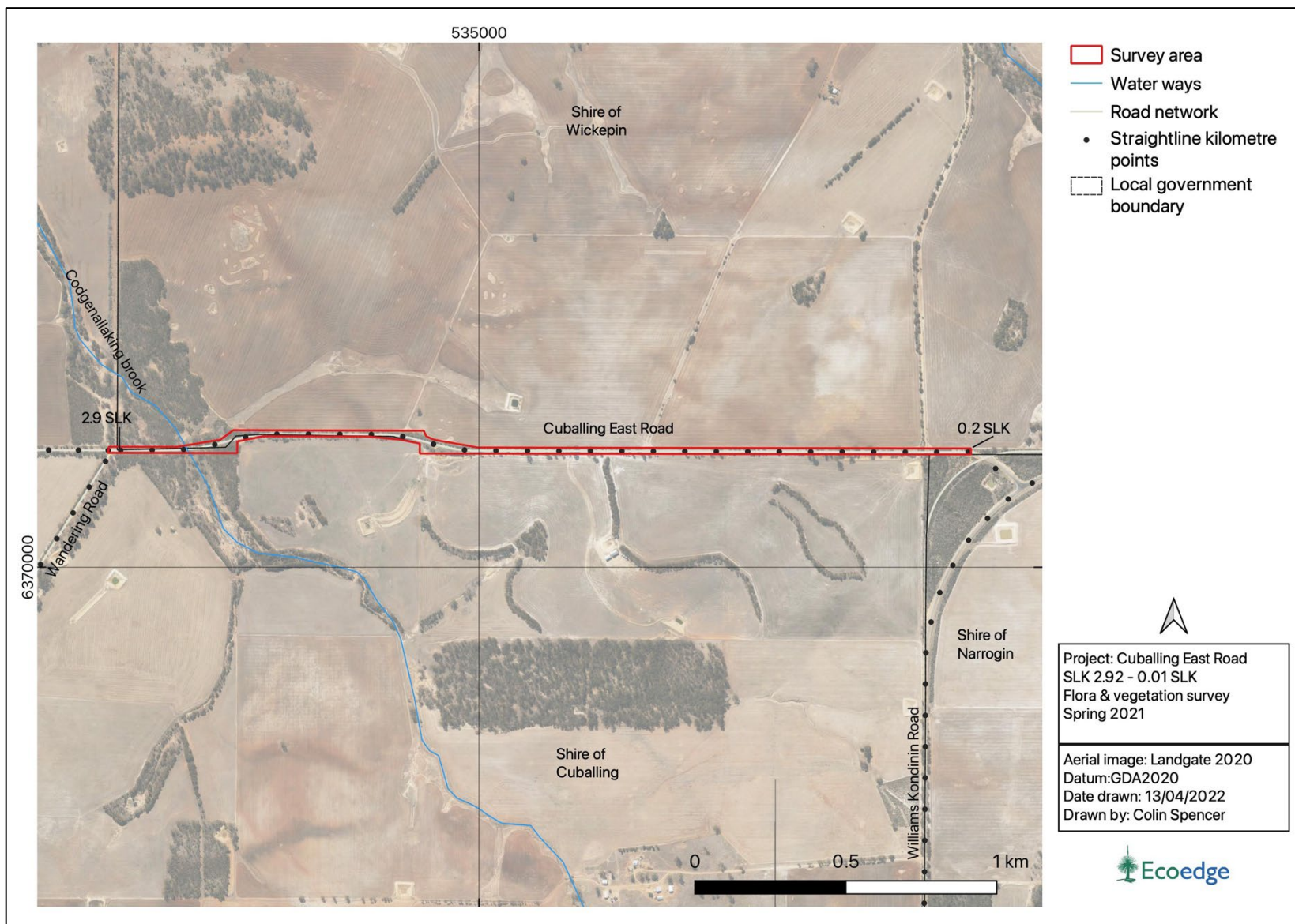


Figure 2. Aerial photograph showing the location of the survey area.

## 2 Scope and objectives

The objective of the survey was to provide a report on the outcomes of a reconnaissance and targeted flora and vegetation survey that delineated key flora and vegetation within the survey area.

The scope required a desktop assessment to be conducted prior to the field survey work to identify all biological features and constraints, which were in, or nearby the survey area, such as significant flora, Threatened and Priority ecological communities (TEC and PEC), riparian vegetation, unusual soil/landscape systems (e.g., granite outcrops), conservation estates, poorly represented vegetation associations and/or vegetation complexes and environmentally sensitive areas (ESA).

The field survey was required to ground-truth outcomes of the desktop assessment, including, as necessary, a targeted flora survey for potential significant flora and a targeted vegetation survey for any potential occurrences of TEC and PECs. The survey also required mapping of weeds of national significance (WONS), declared pest plants listed under the *Biosecurity and Agriculture Management Act 2007* (BAM Act) and mapping of riparian vegetation.

The survey and report were required to be undertaken in accordance with the Environmental Protection Authority (EPA) Technical Guidance - Flora and Vegetation Surveys for Environmental Impact Assessment (EPA 2016) and other State and Commonwealth guidelines for threatened species and communities, such as approved conservation advice for *Environmental Protection and Biodiversity Act 1999* (EPBC Act) threatened species and communities.

## 3 Methods

### 3.1 Desktop assessment

Prior to the field survey, a desktop assessment was undertaken over a 10 km buffer area (the 'assessment area') to provide contextual information on the flora and vegetation within the survey area. The desktop assessment included a review of the following information.

- Regional geology and soil mapping (McArthur et al. 1977, Sawkins 2010).
- Beard's Pre-European vegetation association mapping dataset (DPIRD-006) (Beard et al. 2013).
- WA TEC and PEC Department of Biodiversity Conservation and Attraction (DBCA) database extracts (DBCA 2021a) and TEC and PEC listings (DBCA 2018a, DBCA 2021b).
- Extract from the Department's Threatened Flora database and the Western Australian Herbarium database (DBCA 2021c).
- Threatened and Priority flora Naturemap search results (DBCA 2021d).
- Department of Agriculture, Water and the Environment (DAWE) Protected Matters Search Tool (PMST) results (DAWE 2021).
- Environmentally Sensitive Areas distribution maps and data (DWER 2020).
- Surface hydrology lines (National) (Crossman & Li 2015).
- Wheatbelt Wetlands Stage 1, DBCA-021 (DBCA 2017)

### 3.2 Significant flora likelihood of occurrence

Prior to undertaking the survey, an assessment of the likelihood of occurrence of Threatened and Priority flora occurring within the survey area was undertaken. The rationale for determining this pre-and post-likelihood of occurrence is provided in **Appendix 1**.

### 3.3 Field survey

The flora and vegetation survey was undertaken on 19 October 2021 by Russell Smith (flora permit FB61000473) and Colin Spencer (flora permit FB62000169) in accordance with the Environmental Protection Authority (EPA) Technical Guidance - Flora and Vegetation Surveys for Environmental Impact Assessment (EPA 2016).

The targeted survey for Threatened and Priority flora involved inspecting all potential habitats, including drainage lines. The time of the survey was within the optimum time for field identification of most of the Threatened and Priority flora identified as potentially occurring within the survey area.

Dominant and characteristic species and some soil information were collected at relevés across the survey area, and vegetation condition was recorded at these and other points. This information was used to describe vegetation units. In total, eighty vegetation condition points and eighteen relevés, as well as track files, were recorded.

The relevé information was used to identify and describe vegetation units using the NVIS system (Level 5; NVIS 2017).

Vegetation condition was assessed using the method of the EPA (2016) (**Appendix 2**).

Location of data collection points (vegetation condition assessment points and relevés) and survey track files were recorded.

Flora species not identified in the field were either photographed or collected for later identification.

### 3.4 Survey limitations

Potential limitations with regard to the assessment are addressed in **Table 1**.

Table 1. Limitations of the field survey with regard to assessment adequacy and accuracy.

Aspect	Constraint	Comment
Scope	Not a constraint	The survey scope was prepared in consultation with the Client and was designed to comply with EPA requirements.
Proportion of flora identified	Minor	The survey was carried out within the prime flowering season for the south-west jarrah forest.
Climatic and seasonal effects	Negligible	Climate and seasonal effects for the region had negligible impact on the survey. Rainfall from Wickepin weather station showed that 140% of the long-term average was recorded till the end of September 2021.
Availability of contextual information	Minor	Few local flora survey reports are available, and no regional survey has been conducted.
Completeness of the survey	Minor	All the survey area vegetation was easily accessible.
Skill and knowledge of the botanists (vascular flora)	Not a constraint	The botanists have a combined 35 years of experience in flora surveys in the south-west of W.A.
Disturbance (fire, grazing, clearing etc.)	Minor	Part of the survey area had historically been cleared.

## 4 Desktop assessment results

### 4.1 Biogeographic region

The survey area is situated within the Avon Wheatbelt P2 (AW2) sub-region of the Avon Wheatbelt biogeographic region as defined in the Interim Biogeographical Regionalisation for Australia (IBRA) (Commonwealth of Australia 2016).

### 4.2 Landform and soils

The survey area occurs within the Southern Zone of Rejuvenated Drainage (SZRD). The SZRD generally comprises an erosional surface of gently undulating rises to low hills with continuous stream channels that flow most years. Colluvial processes are active with soils formed in colluvium or in-situ from weathered rock (Sawkins 2010). The SZRD has been divided into landscape systems and subsystems, with the survey area situated at the boundary of the soils of the Dryandra (257Dy) and the Narrogin (257Ng) soil-landscape systems and within that of the Noombaling subsystems (257DyNB and 257NgBNB) and Norrine subsystem (257DyNO). These soil units as shown in **Figure 3** and described in **Table 2**.

Table 2. Soil mapping units for the survey area (McArthur et al. 1977, Sawkins 2010)

Zone	Landscape System	Soil Subsystem
257 - Southern Zone of Rejuvenated Drainage	257Dy - Dryandra System Gently undulating granitic terrain, in the central Zone of Rejuvenated Drainage, with deep sandy duplex, loamy duplex and brown loamy earth.	257DyNB - Noombaling Subsystem  Long gentle, and undulating hillslopes and divides. Colluvium / weathered granite, gneiss and some dolerite. Yellow/brown and grey deep sandy duplexes, brown deep loamy duplexes, sandy gravels and shallow duplexes. Marri-Wandoo / Jam-Sheoak.
		257 DyNO – Norrine Subsystem  A complex of lateritic residuals and associated pediment; gravely sand, sand, duplex yellow soils and duricrust
	257Ng – Narrogin System Irregularly undulating terrain with mesas and mixed soils formed from granites and gneisses, intruded by the large Binneringie dyke suite. Shallow gravel, loamy gravel, red loams and clays, sandy and loamy duplexes.	257NgNB - Noombaling Subsystem  Long gentle, and undulating hillslopes and divides. Colluvium / weathered granite, gneiss and some dolerite. Yellow/brown and grey deep sandy duplexes, brown deep loamy duplexes, sandy gravels and shallow duplexes. Marri-Wandoo / Jam-Sheoak.



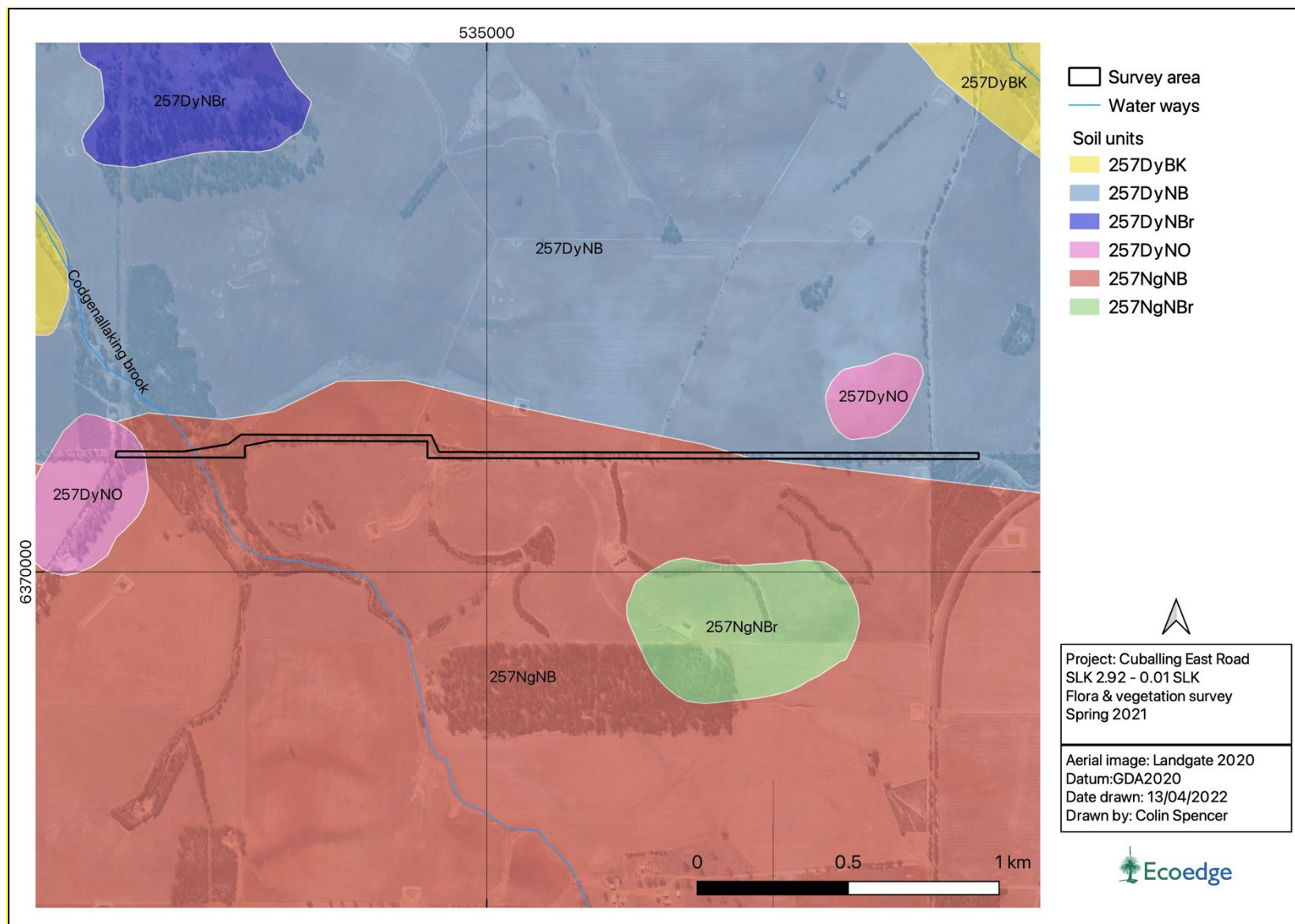


Figure 3. Soil units mapped in and nearby the survey area (McArthur et al. 1977).

## 4.3 Vegetation description according to pre-European mapping datasets

### 4.3.1 Vegetation associations

A systematic survey of native vegetation in Western Australia was undertaken by J. S. Beard (along with others) during the 1970s, which described vegetation systems in the south-west of Western Australia at a scale of 1:250,000. Beard's vegetation maps attempted to depict the vegetation as it might have been prior to European settlement in terms of type and extent (Beeston et al. 2001). The Beard Vegetation Association dataset, also referred to as the pre-European native vegetation extent dataset, was digitised by Shepherd et al. (2002).

Beard vegetation associations have been described to a minimum standard of Level 3 "Broad Floristic Formation" for the National Vegetation Inventory System (NVIS) (state-wide to regional scale)<sup>1</sup>. One Beard vegetation association was mapped as occurring within the Survey Area: association 1023 'Medium woodland; York gum, wandoo and salmon gum'.

### 4.3.2 Assessment of remaining extent against pre-European extent

In 2001, the Commonwealth of Australia stated national targets and objectives for biodiversity conservation, which recognised that the retention of 30%, or more, of the pre-clearing extent of each ecological community, was necessary if Australia's biological diversity was to be protected (Environment Australia 2001).

In its report on the state-wide vegetation statistics incorporating the Comprehensive, Adequate and Representative (CAR) Reserve Analysis, the Government of Western Australia provides information on the pre-European and current extent of the ecological communities of Western Australia and reports on the status of the CAR reserve system for Western Australia (Government of Western Australia 2019). This system is also based on the National retention target of 30% overall. Only reserves managed by DBCA under the *Conservation and Land Management Act 1984* are considered for inclusion in the "CAR Reserve Analysis".

An assessment of Beard's vegetation association 1023 against the Statewide Vegetation Statistics for the Avon Wheatbelt biogeographic region is presented in **Table 3**. The extent remaining of association 1023 falls well below the 30% retention target.

The red, orange and yellow shading in the tables indicates the status of the Commonwealth's 30% retention target.

Status of the commonwealth retention target	>30%	<30%	<10%
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<sup>1</sup> Beard's vegetation mapping units are referred to as 'associations' however these do not correspond to the NVIS Level 5 'Associations'. The NVIS system was developed long after Beard's work was completed, and while both classification systems use the same term, NVIS 'Associations' describe vegetation in more detail than do Beard's.

Table 3. Extent of Association 1023 within the survey area with regard to the Commonwealth retention targets (Government of Western Australia 2019).

Mapping region	Pre-European (ha)	Current Extent (ha)	% Remaining	% remaining in DBCA Managed Land*
Association 1023 'Medium woodland; York gum, wandoo and salmon gum'				
State-wide:	1,601,605.76	172,875.16	10.79	1.18
IBRA region: Avon Wheatbelt (AVW)	1,522,680.40	165,123.60	10.84	1.13
IBRA subregion: Avon Wheatbelt (AVW02)	1,123,736.23	138,408.96	12.32	1.27
Shire of Wickepin	175,618.10	18,444.86	10.50	0.70

\* Excludes Crown Freehold Department Interest Lands managed under Section 8(a) of the CALM Act.

#### 4.4 Threatened and Priority ecological communities

Ecological communities are defined by Western Australia's DBCA as "...naturally occurring biological assemblages that occur in a particular type of habitat. They are the sum of species within an ecosystem and, as a whole, they provide many of the processes which support specific ecosystems and provide ecological services." (DEC 2013).

Under Section 27 of the *Biodiversity Conservation Act 2016* (BC Act), the Western Australian Minister for Environment may list communities considered under significant threat as TECs. These TECs can be listed under one of three conservation categories: Critically Endangered (CR), Endangered (EN), and Vulnerable (VU). The BC Act also provides for listing communities as collapsed ecological communities.

Possible TECs that do not meet survey criteria may be added to the DBCA's PEC lists under Priorities 1, 2 or 3 (referred to as P1, P2, P3). Ecological communities that are adequately known, are rare but not Threatened, meet criteria for near Threatened, or that have been recently removed from the Threatened list are placed in Priority 4 (P4). These ecological communities require regular monitoring. Conservation dependent ecological communities are placed in Priority 5 (P5) (DEC 2013).

The current listing of TECs and PECs is specified in DBCA (2018a, 2021b). The conservation categories for these TECs and PECs are defined in **Appendix 3**.

TECs can also be listed under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). There are three categories of TEC under the EPBC Act: Critically Endangered (CR), Endangered (EN) and Vulnerable (VU) (Department of Agriculture, Water and the Environment) (DAWE 2020a). These are defined in **Appendix 4**.

The desktop assessment of DBCA TEC PEC databases (DBCA 2021a) and a PMST (DAWE 2021) (see **Appendix 5**) query identified likely occurrences of the state listed P3 and EPBC Act Critically Endangered Eucalypt Woodlands of the Western Australian Wheatbelt TEC within 15 km of the survey area. The DBCA TEC PEC databases also showed the P3 York gum Woodlands of the Wheatbelt, part of the Wheatbelt woodland of the Western Australian Wheatbelt TEC, in the study area. The occurrences<sup>2</sup> of the DBCA TEC PEC records within the study area are shown in **Figure 4**, noting that a portion of the Wheatbelt woodlands TEC is mapped to likely occur over a portion of the survey area.

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<sup>2</sup> Note the DBCA 2021a occurrences of the Wheatbelt woodland TEC are predicted indicative occurrences only.



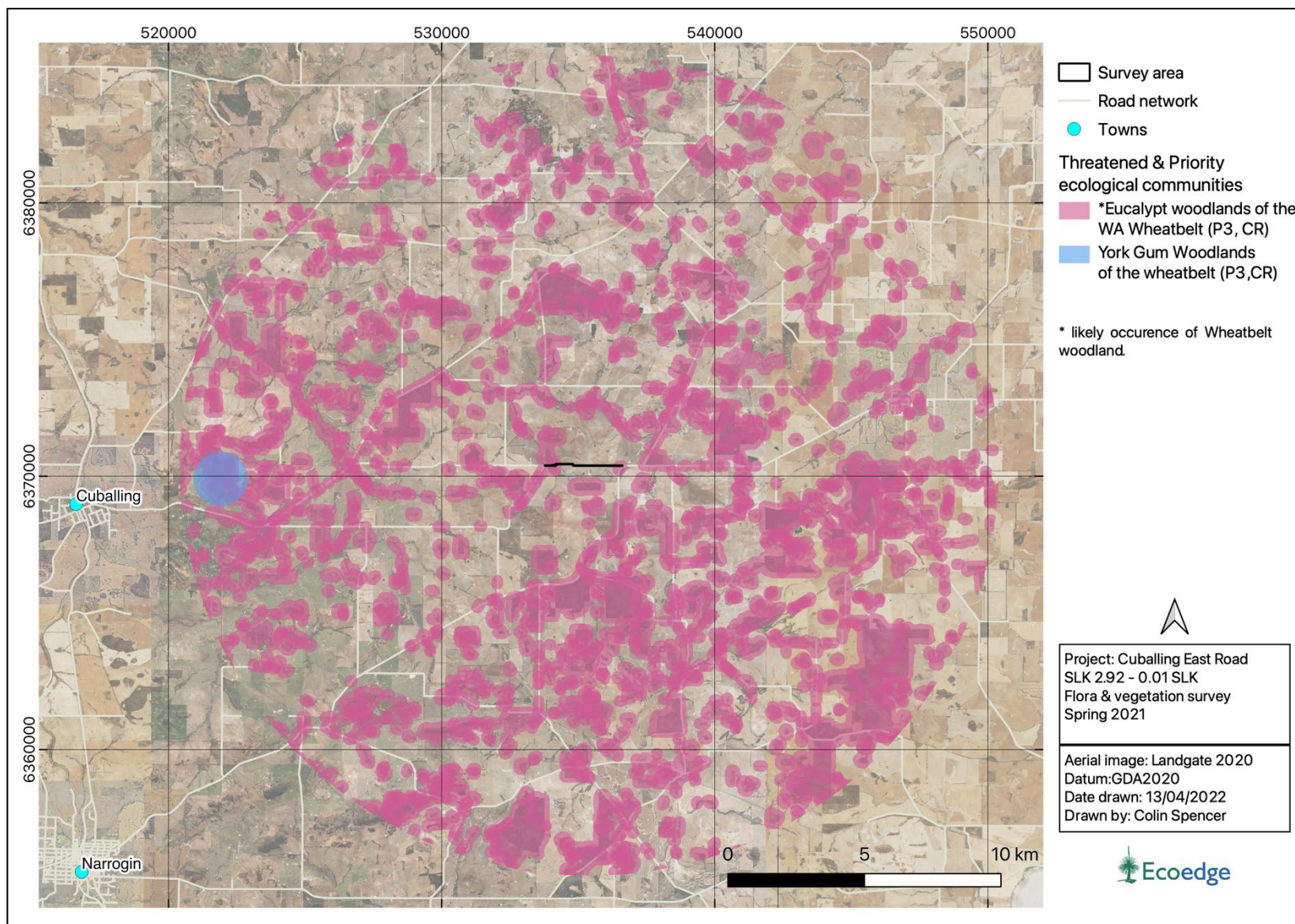


Figure 4. Threatened and Priority ecological communities known and indicatively mapped within 15 km of the survey area (DBCA 2021a).

## 4.5 Threatened and Priority flora

Species of flora are defined as having a Threatened or Priority conservation status where their extant populations are restricted geographically and/or under threat of possible extinction. The DBCA recognises these threats and consequently applies regulations toward population and species protection.

Threatened extant flora species are listed under Section 19 of the BC Act and are ranked according to their level of threat using the International Union for Conservation of Nature (IUCN) Red List categories and criteria of; Critically Endangered (CR), Endangered (EN), Vulnerable (VU). It is an offence to “take” or damage Threatened flora without Ministerial approval. Section 5 of the Act defines “to take” as “... to gather, pluck, cut, pull up, destroy, dig up, remove, harvest or damage flora by any means”.

Priority flora is under consideration for future declaration as “Threatened flora”, dependent on more information. Species classified as Priority One to Three (referred to as P1, P2 and P3) are in need of further survey to determine their status, while Priority Four (P4) species are adequately known rare or Threatened species that require regular monitoring.

Threatened flora lists are formally reviewed annually, whilst the Priority flora list is subject to a less formal ongoing review. The current listing of Threatened and Priority flora was updated on 5 December 2018 (DBCA 2018b).

Categories of Threatened and Priority flora defined by the BC Act are presented in **Appendix 6** (DBCA 2019).

Threatened flora may also be protected under the EPBC Act and be listed in one of six categories; the definitions of these categories are summarised in **Appendix 7** (DAWE 2020b).

Threatened or Priority flora occurring within 20 km of the survey area are provided in a likelihood of occurrence table in **Appendix 8**. The list has been generated from a Naturemap search (DBCA 2021d), a PMST query (DAWE 2021) (**Appendix 5**) and DBCA and WA Herbarium Threatened and Priority flora data downloads (DBCA 2021c).

Forty-two significant species were identified as occurring (DBCA 2021d) or potentially occurring (DAWE 2021) within this search area. No species were considered Likely to occur within the survey area. Forty-one were recorded as possible, with one Unlikely to occur within the survey area. No species were recorded within the survey area (DBCA 2021c).

A breakdown of the likelihood of occurrence according to conservation status is provided in **Table 4**, with the complete assessment provided in **Appendix 8**. Known occurrences of Threatened and Priority flora are shown in **Figure 5**.

Table 4. Pre-survey likelihood of occurrence according to conservation status.

Likelihood of occurrence	Total no	Priority 1	Priority 2	Priority 3	Priority 4	Threatened
Likely	0	0	0	0	0	0
Possible	41	4	7	9	8	13
Unlikely	1	0	1	0	0	0
Total	42	4	8	9	8	13



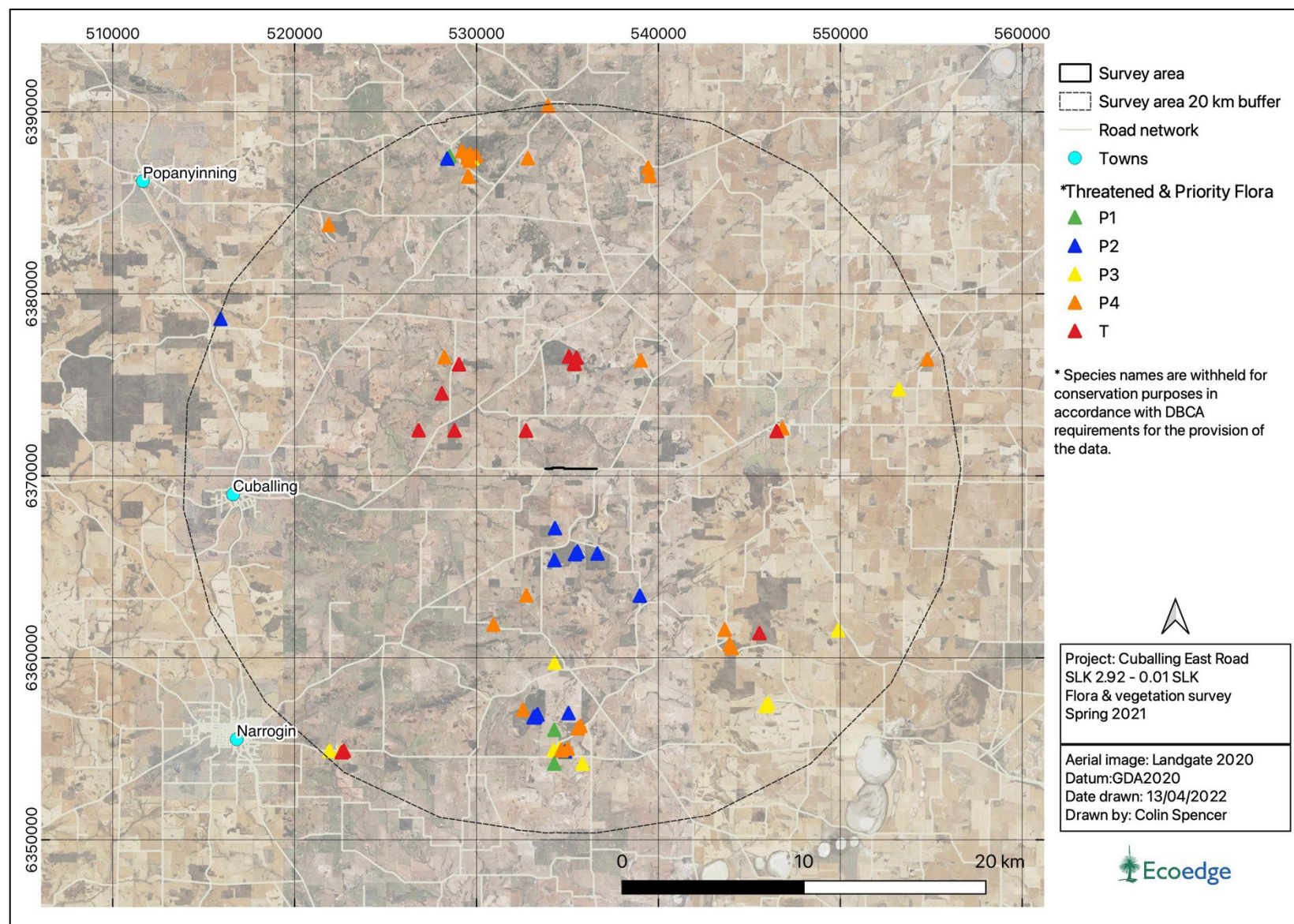


Figure 5. Threatened and Priority flora within 20 km of the survey area (DBCA 2021c).



#### 4.6 Wetlands and watercourses

According to the DBCA (2017) Wheatbelt wetlands Stage 1 mapping, there are no wetlands formally mapped within or w. The nearest mapped wetland is located approximately 3.4 km to the SE of the survey area (**Figure 6**).

The ephemeral Codgenallaking Brook crosses the survey area near its western boundary in a relatively large patch of native vegetation, which extends beyond the survey area (Crossman & Li 2015) (**Figure 6**).

#### 4.7 Ecological linkages

The survey area vegetation forms part of a relatively narrow and mostly sparsely vegetated corridor of vegetation that extends along the Cuballing East Road. In the vicinity of the survey area, the corridor provides a point of connection between isolated parcels of vegetation and the more substantial corridors of vegetation associated with the Codgemalaking brook, in the west of the survey area, and the Commitine brook, just to the east of the survey area (**Figure 7**).

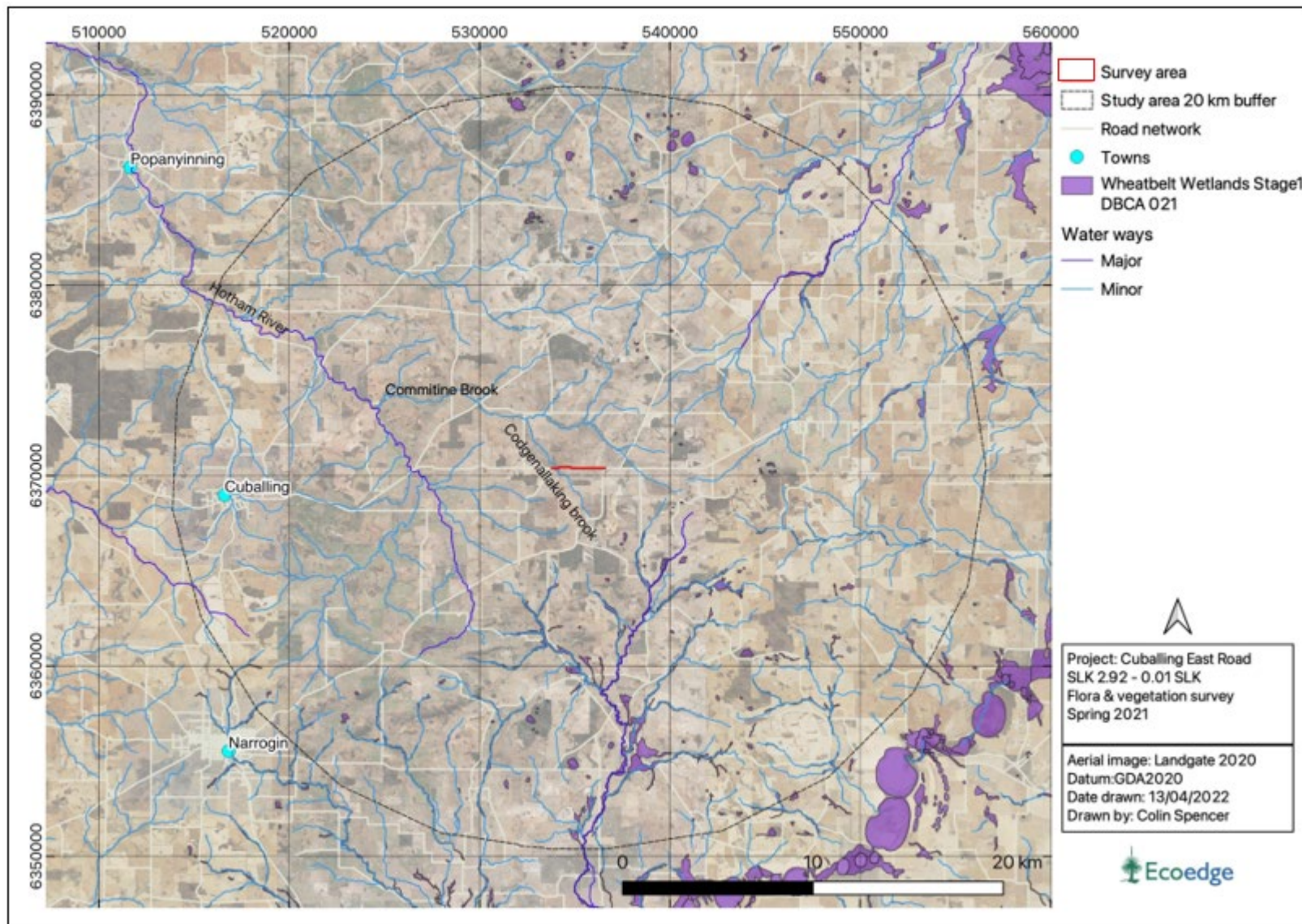


Figure 6. Wetlands within the desktop assessment area (DBCA 2017, Crossman & Li 2015).



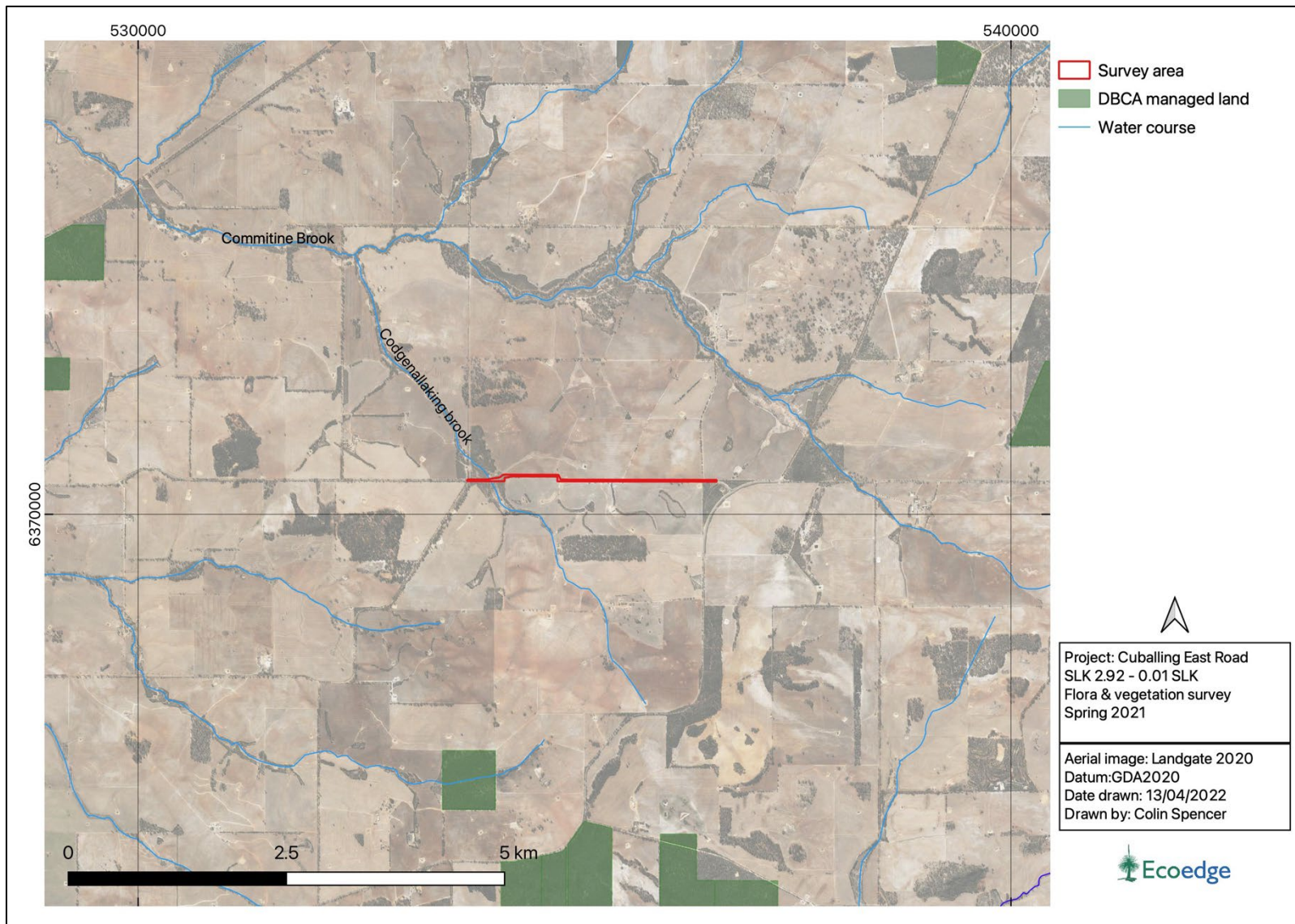


Figure 7. Watercourses within and nearby the survey area (DBCA 2017, Crossman & Li 2015).

#### 4.8 Environmentally Sensitive Areas

ESAs are protected under the Environmental Protection (Clearing of Native Vegetation) Regulations 2004. They are selected for their environmental values at State or National levels (Government of Western Australia 2005). They include:

- Defined wetlands and riparian vegetation within 50 m
- Areas covered by Threatened ecological communities
- Areas of vegetation within 50 m of Threatened flora
- Bush Forever sites
- Declared World Heritage property sites.

There are no ESAs within the survey area or near the survey area. The nearest ESA is located approximately 5.5 km north of the survey area and is associated with the DBCA managed East Yornaning Nature Reserve (**Figure 8**).



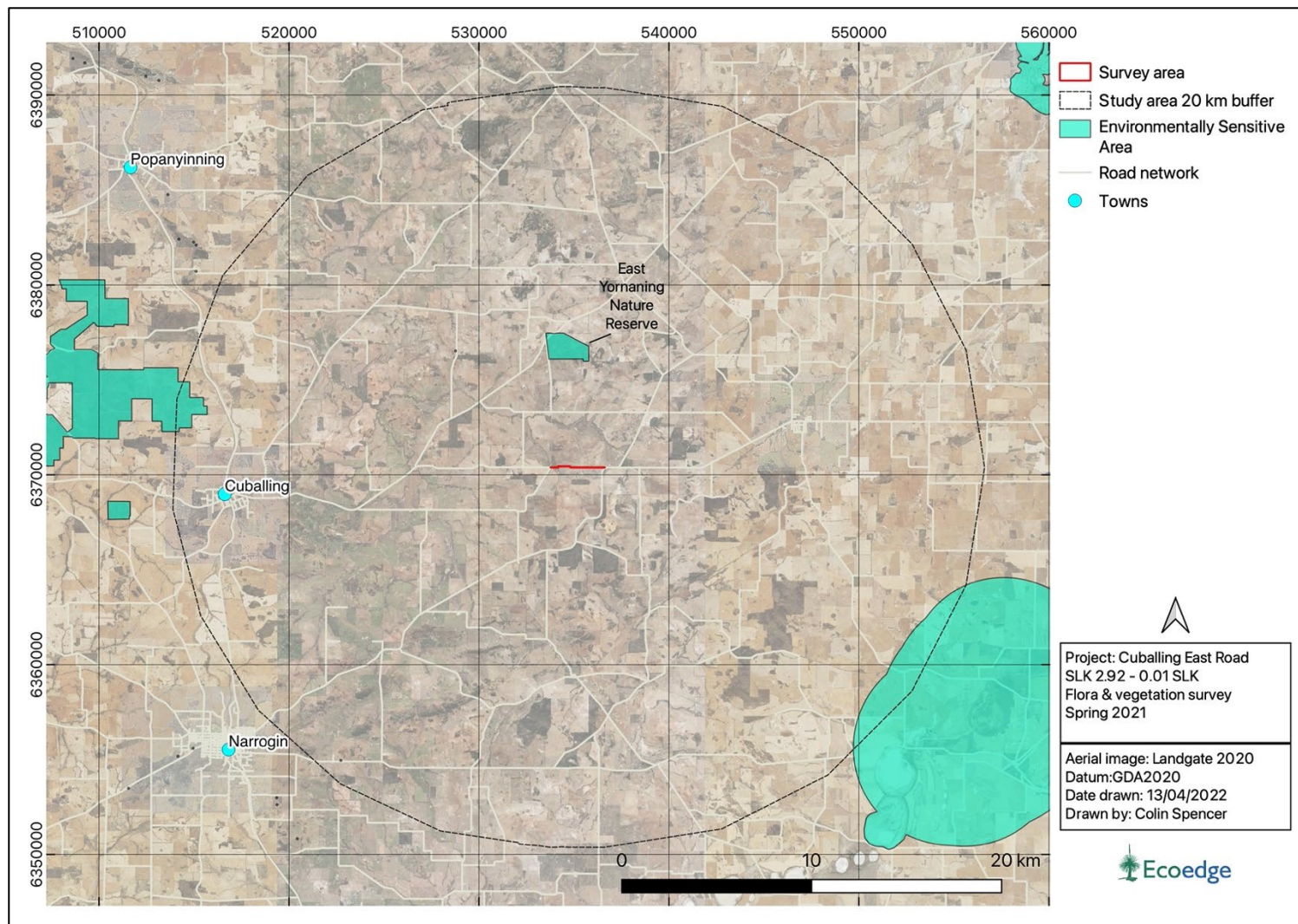


Figure 8. Location of ESAs within the study area.

## 5 Field survey results

A map showing the location of data collection points (vegetation condition assessment points and relevés) and survey track files is provided in **Appendix 9**.

### 5.1 Flora

Thirty-three vascular flora taxa were identified within the survey area, of which sixteen (50%) were introduced species. The complete species list is provided in **Appendix 10**. The two plant families with the highest representation were the Poaceae (seven taxa, with four introduced taxa) and Asteraceae (four taxa, with one native).

No Flora listed as Threatened under the EPBC Act or the BC Act, Priority listed species or other flora of conservation significance were found within the survey area.

#### 5.1.1 Post survey likelihood of occurrence

A summary of the post-survey likelihood of occurrence according to conservation status is provided in **Table 5**.

All the Threatened and Priority taxa potentially occurring in the survey area were given a post-survey rating of 'unlikely'.

Table 5. Vascular post-survey likelihood of occurrence according to conservation status.

Likelihood of occurrence	Total no	Priority 1	Priority 2	Priority 3	Priority 4	Threatened
Likely	0	0	0	0	0	0
Possible	0	0	0	0	0	10
Unlikely	42	4	8	9	8	13
Total	42	4	8	9	8	13

### 5.2 Significant weeds

There were no Declared Pest Plants or Weeds of National Significance (WoNS) in the survey area.



### 5.3 Vegetation units

Two vegetation units were observed in the survey area, these being:

- *Acacia acuminata* low woodland with isolated *Eucalyptus loxophleba* or *E. wandoo*
- *Eucalyptus loxophleba* woodland in a drainage line.

Vegetation unit maps are provided in **Appendix 11**.

Table 6. Descriptions and photographs of the vegetation units.

Photographs	Descriptions
	<b>Unit A:</b> <i>Acacia acuminata</i> low woodland/tall very open shrubland with isolated emergent <i>Eucalyptus loxophleba</i> or <i>E. wandoo</i> over <i>*Avena barbata</i> , <i>*Ehrharta longifolia</i> , <i>*Lolium perenne</i> grassland and <i>*Arctotheca calendula</i> , <i>*Erodium cicutarium</i> , <i>*Raphanus raphanistrum</i> open forbland on red-brown sandy loam.
	<b>Unit B:</b> <i>Eucalyptus loxophleba</i> medium woodland over <i>Atriplex semibaccata</i> , <i>Tecticornia indica</i> low open shrubland over <i>*Avena barbata</i> , <i>*Lolium perenne</i> grassland on red-brown clay in drainage line

The extent and proportion of the total vegetated areas of each of these vegetation units are presented in **Table 7**.

Table 7. Area and condition classes for the various vegetation unit within the survey area.

Veg. Unit	Condition	Area (Ha)	%
A			
	Good	0.029	1.01
	Degraded	0.313	10.90
	Completely Degraded	2.529	88.09
		2.871	100.00
B	Degraded	0.122	50.21
	Completely Degraded	0.121	49.79
		0.243	100.00

## 5.4 Vegetation condition

The majority of the native vegetation was in Completely Degraded condition. This is because it comprises a narrow strip along the verge that has been subject to disturbance by road maintenance activities in the past, as well as an influx of weeds from adjacent pasture.

A breakdown of the condition of vegetation within the survey area is provided in **Table 8.** and shown in **Appendix 12.**

Table 8. Area and percentage of the survey area in vegetation condition classes.

Veg. Condition	Area (ha)	%
Good	0.03	0.93
Degraded	0.44	13.97
Completely Degraded	2.65	85.10
	3.11	100.00
Cleared	3.67	

## 5.5 Threatened and Priority Ecological communities

A small length of verge (approximately 50 m in length: 0.03 ha) of vegetation unit A in the eastern part of the survey area meets the minimum condition and width criteria to be considered an occurrence of the Eucalypt Woodlands of the WA Wheatbelt TEC. **Table 9** shows the comparison of the survey area vegetation with the Eucalypt Woodlands of the Western Australian Wheatbelt TEC key diagnostic characteristics criteria (DotEE 2015).

**Table 10** shows how parts of units A and B meet the key diagnostic criteria, and **Table 11** shows how they meet the condition and width thresholds. **Figure 9** shows the location of the Good condition TEC within the survey area.

A copy of the completed Threatened Ecological Community Report form is provided in **Appendix 13.**

Table 9. Comparison of the survey area vegetation with the Eucalypt Woodlands of the Western Australian Wheatbelt TEC key diagnostic characteristics criteria (DotEE 2015).

Condition Category	Comment
It occurs in one of the appropriate IBRA regions.	Yes, it occurs in the Avon-Wheatbelt IBRA region in an area of less than 600 mm mean annual rainfall.
The structure of the ecological community is a woodland in which the minimum crown cover of the tree canopy in a mature woodland is 10% (crowns measured as if they are opaque).	Yes, criteria met.
The key species of the tree canopy are species of <i>Eucalyptus</i> (typically with a single trunk).	Yes, it contains <i>Eucalyptus loxophleba</i>
A native understorey is present but is of variable composition, being a combination of grasses, other herbs and shrubs.	Yes, criteria met.



Table 10. Comparison of the survey area vegetation with Eucalypt Woodlands of the Western Australian Wheatbelt TEC condition and area criteria adapted from DotEE, 2015.

Condition Category	Mature trees	Minimum Patch Width (roadsides only)	Comment	Area (ha)
'Pristine, Excellent, Very Good'	Mature trees may be present or absent.	5 metres or more	Areas on the northern verge adjacent to the railway reserve and on the southern verge greater than 5 metres wide.	0
'Good'	Mature trees are present with at least 5 trees per 0.5 ha.	5 metres or more	Areas on the northern verge adjacent to the railway reserve.	0.029
'Degraded to Good'	Mature trees are present with at least 5 trees per 0.5 ha.	5 metres or more	Areas on the southern verge greater than 5 metres wide.	0

Table 11. TEC PEC Area and condition classes for the various vegetation unit within the survey area.

Veg. Unit	Condition	Area (Ha)	%	TEC
A	Good	0.029	1.01	Yes <sup>3</sup>
	Degraded	0.313	10.90	No
	Completely Degraded	2.529	88.09	No
	<b>Total</b>	<b>2.871</b>	<b>100.00</b>	
B	Degraded	0.122	50.21	No
	Completely Degraded	0.121	49.79	No
	<b>Total</b>	<b>0.243</b>	<b>100.00</b>	

<sup>3</sup> One of the two areas of unit A in Good condition is too narrow to meet the minimum area criterion.

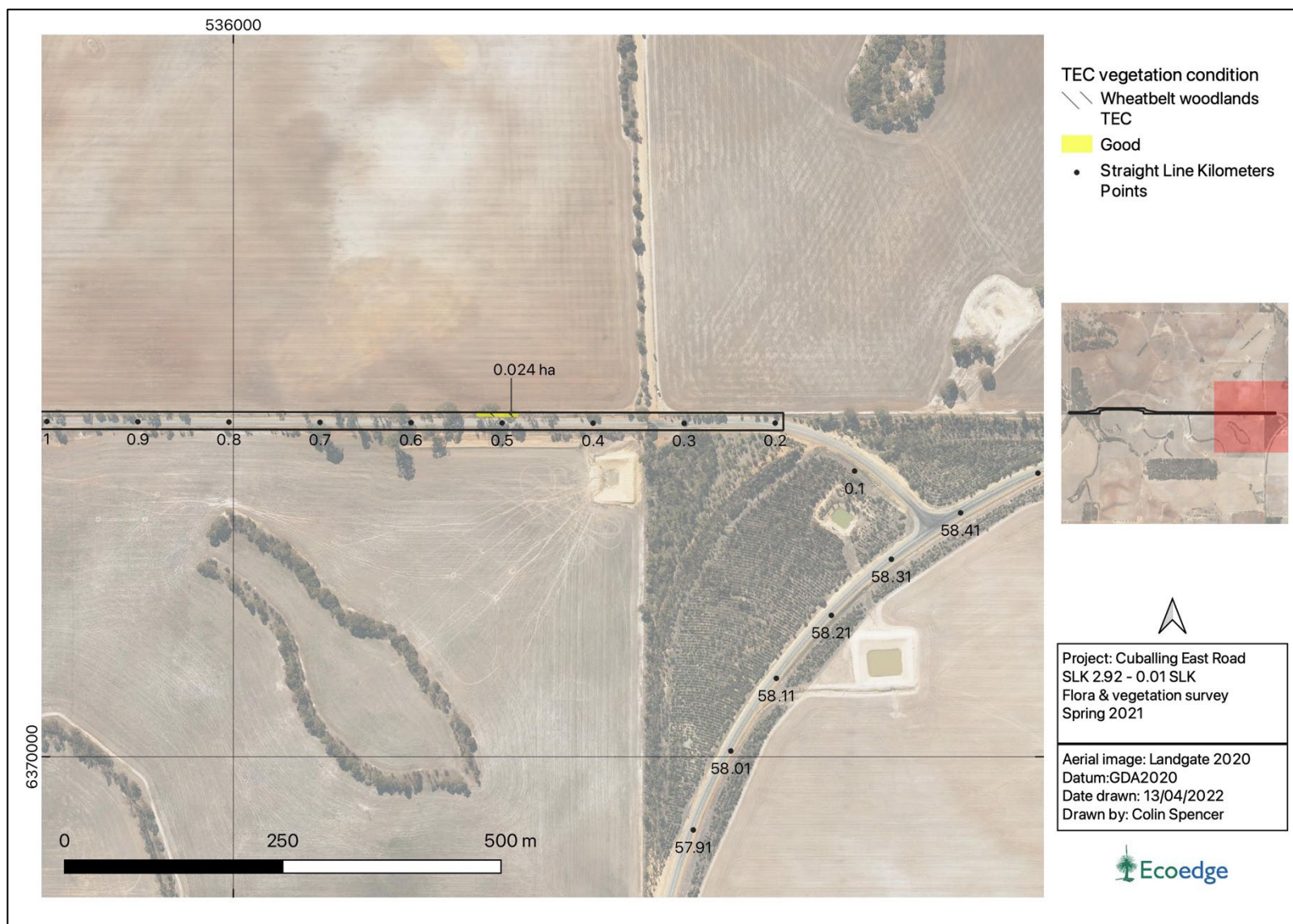


Figure 9. Location of Eucalypt Woodlands of the Western Australian Wheatbelt TEC.

## 6 Discussion and conclusions

### 6.1 Conservation status of the Flora

There were no Threatened or Priority flora species or taxa otherwise of conservation significance found within the survey area.

### 6.2 Conservation status of the vegetation

Except for a 50 m stretch of road verge comprising 0.029ha in 'Good' condition, near the eastern end of the survey area, none of the vegetation met the criteria to be considered an occurrence of the Eucalypt Woodlands of the WA Wheatbelt TEC.

### 6.3 Vegetation complexes and associations

One Beard vegetation association, Association 1023 ('Medium woodland; York gum, wandoo and salmon gum'), is mapped across the survey area. There is a fairly good match between the vegetation in the survey area and this very broadly defined Beard association in terms of the described dominant vegetation. Association 1023 has only marginally more than 10% of its pre-European extent of native vegetation remaining at all levels.

### 6.4 Riparian habitat

Vegetation unit B, situated in the drainage line (Codgenallaking Brook) near the western extent of the survey area, comprises riparian habitat.

### 6.5 Ecological linkages

The survey area vegetation forms part of a relatively narrow and mostly sparsely vegetated corridor of vegetation that extends along the Cuballing East Road. At a local level, it has some value as an ecological linkage connecting some larger isolated parcels of vegetation to the more substantial corridors associated with the Codgenallaking and Commitine Brooks.

There is no statutory basis for the protection of the ecological corridors. However, the importance of ecological linkages, in general, has been recognised as an environmental policy consideration in EPA and Planning policy over the last decade (EPA 2008 and references therein).

### 6.6 Environmentally Sensitive Areas

There are no ESAs within the survey area or near the survey area. The nearest ESA is located approximately 5.5 km north of the survey area.

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## Appendix 1 Threatened and Priority flora Likelihood of occurrence assessment methodology.

Rating	Presurvey rationale	Post survey rationale
<b>Recorded</b>		Taxon was or has been recorded in the survey area.
<b>Likely</b>	Known to occur within one kilometre (km) of the survey area with suitable habitat known or predicted to occur within the survey area.	<p>The taxon is known to occur within one km of the survey area and very suitable habitat was present, but the taxon was not observed for one of the following reasons.</p> <p><b>L1.</b> The taxon was dormant at the time of survey and could therefore not be located.</p> <p><b>L2.</b> The habitat was compromised, for example due to a recent fire.</p> <p><b>L3.</b> The survey area is challenging to survey. The taxon is non-descript and difficult to find because, for example, it occurs in large areas of rocky granite outcrops, or within an expanse of open water.</p>
<b>Possible</b>	Known to occur within a five-ten km of the survey area with suitable habitat known or predicted to occur within the survey area.	<p>The taxon is known from within a five to ten km radius of the survey area, and suitable habitat for the species was present, but despite a thorough search being carried out, the species was not observed. The taxon may however be present for any of the following reasons.</p> <p><b>P1.</b> The taxon was dormant at the time of survey and could therefore not be located.</p> <p><b>P2.</b> The habitat was compromised, for example, due to a recent fire.</p> <p><b>P3.</b> The survey area is challenging to survey. The taxon is non-descript and difficult to find because, for example, it occurs in large areas of rocky granite outcrops, or within an expanse of open water.</p>
<b>Unlikely</b>	Known or predicted to occur within ten km, but no suitable habitat is known or predicted to occur within the survey area.	<p>The taxon was not found and is unlikely to be present for one or more of the following reasons:</p> <p><b>U1.</b> No suitable habitat was observed, and the taxon is known to be restricted to a narrow and clearly defined habitat type.</p> <p><b>U2.</b> Suitable or potential habitat was present and appropriately searched, but the taxon was not observed.</p> <p><b>U3.</b> Suitable habitat present, but these areas were too degraded for the taxon to occur, for example, due to weed invasion and/or clearing.</p>

Example of application of pre and post-survey likelihood of occurrence

Taxon	Cons Status	Flowering	Description	Pre survey likelihood	Post Survey Likelihood
<i>Drakaea elastica</i>	T (EN)	Oct-Nov	Tuberous, perennial, herb, 0.12-0.3 m high. Fl. red, green, yellow. White or grey sand. Low-lying situations adjoining winter-wet swamps.	<b>Likely</b>	<b>Unlikely (U3)</b>

## Appendix 2. 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 3. Categories of Threatened ecological communities under the EPBC Act.

Category	Definition
Critically endangered (CR)	If, at that time, an ecological community is facing an extremely high risk of extinction in the wild in the immediate future (indicative timeframe being the next 10 years).
Endangered (EN)	If, at that time, an ecological community is not critically endangered but is facing a very high risk of extinction in the wild in the near future (indicative timeframe being the next 20 years).
Vulnerable (VU)	If, at that time, an ecological, community is not critically endangered or endangered but is facing a high risk of extinction in the wild in the medium-term future (indicative timeframe being the next 50 years).

## Appendix 4. Categories of threatened and priority ecological communities under the BC Act.

Conservation code	Category
(T) Threatened ecological community pursuant to Sect 27 of the <i>Biodiversity Conservation Act 2016</i> .	
T	<p>(T) CR – Critically endangered</p> <p>An ecological community that has been adequately surveyed and found to have been subject to a major contraction in area and/or that was originally of limited distribution and is facing severe modification or destruction throughout its range in the immediate future, or is already severely degraded throughout its range but capable of being substantially restored or rehabilitated.</p>
	<p>(T) EN - Endangered</p> <p>An ecological community that has been adequately surveyed and found to have been subject to a major contraction in area and/or was originally of limited distribution and is in danger of significant modification throughout its range or severe modification or destruction over most of its range in the near future.</p>
	<p>(T) VU - Vulnerable</p> <p>An ecological community that has been adequately surveyed and is found to be declining and/or has declined in distribution and/or condition and whose ultimate security has not yet been assured and/or a community that is still widespread but is believed likely to move into a category of higher threat in the near future if threatening processes continue or begin operating throughout its range.</p>
(P) Priority species – possible threatened communities.	
p1	<p>Poorly known communities</p> <p>Ecological communities that are known from very few occurrences with a very restricted distribution (generally <math>\leq 5</math> occurrences or a total area of <math>\leq 100\text{ha}</math>). Occurrences are believed to be under threat either due to limited extent, or being on lands under immediate threat (e.g. within agricultural or pastoral lands, urban areas, active mineral leases) or for which current threats exist. May include communities with occurrences on protected lands. Communities may be included if they are comparatively well-known from one or more localities but do not meet adequacy of survey requirements, and/or are not well defined, and appear to be under immediate threat from known threatening processes across their range.</p>

Conservation code	Category
P2	<p>Poorly known communities</p> <p>Communities that are known from few occurrences with a restricted distribution (generally <math>\leq 10</math> occurrences or a total area of <math>\leq 200\text{ha}</math>). At least some occurrences are not believed to be under immediate threat (within approximately 10 years) of destruction or degradation. Communities may be included if they are comparatively well known from one or more localities but do not meet adequacy of survey requirements, and/or are not well defined, and appear to be under threat from known threatening processes.</p>
P3	<p>Poorly known communities</p> <ul style="list-style-type: none"> <li>a) Communities that are known from several to many occurrences, a significant number or area of which are not under threat of habitat destruction or degradation or:</li> <li>b) communities known from a few widespread occurrences, which are either large or with significant remaining areas of habitat in which other occurrences may occur, much of it not under imminent threat (within approximately 10 years), or;</li> <li>c) communities made up of large, and/or widespread occurrences, that may or may not be represented in the reserve system, but are under threat of modification across much of their range from processes such as grazing by domestic and/or feral stock, inappropriate fire regimes, clearing, hydrological change etc.</li> </ul> <p>Communities may be included if they are comparatively well known from several localities but do not meet adequacy of survey requirements and/or are not well defined, and known threatening processes exist that could affect them.</p>
P4	<p>Ecological communities that are adequately known, rare but not threatened or meet criteria for Near Threatened, or that have been recently removed from the threatened list. These communities require regular monitoring.</p> <ul style="list-style-type: none"> <li>a) Rare. Species that are considered to have been adequately surveyed, or for which sufficient knowledge is available, and that are considered not currently threatened or in need of special protection but could be if present circumstances change. These species are usually represented on conservation lands.</li> <li>b) Near Threatened. Species that are considered to have been adequately surveyed and that are close to qualifying for vulnerable but are not listed as Conservation Dependent.</li> <li>c) Species that have been removed from the list of threatened species during the past five years for reasons other than taxonomy.</li> </ul>
P5	<p>Conservation dependent ecological communities</p> <p>Ecological communities that are not threatened but are subject to a specific conservation program, the cessation of which would result in the community becoming threatened within five years.</p>

## Appendix 5. Definitions of conservation codes for Threatened and Priority flora.

Conservation code	Category
(T) Threatened species pursuant to Sect 19 of the BC Act 2016.	
T	<p>(T) CR – Critically endangered</p> <p>Threatened species considered to be “<i>facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with criteria set out in the ministerial guidelines</i>”.</p>
	<p>(T) EN - Endangered</p> <p>Threatened species considered to be “<i>facing a very high risk of extinction in the wild in the near future, as determined in accordance with criteria set out in the ministerial guidelines</i>”.</p>
	<p>(T) VU - Vulnerable</p> <p>Threatened species considered to be “<i>facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with criteria set out in the ministerial guidelines</i>”.</p>
(P) Priority species – possible Threatened species.	
P1	<p>Species that are known from one or a few locations (generally five or less) which are potentially at risk. All occurrences are either: very small; or on lands not managed for conservation, e.g. agricultural or pastoral lands, urban areas, road and rail reserves, gravel reserves and active mineral leases; or otherwise under threat of habitat destruction or degradation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under immediate threat from known threatening processes. Such species are in urgent need of further survey.</p>
P2	<p>Species that are known from one or a few locations (generally five or less), some of which are on lands managed primarily for nature conservation, e.g. national parks, conservation parks, nature reserves and other lands with secure tenure being managed for conservation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under threat from known threatening processes. Such species are in urgent need of further survey.</p>



Conservation code	Category
P3	Species that are known from several locations, and the species does not appear to be under imminent threat, or from few but widespread locations with either large population size or significant remaining areas of apparently suitable habitat, much of it not under imminent threat. Species may be included if they are comparatively well known from several locations but do not meet adequacy of survey requirements and known threatening processes exist that could affect them. Such species are in need of further survey.
P4	<p>(a) Rare. Species that are considered to have been adequately surveyed, or for which sufficient knowledge is available, and that are considered not currently threatened or in need of special protection but could be if present circumstances change. These species are usually represented on conservation lands.</p> <p>(b) Near Threatened. Species that are considered to have been adequately surveyed and that are close to qualifying for vulnerable but are not listed as Conservation Dependent.</p> <p>(c) Species that have been removed from the list of threatened species during the past five years for reasons other than taxonomy.</p>

## Appendix 6. Categories of Threatened species under the EPBC Act.

Category	Definition
Extinct (Ex)	A native species is eligible to be included in the <b>extinct</b> category at a particular time if, at that time, there is no reasonable doubt that the last member of the species has died.
Extinct in the Wild (ExW)	A native species is eligible to be included in the extinct in the wild category at a particular time if, at that time (a) it is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; or (b) it has not been recorded in its known and/or expected habitat, at appropriate seasons, anywhere in its past range, despite exhaustive surveys over a time frame appropriate to its life cycle and form.
Critically Endangered (CE)	A native species is eligible to be included in the critically endangered category at a particular time if, at that time, it is facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with the prescribed criteria.
Endangered (EN)	A native species is eligible to be included in the endangered category at a particular time if, at that time (a) it is not critically endangered; and (b) it is facing a very high risk of extinction in the wild in the near future, as determined in accordance with the prescribed criteria.
Vulnerable (VU)	A native species is eligible to be included in the vulnerable category at a particular time if, at that time (a) it is not critically endangered or endangered; and (b) it is facing a high risk of extinction in the wild in the medium term future, as determined in accordance with the prescribed criteria.
Conservation Dependent (CD)	A native species is eligible to be included in the conservation dependent category at a particular time if, at that time, the species is the focus of a specific conservation program, the cessation of which would result in the species becoming vulnerable, endangered or critically endangered within a period of 5 years.

## Appendix 7. Protected Matters Search Tool and NatureMap reports

# Cuballing Road East NatureMap Species Report\_15/10/21\_20km

Created By Guest user on 16/10/2021

**Kingdom** Plantae  
**Conservation Status** Conservation Taxon (T, X, IA, S, P1-P5)  
**Current Names Only** Yes  
**Core Datasets Only** Yes  
**Method** 'By Circle'  
**Centre** 117° 22' 27" E, 32° 48' 14" S  
**Buffer** 20km

	Name ID	Species Name	Naturalised	Conservation Code	<sup>1</sup> Endemic To Query Area
1.	3287	<i>Acacia deflexa</i>		P3	
2.	14121	<i>Acacia insolita</i> subsp. <i>recurva</i>		T	
3.	6307	<i>Andersonia carinata</i>		P2	
4.	6309	<i>Andersonia gracilis</i>		T	
5.	45400	<i>Babingtonia maleyae</i> (Narrogen <i>Babingtonia</i> )		P2	
6.	32539	<i>Banksia fasciculata</i>		P3	
7.	32212	<i>Banksia meganotia</i>		P3	
8.	32093	<i>Banksia rufa</i> subsp. <i>magna</i>		P1	
9.	1598	<i>Caladenia integra</i> (Mantis Orchid, Smooth-lipped Spider Orchid)		P4	
10.	14288	<i>Daviesia uncinata</i>		P3	
11.	12936	<i>Diuris recurva</i>		P4	
12.	5642	<i>Eucalyptus exilis</i> (Boyagin Mallee)		P4	
13.	16886	<i>Eucalyptus loxophleba</i> x <i>wandoo</i>		P4	
14.	3926	<i>Gastrolobium stipulare</i>		P4	
15.	3928	<i>Gastrolobium tomentosum</i> (Woolly Poison)		P4	
16.	19686	<i>Hibbertia priceana</i>		T	
17.	14749	<i>Jacksonia debilis</i>		P1	
18.	44220	<i>Leucopogon audax</i>		P2	
19.	6384	<i>Leucopogon cymbiformis</i>		P2	
20.	44724	<i>Pterostylis echinulata</i>		P3	
21.	20787	<i>Pultenaea indiria</i> subsp. <i>pudoides</i>		P2	
22.	40945	<i>Stylidium exappendiculatum</i>		P3	
23.	7801	<i>Stylidium squamellosum</i> (Maize Trigger Plant)		P2	
24.	7804	<i>Stylidium tenuicarpum</i>		P4	
25.	12912	<i>Synaphea drummondii</i>		P3	
26.	19352	<i>Trymalium monospermum</i>		P2	Y
27.	14713	<i>Verticordia fimbriolepis</i> subsp. <i>fimbriolepis</i>		T	
28.	12431	<i>Verticordia huegelii</i> var. <i>tridens</i>		P3	

**Conservation Codes**  
T - Rare or likely to become extinct  
X - Presumed extinct  
IA - Protected under international agreement  
S - Other specially protected fauna  
1 - Priority 1  
2 - Priority 2  
3 - Priority 3  
4 - Priority 4  
5 - Priority 5

<sup>1</sup> For NatureMap's purposes, species flagged as endemic are those whose records are wholly contained within the search area. Note that only those records complying with the search criterion are included in the calculation. For example, if you limit records to those from a specific datasource, only records from that datasource are used to determine if a species is restricted to the query area.





# EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected.

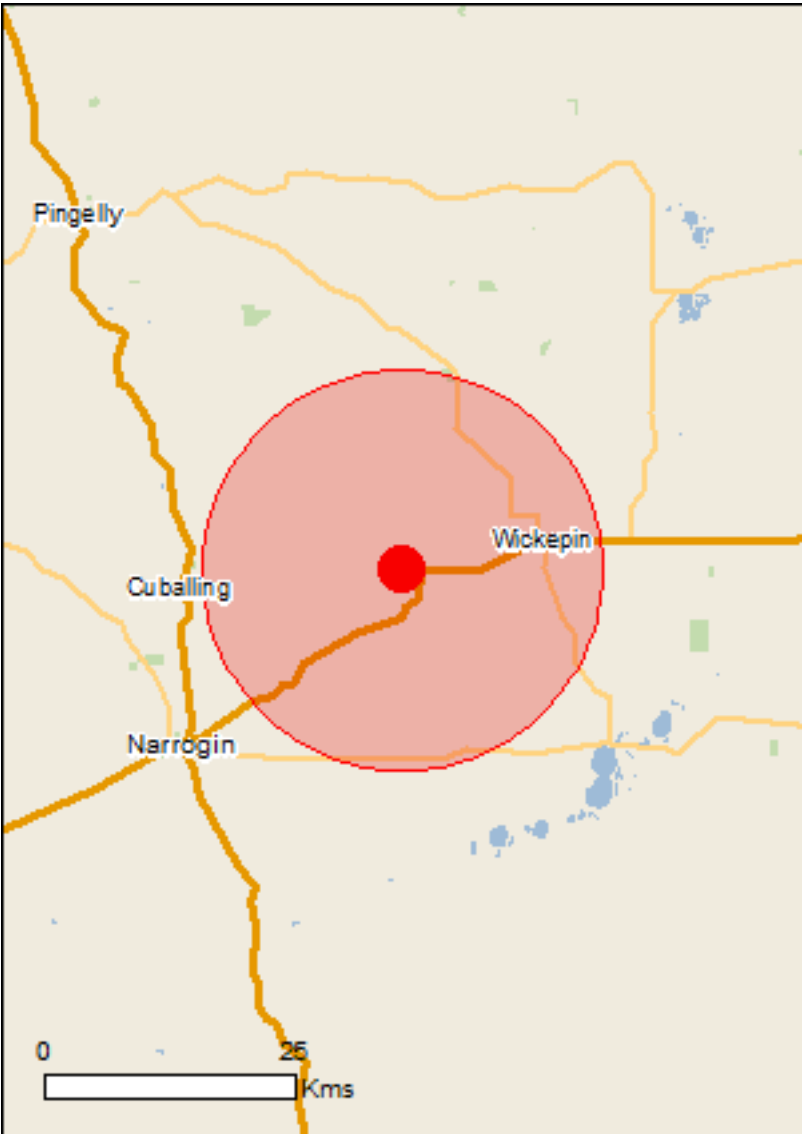
Information on the coverage of this report and qualifications on data supporting this report are contained in the caveat at the end of the report.

Information is available about [Environment Assessments](#) and the EPBC Act including significance guidelines, forms and application process details.

Report created: 16/10/21 23:46:08

- [Summary](#)
- [Details](#)

[Matters of NES](#)[Other Matters Protected by the EPBC Act](#)[Extra Information](#)
- [Caveat](#)
- [Acknowledgements](#)



This map may contain data which are  
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[Coordinates](#)

Buffer: 20.0Km



# Summary

## Matters of National Environmental Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the [Administrative Guidelines on Significance](#).

<a href="#">World Heritage Properties:</a>	None
<a href="#">National Heritage Places:</a>	None
<a href="#">Wetlands of International Importance:</a>	2
<a href="#">Great Barrier Reef Marine Park:</a>	None
<a href="#">Commonwealth Marine Area:</a>	None
<a href="#">Listed Threatened Ecological Communities:</a>	1
<a href="#">Listed Threatened Species:</a>	21
<a href="#">Listed Migratory Species:</a>	6

## Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at <http://www.environment.gov.au/heritage>

A [permit](#) may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

<a href="#">Commonwealth Land:</a>	1
<a href="#">Commonwealth Heritage Places:</a>	None
<a href="#">Listed Marine Species:</a>	10
<a href="#">Whales and Other Cetaceans:</a>	None
<a href="#">Critical Habitats:</a>	None
<a href="#">Commonwealth Reserves Terrestrial:</a>	None
<a href="#">Australian Marine Parks:</a>	None

## Extra Information

This part of the report provides information that may also be relevant to the area you have nominated.

<a href="#">State and Territory Reserves:</a>	17
<a href="#">Regional Forest Agreements:</a>	None
<a href="#">Invasive Species:</a>	22
<a href="#">Nationally Important Wetlands:</a>	None
<a href="#">Key Ecological Features (Marine)</a>	None

# Details

## Matters of National Environmental Significance

Wetlands of International Importance (Ramsar)		[ Resource Information ]
Name	Proximity	
<a href="#">Peel-yalgorup system</a>	100 - 150km upstream	
<a href="#">Toolibin lake (also known as lake toolibin)</a>	Within 10km of Ramsar	

Listed Threatened Ecological Communities		[ Resource Information ]
For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.		

Name	Status	Type of Presence
<a href="#">Eucalypt Woodlands of the Western Australian Wheatbelt</a>	Critically Endangered	Community likely to occur within area

Listed Threatened Species		[ Resource Information ]
Name	Status	Type of Presence
Birds		
<a href="#">Calidris ferruginea</a> Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
<a href="#">Calyptorhynchus banksii naso</a> Forest Red-tailed Black-Cockatoo, Karrak [67034]	Vulnerable	Species or species habitat may occur within area
<a href="#">Calyptorhynchus latirostris</a> Carnaby's Cockatoo, Short-billed Black-Cockatoo [59523]	Endangered	Species or species habitat known to occur within area
<a href="#">Falco hypoleucos</a> Grey Falcon [929]	Vulnerable	Species or species habitat may occur within area
<a href="#">Leipoa ocellata</a> Malleefowl [934]	Vulnerable	Species or species habitat likely to occur within area
Mammals		
<a href="#">Bettongia penicillata ogilbyi</a> Woylie [66844]	Endangered	Species or species habitat may occur within area
<a href="#">Dasyurus geoffroii</a> Chuditch, Western Quoll [330]	Vulnerable	Species or species habitat may occur within area
<a href="#">Phascogale calura</a> Red-tailed Phascogale, Red-tailed Wambenger, Kenngoor [316]	Vulnerable	Species or species habitat known to occur within area
Plants		
<a href="#">Acacia cochlocarpa subsp. cochlocarpa</a> Spiral-fruited Wattle [23877]	Endangered	Species or species habitat may occur within area

Name	Status	Type of Presence
<a href="#">Acacia insolita subsp. recurva</a> Yornaning Wattle [64495]	Endangered	Species or species habitat known to occur within area
<a href="#">Andersonia gracilis</a> Slender Andersonia [14470]	Endangered	Species or species habitat known to occur within area
<a href="#">Banksia cuneata</a> Matchstick Banksia, Quairading Banksia [9827]	Endangered	Species or species habitat likely to occur within area
<a href="#">Banksia oligantha</a> Wagin Banksia [20697]	Endangered	Species or species habitat may occur within area
<a href="#">Boronia capitata subsp. capitata</a> a shrub [29156]	Endangered	Species or species habitat likely to occur within area
<a href="#">Caladenia hoffmanii</a> Hoffman's Spider-orchid [56719]	Endangered	Species or species habitat may occur within area
<a href="#">Darwinia carnea</a> Mogumber Bell, Narrogin Bell [9736]	Endangered	Species or species habitat may occur within area
<a href="#">Grevillea dryandroides subsp. hirsuta</a> Hairy Phalanx Grevillea [64577]	Endangered	Species or species habitat likely to occur within area
<a href="#">Grevillea scapigera</a> Corrigin Grevillea [12195]	Endangered	Species or species habitat may occur within area
<a href="#">Pultenaea pauciflora</a> Narrogin Pea [14013]	Vulnerable	Species or species habitat may occur within area
<a href="#">Roycea pycnophylloides</a> Saltmat [21161]	Endangered	Species or species habitat likely to occur within area
<a href="#">Verticordia fimbrileps subsp. fimbrileps</a> Shy Featherflower [24631]	Endangered	Species or species habitat likely to occur within area

Listed Migratory Species		[ <u>Resource Information</u> ]
* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.		
Name	Threatened	Type of Presence
Migratory Marine Birds		
<a href="#">Apus pacificus</a>		
Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Migratory Terrestrial Species		
<a href="#">Motacilla cinerea</a>		
Grey Wagtail [642]		Species or species habitat may occur within area
Migratory Wetlands Species		
<a href="#">Actitis hypoleucos</a>		
Common Sandpiper [59309]		Species or species habitat may occur within area
<a href="#">Calidris acuminata</a>		
Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area

Name	Threatened	Type of Presence
<a href="#">Calidris ferruginea</a> Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
<a href="#">Calidris melanotos</a> Pectoral Sandpiper [858]		Species or species habitat may occur within area

### Other Matters Protected by the EPBC Act

Commonwealth Land	<a href="#">[ Resource Information ]</a>
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The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Name
Commonwealth Land -

Listed Marine Species	<a href="#">[ Resource Information ]</a>
-----------------------	--

\* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

Name	Threatened	Type of Presence
Birds		
<a href="#">Actitis hypoleucos</a> Common Sandpiper [59309]		Species or species habitat may occur within area
<a href="#">Apus pacificus</a> Fork-tailed Swift [678]		Species or species habitat likely to occur within area
<a href="#">Ardea ibis</a> Cattle Egret [59542]		Species or species habitat may occur within area
<a href="#">Calidris acuminata</a> Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area
<a href="#">Calidris ferruginea</a> Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
<a href="#">Calidris melanotos</a> Pectoral Sandpiper [858]		Species or species habitat may occur within area
<a href="#">Chrysococcyx osculans</a> Black-eared Cuckoo [705]		Species or species habitat likely to occur within area
<a href="#">Haliaeetus leucogaster</a> White-bellied Sea-Eagle [943]		Species or species habitat may occur within area
<a href="#">Merops ornatus</a> Rainbow Bee-eater [670]		Species or species habitat may occur within



Name	Threatened	Type of Presence
<a href="#">Motacilla cinerea</a> Grey Wagtail [642]		area  Species or species habitat may occur within area

Extra Information

State and Territory Reserves	[ Resource Information ]
Name	State
Birdwhistle	WA
Boundain	WA
Brooks	WA
Claypit	WA
Commodine	WA
East Yornaning	WA
Mungerungcutting	WA
NTWA Bushland covenant (0020)	WA
North Yilliminning	WA
Ockley	WA
Unnamed WA19119	WA
Unnamed WA20635	WA
Unnamed WA29589	WA
Unnamed WA29906	WA
Wickepin	WA
Yarling	WA
Yilliminning	WA

Invasive Species	[ Resource Information ]
Weeds reported here are the 20 species of national significance (WoNS), along with other introduced plants that are considered by the States and Territories to pose a particularly significant threat to biodiversity. The following feral animals are reported: Goat, Red Fox, Cat, Rabbit, Pig, Water Buffalo and Cane Toad. Maps from Landscape Health Project, National Land and Water Resouces Audit, 2001.	

Name	Status	Type of Presence
Birds		
Anas platyrhynchos Mallard [974]		Species or species habitat likely to occur within area
Columba livia Rock Pigeon, Rock Dove, Domestic Pigeon [803]		Species or species habitat likely to occur within area
Streptopelia senegalensis Laughing Turtle-dove, Laughing Dove [781]		Species or species habitat likely to occur within area
Mammals		
Canis lupus familiaris Domestic Dog [82654]		Species or species habitat likely to occur within area
Capra hircus Goat [2]		Species or species habitat likely to occur within area

Name	Status	Type of Presence
Felis catus Cat, House Cat, Domestic Cat [19]		Species or species habitat likely to occur within area
Feral deer Feral deer species in Australia [85733]		Species or species habitat likely to occur within area
Mus musculus House Mouse [120]		Species or species habitat likely to occur within area
Oryctolagus cuniculus Rabbit, European Rabbit [128]		Species or species habitat likely to occur within area
Rattus rattus Black Rat, Ship Rat [84]		Species or species habitat likely to occur within area
Sus scrofa Pig [6]		Species or species habitat likely to occur within area
Vulpes vulpes Red Fox, Fox [18]		Species or species habitat likely to occur within area
Plants		
Asparagus asparagoides Bridal Creeper, Bridal Veil Creeper, Smilax, Florist's Smilax, Smilax Asparagus [22473]		Species or species habitat likely to occur within area
Carrichtera annua Ward's Weed [9511]		Species or species habitat may occur within area
Cenchrus ciliaris Buffel-grass, Black Buffel-grass [20213]		Species or species habitat may occur within area
Chrysanthemoides monilifera Bitou Bush, Boneseed [18983]		Species or species habitat may occur within area
Chrysanthemoides monilifera subsp. monilifera Boneseed [16905]		Species or species habitat likely to occur within area
Genista monspessulana Montpellier Broom, Cape Broom, Canary Broom, Common Broom, French Broom, Soft Broom [20126]		Species or species habitat likely to occur within area
Lycium ferocissimum African Boxthorn, Boxthorn [19235]		Species or species habitat likely to occur within area
Salix spp. except S.babylonica, S.x calodendron & S.x reichardtii Willows except Weeping Willow, Pussy Willow and Sterile Pussy Willow [68497]		Species or species habitat likely to occur within area
Solanum elaeagnifolium Silver Nightshade, Silver-leaved Nightshade, White Horse Nettle, Silver-leaf Nightshade, Tomato Weed, White Nightshade, Bull-nettle, Prairie-berry, Satansbos, Silver-leaf Bitter-apple, Silverleaf-nettle, Trompillo [12323] Tamarix aphylla Athel Pine, Athel Tree, Tamarisk, Athel Tamarisk, Athel Tamarix, Desert Tamarisk, Flowering Cypress, Salt Cedar [16018]		Species or species habitat likely to occur within area



# Caveat

The information presented in this report has been provided by a range of data sources as acknowledged at the end of the report.

This report is designed to assist in identifying the locations of places which may be relevant in determining obligations under the Environment Protection and Biodiversity Conservation Act 1999. It holds mapped locations of World and National Heritage properties, Wetlands of International and National Importance, Commonwealth and State/Territory reserves, listed threatened, migratory and marine species and listed threatened ecological communities. Mapping of Commonwealth land is not complete at this stage. Maps have been collated from a range of sources at various resolutions.

Not all species listed under the EPBC Act have been mapped (see below) and therefore a report is a general guide only. Where available data supports mapping, the type of presence that can be determined from the data is indicated in general terms. People using this information in making a referral may need to consider the qualifications below and may need to seek and consider other information sources.

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species distributions have been derived through a variety of methods. Where distributions are well known and if time permits, maps are derived using either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc) together with point locations and described habitat; or environmental modelling (MAXENT or BIOCLIM habitat modelling) using point locations and environmental data layers.

Where very little information is available for species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc). In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More reliable distribution mapping methods are used to update these distributions as time permits.

Only selected species covered by the following provisions of the EPBC Act have been mapped:

- migratory and
- marine

The following species and ecological communities have not been mapped and do not appear in reports produced from this database:

- threatened species listed as extinct or considered as vagrants
- some species and ecological communities that have only recently been listed
- some terrestrial species that overfly the Commonwealth marine area
- migratory species that are very widespread, vagrant, or only occur in small numbers

The following groups have been mapped, but may not cover the complete distribution of the species:

- non-threatened seabirds which have only been mapped for recorded breeding sites
- seals which have only been mapped for breeding sites near the Australian continent

Such breeding sites may be important for the protection of the Commonwealth Marine environment.

# Coordinates

-32.80394 117.3743

# Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

- [-Office of Environment and Heritage, New South Wales](#)
- [-Department of Environment and Primary Industries, Victoria](#)
- [-Department of Primary Industries, Parks, Water and Environment, Tasmania](#)
- [-Department of Environment, Water and Natural Resources, South Australia](#)
- [-Department of Land and Resource Management, Northern Territory](#)
- [-Department of Environmental and Heritage Protection, Queensland](#)
- [-Department of Parks and Wildlife, Western Australia](#)
- [-Environment and Planning Directorate, ACT](#)
- [-Birdlife Australia](#)
- [-Australian Bird and Bat Banding Scheme](#)
- [-Australian National Wildlife Collection](#)
- Natural history museums of Australia
- [-Museum Victoria](#)
- [-Australian Museum](#)
- [-South Australian Museum](#)
- [-Queensland Museum](#)
- [-Online Zoological Collections of Australian Museums](#)
- [-Queensland Herbarium](#)
- [-National Herbarium of NSW](#)
- [-Royal Botanic Gardens and National Herbarium of Victoria](#)
- [-Tasmanian Herbarium](#)
- [-State Herbarium of South Australia](#)
- [-Northern Territory Herbarium](#)
- [-Western Australian Herbarium](#)
- [-Australian National Herbarium, Canberra](#)
- [-University of New England](#)
- [-Ocean Biogeographic Information System](#)
- [-Australian Government, Department of Defence](#)
- [Forestry Corporation, NSW](#)
- [-Geoscience Australia](#)
- [-CSIRO](#)
- [-Australian Tropical Herbarium, Cairns](#)
- [-eBird Australia](#)
- [-Australian Government – Australian Antarctic Data Centre](#)
- [-Museum and Art Gallery of the Northern Territory](#)
- [-Australian Government National Environmental Science Program](#)
- [-Australian Institute of Marine Science](#)
- [-Reef Life Survey Australia](#)
- [-American Museum of Natural History](#)
- [-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania](#)
- [-Tasmanian Museum and Art Gallery, Hobart, Tasmania](#)
- Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the [Contact Us](#) page.

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## Appendix 8. Pre and post likelihood of occurrence.

SPECIES	CATEGORY	FLOWERING	DESCRIPTION AND HABITAT	Likelihood	Post survey Likelihood
<i>Hibbertia priceana</i>	T (CR)	June - Aug	Usually compact but sometimes sprawling, dwarf shrub, to 0.15 m high. Fl. yellow, Jun to Aug. Grey sandy clay with laterite gravel. Ridges.	Possible	Unlikely (U2)
<i>Acacia cochlocarpa</i> subsp. <i>cochlocarpa</i>	T (EN)	Jun-Aug	Velutinous, sprawling shrub, 0.3-0.7(-1.5) m high. Fl. yellow. Sandy clay or laterite.	Possible	Unlikely (U2)
<i>Acacia insolita</i> subsp. <i>recurva</i>	T (EN)	Sep	Spindly shrub, 0.6-1.2 m high. Fl. yellow-cream. Lateritic ridges.	Possible	Unlikely (U2)
<i>Banksia cuneata</i>	T (EN)	Sep-Dec	Non-lignotuberous, small tree or shrub, 2-4 m high. Fl. pink/pink & cream & yellow. Grey, yellow or yellow-brown sand.	Possible	Unlikely (U1)
<i>Banksia oligantha</i>	T (EN)	Oct-Nov	Non-lignotuberous shrub, to 3 m high. Fl. red & cream/orange-brown. Yellow or yellow-brown sand.	Possible	Unlikely (U1)
<i>Boronia capitata</i> subsp. <i>capitata</i>	T (EN)	Aug to Dec or Feb	Slender shrub, 0.3-1.3 m high. Fl. pink. Sand, often over laterite. Sandplains.	Possible	Unlikely (U1)
<i>Caladenia hoffmanii</i>	T (EN)	Aug-Oct	Tuberous, perennial, herb, 0.13-0.3 m high. Fl. green & yellow & red. Clay, loam, laterite, granite. Rocky outcrops and hillsides, ridges, swamps and gullies.	Possible	Unlikely (U2)
<i>Darwinia carnea</i>	T (EN)	Oct to Dec	Spreading shrub, 0.2-0.45 m high. Fl. green & red. Lateritic loam & gravel.	Possible	Unlikely (U2)
<i>Grevillea dryandroides</i> subsp. <i>hirsuta</i>	T (EN)	May or Sep to Nov	Prostrate, vigorously suckering shrub, 0.05-0.3 m high. Fl. red/pink-red. White or yellow sand, laterite.	Possible	Unlikely (U2)
<i>Grevillea scapigera</i>	T (EN)	Feb or Oct to Nov	Suckering, prostrate to weakly ascending shrub, 0.15-0.4 m high, up to 1.8 m wide. Fl. white/yellow-green. Sandy or gravelly lateritic soils.	Possible	Unlikely (U2)
<i>Roycea pycnophylloides</i>	T (EN)	Sep	Perennial, herb, forming densely branched, silvery mats to 1 m wide. Fl. Sandy soils, clay. Saline flats.	Possible	Unlikely (U2)
<i>Verticordia fimbrilepis</i> subsp. <i>fimbrilepis</i>	T (EN)	Oct-Dec, Jan	Shrub, 0.3-0.7 m high. Fl. pink-white. Gravelly sandy or clayey soils. Flats, road verges.	Possible	Unlikely (U2)

SPECIES	CATEGORY	FLOWERING	DESCRIPTION AND HABITAT	Likelihood	Post survey Likelihood
<i>Pultenaea pauciflora</i> (Narrogen Pea)	T (VU)	Oct - Nov	Dense, much-branched shrub, to 0.8 m high. Fl. yellow. Sandy & clay lateritic soils. Undulating country.	Possible	Unlikely (U2)
<i>Banksia rufa</i> subsp. <i>magna</i>	P1	Winter to spring?	Non-lignotuberous shrub, to 1.5 m high. Yellow-grey sandy gravel over laterite or gravelly loam. Slopes.	Possible	Unlikely (U2)
<i>Jacksonia debilis</i>	P1	Sep to Oct	Prostrate shrub. Fl. yellow & red. White or grey clayey sand.	Possible	Unlikely (U2)
<i>Xanthoparmelia</i> <i>sammyi</i>	P1		Rock shield lichen	?	Unlikely (U1)
<i>Xanthoparmelia</i> <i>sargentii</i>	P1		Rock shield lichen	?	Unlikely (U1)
<i>Andersonia carinata</i>	P2	Aug-Oct	Erect slender shrub, 0.1-0.45(-0.8) m high. Fl. pink/pink- white/pink-purple. White sand, gravelly lateritic soils. Plains.	Possible	Unlikely (U2)
<i>Babingtonia maleyae</i>	P2	Jan - Feb	Shrub 0.8–1.3 m high. Fl white, pink outside in bud, sepals deep pink. Sandy loam with lateritic gravel	Possible	Unlikely (U2)
<i>Banksia subpinnatifida</i> var. <i>subpinnatifida</i>	P2	Sep-Oct	Erect or straggling, non-lignotuberous shrub, 0.3-1.5 m high. Fl. yellow. Gravelly loam.	Possible	Unlikely (U2)
<i>Leucopogon audax</i>	P2	Aug-Oct	Erect open shrub to 150 cm high x 120 cm wide. Leaves helically arranged. Corolla tube white, lobes white, partially pink - longer than tube. Lateritic uplands.	Possible	Unlikely (U2)
<i>Pultenaea indira</i> subsp. <i>pudiodes</i>	P2	Sep-Nov	Erect subshrub, height ca 25 cm, leaves with distinct recurved tips, yellow/ dark brown flowers present.	Possible	Unlikely (U2)
<i>Stylidium</i> <i>squamellosum</i>	P2	Oct-Nov	Caespitose perennial, herb, 0.12-0.35 m high, leaves tufted, linear to narrowly oblanceolate, 1-5 cm long, 0.8-2.5 mm wide, apex subacute, margin entire, glandular. Scape glandular throughout. Inflorescence racemose. Fl. yellow. Brown to red-brown clay loam. Winter-wet habitats and depressions, open woodland, shrubland.	Possible	Unlikely (U2)
<i>Styphelia cymbiformis</i>	P2	Nov-Dec?	Erect shrub to 0.8 m, Fl. White. Known from east and south of Mt Barker	Unlikely	Unlikely (U2)
<i>Trymalium</i> <i>monospermum</i>	P2	Jul	Shrub, 0.1-0.3 m high, multi-stemmed at base. Fl. cream. Red-brown gravelly sandy loam, laterite. Ridges.	Possible	Unlikely (U2)

SPECIES	CATEGORY	FLOWERING	DESCRIPTION AND HABITAT	Likelihood	Post survey Likelihood
<i>Acacia deflexa</i>	P3	Aug	Diffuse, much-branched shrub, 0.5-1.5 m high. Fl. yellow. Red-brown sandy loam. Undulating plains, along drainage lines.	Possible	Unlikely (U2)
<i>Austroparmelina macrospora</i>	P3		Foliose lichen. Occurs on live bark	?	Unlikely (U2)
<i>Banksia fasciculata</i>	P3	May to Aug	Columnar, non-lignotuberous shrub, 1-2.5 m high. Fl. cream-yellow. Lateritic clay, sand over laterite.	Possible	Unlikely (U2)
<i>Banksia meganotia</i>	P3	Oct	Straggly or erect, prickly, lignotuberous shrub, 0.3-1 m high. Fl. yellow. Sand, sandy loam or clay loam over laterite.	Possible	Unlikely (U2)
<i>Daviesia uncinata</i>	P3	Dec or Jan	Intricate, many-stemmed shrub, 0.2-0.7 m high. Fl. yellow & brown. Gravelly lateritic sand, loamy sand. Undulating plains.	Possible	Unlikely (U2)
<i>Pterostylis echinulata</i>	P3	June	Erect orchid with prostrate leaf rosette, height ca 5 cm.fl. Green. Sandy soil	Possible	Unlikely (U1)
<i>Stylidium exappendiculatum</i>	P3	Aug to Oct/Nov	Bulb-forming perennial, herb, 0.03-0.065 m high. Fl. white/yellow, Aug to Oct or Dec. Stony, sandy or clayey soils, granite. Outcrops, winter-wet flats	Possible	Unlikely (U2)
<i>Synaphea platyphylla</i>	P3	Sep-Oct	Caespitose shrub. Fl. yellow, Sep to Oct. Sandy loam.	Possible	Unlikely (U2)
<i>Verticordia huegelii</i> var. <i>tridens</i>	P3	Sep - Nov	Shrub, 0.15-0.6 m high. Fl. green-yellow/red. Sandy or gravelly loam. Winter-wet areas, low hills.	Possible	Unlikely (U2)
<i>Caladenia integra</i>	P4	Sep to Oct	Tuberous, perennial, herb, 0.2-0.5 m high. Fl. green & red. Clayey loam. Granite outcrops, rocky slopes.	Unlikely	Unlikely (U2)
<i>Diuris recurva</i>	P4	Jul to Aug	Tuberous, perennial, herb, 0.2-0.3 m high. Fl. yellow & brown, Jul to Aug. Loam. Winter-wet areas.	Possible	Unlikely (U2)
<i>Eucalyptus exilis</i>	P4	Aug-Oct	(Whipstick mallee), 2-6 m high, bark smooth. Fl. white. Grey sand, gravelly loam. Lateritic ridges.	Possible	Unlikely (U2)
<i>Eucalyptus loxophleba</i> x <i>wandoo</i>	P4	Sep to Oct, Dec - Feb	(Mallee) or tree, 4-20 m high, bark rough black-brown on trunk. Sandy clay or loam.	Possible	Unlikely (U2)

SPECIES	CATEGORY	FLOWERING	DESCRIPTION AND HABITAT	Likelihood	Post survey Likelihood
<i>Gastrolobium stipulare</i>	P4	Sep	Erect, leafy shrub, to 0.5 m high. Fl. Yellow & red & brown. Yellow-grey sand, gravelly clay loam, laterite. Slopes, ridges.	Possible	Unlikely (U2)
<i>Stylidium tenuicarpum</i>	P4	Sep to Nov	Rosetted perennial, herb, 0.1-0.5 m high, Leaves broadly linear to narrowly oblanceolate, 1-7 cm long, 1-2.5 mm wide, apex mucronate, margin hyaline, glabrous. Scape hoary. Inflorescence racemose. Fl. yellow/orange. Sandy loam over laterite or granite. Rock outcrops, hillslopes, breakaways. Shrubland, open woodland.	Possible	Unlikely (U2)
<i>Synaphea drummondii</i>	P4	Jul to Sep	Shrub. Fl. yellow. Sand over laterite.	Possible	Unlikely (U2)
<i>Gastrolobium tomentosum</i>	P4	Aug-Nov	Weak, decumbent, often clumped shrub, to 1 m high. Fl. orange, purple, red. Gravelly loam or clay, sometimes over sandier substrates. Hills, road verges.	Possible	Unlikely (U2)

Appendix 9. Sample sites within the survey area.

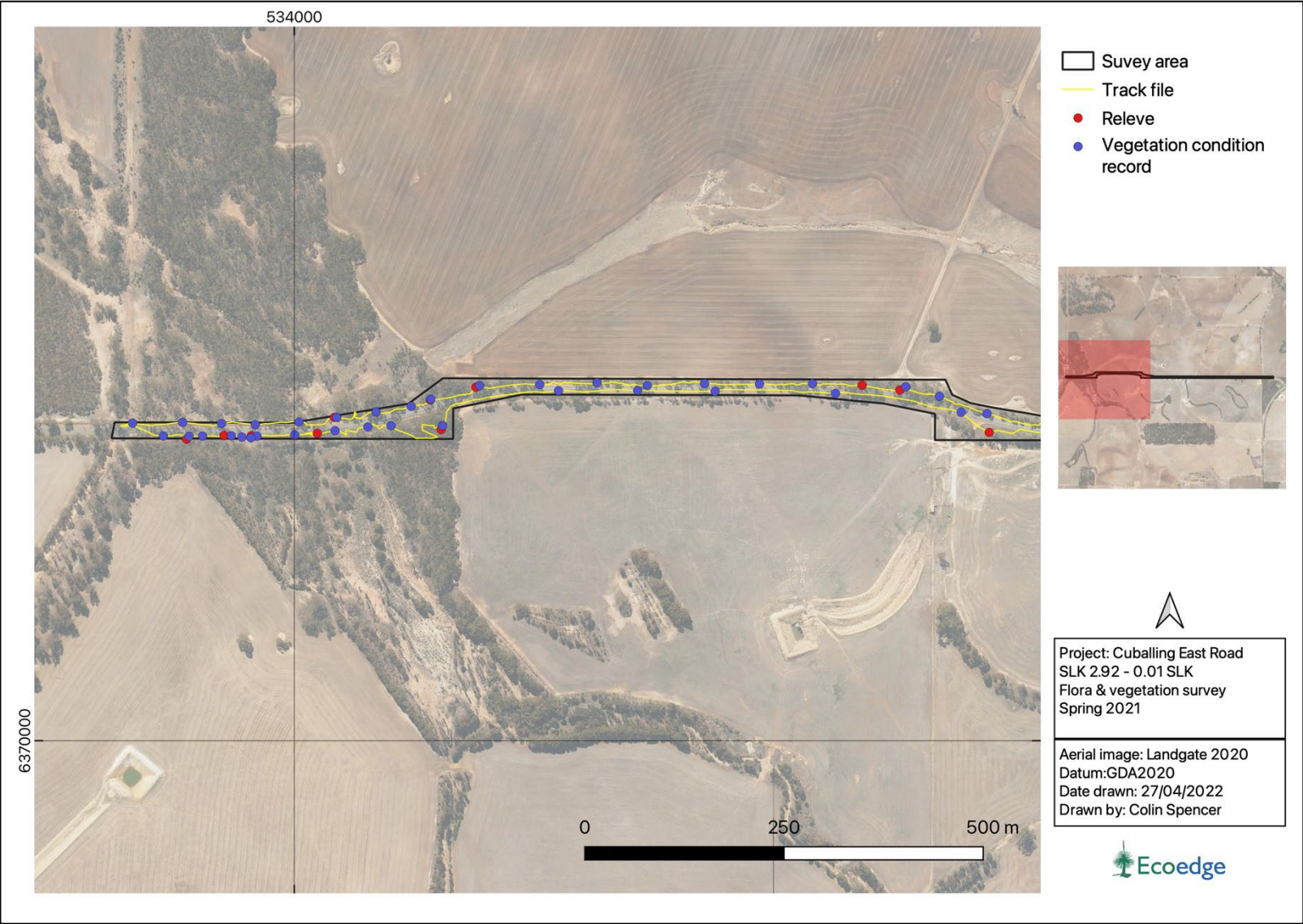


Figure A. Sample sites within the survey area.



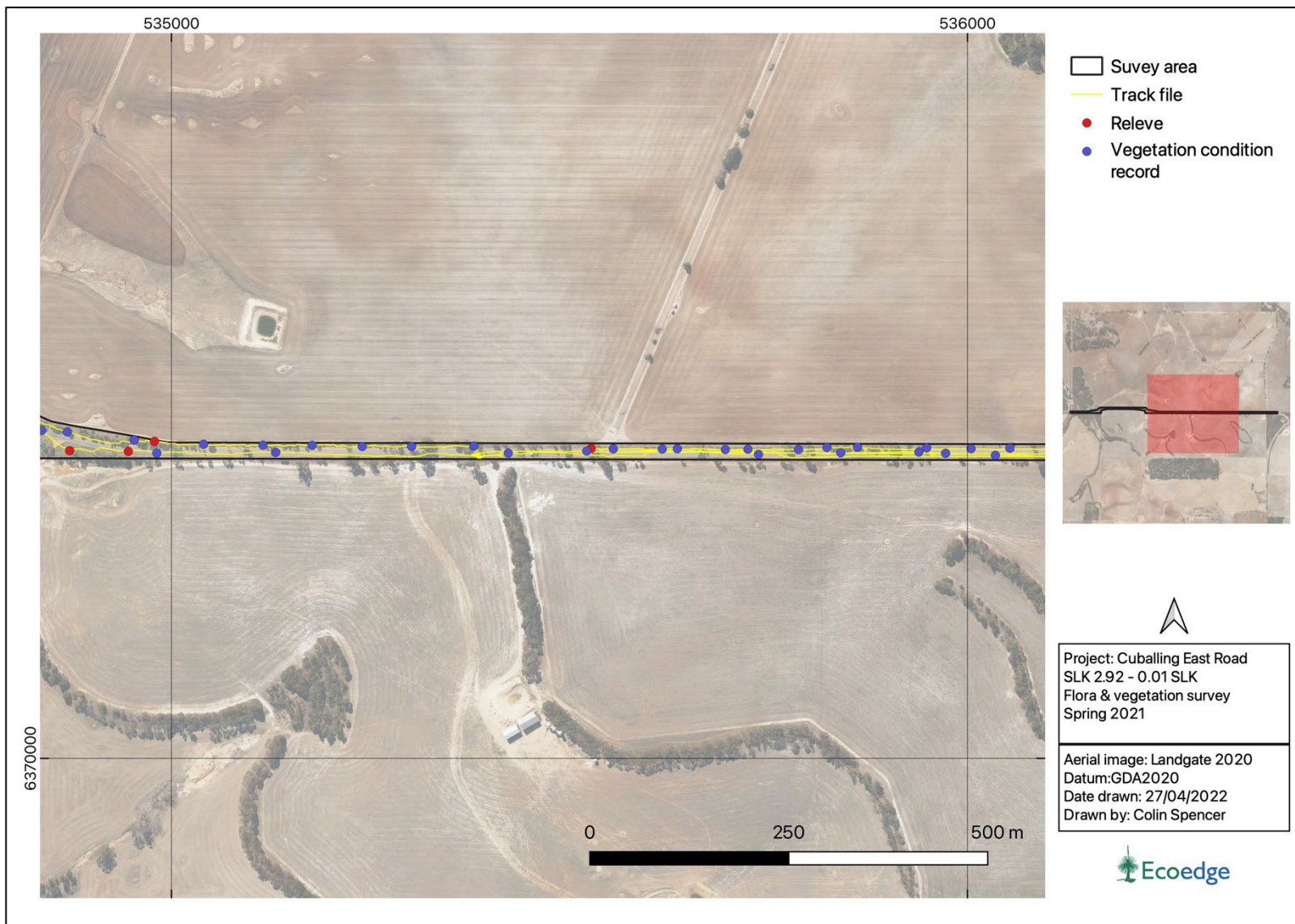


Figure B. Sample sites within the survey area.



Figure C. Sample sites within the survey area.

## Appendix 10. List of vascular flora found within the survey area.

#	FAMILY_NAME	SPECIES	NATURALISED
1	Asparagaceae	<i>Dichopogon capillipes</i>	
2	Asparagaceae	<i>Lomandra micrantha</i> subsp. <i>micrantha</i>	
3	Asparagaceae	<i>Lomandra suaveolens</i>	
4	Asteraceae	<i>Arctotheca calendula</i>	*
5	Asteraceae	<i>Pseudognaphalium luteoalbum</i>	
6	Asteraceae	<i>Sonchus oleraceus</i>	*
7	Asteraceae	<i>Ursinia anthemoides</i>	*
8	Brassicaceae	<i>Raphanus raphanistrum</i>	*
9	Casuarinaceae	<i>Allocasuarina huegeliana</i>	
10	Chenopodiaceae	<i>Atriplex semibaccata</i>	
11	Chenopodiaceae	<i>Tecticornia indica</i> subsp. <i>bidens</i>	
12	Crassulaceae	<i>Crassula colorata</i>	
13	Cucurbitaceae	<i>Cucumis myriocarpus</i>	*
14	Cyperaceae	<i>Isolepis marginata</i>	
15	Fabaceae	<i>Acacia acuminata</i>	
16	Fabaceae	<i>Melilotus indicus</i>	*
17	Fabaceae	<i>Trifolium campestre</i>	*
18	Geraniaceae	<i>Erodium cicutarium</i>	*
19	Hemerocallidaceae	<i>Dianella revoluta</i>	
20	Iridaceae	<i>Romulea rosea</i>	*
21	Juncaceae	<i>Juncus bufonius</i>	*
22	Juncaginaceae	<i>Triglochin mucronata</i>	
23	Myrtaceae	<i>Eucalyptus loxophleba</i> subsp. <i>loxophleba</i>	
24	Myrtaceae	<i>Eucalyptus wandoo</i>	
25	Poaceae	<i>Austrostipa variabilis</i>	
26	Poaceae	<i>Avena barbata</i>	*
27	Poaceae	<i>Ehrharta longiflora</i>	*
28	Poaceae	<i>Hordeum leporinum</i>	*
29	Poaceae	<i>Lolium perenne</i>	*
30	Poaceae	<i>Microlaena stipoides</i>	
31	Poaceae	<i>Rytidosperma acerosum</i>	
32	Primulaceae	<i>Lysimachia arvensis</i>	*
33	Rubiaceae	<i>Galium murale</i>	*



## Appendix 11. The location of vegetation units within the survey area along Cuballing East Road.

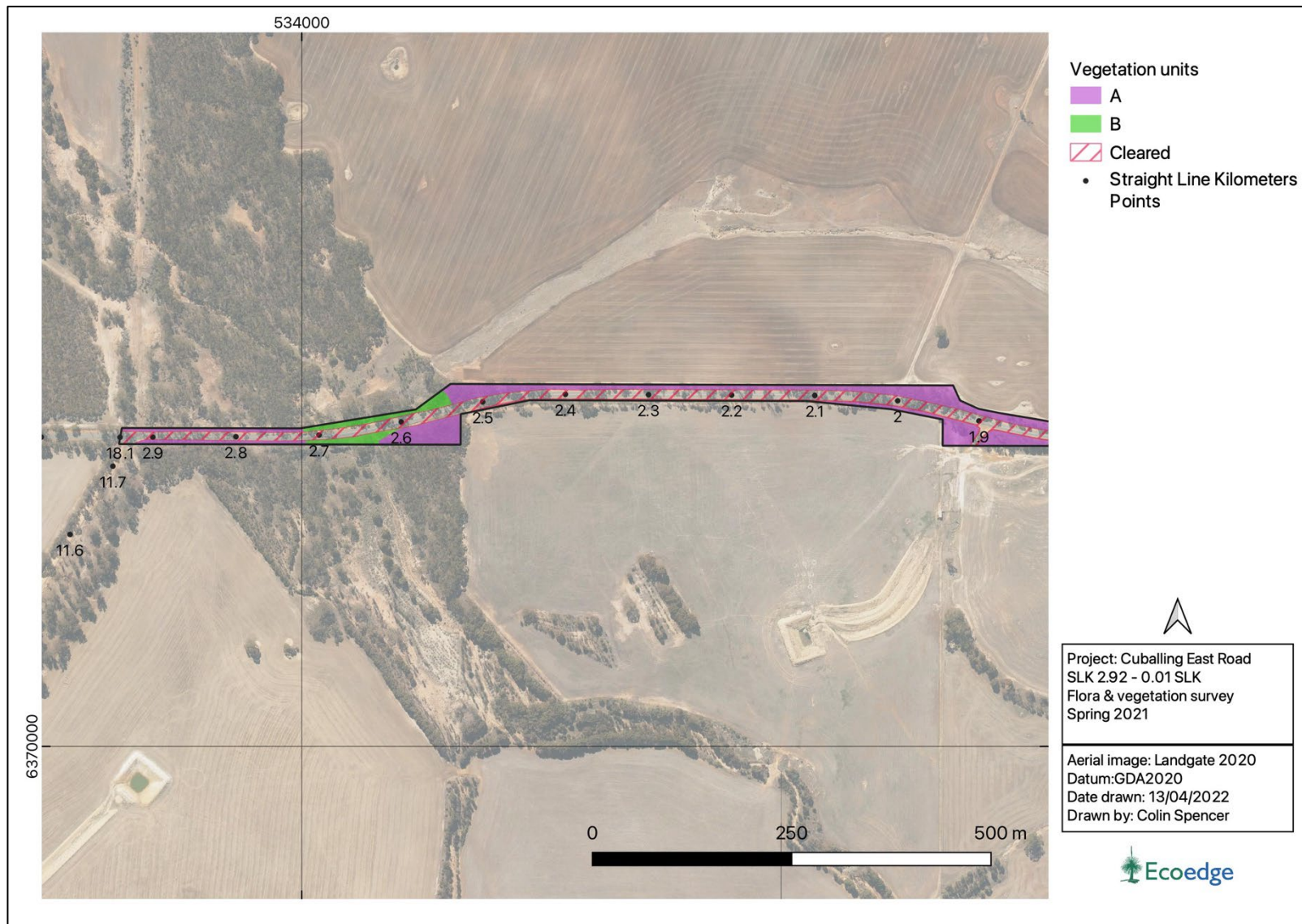


Figure D. Vegetation units within the survey area SLK 2.9– 1.9 SLK.

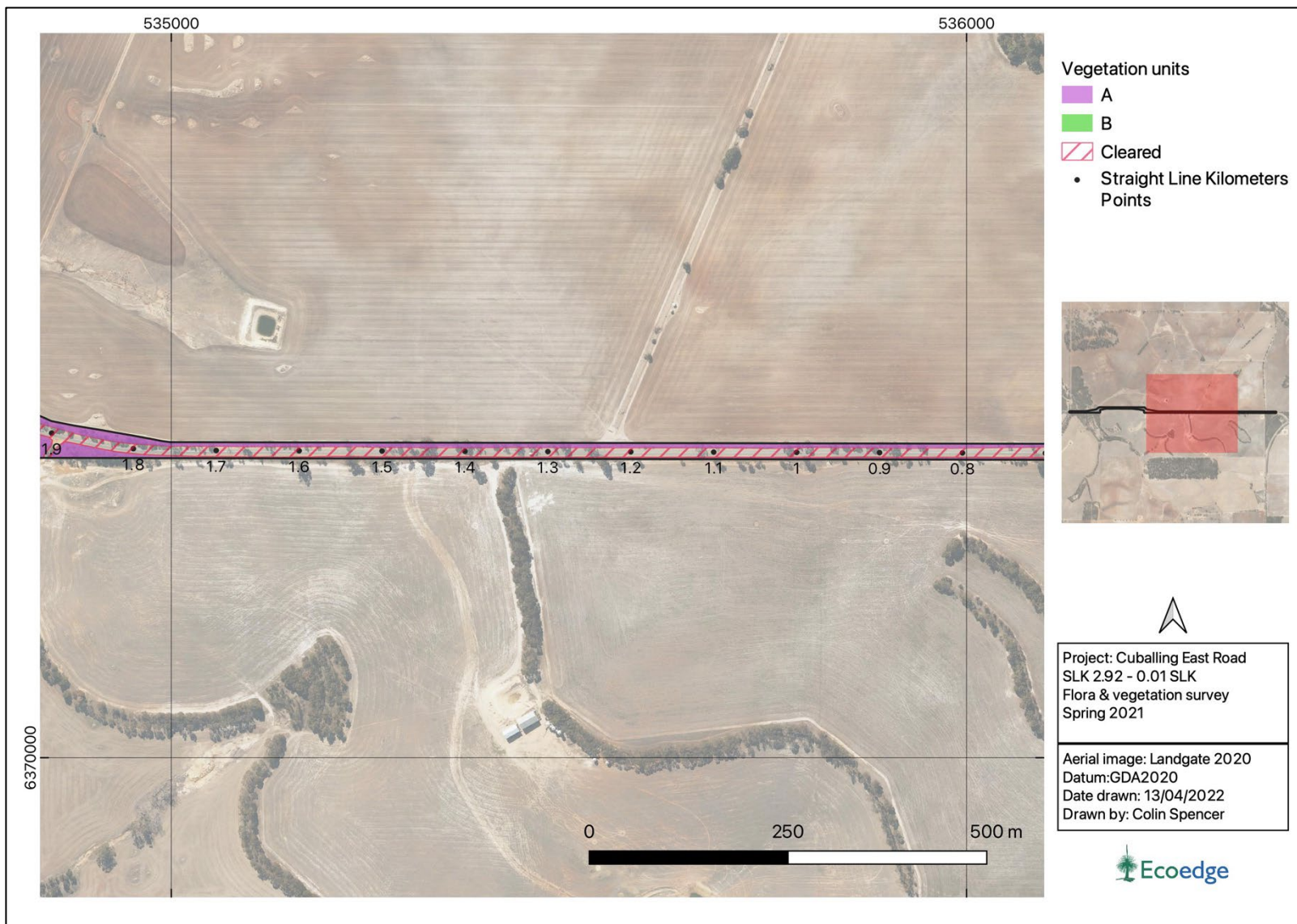


Figure E. Vegetation units within the survey area SLK 1.9 – 0.8 SLK.



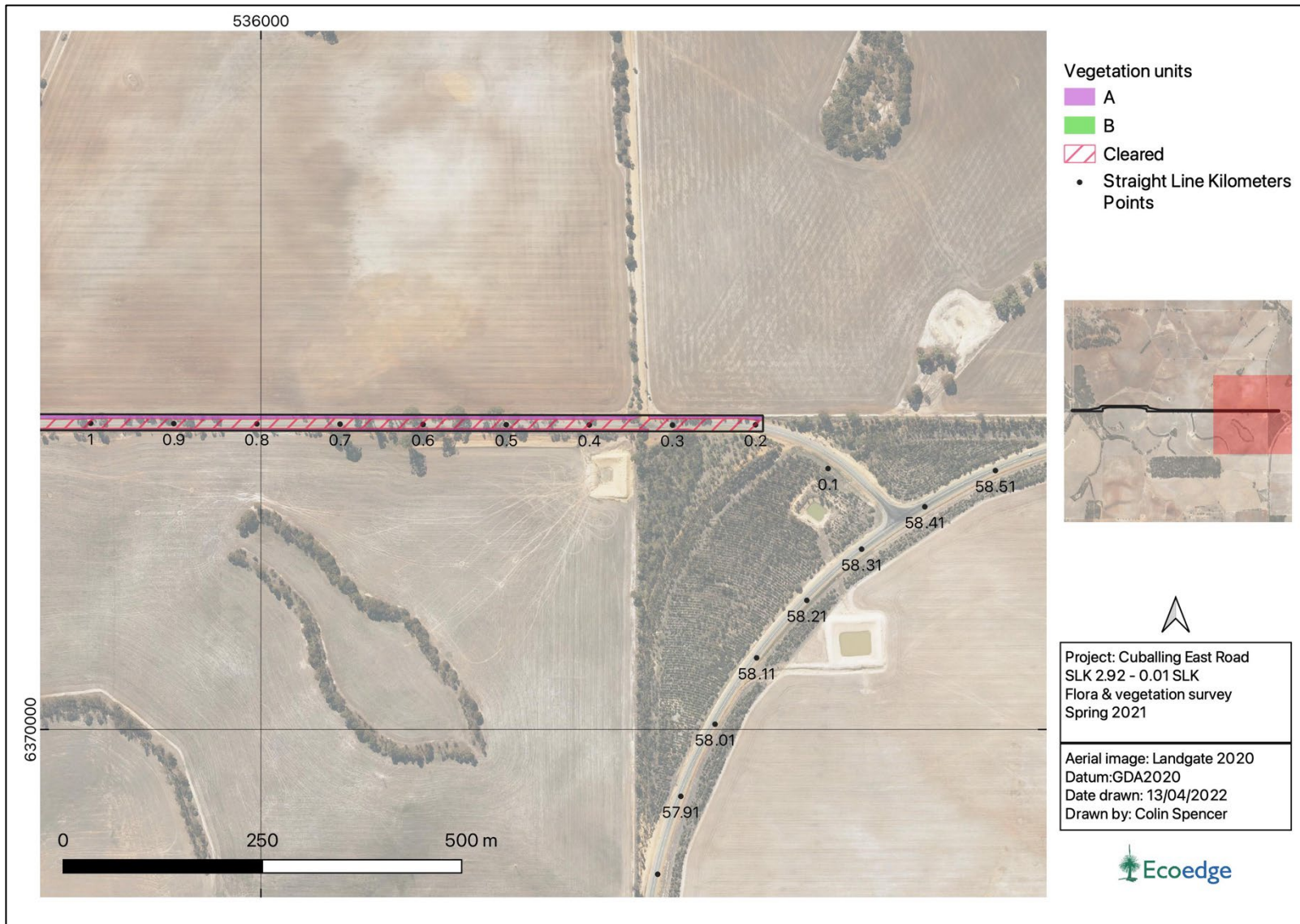


Figure F. Vegetation units within the survey area SLK 1.0– 0.2 SLK.

Appendix 12. Vegetation condition within the survey area along Cuballing East Road.

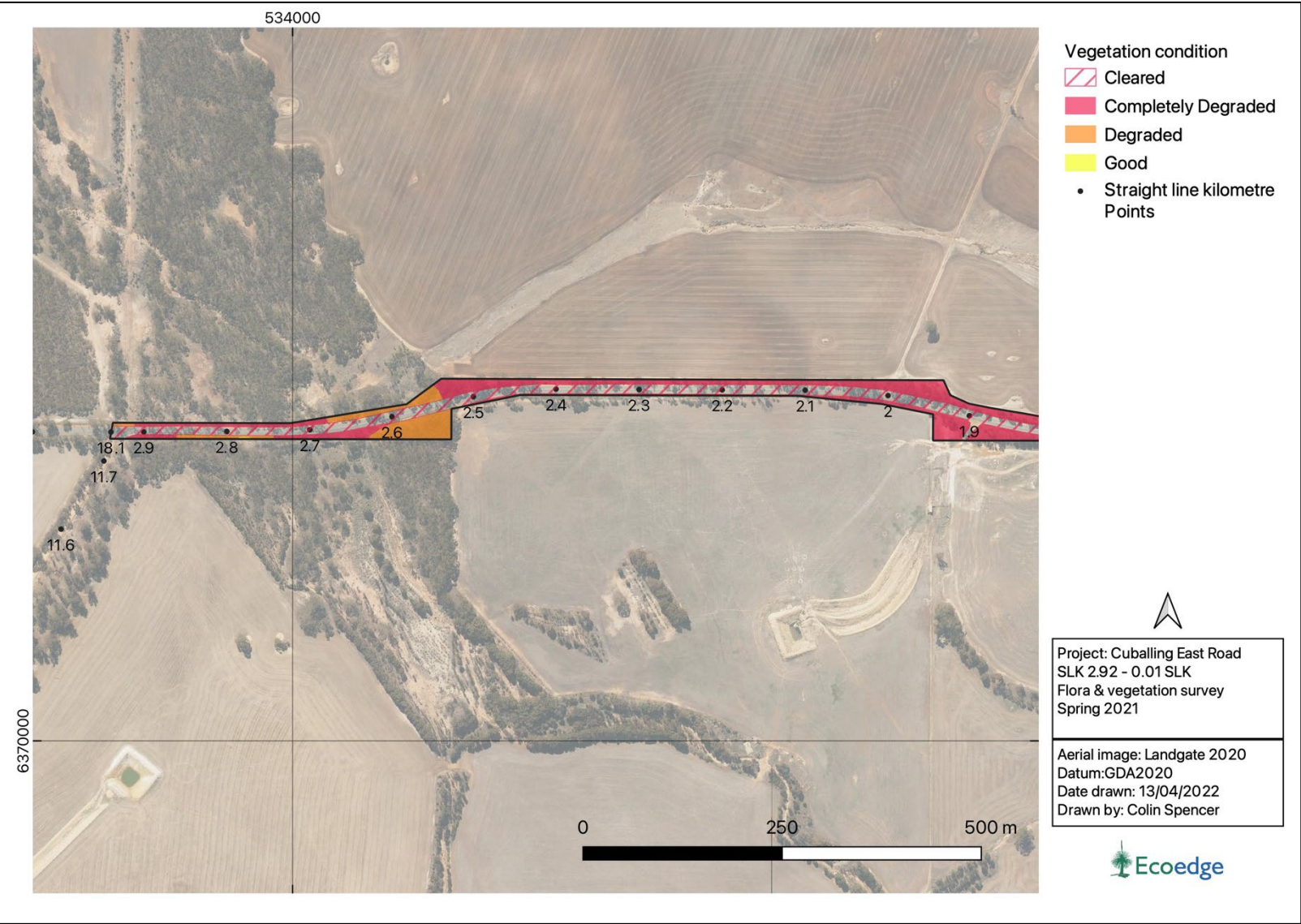


Figure G. Vegetation condition within the survey area SLK 2.9– 1.9 SLK.



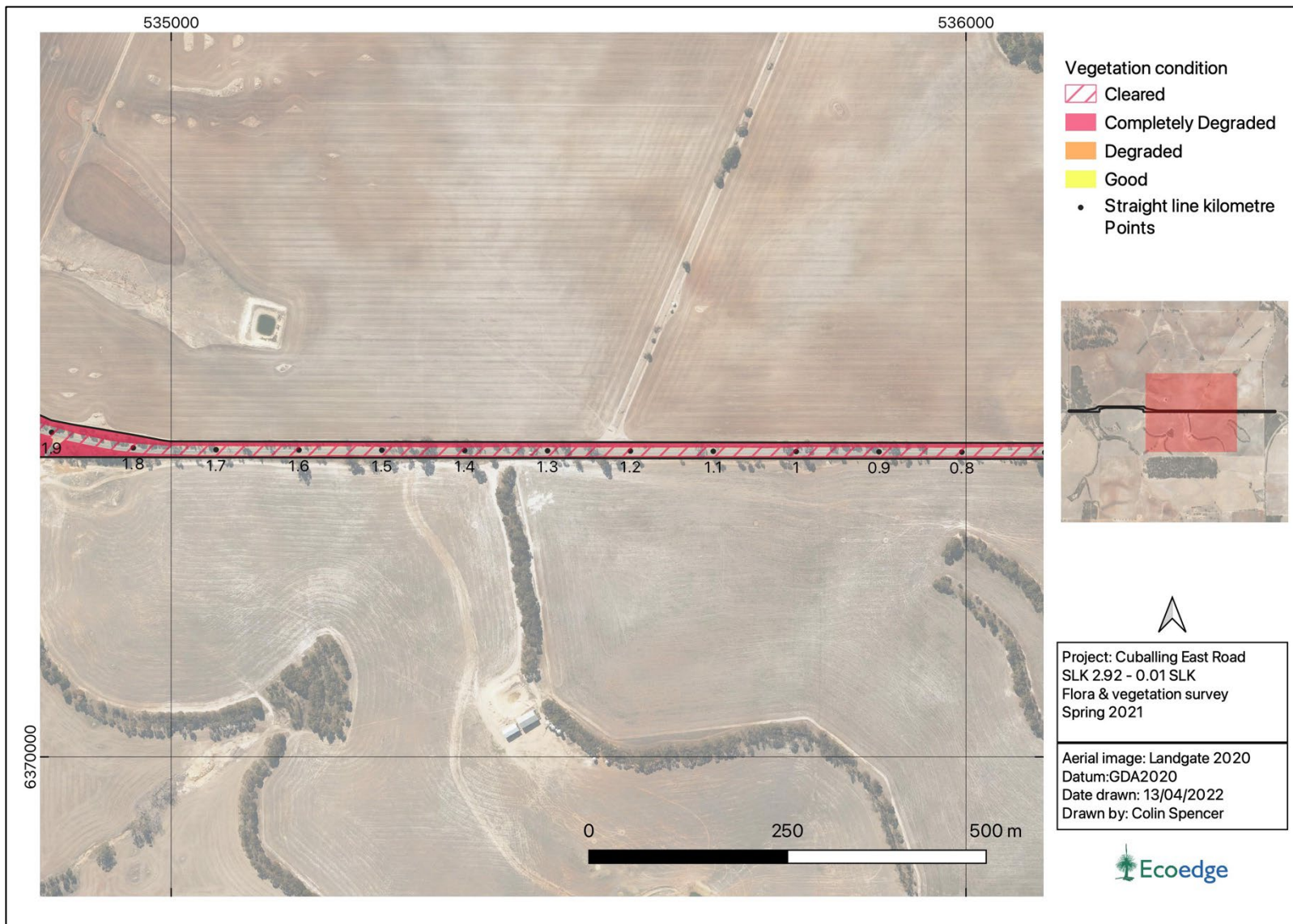


Figure H. Vegetation condition within the survey area SLK 1.9 – 0.8 SLK.

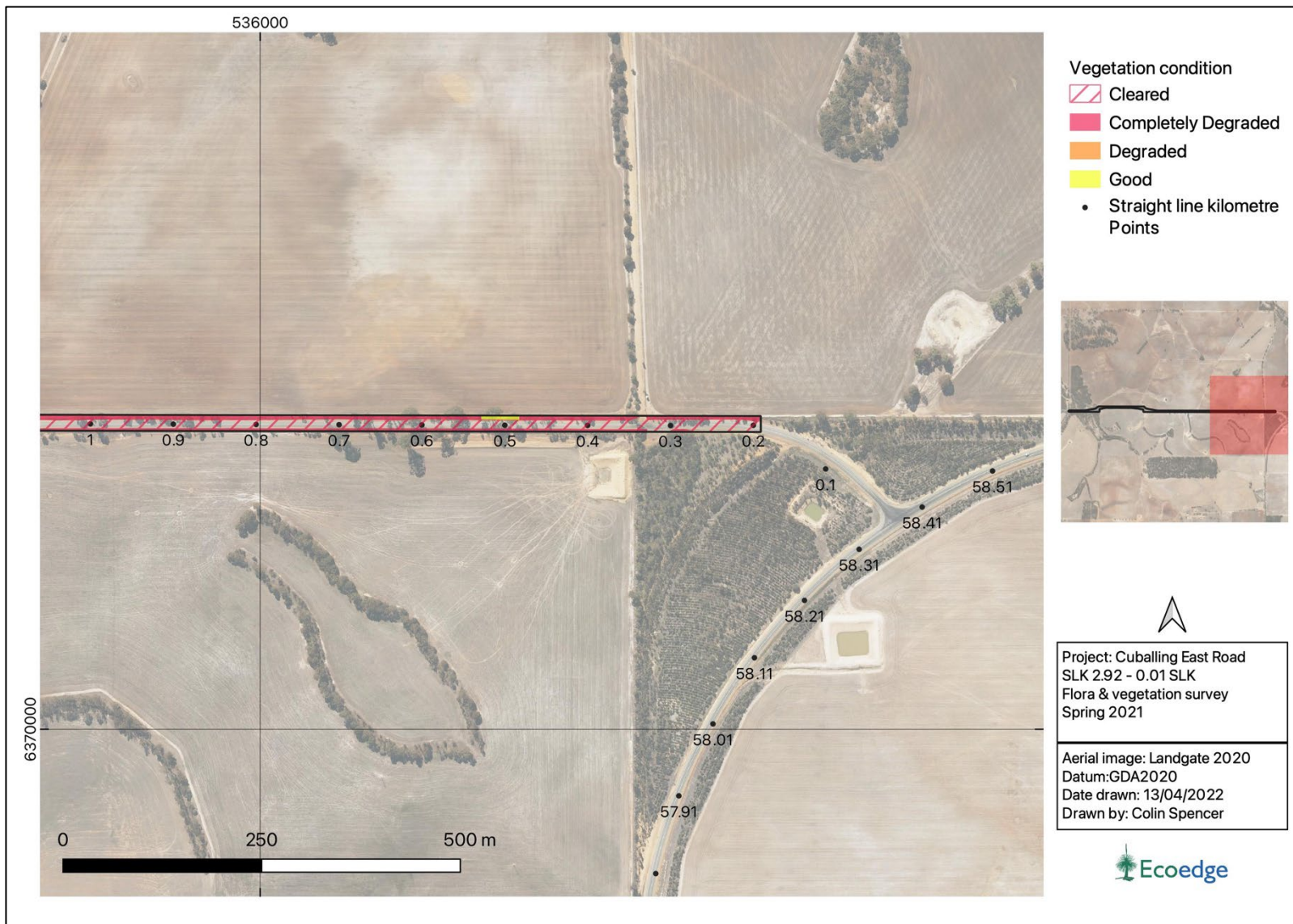


Figure I. Vegetation condition within the survey area SLK 1.0– 0.2 SLK.

## Appendix 13. Threatened Ecological Community reporting form.



# Threatened and Priority Ecological Community (TEC/PEC) Occurrence Report Form

<b>COMMUNITY:</b> Eucalypt Woodlands of the WA Wheatbelt (EPBC Act)		<b>OBSERVATION DATE:</b> 19/10/2021
<b>New occurrence</b> <input type="checkbox"/> <b>Site ID:</b> _____		<b>CONS STATUS:</b> Threatened
<b>OBSERVER/S:</b> Russell Smith & Colin Spencer		<b>PHONE:</b> 0447809124
<b>ROLE:</b> botanists	<b>ORGANISATION:</b> Ecoedge	
<b>EMAIL:</b> russell@ecoedge.com.au		

**DESCRIPTION OF LOCATION** (Provide at least nearest town/named locality, and the distance and direction to that place):  
Shire of Wickieping. 512 to 560 metres along East Cuballing Road from Williams-Kondinin Road. North side of road.

**Reserve No:** \_\_\_\_\_

<b>DISTRICT:</b> _____		<b>LGA:</b> _____	<b>Land manager present:</b> <input type="checkbox"/>
<b>DATUM:</b>  GDA94 / MGA94 <input checked="" type="checkbox"/> AGD84 / AMG84 <input type="checkbox"/> WGS84 <input type="checkbox"/> Unknown <input type="checkbox"/>	<b>COORDINATES:</b> (If UTM coords provided, <b>Zone</b> is also required) DecDegrees <input type="checkbox"/> DegMinSec <input type="checkbox"/> UTM <input checked="" type="checkbox"/> <b>Lat / Northing:</b> 6370391 <b>Long / Easting:</b> 536298 <b>Zone:</b> 50		<b>METHOD USED:</b> GPS <input checked="" type="checkbox"/> Differential GPS <input type="checkbox"/> Map <input type="checkbox"/> No. satellites: _____ Map used: _____ Boundary polygon captured: <input type="checkbox"/> Map used: _____

**LAND TENURE:**

Nature reserve <input type="checkbox"/>	Timber reserve <input type="checkbox"/>	Private property <input type="checkbox"/>	Rail reserve <input type="checkbox"/>	Shire road reserve <input checked="" type="checkbox"/>
National park <input type="checkbox"/>	State forest <input type="checkbox"/>	Pastoral lease <input type="checkbox"/>	MRWA road reserve <input type="checkbox"/>	Other Crown reserve <input type="checkbox"/>
Conservation park <input type="checkbox"/>	Water reserve <input type="checkbox"/>	UCL <input type="checkbox"/>	SLK/Pole _____ to _____	Specify other: _____

**AREA ASSESSMENT:** Edge survey ☐ Partial survey ☐ Full survey ☒ Area observed (m<sup>2</sup>): 240  
**EFFORT:** Time spent surveying (minutes): \_\_\_\_\_ No. of minutes spent / 100 m<sup>2</sup>: \_\_\_\_\_

THREATS - type, and supporting information: e.g. clearing, too frequent fire, weed, disease. Refer to field manual for list of threats & agents.	Cause/Agent: e.g. weed type, grazing species, recreation type	Area affected	Current impact (N-E)	Potential Impact (L-E)	Potential Threat Onset (S-L)
•		%			
•		%			
•		%			
•		%			
•		%			
•		%			
•		%			
•		%			
•		%			

\*Rate current and potential threat impact: N=Nil, L=Low, M=Medium, H=High, E=Extreme

\*Estimate time to potential impact: S=Short (<12mths), M=Medium (<5yrs), L=Long (5yrs+)

**CONDITION OF OCCURRENCE: (Bush Forever Scale)** (estimate % of area in each)

Pristine <input type="checkbox"/> _____%	Very Good <input type="checkbox"/> _____%	Degraded <input type="checkbox"/> _____%
Excellent <input type="checkbox"/> _____%	Good <input checked="" type="checkbox"/> _____%	Completely Degraded <input type="checkbox"/> _____%

*Please return form to:*

**communities.data@dpaw.wa.gov.au**

**or** Species and Communities Branch, Department of Parks and Wildlife, Locked Bag 104, Bentley Delivery Centre WA 6983

Record entered by: \_\_\_\_\_ Date entered: \_\_\_\_\_ Database no: \_\_\_\_\_





# Threatened and Priority Ecological Community (TEC/PEC) Occurrence Report Form

**RECOMMENDED MANAGEMENT ACTIONS:** e.g. roadside markers, weed control, etc.

**ACTIONS IMPLEMENTED (include date):**
**HABITAT INFORMATION:** (Check more than one box for combinations or where necessary)
**LANDFORM:**

- Crest ☐  
 Hill ☐  
 Ridge ☐  
 Outcrop ☐  
 Slope ☒  
 Flat ☐  
 Open depression ☐  
 Drainage line ☐  
 Closed depression ☐  
 Wetland ☐

**ROCK TYPE:**

- Granite ☐  
 Dolerite ☐  
 Laterite ☒  
 Ironstone ☐  
 Limestone ☐  
 Quartz ☐

Specify other:

**LOOSE ROCK:**

(on soil surface; e.g. gravel, quartz fields)

- 0-10% ☐  
 10-30% ☐  
 30-50% ☐  
 50-100% ☐

**SOIL TYPE:**

- Sand ☐  
 Sandy loam ☒  
 Loam ☐  
 Clay loam ☐  
 Light clay ☐  
 Peat ☐

Specify other:

**SOIL COLOUR:**

- Red ☐  
 Brown ☒  
 Yellow ☐  
 White ☐  
 Grey ☒  
 Black ☐

Specify other:

**DRAINAGE:**

- Well drained ☒  
 Seasonally inundated ☐  
 Permanently inundated ☐  
 Tidal ☐

Specify other:

**Specific Landform Element:** (Refer to field manual for additional values)
**CONDITION OF SOIL:**
 Dry ☒ Moist ☐ Waterlogged ☐ Inundated ☐ Cracked ☐ Saline ☐ Other:
**VEGETATION  
CLASSIFICATION:**

1. Open woodland  
 2. Open forbland  
 3. Open grassland  
 4.

**FIRE HISTORY:**
**Last Fire:** Season/Month: Year: **Fire Intensity:** High ☐ Medium ☐ Low ☐ No evidence of fire ☒
**Actual Occurrence Landuse:**
*Please return form to:*
**communities.data@dpaw.wa.gov.au**

or Species and Communities Branch, Department of Parks and Wildlife, Locked Bag 104, Bentley Delivery Centre WA 6983

Record entered by: \_\_\_\_\_ Date entered: \_\_\_\_\_ Database no: \_\_\_\_\_



# Threatened and Priority Ecological Community (TEC/PEC) Occurrence Report Form

<b>Adjacent Landuse:</b>	Farming
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<b>Associated Flora Species:</b>
Eucalyptus loxophleba, Dichopogon capellipes, Microlaena stipoides, Rytidosperma acerosum, Austrostipa ?mollis

<b>Associated Fauna Species:</b>

<b>OTHER COMMENTS:</b>

<b>ATTACHED:</b>	Map <input type="checkbox"/>	Mudmap <input type="checkbox"/>	Photo <input type="checkbox"/>	GIS data <input type="checkbox"/>	Field notes <input type="checkbox"/>
Other:					

<b>COPY SENT TO:</b>	Regional Office <input type="checkbox"/>	District Office <input type="checkbox"/>	Other:
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<b>Submitter of record:</b> Russell Smith	<b>Role:</b> botanist
<b>Signature:</b> Russell Smith	<b>Date submitted:</b> 20/04/2022

*Please return form to:*

**communities.data@dpaw.wa.gov.au**

**or** Species and Communities Branch, Department of Parks and Wildlife, Locked Bag 104, Bentley Delivery Centre WA 6983

Record entered by: \_\_\_\_\_ Date entered: \_\_\_\_\_ Database no: \_\_\_\_\_