



## CLEARING PERMIT

*Granted under section 51E of the Environmental Protection Act 1986*

<b>Purpose Permit number:</b>	CPS 9741/1
<b>Permit Holder:</b>	Shire of Wickepin
<b>Duration of Permit:</b>	From 29 September 2023 to 29 September 2038

The permit holder is authorised to clear *native vegetation* subject to the following conditions of this permit.

### **PART I – CLEARING AUTHORISED**

**1. Clearing authorised (purpose)**

The permit holder is authorised to clear *native vegetation* for the purpose of road widening and safety.

**2. Land on which clearing is to be done**

Cuballing East Road Reserve (PINs 11471978, 11496534 and 11471977), Wickepin

**3. Clearing authorised**

The permit holder must not clear more than 1 hectare of *native vegetation* within a 5.7 hectare footprint within the area cross-hatched yellow in Figure 1 and 2 of Schedule 1.

**4. Period during which clearing is authorised**

The permit holder must not clear any *native vegetation* after 29 September 2028.

### **PART II – MANAGEMENT CONDITIONS**

**5. Avoid, minimise, and reduce impacts and extent of clearing**

In determining the *native vegetation* authorised to be cleared under this permit, the permit holder must apply the following principles, set out in descending order of preference:

- (a) avoid the clearing of *native vegetation*;
- (b) minimise the amount of *native vegetation* to be cleared; and
- (c) reduce the impact of clearing on any environmental value.

## 6. Weed and dieback management

When undertaking any clearing authorised under this permit, the permit holder must take the following measures to minimise the risk of introduction and spread of *weeds* and *dieback*:

- (a) clean earth-moving machinery of soil and vegetation prior to entering and leaving the area to be cleared;
- (b) ensure that no known *dieback* or *weed*-affected soil, *mulch*, *fill*, or other material is brought into the area to be cleared; and
- (c) restrict the movement of machines and other vehicles to the limits of the areas to be cleared.

## 7. Directional clearing

The permit holder must conduct clearing activities in a slow, progressive manner from the Cuballing East Road centreline towards the areas of closest adjacent *native vegetation* to allow fauna to move into the adjacent *native vegetation* ahead of the clearing activity.

## 8. Revegetation and rehabilitation

The permit holder must within 24 months of undertaking clearing authorised under this permit:

- (a) undertake the *planting* of 161 seedlings that are comprised of a mixture of *Eucalyptus wandoo* (wandoo) and *Eucalyptus loxophleba* (York gum) located within the cross-hatched green area in Figure 1 and 2 of Schedule 2, within the Cuballing East Road Reserve (PINs 11471978, 11496534 and 11471977), Wickepin;
- (b) ensure only *local provenance* species are used;
- (c) ensure *planting* is undertaken at the *optimal time*;
- (d) the permit holder must within 24 months of *planting* the mixture of 161 *Eucalyptus wandoo* (wandoo) and *Eucalyptus loxophleba* (York gum) seedlings in accordance with condition 8(a) of this permit;
  - (i) engage an *environmental specialist* to make a determination that at least 161 seedlings will survive, comprised of a mixture of *Eucalyptus wandoo* (wandoo) and *Eucalyptus loxophleba* (York gum); and
  - (ii) if the determination made by the *environmental specialist* under condition 8(d)(i) that at least 161 seedlings will not survive, the permit holder must plant additional native seedlings that will result in at least 161 seedlings, comprised of a mixture of *Eucalyptus wandoo* (wandoo) and *Eucalyptus loxophleba* (York gum), persisting located within the cross-hatched green area in Figure 1 and 2 of Schedule 2, within Cuballing East Road Reserve (PINs 11471978, 11496534 and 11471977), Wickepin;
  - (iii) undertake *weed* control and watering activities on an 'as needs' basis to ensure success of *revegetation*;
- (e) where additional *planting* of native seedlings is undertaken in accordance with condition 8(c)(ii), the permit holder must repeat the activities required by condition 8(b) and 8(c) of this permit.

## PART III - RECORD KEEPING AND REPORTING

### 9. Records that must be kept

The permit holder must maintain records relating to the listed relevant matters in accordance with the specifications detailed in Table 1.

**Table 1: Records that must be kept**

No.	Relevant matter	Specifications
1.	In relation to the authorised clearing activities generally	<ul style="list-style-type: none"> <li>(a) the species composition, structure, and density of the cleared area;</li> <li>(b) the location where the clearing occurred, recorded using a Global Positioning System (GPS) unit set to GDA2020, expressing the geographical coordinates in Eastings and Northings;</li> <li>(c) the date that the area was cleared;</li> <li>(d) the direction of clearing;</li> <li>(e) the size of the area cleared (in hectares);</li> <li>(f) actions taken to avoid, minimise, and reduce the impacts and extent of clearing in accordance with condition 5; and</li> <li>(g) actions taken to minimise the risk of the introduction and spread of <i>weeds</i> and <i>dieback</i> in accordance with condition 6.</li> </ul>
2.	In relation to the required <i>revegetation</i> activities in accordance with condition 8.	<ul style="list-style-type: none"> <li>(a) the location where the mixture of 161 <i>Eucalyptus wandoo</i> (wandoo) and <i>Eucalyptus loxophleba</i> (York gum) seedlings were planted, recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 2020 (GDA20), expressing the geographical coordinates in Eastings and Northings;</li> <li>(b) the date that the area was planted;</li> <li>(c) the number of <i>Eucalyptus wandoo</i> (wandoo) and <i>Eucalyptus loxophleba</i> (York gum) trees planted;</li> <li>(d) the size (in mm) of the <i>Eucalyptus wandoo</i> (wandoo) and <i>Eucalyptus loxophleba</i> (York gum) trees planted;</li> <li>(e) dates of the weed and watering actions undertaken in accordance with condition 8(d)(iii);</li> <li>(f) a copy of the <i>environmental specialist's</i> report;</li> <li>(g) a description of the <i>revegetation</i> activities undertaken; and</li> <li>(h) any remedial actions required to be undertaken.</li> </ul>

## 10. Reporting

The permit holder must provide to the *CEO* the records required under condition 9 of this permit when requested by the *CEO*.

## DEFINITIONS

In this permit, the terms in Table have the meanings defined.

**Table 2: Definitions**

Term	Definition
CEO	Chief Executive Officer of the department responsible for the administration of the clearing provisions under the <i>Environmental Protection Act 1986</i> .
clearing	has the meaning given under section 3(1) of the EP Act.
condition	a condition to which this clearing permit is subject under section 51H of the EP Act.
dieback	means the effect of <i>Phytophthora</i> species on native vegetation.
department	means the department established under section 35 of the <i>Public Sector Management Act 1994</i> (WA) and designated as responsible for the administration of the EP Act, which includes Part V Division 3.
EP Act	<i>Environmental Protection Act 1986</i> (WA)
environmental specialist	means a person who holds a tertiary qualification specialising in environmental science or equivalent, and has a minimum of 2 years work experience relevant to the type of environmental advice that an environmental specialist is required to provide under the permit, or who is approved by the <i>CEO</i> as a suitable environmental specialist.
fill	means material used to increase the ground level, or to fill a depression.
local provenance	means native vegetation seeds and propagating material from natural sources within 50 kilometres and the same IBRA subregion of the area cleared.
mulch	means the use of organic matter, wood chips or rocks to slow the movement of water across the soil surface and to reduce evaporation.
native vegetation	has the meaning given under section 3(1) and section 51A of the EP Act.
optimal time	means the period from May to July for undertaking planting.
planting	means the re-establishment of vegetation by creating favourable soil conditions and planting seedlings of the desired species.
rehabilitate	means actively managing an area containing native vegetation in order to improve the ecological function of that area.
revegetate	means the re-establishment of a cover of local provenance native vegetation in an area using methods such as natural regeneration, direct seeding and/or planting, so that the species composition, structure and density is similar to pre-clearing vegetation types in that area.
weeds	means any plant – (a) that is a declared pest under section 22 of the <i>Biosecurity and</i>



Term	Definition
	<p><i>Agriculture Management Act 2007</i>; or</p> <p>(b) published in a Department of Biodiversity, Conservation and Attractions species-led ecological impact and invasiveness ranking summary, regardless of ranking; or</p> <p>(c) not indigenous to the area concerned.</p>

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**END OF CONDITIONS**



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**Mathew Gannaway**  
**MANAGER**  
NATIVE VEGETATION REGULATION

*Officer delegated under Section 20  
of the Environmental Protection Act 1986*

5 September 2023

# Schedule 1

The boundary of the area authorised to be cleared is shown in the map below (Figure 1 and Figure 2).

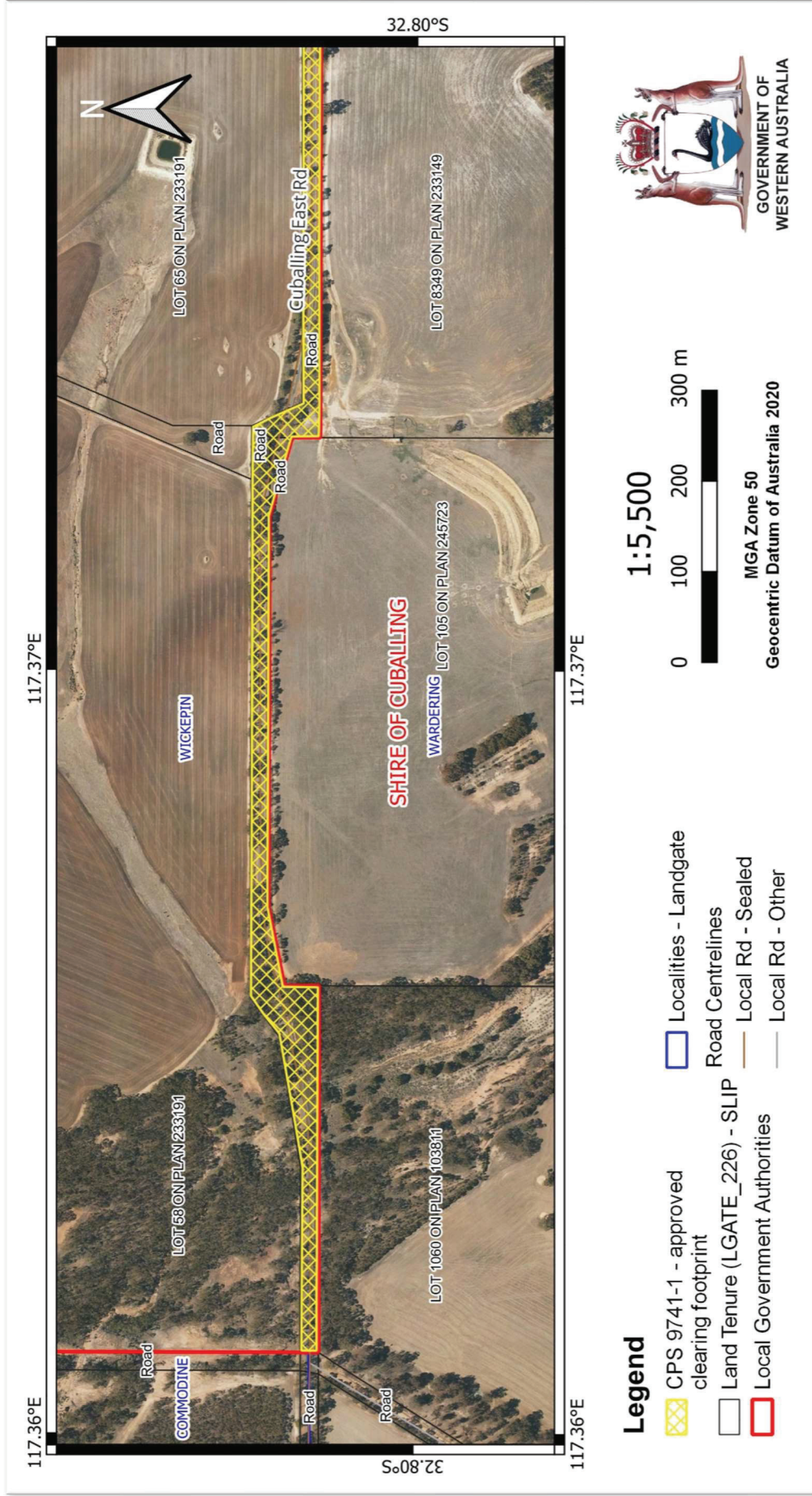


Figure 1: Map of the western boundary of the area within which clearing may occur



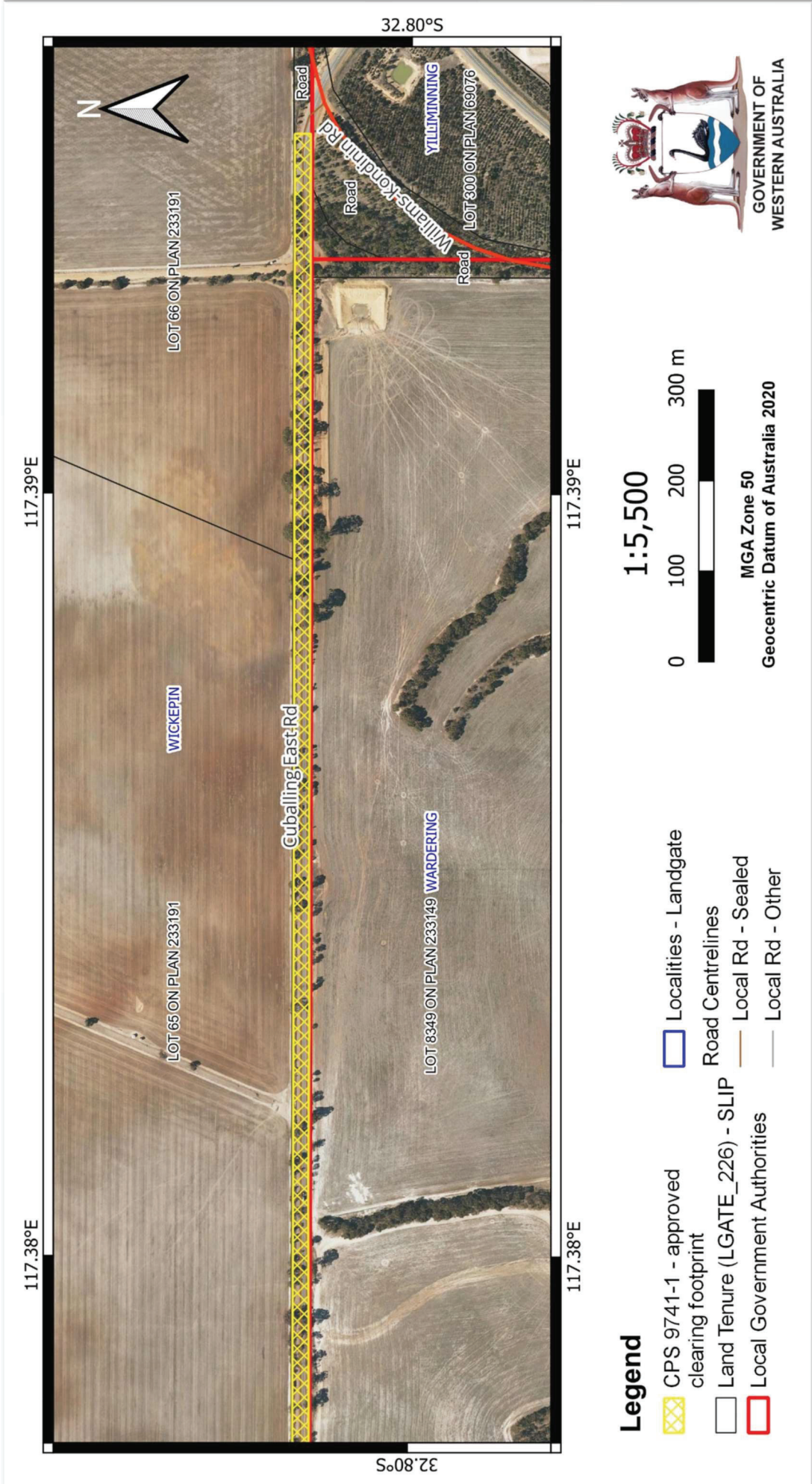
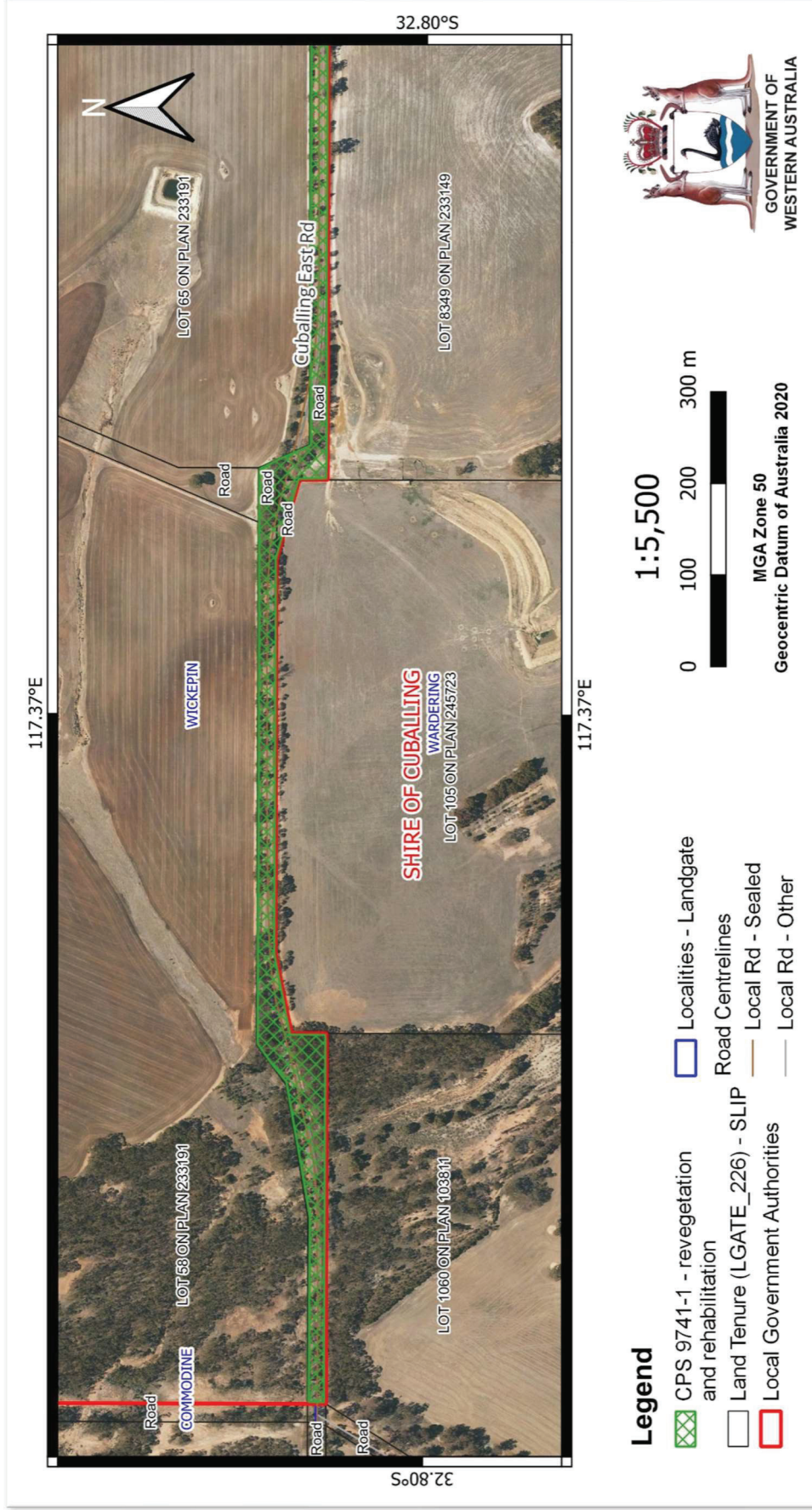


Figure 2: Map of the eastern boundary of the area within which clearing may occur

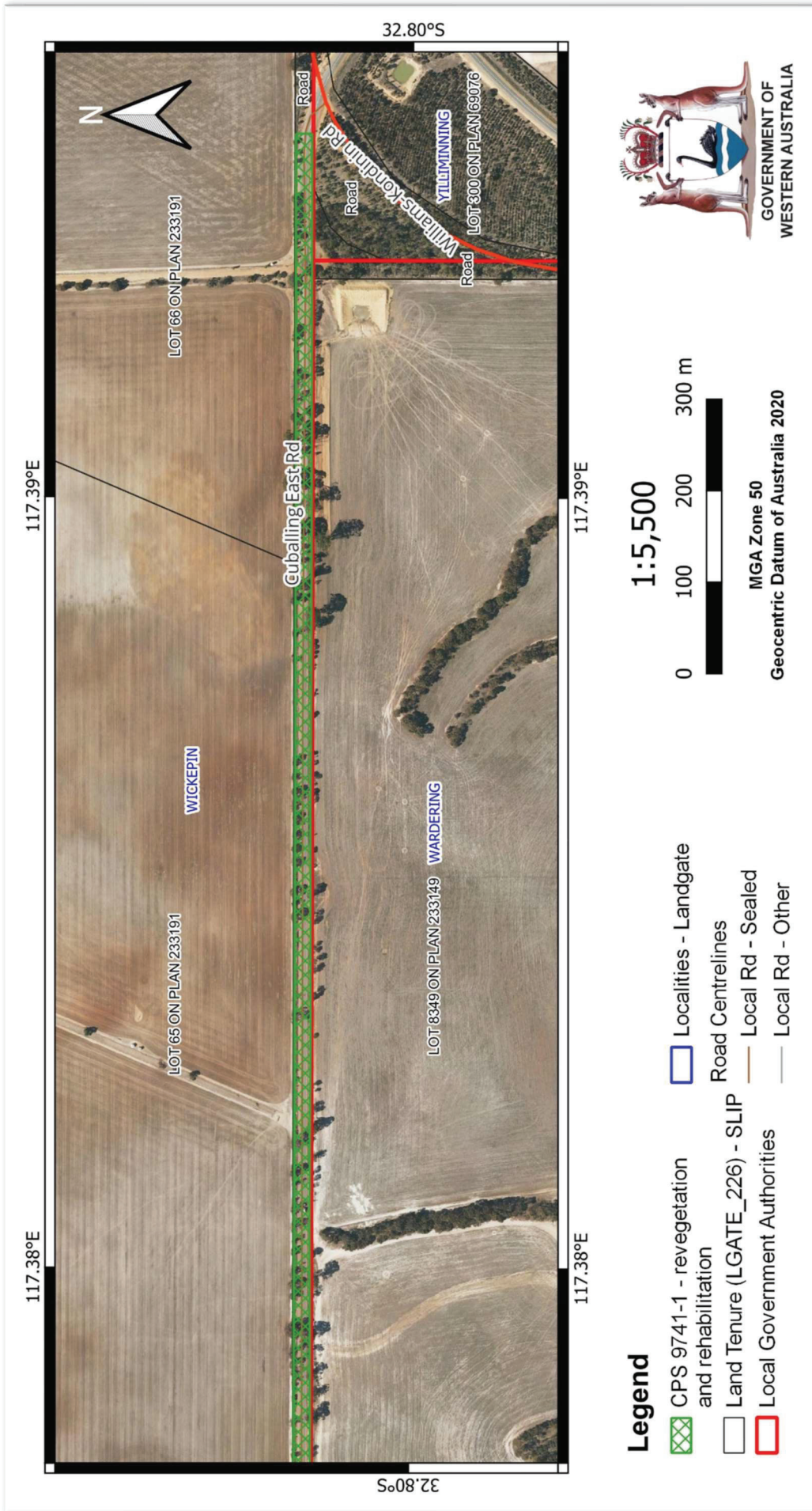


## Schedule 2

The boundary of the areas revegetation and rehabilitation must occur shown in the maps below (Figure 1 and 2).



**Figure 1: Map of the boundary of the western areas within which revegetation and rehabilitation must occur**



**Figure 2: Map of the boundary of the eastern areas within which revegetation and rehabilitation must occur**





# Clearing Permit Decision Report

## 1 Application details and outcome

### 1.1. Permit application details

Permit number:	CPS 9741/1
Permit type:	Purpose permit
Applicant name:	Shire of Wickepin
Application received:	18 May 2022
Application area:	1 hectare of native vegetation within a 5.7 hectare footprint
Purpose of clearing:	Road widening and safety
Method of clearing:	Mechanical
Property:	Cuballing East Road Reserve (PINs 11471978, 11496534 and 11471977)
Location (LGA area/s):	Shire of Wickepin
Localities (suburb/s):	Wickepin

### 1.2. Description of clearing activities

The Shire of Wickepin (the Shire) are seeking to clear native vegetation to construct a road upgrade along Cuballing East Road, Wickepin, for the purpose of road widening, upgrades and safety. The application area consists of one hectare of native vegetation on both sides of Cuballing East Road (PINs 11471978, 11496534 and 11471977), within a footprint of 5.7 hectares, comprising of 94 native trees and the associated understorey (Shire of Wickepin, 2022).

### 1.3. Decision on application

Decision:	Granted
Decision date:	5 September 2023
Decision area:	One hectare of native vegetation within a 5.7 hectare footprint, as depicted in Figure 1 and 2 in Section 1.5, below.

### 1.4. Reasons for decision

This clearing permit application was submitted, accepted, assessed and determined in accordance with sections 51E and 51O of the *Environmental Protection Act 1986* (EP Act). The Department of Water and Environmental Regulation (DWER) advertised the application for 21 days and no submissions were received.

In making this decision, the Delegated Officer had regard for the site characteristics (see Appendix A), relevant datasets (see Appendix E.1.), the findings of a flora and vegetation survey and fauna habitat assessment (Appendix D), the clearing principles set out in Schedule 5 of the EP Act (Appendix B), relevant planning instruments and any other matters considered relevant to the assessment (Section 3). The Delegated Officer also took into consideration the purpose of the proposed clearing to upgrade and widen Cuballing East Road for safety reasons (Shire of Wickepin, 2022).

The assessment identified that the proposed clearing will result in:

- the loss of one hectare of native vegetation representing foraging habitat for the endangered *Zanda latirostris* (Carnaby's black cockatoo);

- the loss of native vegetation that is representative of the Beard's vegetation association Narrogin 1023, an extensively cleared vegetation type; and
- the potential introduction and spread of weeds or dieback disease (*Phytophthora* sp.) that have the potential to impact adjacent areas of native vegetation.

After consideration of the available information, as well as the applicant's avoidance and minimisation measures (see Section 3.1), the Delegated Officer determined that some of the impacts of the proposed clearing, including the potential to facilitate the introduction of weeds and dieback, can be minimised and managed to unlikely lead to an unacceptable risk to environmental values through permit conditioning. However, impacts to habitat for black cockatoos and clearing an extensively cleared vegetation complex remained significant even after the application of avoidance and minimisation measures, and constituted a significant residual impact.

The Delegated Officer determined that the following measures was sufficient to counterbalance the significant residual impacts of the proposed clearing:

- The revegetation of 161 native trees, consisting of *Eucalyptus wandoo* (wandoo) and *Eucalyptus loxophleba* (York gum) seedlings, within the Cuballing East Road Reserve (PINs 11471978, 11496534 and 11471977), Wickepin. The Delegated Officer nominated the revegetation to replace the trees within the road reserve only, as these provided the most environmental value to mitigate the loss of native trees suitable for black cockatoo foraging and that is representative of the Narrogin vegetation association.

The Delegated Officer decided to grant a clearing permit subject to conditions to:

- avoid, minimise and reduce the impacts and extent of clearing;
- implement weed and dieback management measures to mitigate impacts to adjacent vegetation;
- implement slow directional clearing to allow fauna to move into adjacent vegetation ahead of the clearing activity; and
- undertake deliberate planting of at least 161 locally-provenanced native trees, consisting of *Eucalyptus wandoo* (wandoo) and *Eucalyptus loxophleba* (York gum) seedlings, within the Cuballing East Road Reserve (PINs 11471978, 11496534 and 11471977), Wickepin.



## 1.5. Site maps

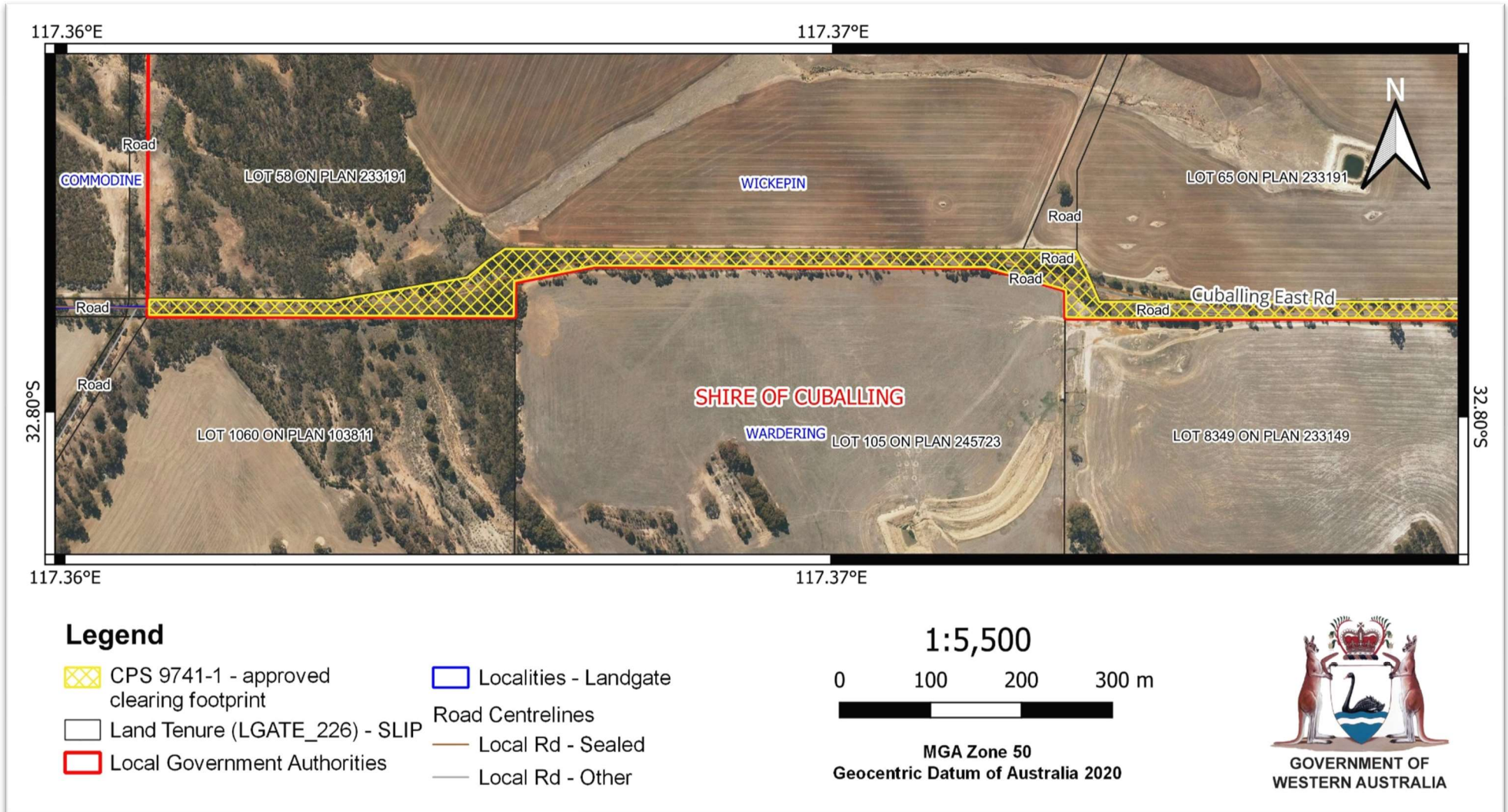
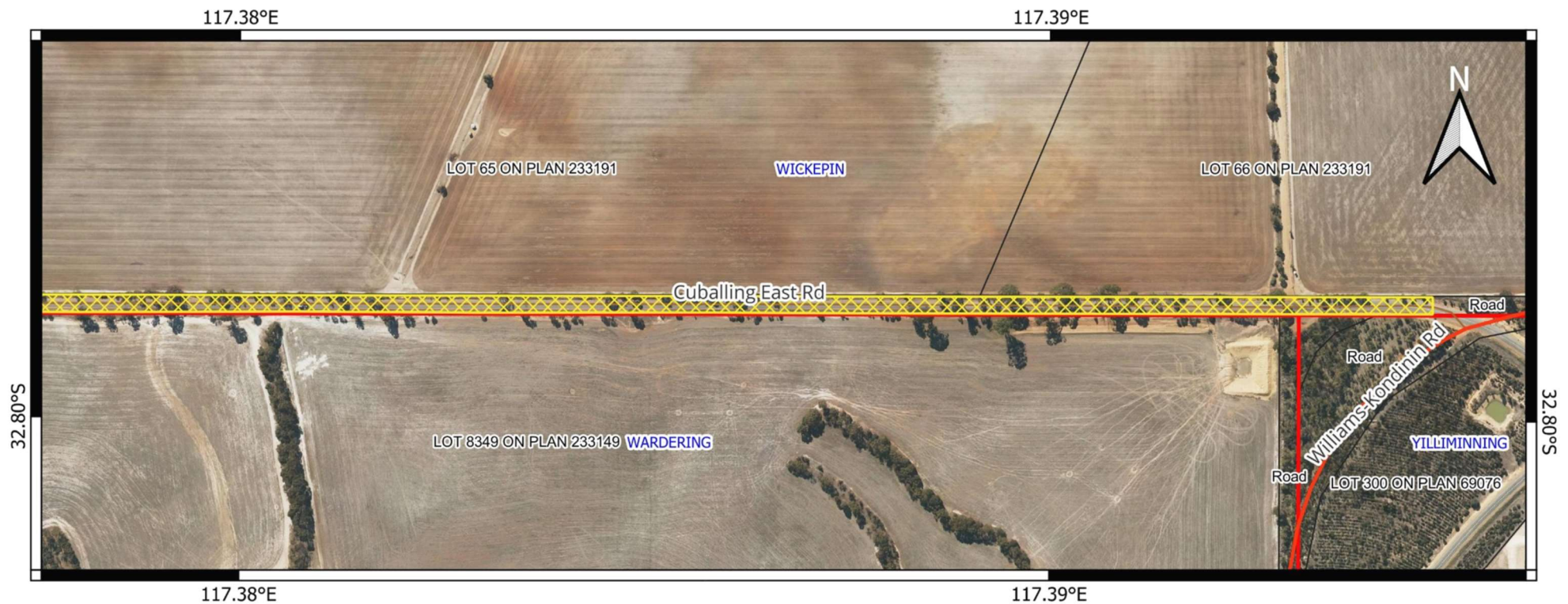


Figure 1: Map of the western application area. The area crosshatched yellow indicates the footprint area in which one hectare of native vegetation is authorised to be cleared under the granted clearing permit CPS 9741/1.



**Legend**

- CPS 9741-1 - approved clearing footprint
- Localities - Landgate
- Land Tenure (LGATE\_226) - SLIP
- Local Government Authorities
- Road Centrelines
- Local Rd - Sealed
- Local Rd - Other

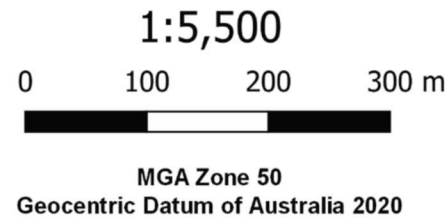


Figure 2: Map of the eastern application area. The area crosshatched yellow indicates the footprint area in which one hectare of native vegetation is authorised to be cleared under the granted clearing permit CPS 9741/1.



## 2 Legislative context

The clearing of native vegetation in Western Australia is regulated under the EP Act and the *Environmental Protection (Clearing of Native Vegetation) Regulations 2004* (Clearing Regulations).

In addition to the matters considered in accordance with section 51O of the EP Act (see Section 1.4), the Delegated Officer has also had regard to the objects and principles under section 4A of the EP Act, particularly:

- the precautionary principle
- the polluter pays principle
- the principle of the conservation of biological diversity and ecological integrity.

Other legislation of relevance for this assessment include:

- *Biodiversity Conservation Act 2016* (WA) (BC Act)
- *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act)
- *Rights in Water and Irrigation Act 1914* (RIWI Act)

Relevant policies considered during the assessment include:

- *Environmental Offsets Policy* (2011)

The key guidance documents which inform this assessment are:

- *A guide to the assessment of applications to clear native vegetation* (DER, December 2013)
- *Procedure: Native vegetation clearing permits* (DWER, October 2019)
- *Environmental Offsets Guidelines* (August 2014)
- Technical guidance – *Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA, 2016)
- Technical guidance – *Terrestrial Fauna Surveys for Environmental Impact Assessment* (EPA, 2016)

## 3 Detailed assessment of application

### 3.1. Avoidance and mitigation measures

Evidence was submitted by the applicant, demonstrating that avoidance and mitigation measures have been taken.

#### Avoidance

The Shire advised the department that they will only remove trees within this clearing footprint as necessary and will prune native vegetation where possible (Shire of Wickepin, 2022a).

A Reconnaissance and Targeted Flora and Vegetation Survey was undertaken within Cuballing East Road (PINs 11471978, 11496534 and 11471977), Wickepin (Ecoedge, 2022a). This survey assisted the Shire in determining the minimum clearing requirements for the purpose of the road upgrades, taking into consideration any existing environmental values connected to the flora and vegetation within the application area.

In response to the department's request for further information, the Shire obtained a black cockatoo habitat assessment of the application area (Harewood, 2023). As a result of this assessment, the Shire were able to identify all trees with hollows or potential hollows deemed suitable for black cockatoos and were able to avoid including them in the clearing application.

The Shire have informed the department that they are only clearing the area closest to the road, leaving the strip away from the road edge for ecological linkage, fauna habitat and passage (Ecoedge, 2023a).

The Shire have applied for a RIWI Act Bed and Banks permit for disturbance to the riparian vegetation for the drain upgrade associated with the road upgrade. The Shire reduced the clearing within the riparian zone to the minimal requirement for the purpose of the road upgrade (Ecoedge, 2023a).

The Shire will engage a fauna specialist to be on site at the time of clearing (Ecoedge, 2023a).

#### Mitigation

The Shire have committed to plant a minimum of 161 native tree seedlings of wandoo and York gum seedlings, within the Cuballing East Road Reserve (PINs 11471978, 11496534 and 11471977), Wickepin, as mitigation measures for the clearing of native vegetation that provides foraging value for black cockatoos and for impacts to the extensively cleared landscape (Ecoedge, 2023a).

## Revegetation Mitigation

An assessment of the revegetation was undertaken using the WA Environmental Offsets Metric and having consideration for the Environmental Offsets Policy (2011) and the Environmental Offsets Guidelines (2014). To ensure adequate suitability to balance the significant residual impact of the loss of foraging habitat and clearing an extensively cleared vegetation association, the calculation identified that the intentional planting of 161 native trees of black cockatoo foraging species that are also representative of Beard's vegetation association Narrogin, within Cuballing East Road Reserve, would be sufficient to ensure that no significant residual impacts remains.

The Delegated Officer was satisfied that the applicant has made a reasonable effort to avoid and minimise potential impacts of the proposed clearing on environmental values.

### 3.2. Assessment of impacts on environmental values

The assessment against the clearing principles (Appendix B) identified that the impacts of the proposed clearing may present a risk to fauna habitat, a significant ecological community, to water resources within the area and within an extensively cleared landscape. The consideration of these impacts, and the extent to which they can be managed through conditions applied in line with sections 51H and 51I of the EP Act, is set out below.

#### 3.2.1. Biological values (flora) - Clearing Principles (a and c)

##### Assessment

Ecoedge Environmental Services was engaged by the Shire in September 2021 to undertake a reconnaissance and targeted flora and vegetation survey of road reserve vegetation within the application area along the Cuballing East Road (Ecoedge, 2022a). 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).

Thirty-three vascular flora taxa were identified within the survey area, of which 17 were native species. The complete species list is detail in Appendix D: Figure 4. The two plant families with the highest representation were the Poaceae (seven taxa, with four introduced taxa) and Asteraceae (four taxa, with one native). None of these native species are listed as Threatened under the EPBC Act or the BC Act, or Priority listed species (Ecoedge, 2022a). 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 (Ecoedge, 2022a).

According to available databases four priority flora species and one critically endangered flora species have been recorded within 10 kilometres of the application area (Table A.3.). Due to the lack of understorey, the likelihood of flora of conservation significance occurring over the application area is very low. Ecoedge conducted a post-survey likelihood of occurrence according to conservation status of the flora. All the threatened and priority listed species potentially occurring in the survey area were given a postsurvey rating of 'unlikely'. A table detailing the likelihood analysis can be found in Appendix D: Figure 5a to 5d.

##### Conclusion

The lack of understorey, the low likelihood of flora of conservation significance occurring over the application area (Ecoedge, 2022a) along with an appropriately timed survey indicates a low likelihood of impacts on conservation significant flora.

##### Conditions

No conditions required in relation to this environmental value.

#### 3.2.2. Biological values (significant ecological communities) - Clearing Principles (a and d)

##### Assessment

Descriptions and photographs of the two vegetation units Ecoedge recorded within the application area can be found in Appendix D: Figure 8. Vegetation units of mapped across the application area, during the survey, can be found in Appendix D: Figures 9 to 11. Vegetation units condition mapped during the survey can be found in Appendix D: Figures 12 to 14.

According to available mapping, 1.04 hectares of the western section of the application area footprint is mapped as the Eucalypt Woodlands of the Western Australian Wheatbelt (Eucalypt Woodlands). The Eucalypt Woodlands is

listed as a Threatened Ecological Community (TEC) under the EPBC Act (CR), and a Priority 3 Priority Ecological Community (PEC) by the Department of Biodiversity, Conservation, and Attractions (DBCA). Eucalypt Woodlands have been mapped extensively within the local area (Appendix D: Figure 6).

During Ecoedge's 2021 survey, a small length of verge (approximately 50 metres in length: 0.03 hectares in size) of vegetation Unit A (one of two vegetation units identified within the application area) in the eastern part of the survey area meets the minimum condition and width criteria to be considered an occurrence of the Eucalypt Woodlands (Appendix D: Figure 7). The Shire have proposed to remove one native tree from within this area.

The survey identified that the majority of the native vegetation (85 per cent) within the application area was in 'Completely Degraded' condition (Keighery, 1994), because it largely comprises of 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 (Ecoedge, 2022a). Ecoedge concluded that the structure of the vegetation is no longer intact and is 'parkland cleared' with no native understorey. Due predominantly to the lack of understorey the species richness of the vegetation present is likely to be very low when compared to analogous areas of native vegetation in better condition (Ecoedge, 2022a).

### Conclusion

Based on the survey results, it appears the mapped 1.04 hectares of Eucalypt Woodlands in the western section of the application footprint no longer represents the TEC. An additional area in the eastern side of the application area has been identified as having values consistent with the Eucalypt Woodlands TEC, where one native tree is proposed to be cleared. The removal of one tree within the area representative of the Eucalypt Woodlands TEC does not constitute significant residual impact and an offset is not required in relation to this value.

It is considered that the impacts of the proposed clearing on significant ecological communities can be managed by implementing the applicant's avoidance and minimisation strategies and minimising the risk of the introduction and spread of weeds and dieback.

### Conditions

To address the above impacts, the following management measures will be required as conditions on the clearing permit:

- avoid, minimise to reduce the impacts and extent of clearing; and
- take hygiene steps to minimise the risk of the introduction and spread of weeds and dieback.

### **3.2.3. Biological values (fauna) - Clearing Principle (b)**

#### Assessment

Within the local area (10 kilometre radius of the application area), five conservation significant fauna species have been recorded. A total of one hectare of native vegetation has been proposed to be cleared, which includes 94 native trees consisting of a combination of *Eucalyptus loxophleba* (York gum) and *Eucalyptus wandoo* (wandoo), and the associated understorey. A flora and vegetation survey, and a black cockatoo habitat assessment has been undertaken within Cuballing East Road Reserve (PINs 11471978, 11496534 and 11471977), Wickepin. These trees are likely to provide habitat for *Zanda latirostris* (Carnaby's black cockatoo), which is listed as endangered under the BC Act and the Commonwealth EPBC Act. Other fauna, including the Red-tailed Phascogale (*Phascogale calura*), may utilise the application to move through the landscape.

It must be noted that *Calyptorhynchus sp.* (white-tailed black cockatoo) have been recorded in the local area. These records were obtained when the data collector could not definitively distinguish if they spotted a Carnaby's or Baudin's black cockatoo, therefore the white-tailed black cockatoo category was created to incorporate these records.

#### **Black Cockatoo species**

According to available mapping, the application area is located within the mapped area known to be breeding habitat for Carnaby's black cockatoo. The habitat requirements for black cockatoos are generally categorised as breeding habitat, foraging habitat and night roosting habitat.

#### Breeding habitat

Suitable breeding habitat for black cockatoos includes trees which either have a suitable nest hollow or are of a suitable DBH to develop a nest hollow (DAWE, 2022). Carnaby's black cockatoos generally breed in woodland or forest, but also breed in partially woodland or forest, including isolated trees. Black cockatoos nest in hollows in live

or dead trees (many eucalypt species may provide suitable hollows), particularly salmon gum, wandoo, tuart, jarrah, *Eucalyptus rudis* (flooded gum), York gum, *Eucalyptus accedens* (powderbark), karri and marri (DAWE, 2022). Habitat trees considered potentially suitable for black cockatoo breeding have a diameter at breast height (DBH) greater than 500 millimetres (for salmon gum and wandoo, suitable DBH is 300 millimetres).

In terms of mature eucalypts or large trees with hollows, Harewood (2023) undertook an assessment of the application area and identified all suitable trees with a DBH of equal to or over 300 millimetres for wandoo and salmon gum and over 500 millimetres DBH for the other eucalypt species present. Forty-five (including one dead tree) trees with a DBH of greater than or equal to 300 millimetres were recorded throughout the 5.7 hectare application footprint. Most of these trees (32) appeared to not contain hollows of any size. Thirteen individual trees that contained apparent or obvious hollows, consisting of 10 wandoos, two *Eucalyptus longicornis* (red morrel) and one dead tree, were identified from within the application footprint. All of which were assessed as being unlikely to be suitable for black cockatoos to currently use for nesting purposes, due to the hollows apparent small size, unsuitable orientation and/or low height above ground level (Harewood, 2023). Three of the 32 trees that appear to not contain hollows are located within the area proposed to be cleared, including one York gum and two wandoo trees (Figure 15). No significant impact to breeding habitat for Carnaby's Cockatoo is likely to occur as a result of the clearing.

#### Night Roost sites

Black cockatoo night roosts are usually located in the tallest trees of an area, and in close proximity to both a food supply and surface water (DAWE, 2022). Carnaby's black cockatoos generally roost in or near riparian environments or natural and artificial permanent water sources. Any tall trees may provide roosting habitat, but particularly *Eucalyptus occidentalis* (flat-topped yate), salmon gum, wandoo, marri, karri, blackbutt, tuart, introduced eucalypts and introduced pines (DAWE, 2022).

No evidence of black cockatoos roosting within trees located within the survey area was observed during the black cockatoo habitat survey (Harewood, 2023). It was noted in the black cockatoo habitat assessment report that it was difficult to determine if trees or groves of trees within the survey area represented potential roosting habitat as a range of factors, not all of which can be observed, determine suitability. Some of the larger trees may be suitable for roosting but as indicated no actual evidence of use was seen (Harewood, 2023).

A review of the 2019 great cocky count database shows no documented roosts sites within the survey area (Harewood, 2023). No significant impact to roosting habitat for Carnaby's Cockatoo is likely to occur as a result of the clearing.

#### Foraging habitat

Carnaby's black cockatoo are known to forage on native shrubland, kwongan heathland and woodland on seeds, flowers and nectar of native proteaceous plant species (*Banksia spp.*, *Hakea spp.* and *Grevillea spp.*), as well as *Callistemon spp.* and marri. Also seeds of introduced species including *Pinus spp.*, *Erodium spp.*, wild radish, canola, almonds, macadamia and pecan nuts; insects and insect larvae; occasionally apples and persimmons; and liquidambar (DAWE, 2022).

During the black cockatoo habitat assessment, the following species were recorded and are known to be or potentially used as a direct food source (e.g. seeds, flowers, nectar, bark or grubs) by Carnaby's black cockatoos (Harewood, 2023):

- *Eucalyptus loxophleba* (York gum) – primary
- *Eucalyptus wandoo* (wandoo) - primary
- *Allocasuarina huegeliana* (rock sheoak) – secondary
- *Erodium cicutarium* (common stork's bill – common introduced weed)
- *Romulea rosea* (onion grass - common introduced weed)

No evidence of black cockatoo foraging within the survey area was found during the survey period (Harewood, 2023).

Food resources within the range of roosting and breeding sites are important to sustain populations of black cockatoos, and foraging resources should therefore be viewed in the context of the proximity to the known night roosting and breeding sites to the application area. Black cockatoos will generally forage up to 12 kilometres from an active breeding site. Following breeding, they will flock in search of food, usually within six kilometres of a night roost (DAWE, 2022). Available databases show that there are several records of black cockatoo roost sites and a few mapped breeding locations within the local area. Therefore, the vegetation within the application area may support foraging by breeding and roosting populations. The ongoing loss of foraging habitat within proximity to breeding sites in the region represents a significant risk to black cockatoos.

Based on the above assessment, the application area is likely to provide significant foraging habitat for black cockatoos. According to the WA Environmental Offsets Calculator and consistent with the WA Environmental Offsets Policy (2011), to mitigate the loss of 94 native trees suitable for black cockatoo foraging, 161 native seedlings suitable for black cockatoo foraging are required to be planted within the adjacent road reserve. A significant residual impact no longer remains following the mitigation planting.

### **Red tailed Phascogale**

Sixty records of the Red-tailed Phascogale (*Phascogale calura*) have been made within the local area of the application area. The Red-tailed Phascogale inhabits Wandoo and Rock Sheoak woodland associations (DEC, 2012). Red-tailed Phascogales are arboreal and show a preference for long-unburnt and dense habitat that contains tree hollows and providing a continuous canopy that facilitates protection from predation by both feral cats and foxes (DEC, 2012). Wandoo trees in particular provide nesting sites in the form of hollow logs and limbs and the best habitat has numerous tree hollows for shelter and a continuous or at least semi-continuous canopy (DEC, 2012).

The vast majority of records of Red-tailed Phascogale from the local area are from Nature Reserves where large vegetated areas provide the habitat required. Opportunistic records have occurred within Cuballing East Road Reserve to the west of the application area. Harewood (2023) identified trees containing hollows, or possible hollows, that are unsuitable for black cockatoos but may have a potential to be suitable for Red-tailed Phascogale. No evidence of occupancy was recorded, and the scattered isolated trees over the application area do not provide a continuous or semi-continuous canopy to provide the appropriate levels of cover to support the species. None of the identified trees with hollows are proposed to be cleared. It is unlikely that the application area is inhabited by the species given the degraded and fragmented nature of the vegetation in the wider area. No significant habitat for the Red-tailed Phascogale is likely to be cleared.

### **Other fauna**

The application area may function as an ecological linkage for fauna moving between larger remnants of native vegetation within the local area. The ecological linkage values will not likely be severed by the proposed clearing, noting native vegetation will remain with the road reserve and additional trees will be planted as a mitigation measure to replace the trees being cleared.

### Conclusion

Based on the above assessment, the application area is likely to provide significant foraging habitat for Carnaby's black cockatoos. Due to the nature of the proposed clearing and degraded understorey, other fauna species are not likely to be significantly impacted by the clearing, with ecological linkage values of the road reserve likely to remain. Planting foraging species within the adjacent road reserve will ensure no significant residual impact remains for clearing black cockatoo foraging habitat.

### Conditions

To address the above impacts, the following management measures will be required as conditions on the clearing permit:

- avoidance and minimisation measures;
- implement slow directional clearing to allow fauna to move into adjacent vegetation ahead of the clearing activity; and
- planting of 161 *Eucalyptus wandoo* (wandoo) and *Eucalyptus loxophleba* (York gum) Cuballing East Road Reserve (PINs 11471978, 11496534 and 11471977), Wickepin, to balance the significant residual impacts from the loss of 94 native trees suitable for black cockatoo foraging.

### **3.2.4. Environmental value (significant remnant vegetation) - Clearing Principle (e)**

#### Assessment

The national objectives and targets for biodiversity conservation in Australia has a target to prevent clearance of ecological communities with an extent below 30 per cent of that present pre-1750, below which species loss appears to accelerate exponentially at an ecosystem level (Commonwealth of Australia, 2001). The application area is located within the Avon Wheatbelt Interim Biogeographic Regionalisation of Australia (IBRA) bioregion, which retains approximately 18.51 per cent of its pre-European vegetation extent (Government of Western Australia, 2019b). The mapped Avon Wheatbelt Beard vegetation association 'Narrogin - 1023' retains approximately 10.84 per cent of its pre-European native vegetation extent within the bioregion (Government of Western Australia, 2019a). This



vegetation association is described as medium woodland; *Eucalyptus wandoo* (wandoo), *Eucalyptus loxophleba* (York gum) and *Eucalyptus salmonophloia* (salmon gum). The extent of native vegetation remaining within the local area (10 kilometre radius of the application area) is approximately 17.40 per cent.

Noting the proposed clearing is dominated by *Eucalyptus loxophleba* (York gum) and *Eucalyptus salmonophloia* (salmon gum), it was concluded that the application area is representative of the mapped Narrogin vegetation association. The flora and vegetation survey undertaken within the application area also concluded that there is a fairly good match between the vegetation in the application area and this very broadly defined Beard association in terms of the described dominant vegetation (Ecoedge, 2022a). As the vegetation complex retains less than 30 per cent of the original extent of native vegetation, the application area is considered to be within an extensively cleared landscape. Noting the vegetation also provides foraging habitat for Carnaby’s cockatoo, the vegetation is considered to be a significant remnant.

**Conclusion**

Due to the presence of suitable habitat for conservation significant fauna, the proposed clearing is impacting a significant remnant of native vegetation within an extensively cleared landscape. The mitigation measures committed to by the applicant through the revegetation of at least 161 native trees does not result in a significant residual impact, according to calculations made using the WA Environmental Offsets Metric Calculator (see section 3.2.2). Weed and dieback management measures will minimise impacts to the surrounding native vegetation.

**Conditions**

To address the above impacts, the following management measures will be required as conditions on the clearing permit:

- Planting and ensuring the survival of at least 161 native trees within the road reserve; and
- Take hygiene steps to minimise the risk of the introduction and spread of weeds and dieback.

**3.2.5. Environmental value (water resources) - Clearing Principle (f)**

The ephemeral Codgenallaking Brook crosses the application area near the western boundary of the application area in a relatively large patch of native vegetation, which extends beyond the survey area (Ecoedge, 2022a).

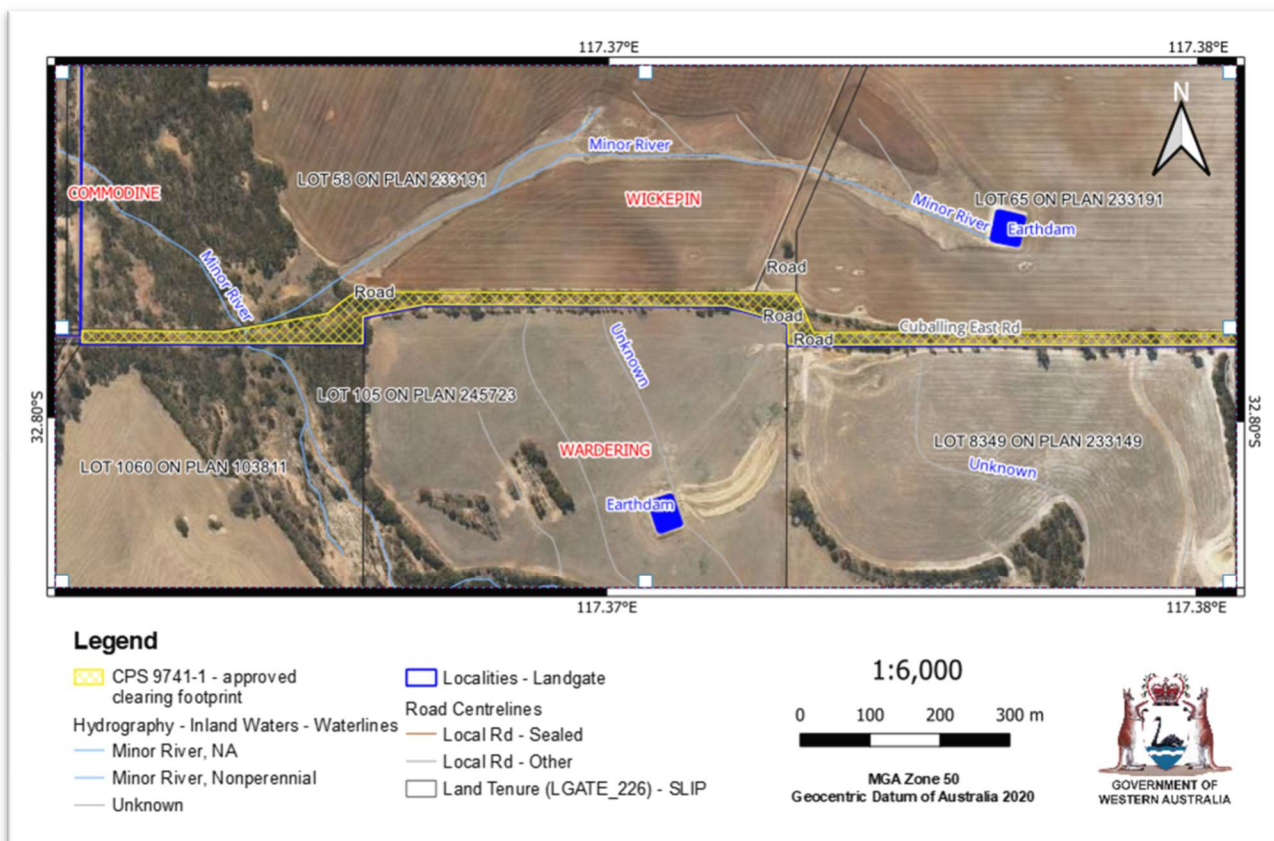


Figure 3: Location in which ephemeral Codgenallaking Brook crosses the application area and other inland waterlines occur adjacent to the application area.

Ecoedge identified the vegetation situated in the drainage line (Codgenallaking Brook) as comprising of riparian habitat 'Vegetation unit B' which was defined as *Eucalyptus loxophleba* medium woodland over *Atriplex semibaccata* *Tecticornia indica* low open shrubland over *Avena barbata*, *Lolium perenne* grassland on red-brown clay (Ecoedge, 2022a).

The Shire have ensured that clearing vegetation in association with the watercourse will be minimised, however riparian vegetation will be disturbed during the drain upgrade. A RIWI Act Permit has been applied for, as detailed in Section 3.3 (Ecoedge, 2023a).

### Conclusion

As a brook intersects the application area, there is a potential for the introduction and spread of weeds and dieback into the adjacent riparian vegetation. Potential impacts to the waterway as a result of the introduction and spread of weeds and dieback may be minimised by the implementation of a weed management condition. With regards to the management of water quality impacts, sites affected by construction or removal activities should be stabilised using the methods outlined in *Stream Stabilisation (Report No RR10)* and refer to *WQPN 44 – Roads near sensitive water resources* for best practice advice and recommendations (DWER, 2023).

### Conditions

To address the above impacts, the following management measures will be required as conditions on the clearing permit:

- Take hygiene steps to minimise the risk of the introduction and spread of weeds and dieback.

### **3.3. Relevant planning instruments and other matters**

The application area is located within the Murray River System which is a proclaimed Surface Water Area under the RIWI Act. A permit to interfere with bed and banks under the RIWI Act will be required for clearing in the riparian zone of the Codgenallaking Brook which intercepts the application area.

The Shire of Wickepin advised DWER that local government approvals are not required, and that the proposed clearing is consistent with the Shire's Local Planning Scheme.

The application area is located with the boundary of the registered Native Title (Indigenous Land Use Agreements) Gnaala Karla Booja Indigenous Land Use Agreement (WI2015/005). Several Aboriginal sites of significance have been mapped within the local area, however none within the application area. It is the permit holder's responsibility to ensure that no Aboriginal Sites of Significance are damaged through the clearing process.

**End**

## Appendix A. Site characteristics

The information provided below describes the key characteristics of the area proposed to be cleared and is based on the best information available to DWER at the time of the assessment. This information was used to inform the assessment of the clearing against the Clearing Principals, contained in Appendix B.

### A.1. Site characteristics

Characteristic	Details
Local context	<p>The proposed clearing footprint consists of a strip of native vegetation connecting larger areas of native vegetation in the intensive land use zone of Western Australia. Along the majority of its length, it is adjacent to land cleared for agriculture to the north and south and at its western extents it is surrounded by native vegetation to the north and south.</p> <p>Spatial data indicates the local area (10 kilometre radius from the centre of the area proposed to be cleared) retains approximately 17.40 per cent of the original native vegetation cover.</p>
Ecological linkage	<p>The proposed clearing footprint area provides an ecological linkage between two areas of native vegetation to its west and east that extends along the Cuballing East Road. The proposed clearing footprint area is not located close to a formally mapped ecological linkage.</p> <p>In the vicinity of the application 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 application area, and the Commitine Brook, just to the east of the application area (Ecoedge, 2022a).</p>
Conservation areas	<p>The closest conservation area to the proposed clearing footprint is Claypit Nature Reserve, located approximately 3.4 kilometres to the northeast.</p>
Vegetation description	<p>A vegetation survey (Ecoedge, 2022a) indicates the vegetation within the proposed clearing footprint area consists of:</p> <ul style="list-style-type: none"> <li>• Unit A (2.02 hectares) – <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.</li> <li>• Unit B (0.21 hectares) – <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. This vegetation unit is regarded as a riparian habitat as it occurs along an ephemeral stream.</li> <li>• Cleared – 3.30 hectares.</li> </ul> <p>Representative photos and survey maps are available in Appendix D.</p> <p>Beard association Narrogin - 1023 – is mapped across the application footprint and is described as Wheatbelt; york gum, salmon gum etc. <i>Eucalyptus loxophleba</i>, <i>E. salmonophloia</i>. Goldfields; gimlet, redwood etc. <i>E. salubris</i>, <i>E. oleosa</i>. Riverine; rivergum <i>E. camaldulensis</i>. Tropical; messmate, woolyb (Shepherd et al, 2001). According to Ecoedge's 2022 vegetation survey, 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 (Ecoedge, 2022a).</p> <p>This mapped vegetation association retains approximately 10.84 per cent of its original extent (Government of Western Australia, 2019).</p>
Vegetation condition	<p>A vegetation survey (Ecoedge, 2022a) indicates the vegetation within the proposed clearing footprint area is in Completely Degraded to Good (Keighery, 1994) condition.</p> <p>The full Keighery (1994) condition rating scale is provided in Appendix C.</p> <p>Representative photos and survey mapping are available in Appendix D.</p>

Characteristic	Details
Climate	The climate experienced in the area is a Mediterranean climate, with dry, hot summers and cool, wet winters. Average rainfall is 512.5 millimetres per annum with the majority falling between June and August (BOM, 2023).
Topography	Elevation within the proposed clearing footprint area ranges from 350 metres AHD in the west to 380 metres AHD in the east.
Soil description	Soil within the proposed clearing footprint is mapped as: <ul style="list-style-type: none"> <li>Western extent - Norrine Subsystem (Dryandra) (257DyNO), described as a complex of lateritic residuals and associated pediment; gravely sand, sand, duplex yellow soils and duricrust.</li> <li>Majority of area - Noombling Subsystem (Narrogin) (257NgNB), described as gently sloping terrain which may extend over local divides; yellow and red duplex soils and associated granite and dolerite outcrops.</li> <li>Eastern extent - Noombling Subsystem (Dryandra) (257DyNB), described as 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.</li> </ul>
Land degradation risk	Soils within the proposed clearing footprint area have a high risk of subsurface acidification, a high (western extent only) to moderate risk of wind erosion, and a moderate risk of phosphorus export (western and eastern extents only).  Further details on land degradation risk factors according to the soil systems located within the application area is detailed in Appendix A.6.
Surface water	The closest mapped wetland to the proposed clearing footprint area is a wetland associated with a granite outcrop located approximately 3.5 kilometres to the southeast. A minor, non-perennial watercourse, in the Hotham River catchment, intersects the western extent of the proposed clearing footprint area.  The proposed clearing is located within the Murray River and Tributaries, Hotham Surface Water Resource, which is proclaimed under RIWI Act. The proposed clearing footprint within Road PIN number 11471978 intersects the Codgenallaking Brook, which is a tributary of the Hotham River.
Hydrogeography	Hydrogeology - Rocks of low permeability, Fractured and Weathered Rocks - Local Aquifers (granitoid lithology).  Groundwater salinity - 7000-14000 mg/L TDS
Flora	There are records of one threatened and four priority flora species within the local area, the closest of which is threatened species <i>Acacia insolita</i> subsp. <i>recurva</i> , located approximately 2.3 kilometres northwest of the proposed clearing footprint area.  In the 2022 flora and vegetation survey (Ecoedge, 2022a), 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 application footprint (Ecoedge, 2022a).  All the Threatened and Priority taxa potentially occurring in the survey area were given a postsurvey rating of 'unlikely' (Ecoedge, 2022a).
Ecological communities	Within the local area, there are 833 records of the Critically Endangered TEC Eucalypt woodlands. Available mapping indicates that the application footprint overlaps with the Eucalypt woodlands TEC. The 2022 flora and vegetation survey (Ecoedge, 2022a) recorded an area comprising of only 0.029 hectares within the proposed clearing footprint that was consistent with the Eucalypt woodlands. This area was a 50 metre stretch of road verge comprising 0.029 hectares in 'Good' condition, near the eastern end of the survey area. No other surveyed vegetation within the application footprint met the criteria to be considered an occurrence of the Eucalypt Woodlands TEC.
Fauna	There are records of two endangered, two priority and one conservation dependent fauna species within the local area, the closest of which to the proposed clearing footprint

Characteristic	Details
	<p>area is <i>Phascogale calura</i> (red-tailed phascogale) located approximately 3.77 kilometres south of the application area.</p> <p>The location of the proposed clearing is within the mapped area in which breeding of <i>Zanda latirostris</i> (Carnaby's black cockatoo) is likely to occur and approximately 15 kilometres east of the mapped core distribution of forest red-tailed black cockatoo.</p> <p>The vegetation proposed to be cleared is known to provide foraging habitat for Carnaby's black cockatoo (DAWE, 2022).</p>

## A.2. Vegetation extent

	Pre-European extent (ha)	Current extent (ha)	Extent remaining (%)	Current extent in all DBCA managed land (ha)	Current proportion (%) of pre-European extent in all DBCA managed land
IBRA bioregion*					
Avon Wheatbelt	9,517,109.95	1,761,187.42	18.51	174,980.68	1.84
Beard vegetation association					
Narrogin_1023	1,522,680.40	165,123.60	10.84	17,277.64	1.13
Local area					
10 kilometre radius	37,165.10	6,468.31	17.40	-	-

\*Government of Western Australia (2019)

## A.3. Flora analysis table

One threatened flora taxa and four priority flora taxa have been recorded within ten kilometres of the application area. Due to the largely 'Completely Degraded' condition of the vegetation within the application area, the likelihood of flora of conservation significance occurring is very low.

Species name	Conservation status	Likelihood	Distance of closest record to application area (km)	Number of known records (total)	Are surveys adequate to identify? [Y, N, N/A]
<i>Acacia insolita</i> subsp. <i>recurva</i>	CR	Unlikely	2.21	9	Yes
<i>Andersonia carinata</i>	2	Unlikely	4.18	2	Yes
<i>Babingtonia maleyae</i>	2	Unlikely	2.93	5	Yes
<i>Eucalyptus loxophleba</i> x <i>wandoo</i>	4	Unlikely	5.95	2	Yes
<i>Gastrolobium tomentosum</i>	4	Unlikely	6.36	2	Yes

T: threatened, CR: critically endangered, EN: endangered, VU: vulnerable, P: priority

## A.4. Fauna analysis table

Species name	Conservation status	Suitable habitat features? [Y/N]	Suitable vegetation type? [Y/N]	Distance of closest record to application area (km)	Number of known records (total)	Are surveys adequate to identify? [Y, N, N/A]
<i>Phascogale calura</i> (red-tailed phascogale, kenngoor)	CD	N	Y	3.77	60	N/A

Species name	Conservation status	Suitable habitat features? [Y/N]	Suitable vegetation type? [Y/N]	Distance of closest record to application area (km)	Number of known records (total)	Are surveys adequate to identify? [Y, N, N/A]
<i>Myrmecobius fasciatus</i> (numbat, walpurti)	EN	N	N	4.61	1	N/A
<i>Notamacropus eugenii derbianus</i> (tamar wallaby)	P4	N	N	5.82	2	N/A
<i>Platycercus icterotis xanthogenys</i> (western rosella (inland))	P4	N	N	6.51	1	N/A
<i>Calyptrorhynchus</i> sp. 'white-tailed black cockatoo'	EN	Y	Y	10.60	1	Y

T: threatened, CR: critically endangered, EN: endangered, VU: vulnerable, P: priority

#### A.5. Ecological community analysis table

Community name	Conservation status	Suitable habitat features? [Y/N]	Suitable vegetation type? [Y/N]	Suitable soil type? [Y/N]	Distance of closest record to application area (km)	Number of known records in local area (total)	Are surveys adequate to identify? [Y, N, N/A]
Wheatbelt Woodlands - Eucalypt woodlands of the Western Australian Wheatbelt	CR / Priority 3	Y	Y	Y	0	833	Y

T: threatened, CR: critically endangered, EN: endangered, VU: vulnerable, P: priority

#### A.6. Land degradation risk tables

Risk categories	Norrine Subsystem (Dryandra) (257DyNO)
Wind erosion	H2: >70% of the map unit has a high to extreme hazard
Water erosion	L2: 3-10% of the map unit has a very high to extreme hazard
Salinity	L1: <3% of the map unit has a moderate or high hazard or is presently saline
Subsurface Acidification	H2: >70% of the map unit has a high susceptibility
Flood risk	L1: <3% of the map unit has a moderate to high hazard
Water logging	L1: <3% of the map unit has a moderate to very high to risk
Phosphorus export risk	M1: 10-30% of the map unit has a high to extreme hazard

Risk categories	Noombling Subsystem (Narrogin) (257NgNB)
Wind erosion	M1: 10-30% of the map unit has a high to extreme hazard
Water erosion	L1: <3% of the map unit has a very high to extreme hazard
Salinity	L2: 3-10% of the map unit has a moderate or high hazard or is presently saline
Subsurface Acidification	H2: >70% of the map unit has a high susceptibility
Flood risk	L1: <3% of the map unit has a moderate to high hazard
Water logging	L2: 3-10% of the map unit has a moderate to very high to risk
Phosphorus export risk	L2: 3-10% of the map unit has a high to extreme hazard

Risk categories	Noombling Subsystem (Dryandra) (257DyNB)
Wind erosion	M1: 10-30% of the map unit has a high to extreme hazard
Water erosion	L1: <3% of the map unit has a very high to extreme hazard
Salinity	L2: 3-10% of the map unit has a moderate or high hazard or is presently saline
Subsurface Acidification	H2: >70% of the map unit has a high susceptibility
Flood risk	L1: <3% of the map unit has a moderate to high hazard
Water logging	L1: <3% of the map unit has a moderate to very high to risk
Phosphorus export risk	M1: 10-30% of the map unit has a high to extreme hazard

## Appendix B. Assessment against the clearing principles

Assessment against the clearing principles	Variance level	Is further consideration required?
<b>Environmental value: biological values</b>		
<p><u>Principle (a):</u> "Native vegetation should not be cleared if it comprises a high level of biodiversity."</p> <p><u>Assessment:</u></p> <p>There was no regionally significant flora recorded in the area proposed to be cleared. The application area consists of native trees and shrubs, with the majority in 'Completely Degraded' condition (Keighery, 1994). Due to the lack of understorey, the likelihood of flora of conservation significance occurring over the application area is very low. A portion of the application area is mapped as the 'Eucalypt woodlands of the Western Australian Wheatbelt' TEC/PEC.</p>	At variance	Yes  <i>Refer to Section 3.2.1 and 3.2.2, above.</i>
<p><u>Principle (b):</u> "Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna."</p> <p><u>Assessment:</u></p> <p>The area proposed to be cleared contains foraging habitat for conservation significant fauna.</p>	At variance	Yes  <i>Refer to Section 3.2.3, above.</i>
<p><u>Principle (c):</u> "Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora."</p> <p><u>Assessment:</u></p> <p>The area proposed to be cleared is unlikely to contain habitat for threatened flora species.</p>	Not likely to be at variance	Yes  <i>Refer to Section 3.2.1, above.</i>
<p><u>Principle (d):</u> "Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a threatened ecological community."</p> <p><u>Assessment:</u></p> <p>The area proposed to be cleared contains a small area that represents 'Eucalypt woodlands of the Western Australian Wheatbelt' TEC.</p>	May be at variance	No  <i>Refer to Section 3.2.2, above.</i>
<b>Environmental value: significant remnant vegetation and conservation areas</b>		
<p><u>Principle (e):</u> "Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared."</p> <p><u>Assessment:</u></p> <p>The extent of the mapped vegetation type is inconsistent with the national objectives and targets for biodiversity conservation in Australia. The</p>	At variance	Yes  <i>Refer to Section 3.2.4, above.</i>



Assessment against the clearing principles	Variance level	Is further consideration required?
vegetation proposed to be cleared is considered to be part of a ecological linkage in the local area.		
<p><u>Principle (h):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.”</i></p> <p><u>Assessment:</u></p> <p>Given the distance to the nearest conservation area, the proposed clearing is not likely to have an impact on the environmental values of nearby conservation areas.</p>	Not at variance	No
<b>Environmental value: land and water resources</b>		
<p><u>Principle (f):</u> <i>“Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.”</i></p> <p><u>Assessment:</u></p> <p>Given one watercourse is located within the application area, the proposed clearing is associated with a watercourse.</p>	At variance	Yes <i>Refer to Section 3.2.5, above.</i>
<p><u>Principle (g):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.”</i></p> <p><u>Assessment</u></p> <p>The mapped soils are highly susceptible to subsurface acidification, with a high to moderate risk of wind erosion and nutrient export. Noting the extent of the clearing within the application area, the condition of the vegetation and the mitigation revegetation taking place, the proposed clearing is not likely to have an appreciable impact on land degradation.</p>	Not likely to be at variance	No
<p><u>Principle (i):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.”</i></p> <p><u>Assessment:</u></p> <p>The proposed clearing is unlikely to impact ground water quality. One watercourse is located within the application area. With standard design features and roadwork construction methodologies implemented, proposed clearing is not likely to cause any long term deterioration in the quality of surface water.</p>	Not likely to be at variance	No
<p><u>Principle (j):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.”</i></p> <p><u>Assessment:</u></p> <p>The mapped soils and topographic contours in the surrounding area do not indicate the proposed clearing is likely to contribute to increased incidence or intensity of flooding.</p>	Not likely to be at variance	No

## Appendix C. Vegetation condition rating scale

Vegetation condition is a rating given to a defined area of vegetation to categorise and rank disturbance related to human activities. The rating refers to the degree of change in the vegetation structure, density and species present in relation to undisturbed vegetation of the same type. The degree of disturbance impacts upon the vegetation's ability to regenerate. Disturbance at a site can be a cumulative effect from a number of interacting disturbance types.

Considering its location, the scale below was used to measure the condition of the vegetation proposed to be cleared. This scale has been extracted from Keighery, B.J. (1994) *Bushland Plant Survey: A Guide to Plant Community Survey for the Community*. Wildflower Society of WA (Inc). Nedlands, Western Australia.

### Measuring vegetation condition for the South West and Interzone Botanical Province (Keighery, 1994)

Condition	Description
Pristine	Pristine or nearly so, no obvious signs of disturbance.
Excellent	Vegetation structure intact, with disturbance affecting individual species; weeds are non-aggressive species.
Very good	Vegetation structure altered, with obvious signs of disturbance. For example, disturbance to vegetation structure caused by repeated fires, the presence of some more aggressive weeds, dieback, logging and/or grazing.
Good	Vegetation structure significantly altered by very obvious signs of multiple disturbances. Retains basic vegetation structure or ability to regenerate it. For example, disturbance to vegetation structure caused by very frequent fires, the presence of some very aggressive weeds at high density, partial clearing, dieback and/or grazing.
Degraded	Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management. For example, disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds, partial clearing, dieback and/or 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 or shrubs.

## Appendix D. Biological survey information excerpts and photographs of the vegetation

#	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>	*

Figure 4: List of vascular flora found within in the flora and vegetation reconnaissance survey (Ecoedge, 2022a).

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 fimbrialepis</i> subsp. <i>fimbrialepis</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)

Figure 5a: Pre and post likelihood of occurrence of conservation significant flora within the application area (Ecoedge, 2022a).



SPECIES	CATEGORY	FLOWERING	DESCRIPTION AND HABITAT	Likelihood	Post survey Likelihood
<i>Pultenaea pauciflora</i> (Narrogin 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 sammyi</i>	P1		Rock shield lichen	?	Unlikely (U1)
<i>Xanthoparmelia 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 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 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)

Figure 5b: Pre and post likelihood of occurrence of conservation significant flora within the application area (Ecoedge, 2022a).

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)

Figure 5c: Pre and post likelihood of occurrence of conservation significant flora within the application area (Ecoedge, 2022a).

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)

Figure 5d: Pre and post likelihood of occurrence of conservation significant flora within the application area (Ecoedge, 2022a).



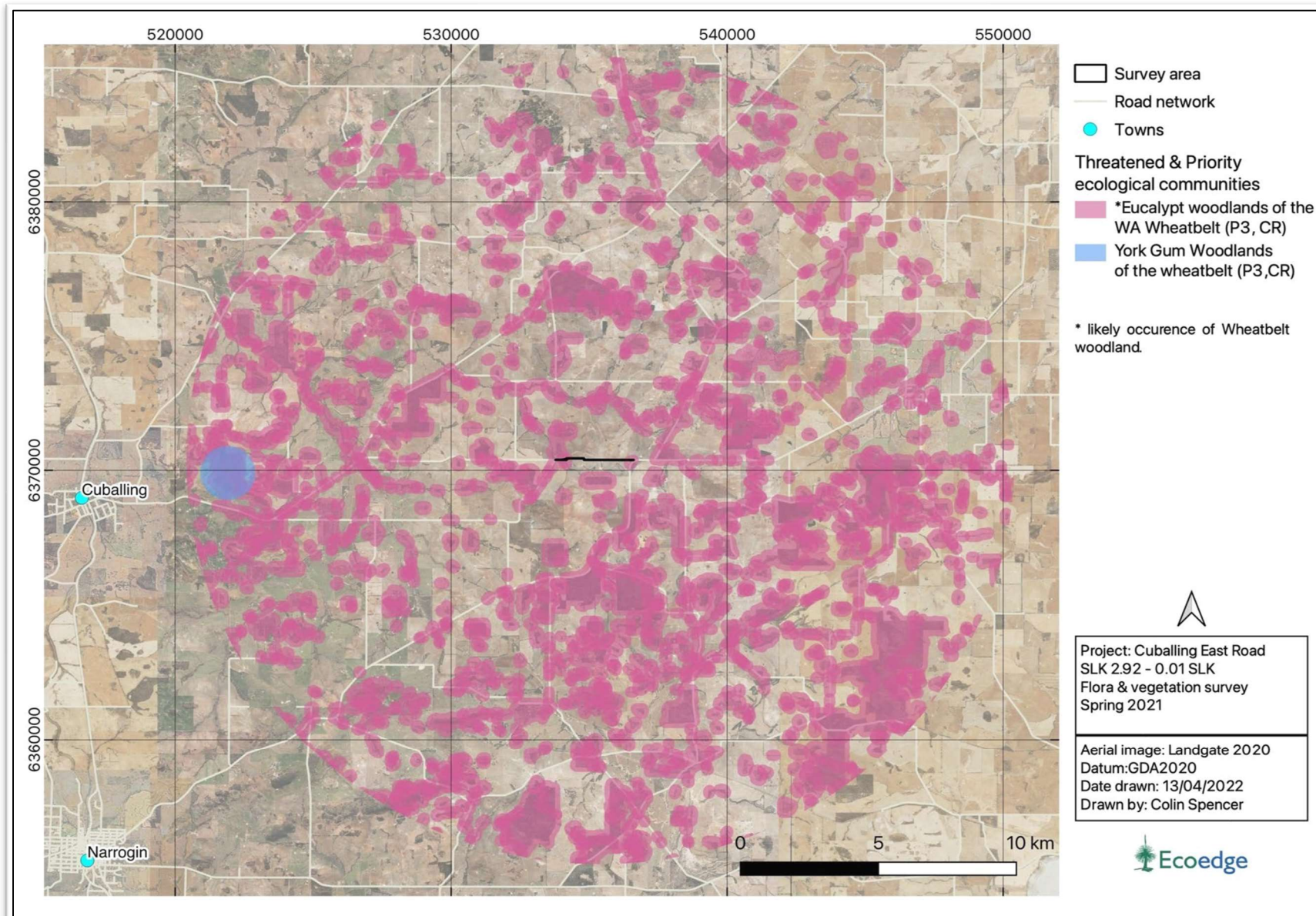


Figure 6: Threatened and Priority ecological communities known and indicatively mapped within 15 km of the application area (Ecoedge, 2022a)

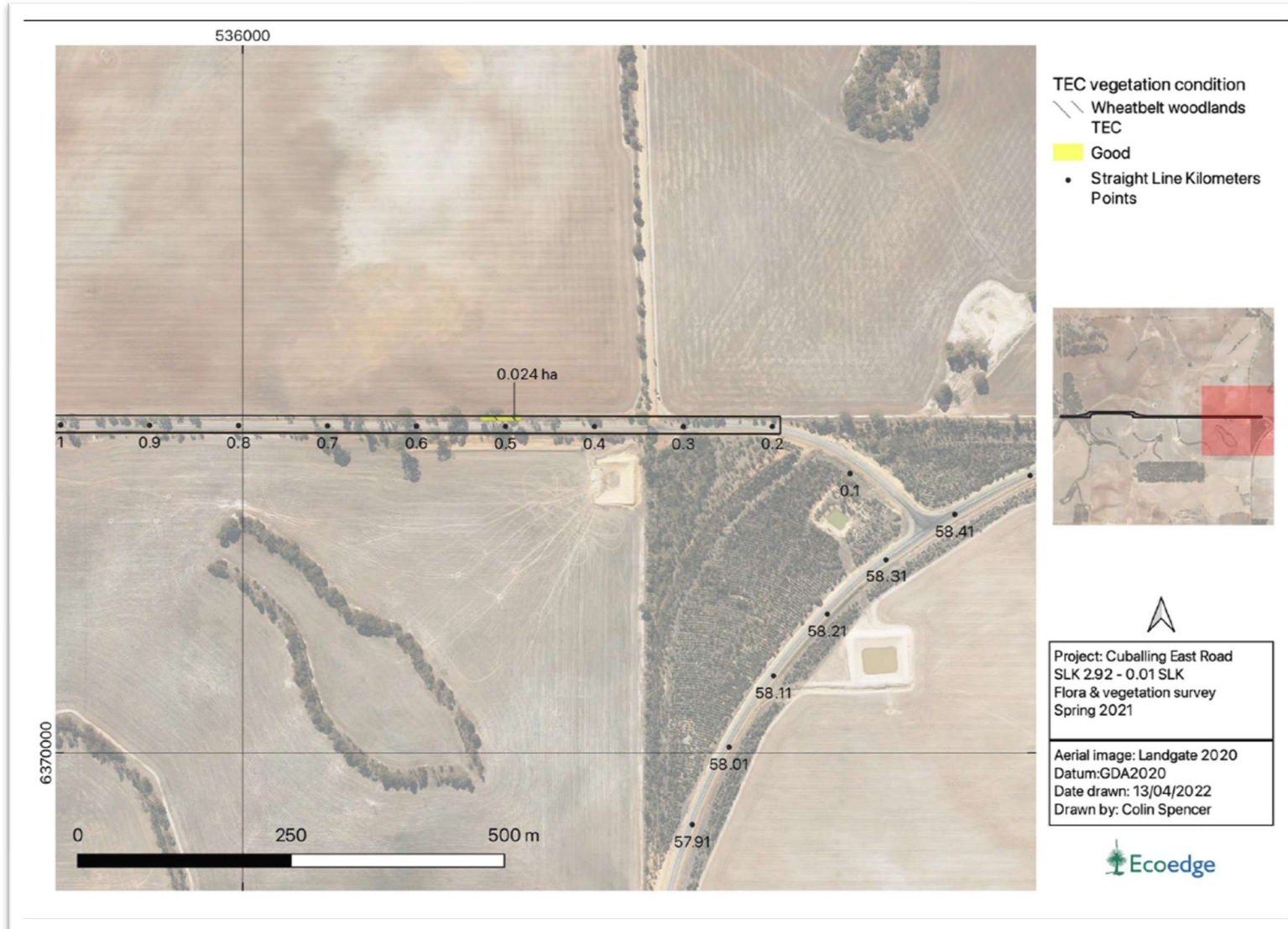


Figure 7: Location of Threatened Ecological Community Eucalypt Woodlands of the Western Australian Wheatbelt, identified during Ecoedge's 2021 Flora and Vegetation Reconnaissance Survey (Ecoedge, 2022a).




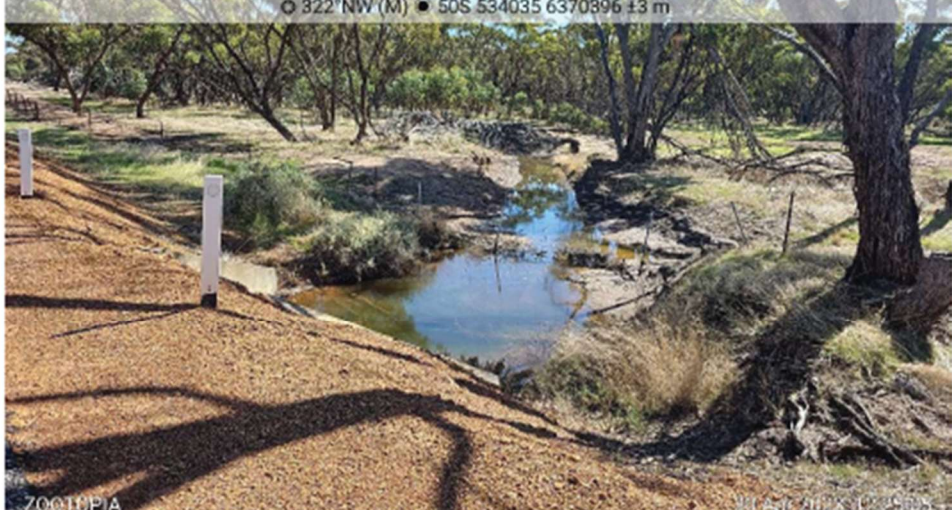
Vegetation Description	Example Image
<p>Jam (<i>Acacia acuminata</i>) low woodland/tall very open shrubland with isolated emergent York gum (<i>Eucalyptus loxophleba</i>) or wandoo (<i>E. wandoo</i>) over grassland and open forbland on red-brown sandy loam.</p> <p>Area = 2.9 ha</p>	
<p>York gum (<i>Eucalyptus loxophleba</i>) medium woodland over low open shrubland over grassland on red-brown clay in drainage line.</p> <p>Area = 0.2 ha</p>	

Figure 8: Descriptions and photographs of the vegetation unit A (above) and B (below), provided in the flora and vegetation survey (Ecoedge, 2022a).

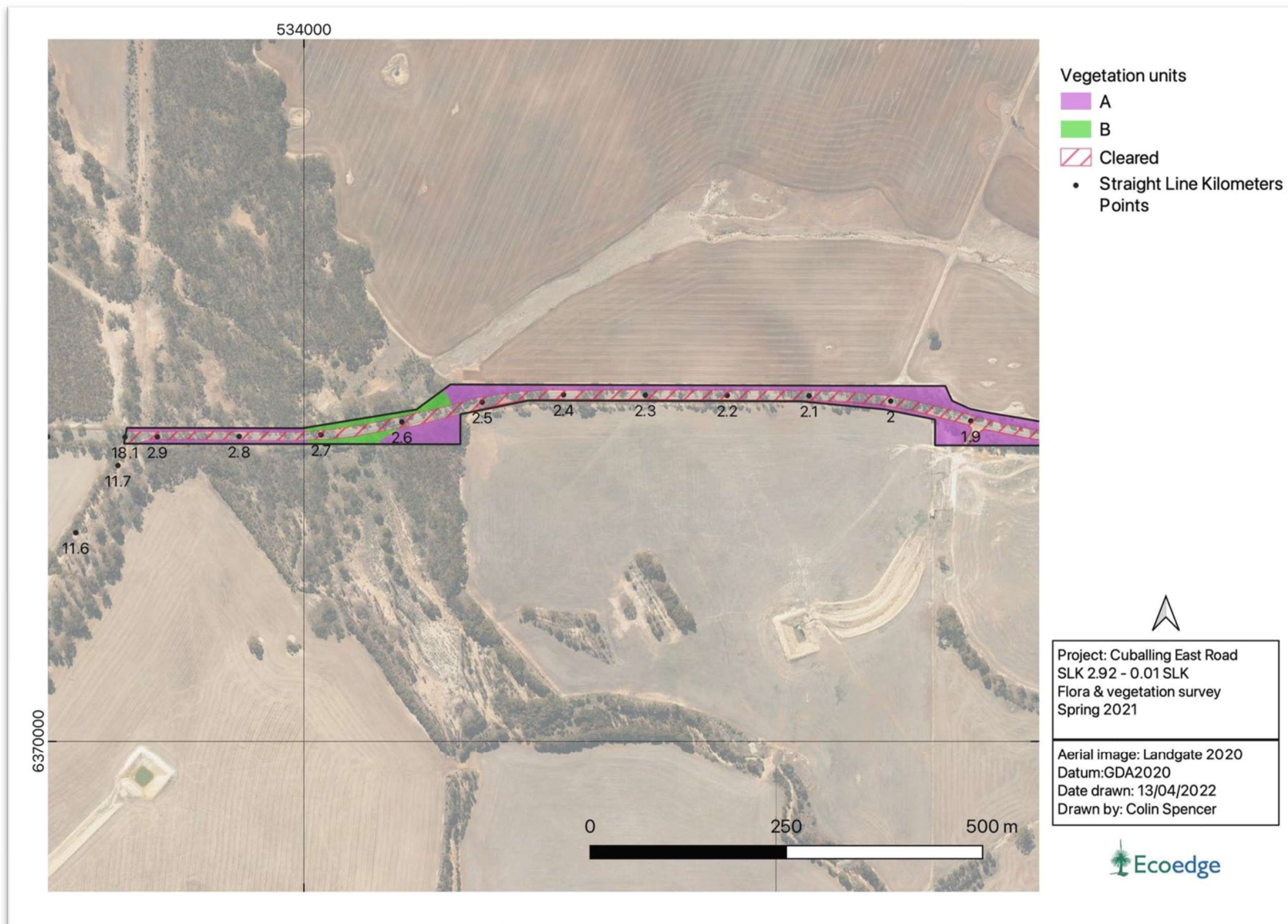


Figure 9: Vegetation units within the western section of the application area, identified during Ecoedge's 2021 Flora and Vegetation Reconnaissance Survey (Ecoedge, 2022a).



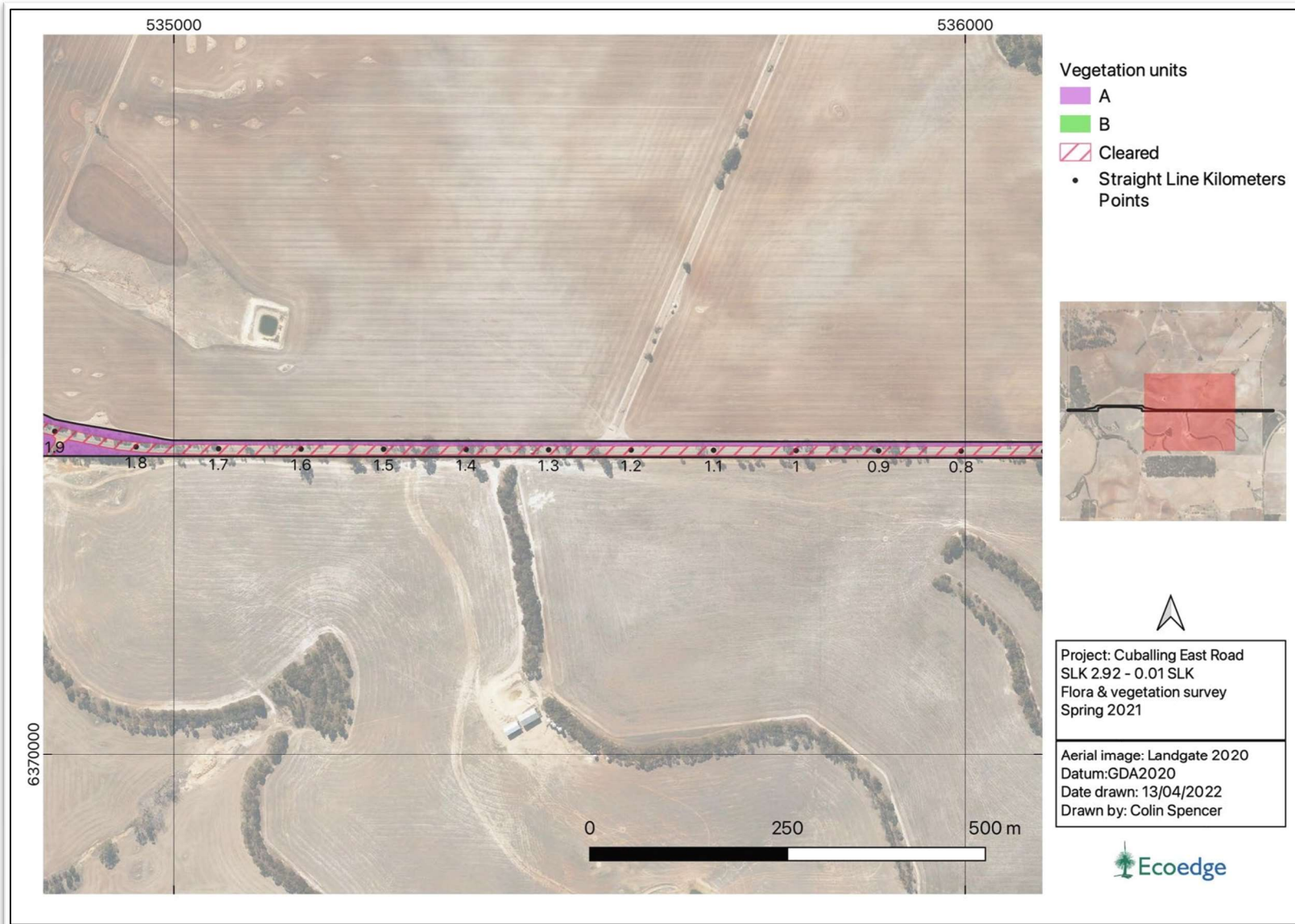


Figure 10: Vegetation units within the central section of the application area, identified during Ecoedge's 2021 Flora and Vegetation Reconnaissance Survey (Ecoedge, 2022a).



Figure 11: Vegetation units within the eastern section of the application area, identified during Ecoedge’s 2021 Flora and Vegetation Reconnaissance Survey (Ecoedge, 2022a).



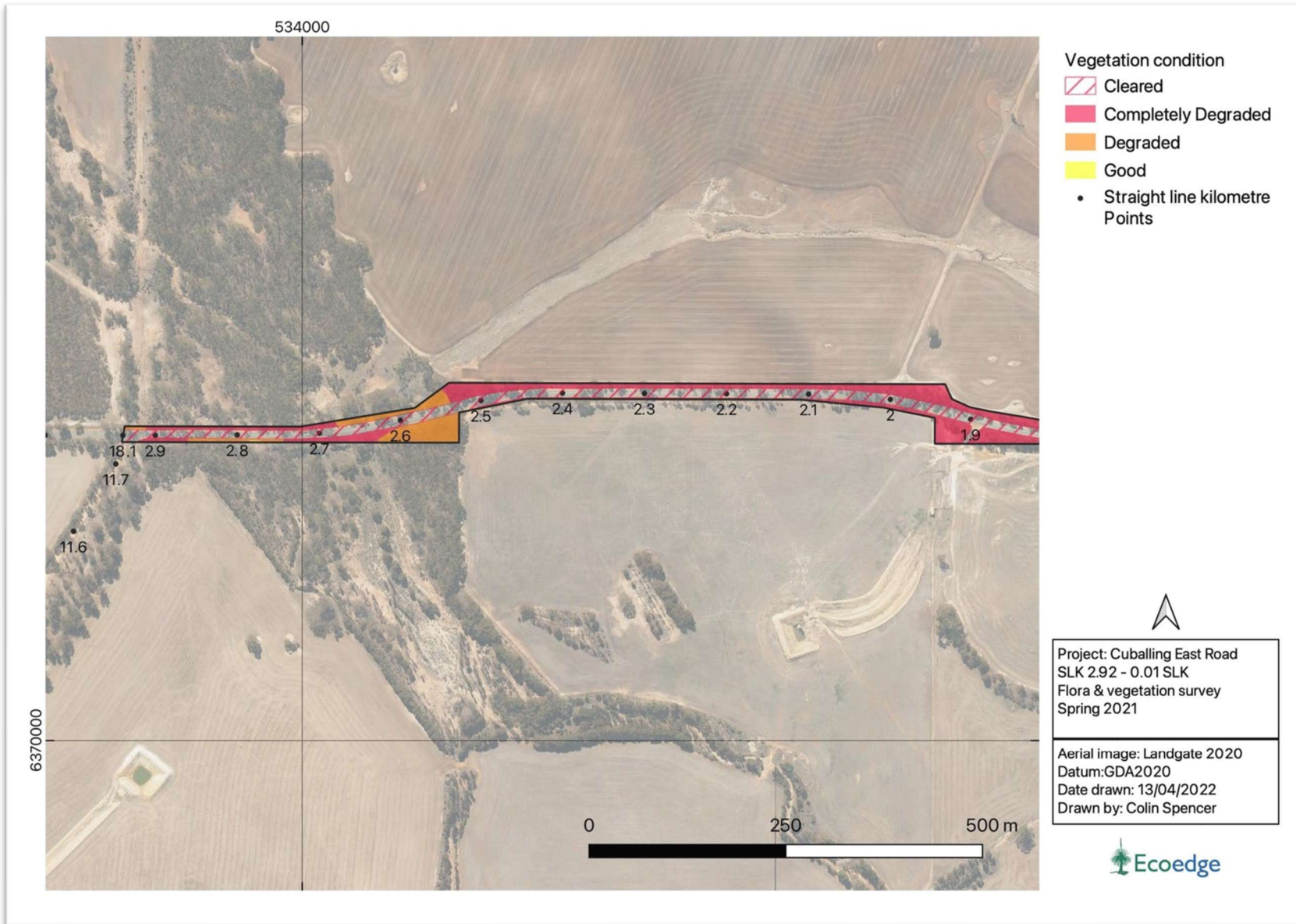


Figure 12: Vegetation condition within the western section of the application area, identified during Ecoedge's 2021 Flora and Vegetation Reconnaissance Survey (Ecoedge, 2022a).

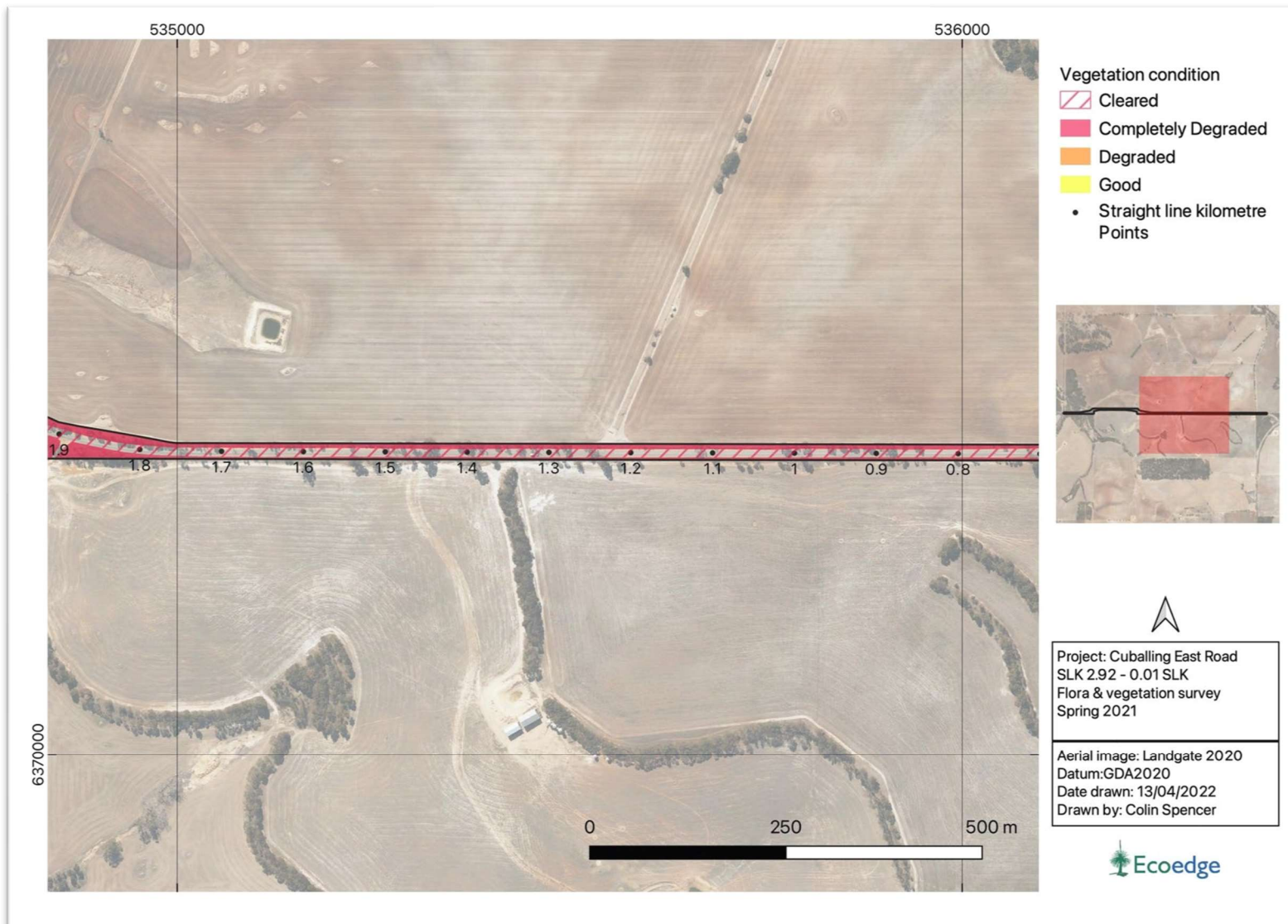


Figure 13: Vegetation condition within the central section of the application area, identified during Ecoedge's 2021 Flora and Vegetation Reconnaissance Survey (Ecoedge, 2022a).





Figure 14: Vegetation condition within the eastern section of the application area, identified during Ecoedge's 2021 Flora and Vegetation Reconnaissance Survey (Ecoedge, 2022a).

Habitat Trees (DBH >50cm (>30cm for wandoo))

Datum GDA 94

Estimated Hollow Entrance Size: Small+ <5cm, Medium = 5 to<10cm, Large = 10cm+

Waypoint Number	Zone	mE	mN	Side of Road	SLK	Tree Species	Tree Height (m)	DBH (cm)	Number of Hollows	Estimated Hollow Entrance Size	Occupancy	Chew Marks	Potential Cockatoo Nest Hollow	Comments
wpt001	50H	533781	6370399	N	2.92	York Gum	15-20	>50	2+	Small & Medium			No	Not in clearing footprint
wpt002	50H	533880	6370380	S	2.84	Dead Unknown	10-15	>50	2+	Small & Medium			No	Not in clearing footprint
wpt003	50H	533886	6370384	S	2.83	Dead Unknown	15-20	>50	2+	Small & Medium			No	Not in clearing footprint
wpt004	50H	534010	6370381	S	2.71	York Gum	10-15	>50	0				No	Not in clearing footprint
wpt005	50H	534011	6370381	S	2.71	York Gum	10-15	>50	0				No	Not in clearing footprint
wpt006	50H	534036	6370402	N	2.69	York Gum	10-15	>50	0				No	Not in clearing footprint
wpt007	50H	534075	6370409	N	2.65	Dead York Gum	10-15	>50	2+	Small & Medium			No	Not in clearing footprint
wpt008	50H	534125	6370417	N	2.60	York Gum	10-15	>50	1	Small	Bees		No	Not in clearing footprint
wpt009	50H	534286	6370452	N	2.44	York Gum	15-20	>50	0				No	Not in clearing footprint
wpt010	50H	534370	6370450	N	2.30	York Gum	10-15	>50	0				No	Not in clearing footprint
wpt011	50H	534429	6370452	N	2.31	Wandoo	10-15	>30	0				No	Not in clearing footprint
wpt012	50H	534589	6370437	S	2.16	York Gum	15-20	>50	0				No	In clearing footprint
wpt013	50H	534653	6370450	N	2.09	York Gum	10-15	>50	0				No	Not in clearing footprint
wpt014	50H	534664	6370451	N	2.09	York Gum	15-20	>50	0				No	Not in clearing footprint
wpt015	50H	534696	6370449	N	2.05	York Gum	15-20	>50	0				No	Not in clearing footprint
wpt016	50H	534709	6370448	N	2.04	York Gum	15-20	>50	1	Medium	Bees		No	Not in clearing footprint
wpt017	50H	534726	6370450	N	2.02	York Gum	15-20	>50	0				No	Not in clearing footprint
wpt018	50H	534759	6370444	N	1.99	York Gum	15-20	>50	0				No	Not in clearing footprint
wpt019	50H	535072	6370397	N	1.69	Dead Unknown	15-20	>50	2+	Small			No	Not in clearing footprint
wpt020	50H	535091	6370394	N	1.67	Wandoo	10-15	>30	0				No	Not in clearing footprint
wpt021	50H	535303	6370395	N	1.47	Wandoo	15-20	>30	0				No	Not in clearing footprint
wpt022	50H	535324	6370396	N	1.45	Wandoo	15-20	>30	0				No	Not in clearing footprint
wpt023	50H	535319	6370379	S	1.45	Wandoo	15-20	>30	0				No	Not in clearing footprint
wpt024	50H	535301	6370379	S	1.47	Wandoo	10-15	>30	0				No	Not in clearing footprint
wpt025	50H	535495	6370395	N	1.28	Wandoo	15-20	>30	2+	Small & Medium			No	Not in clearing footprint
wpt026	50H	535526	6370393	N	1.25	Wandoo	15-20	>30	2+	Small & Medium			No	Not in clearing footprint
wpt027	50H	536118	6370394	N	0.69	Wandoo	10-15	>30	0				No	Not in clearing footprint
wpt028	50H	536131	6370392	N	0.68	Wandoo	10-15	>30	0				No	Not in clearing footprint
wpt029	50H	536139	6370391	N	0.67	York Gum	20+	>50	0				No	Not in clearing footprint
wpt030	50H	536162	6370391	N	0.65	Wandoo	10-15	>30	0				No	In clearing footprint
wpt031	50H	536169	6370391	N	0.64	Wandoo	10-15	>30	0				No	In clearing footprint
wpt032	50H	536190	6370391	N	0.62	York Gum	20+	>50	0				No	Not in clearing footprint
wpt033	50H	536164	6370376	S	0.64	Wandoo	10-15	>30	0				No	Not in clearing footprint
wpt034	50H	536106	6370377	S	0.70	Wandoo	20+	>30	1	Small			No	Not in clearing footprint
wpt035	50H	536090	6370378	S	0.72	York Gum	15-20	>50	0				No	Not in clearing footprint
wpt036	50H	536241	6370393	N	0.57	York Gum	20+	>50	1	Large	Bees		No	Not in clearing footprint

Figure 15: Results from black cockatoo habitat assessment undertaken within application area (Harewood, 2023)

## Appendix E. Sources of information

### E.1. GIS databases

Publicly available GIS Databases used (sourced from [www.data.wa.gov.au](http://www.data.wa.gov.au)):

- 10 Metre Contours (DPIRD-073)
- Aboriginal Heritage Places (DPLH-001)
- Aboriginal Heritage Places (DPLH-001)
- Cadastre (LGATE-218)
- Cadastre Address (LGATE-002)
- Contours (DPIRD-073)
- DBCA – Lands of Interest (DBCA-012)
- DBCA Legislated Lands and Waters (DBCA-011)
- Directory of Important Wetlands in Australia – Western Australia (DBCA-045)
- Environmentally Sensitive Areas (DWER-046)
- Flood Risk (DPIRD-007)
- Groundwater Salinity Statewide (DWER-026)
- Hydrography – Inland Waters – Waterlines
- Hydrological Zones of Western Australia (DPIRD-069)
- IBRA Vegetation Statistics
- Imagery
- Local Planning Scheme – Zones and Reserves (DPLH-071)
- Native Title (ILUA) (LGATE-067)
- Offsets Register – Offsets (DWER-078)
- Pre-European Vegetation Statistics
- Public Drinking Water Source Areas (DWER-033)
- Ramsar Sites (DBCA-010)
- Regional Parks (DBCA-026)
- Remnant Vegetation, All Areas
- RIWI Act, Groundwater Areas (DWER-034)
- RIWI Act, Surface Water Areas and Irrigation Districts (DWER-037)
- Soil Landscape Land Quality – Flood Risk (DPIRD-007)
- Soil Landscape Land Quality – Phosphorus Export Risk (DPIRD-010)
- Soil Landscape Land Quality – Subsurface Acidification Risk (DPIRD-011)
- Soil Landscape Land Quality – Water Erosion Risk (DPIRD-013)
- Soil Landscape Land Quality – Water Repellence Risk (DPIRD-014)
- Soil Landscape Land Quality – Waterlogging Risk (DPIRD-015)
- Soil Landscape Land Quality – Wind Erosion Risk (DPIRD-016)
- Soil Landscape Mapping – Best Available
- Soil Landscape Mapping – Systems
- Wheatbelt Wetlands Stage 1 (DBCA-021)

Restricted GIS Databases used:

- ICMS (Incident Complaints Management System) – Points and Polygons
- Threatened Flora (TPFL)
- Threatened Flora (WAHerb)
- Threatened Fauna
- Threatened Ecological Communities and Priority Ecological Communities
- Threatened Ecological Communities and Priority Ecological Communities (Buffers)



## E.2. References

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