



CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

Purpose Permit number:	CPS 8832/2
Permit Holder:	Shire of Goomalling
Duration of Permit:	From 29 May 2021 to 29 May 2036

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.

2. Land on which clearing is to be done

Lot 121 on Deposited Plan 406131, Cunjardine

Goomalling-Meckering Road reserve (PINs 11719167, 11719169, 11719181, 11719183, 11719184), Cunjardine

Goomalling-Meckering Road reserve (PIN 11719186), Cunjardine and Hulongine

Goomalling-Meckering Road reserve (PIN 11719247), Hulongine

3. Clearing authorised

The permit holder must not clear more than 2.8 hectares of native vegetation within the area cross-hatched yellow in Figure 1A, Figure 1B, Figure 1C, Figure 1D and Figure 1E of Schedule 1.

4. Type of clearing authorised

This Permit authorises the Permit Holder to clear native vegetation for the activities described in condition 1 of this Permit to the extent that the Permit Holder has the power to carry out works involving clearing for those activities under the *Local Government Act 1995* or any other written law.

5. Period during which clearing is authorised

The permit holder must not clear any native vegetation after 29 May 2026.

PART II – MANAGEMENT CONDITIONS

6. 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.

7. 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.

8. Priority ecological community management

The permit holder must not clear more than 0.6 hectares of native vegetation representative of the ‘Eucalypt woodlands of the Western Australian Wheatbelt (Eucalypt Woodlands)’ ecological community.

9. Priority flora management

Prior to undertaking any clearing authorised under this Permit, the permit holder must:

- (a) Engage an *environmental specialist* to demarcate 20-metre buffers of all *priority flora* species identified (Natural Area Holdings Pty Ltd, 2020a) within the area cross-hatched yellow in Figure 1A, Figure 1B, Figure 1C, Figure 1D and Figure 1E of Schedule 1
- (b) If demarcating of 20-metre buffers under condition 9(a) is not practical, engage an *environmental specialist* to demarcate all individuals of *priority flora* species identified (Natural Area Holdings Pty Ltd, 2020a) within the area cross-hatched yellow in Figure 1A, Figure 1B, Figure 1C, Figure 1D and Figure 1E of Schedule 1
- (c) The permit holder is not authorised to clear the *priority flora* species described in Table 1, or any other *priority flora*.

Table 1 - Priority flora identified within the application area (Natural Area Holdings Pty Ltd, 2020a)

ID	Taxon	Easting	Northing
1	<i>Acacia trinalis</i>	487136.871	6525492.059
2	<i>Acacia trinalis</i>	487158.059	6525445.241
3	<i>Acacia trinalis</i>	487027.951	6525709.656
4	<i>Acacia trinalis</i>	487191.472	6525305.830

5	<i>Acacia trinalis</i>	487191.126	6525302.150
6	<i>Acacia trinalis</i>	487184.127	6525343.435
7	<i>Acacia trinalis</i>	487030.299	6525718.603
8	<i>Acacia trinalis</i>	487189.195	6525342.997
9	<i>Acacia trinalis</i>	487032.986	6525710.328
10	<i>Acacia trinalis</i>	487034.803	6525710.235
11	<i>Acacia trinalis</i>	487186.174	6525337.887
12	<i>Acacia trinalis</i>	487186.644	6525344.326
13	<i>Acacia trinalis</i>	487186.713	6525340.235
14	<i>Acacia trinalis</i>	487186.523	6525338.934
15	<i>Acacia trinalis</i>	487191.176	6525312.965

10. Fauna management – black cockatoo habitat

- (a) Prior to undertaking any clearing authorised under this permit within the areas cross-hatched yellow in Figure 1A, Figure 1B, Figure 1C, Figure 1D and Figure 1E of Schedule 1, the permit holder must engage a *fauna specialist* to conduct a *fauna survey* of the permit area to identify *black cockatoo habitat tree/s* being utilised by *Calyptorhynchus lateriosis* (Carnaby’s cockatoo).
- (b) Where *black cockatoo habitat tree/s* are identified under condition 10(a), the permit holder must engage a *fauna specialist* to map *black cockatoo habitat tree/s* within the permit area.
- (c) Each *black cockatoo habitat tree* identified must be inspected by a *fauna specialist* for *evidence* of current or past breeding use by *black cockatoo species*.
- (d) Where a *black cockatoo habitat tree* with no *evidence* of current or past use by *black cockatoo species* is identified in accordance with condition 10(a), that tree must only be cleared immediately after the inspection.
- (e) Where a *black cockatoo habitat tree* is identified within the areas cross-hatched yellow in Figure 1A, Figure 1B, Figure 1C, Figure 1D and Figure 1E of Schedule 1 and that tree shows *evidence* of current or past breeding use by *black cockatoo species* under condition 10(c), and clearing of that tree cannot be avoided, that tree must be monitored by a *fauna specialist* to determine when it is no longer in use for that breeding season.
- (f) Any *black cockatoo habitat tree* with *evidence* of current breeding use by *black cockatoo species* must not be cleared whilst it is in use for that breeding season as determined by the *fauna specialist* under condition 10(e).
- (g) For each suitably sized hollow for black cockatoo nesting that cannot be avoided, the permit holder must install an artificial black cockatoo nesting hollow.
- (h) Each artificial black cockatoo nesting hollow required by condition 10(g) must be installed prior to commencement of the next black cockatoo breeding season following clearing of the related *black cockatoo habitat tree(s)*.
- (i) In relation to the total of 11 artificial black cockatoo nest hollow(s) required by condition 10(g) of this permit:
 - (i) seven (7) hollows must be installed within the area cross-hatched green in Figure 3A of Schedule 1 (Crown Reserve 13322)
 - (ii) two (2) hollows must be installed within the area cross-hatched green in Figure 3B of Schedule 1 (Reserve 47896)
 - (iii) two (2) hollows must be installed within the area cross-hatched green in Figure 2C of Schedule 1 (Reserve 15442)

- (iv) must be designed and placed in accordance with the specifications detailed in Schedule 2; and
 - (v) must be monitored and maintained in accordance with the specifications detailed in Schedule 3, for a period of at least 10 years.
- (j) Within two months of clearing authorised under this permit within the areas cross-hatched yellow in Figure 1A, Figure 1B, Figure 1C, Figure 1D and Figure 1E of Schedule 1, the permit holder must provide the results of the *fauna survey* in a report to the *CEO*.
- (k) The *fauna survey* report must include the following;
- (i) the time(s) and date(s) of inspection(s) by the *fauna specialist*
 - (ii) a description of the *fauna specialist* inspection methods used
 - (iii) the location of the *black cockatoo habitat tree(s)* recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 1994 (GDA94), expressing the geographical coordinates in Eastings and Northings or decimal degrees
 - (iv) the location of any fauna species listed in condition 10(a), if identified, recorded using a GPS unit set to GDA94, expressing the geographical coordinates in Eastings and Northings or decimal degrees
 - (v) the name and amount of each fauna species identified
 - (vi) whether the *black cockatoo habitat tree/s* identified show current or past use by black cockatoo species
 - (vii) a photo of the *black cockatoo habitat tree(s)* identified; and
 - (viii) a description of the *black cockatoo habitat tree(s)* identified, including the:
 - (A) species of *black cockatoo habitat tree(s)*; and
 - (B) condition of the *black cockatoo habitat tree(s)*
 - (ix) the time and date each *black cockatoo habitat tree* with evidence of current or past breeding use was cleared.

11. Offset – revegetation

Within 12 months of the commencement of clearing, the permit holder must implement and adhere to the *Revegetation plan*, including but not limited to the following actions:

- (a) Retain the vegetative material and topsoil removed by clearing authorised under this Permit and stockpile the vegetative material and topsoil in an area that has already been cleared;
- (b) Commence *revegetation* and *rehabilitation* within the areas cross-hatched red in Figure 2A, Figure 2B and Figure 2C of Schedule 1 by:
 - (i) laying the vegetative material and topsoil retained under condition 11(a) within 18 months of its removal within the *offset sites*
 - (ii) deliberately *planting* native vegetation that will result in similar species composition, structure and density of native vegetation to the surrounding vegetation within the *offset sites*; and
 - (iii) ensuring only *local provenance* seeds and propagating material area used to *revegetate* and *rehabilitate* the area.
- (c) Rip the *offset sites* to remove any areas of compaction or other obstruction that could prevent root penetration of seedlings
- (d) Undertake weed control in accordance with Section 4.3.2 of the *Revegetation plan*
- (e) Establish seven 10 x 10 metre quadrat monitoring sites across the *offset sites*:
 - (i) one (1) within Crown Reserve 4237
 - (ii) two (2) within Crown Reserve 13755

- (iii) four (4) within Crown Reserve 15442
- (f) Conduct *pest animal* control
- (g) Fence the *offset sites*
- (h) Remove rubbish from the *offset sites*
- (i) Install a four-metre trafficable firebreak that complies with the Shire of Goomalling requirements around the interior perimeter fence of the *offset sites*
- (j) Water planted vegetation between November and March during the first two years following planting
- (k) Undertake weed control activities on an 'as needs' basis to maintain a minimum 80 per cent weed free state of the *offset sites* by the end of the project maintenance period
- (l) Achieve the following completion criteria no later than within a 5-year monitoring period for areas *revegetated* and *rehabilitated* under this Permit and for the vegetation to be maintained for a period of two years from the date of the completion criteria having been met:

Item	Criterion	Completion targets	Completion criteria	Monitoring
1a	Species richness	Return dominant overstorey species present at <i>reference sites</i> .	For each target revegetation type, the revegetation needs to support the dominant overstorey species from the target <i>reference site</i> .	Annually in spring by an <i>environmental specialist</i> until completion criterion has been met and maintained for two years (i.e. three successive monitoring events).
1b	Species richness	Minimum of 60 per cent of native species in each structural layer returned, based on <i>reference sites</i> .	For each target revegetation type, the revegetation needs to achieve a minimum species richness of at least 60 per cent of the average recorded at the <i>reference sites</i> .	Annually in spring by an <i>environmental specialist</i> until completion criterion has been met and maintained for two years (i.e. three successive monitoring events).
2a	Cover and density	Minimum of 60 per cent of stems/ha for dominant overstorey species returned based on <i>reference sites</i> .	For each target revegetation type, the revegetation needs to support 60 per cent of stems/ha of the dominant overstorey species from the target <i>reference sites</i> .	Annually by an <i>environmental specialist</i> until completion criterion has been met and maintained for two years (i.e. three successive monitoring events).
2b	Cover and density	Minimum of 60 per cent of plants /ha in each structural layer returned, based on <i>reference sites</i> .	For each target revegetation type, the revegetation needs to achieve a minimum species richness of at least 60 per cent of the average record at the <i>reference site</i> .	Annually by an <i>environmental specialist</i> until completion criterion has been met and maintained for two years (i.e. three successive monitoring events).
3a	Weeds	Weed cover is no greater than at <i>reference sites</i>	For each target revegetation type, the revegetation needs a weed cover no greater than that recorded at the targeted <i>reference sites</i> .	Annually in winter/spring by an <i>environmental specialist</i> until completion criterion has been met and maintained for two years (i.e. three successive monitoring events).
3b	Weeds	No priority, high impact or highly invasive weeds present	No weeds present that are listed as Priority Alert, High Impact or Rapid invasiveness on the DBCA Wheatbelt Region Impact and Invasiveness Ratings list as updated from time to time.	Annually in winter/spring by an <i>environmental specialist</i> until completion criterion has been met and maintained for two years (i.e. three successive monitoring events).
4	Bare ground	No more than 5 per cent greater than at the <i>reference sites</i>	For each target revegetation type, the <i>offset sites</i> must not have more than 30m ² of bare ground.	Annually in Summer by an <i>environmental specialist</i> until completion criterion has been met and maintained for two years (i.e. three successive monitoring events).
5	Gates and boundary fence	Gates and boundary fence to be in good condition with no obvious damage that will enable the entry of fauna, including rabbits and/or kangaroos into the <i>rehabilitation</i> area.	N/A	Annually by an <i>environmental specialist</i> until completion criteria 1 – 4 has been met.

- (m) Undertake remedial action for areas *the offset sites* where monitoring indicated that revegetation has not met the completion criteria, outlined in condition 11(l) of this permit, including:
- (i) revegetate the area by deliberately *planting* native vegetation that will result in the minimum target set out in condition 11(l) of this permit and ensuring only *local provenance* seeds and propagating material are used;
 - (ii) undertake further weed control activities;
 - (iii) undertake further watering activities; and
 - (iv) annual monitoring by an *environmental specialist of the offset sites* following the three years of biannual monitoring outlined in condition 11(l), until the completion criteria, outline in condition 11(l) of this Permit are met.

12. Offset – Crown Reserves 15442

By 29 May 2022, the permit holder shall provide to the *CEO* a copy of the executed change in purpose of Crown Reserve 15442, Ucarty West, from ‘gravel’ to ‘conservation’.

13. Offset – Crown Reserves 13755

By 29 May 2022, the permit holder shall provide to the *CEO* a copy of the executed change in purpose of Crown Reserve 13755, Cunjardine, from ‘gravel’ to ‘conservation’.

PART III - RECORD KEEPING AND REPORTING

14. 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"> (a) the species composition, structure, and density of the cleared area; (b) the location where the clearing occurred, recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 1994 (GDA94), expressing the geographical coordinates in Eastings and Northings; (c) the date that the area was cleared; (d) the size of the area cleared (in hectares); (e) actions taken to avoid, minimise, and reduce the impacts and extent of clearing in accordance with condition 6; (f) actions taken to minimise the risk of the introduction and spread of weeds and dieback in accordance with condition 7; and (g) the size of the area of Wheatbelt Woodland TEC cleared (in hectares) in accordance with condition 8 of this permit.
2.	In relation to flora management pursuant to condition 9	<ul style="list-style-type: none"> (a) the name and location of each threatened flora and/or priority flora species, recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 1994 (GDA94), expressing the geographical coordinates in Eastings and Northings; (b) actions taken to demarcate each priority flora species recorded and their relevant buffers; and

No.	Relevant matter	Specifications
		(c) actions taken to avoid and minimise direct and indirect impacts of the clearing on <i>priority flora</i> species.
3.	In relation to black cockatoo fauna management pursuant to condition 10	<p>(a) the time(s) and date(s) of inspection(s) of the suitable <i>black cockatoo habitat tree</i> by the <i>fauna specialist</i>;</p> <p>(b) a description of the inspection methodology employed by the <i>fauna specialist</i>;</p> <p>(c) the species name of any fauna determined by the <i>fauna specialist</i> to be occupying the suitable <i>black cockatoo habitat tree</i>;</p> <p>(d) where the suitable <i>black cockatoo habitat tree</i> is determined by the <i>fauna specialist</i> to be occupied by <i>black cockatoo species</i>:</p> <p style="padding-left: 20px;">(i) the time and date that it was determined to be no longer occupied; and</p> <p style="padding-left: 20px;">(ii) a description of the evidence by which it was determined to be no longer occupied; and</p> <p>(a) the time and date that the suitable <i>black cockatoo habitat tree</i> was cleared.</p>
4.	In relation to the <i>revegetation</i> and <i>rehabilitation</i> areas pursuant to condition 11 of this permit	<p>(a) the location of any areas <i>revegetated</i> and <i>rehabilitated</i>, recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 1994 (GDA94), expressing the geographical coordinates in Eastings and Northings or decimal degrees;</p> <p>(b) the date the fence and firebreak were installed and evidence of maintenance;</p> <p>(c) the date rubbish was removed from the <i>revegetation</i> and <i>rehabilitation</i> area;</p> <p>(d) pest animal and weed control measures undertaken;</p> <p>(e) a description of the <i>revegetation</i> and <i>rehabilitation</i> activities undertaken;</p> <p>(f) the size of the area <i>revegetated</i> and <i>rehabilitated</i> (in hectares);</p> <p>(g) the species composition, structure and density of <i>revegetation</i> and <i>rehabilitation</i>;</p> <p>(h) the number of plants and species installed</p> <p>(i) the assessment of the <i>revegetation</i> and <i>rehabilitation</i> against Criterion outlined in condition 11(l);</p> <p>(j) any remedial actions undertaken in accordance with condition 11(m); and</p> <p>(k) a copy of the environmental specialist's report.</p>

15. Reporting

- (a) The Permit Holder must provide to the *CEO* on or before 30 June of each year, a written report:
- (i) of records required under condition 14 of this Permit; and
 - (ii) concerning activities done by the Permit Holder under this Permit between 1 January and 31 December of the preceding calendar year.
- (b) If no clearing authorised under this Permit was undertaken between 1 January to 31 December of the preceding calendar year, a written report confirming that no clearing under this permit has been carried out, must be provided to the *CEO* on or before 30 June of each year.
- (c) Prior to 29 February 2031, the permit holder must provide to the *CEO* a written report of records required under condition 14 of this Permit, where these records have not already been provided under condition 15(a) of this Permit.

DEFINITIONS

In this permit, the terms in Table 2 have the meanings defined.

Table 2: Definitions


Term	Definition
Black cockatoo habitat trees	means trees that have a diameter measured over bark at 130 centimetres from the base of the tree of 50 centimetres or greater (or 30 centimetres or greater for <i>Eucalyptus salmonophloia</i> or <i>Eucalyptus wandoo</i>) that contain hollows suitable for breeding by <i>black cockatoo species</i> .
Black cockatoo species	means one or more of the following species: a) <i>Calyptorhynchus lateriosis</i> (Carnaby's cockatoo); b) <i>Calyptorhynchus baudinii</i> (Baudin's cockatoo); and/or c) <i>Calyptorhynchus banksii naso</i> (forest red-tailed black cockatoo).
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.
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.
Dieback	means the effect of <i>Phytophthora</i> species on native vegetation.
Direct seeding	means a method of re-establishing vegetation through establishment of a seed bed and the introduction of seeds of the desired plant species.
Environmental specialist	means a person who holds a tertiary qualification in environmental science or equivalent and has experience relevant to the type of environmental advice that an environmental specialist is required to provide under this Permit, or who is approved by the CEO as a suitable environmental specialist.
EP act	<i>Environmental Protection Act 1986</i> (WA)
Fauna specialist	means a person who holds a tertiary qualification specialising in environmental science or equivalent, and has a minimum of 2 years work experience in fauna identification and surveys of fauna native to the region being inspected or surveyed, or who is approved by the CEO as a suitable fauna specialist for the bioregion, and who holds a valid fauna licence issued under the <i>Biodiversity Conservation Act 2016</i> .
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 100 kilometres and the same Interim Biogeographic Regionalisation for Australia (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.
Offset sites	Means the areas cross-hatched red on Figure 2a, Figure 2b and Figure 2c of Schedule 1.
Optimal time	means the period from April to June for undertaking <i>planting</i> and <i>seeding</i> .
Pest animal	Animals that are known to impact the survival of revegetation/rehabilitation i.e. rabbits.
Planting	means the re-establishment of vegetation by creating favourable soil conditions and planting seedlings of the desired species.
Reference sites	Means: a) For Crown Reserves 4237, Hulongine and 13755, Cunjardine, the five 10m x 10m quadrat reference sites that were identified (Munns, 2018) along Patterson Rd verge within 150 meters of the <i>revegetation</i> and <i>rehabilitation area</i> to identify remnant native vegetation species composition and structure, condition, density and weed cover. b) For Crown Reserve 15442, Ucarty West, the area cross-hatched green in Figure 2c of Schedule 1.
Regeneration	means revegetation that can be established from in situ seed banks contained either within the topsoil or seed-bearing mulch.
Rehabilitate, rehabilitated and rehabilitation	means actively managing an area containing native vegetation in order to improve the ecological function of that area using methods such as natural <i>regeneration</i> ,

Term	Definition
	<i>direct seeding and/or planting</i> , so that the species composition, structure and density is similar to pre-clearing vegetation types in that area.
Revegetation plan	Means plan developed by the permit holder for the <i>revegetation and rehabilitation</i> of a site in accordance with condition 11 of this Permit: “ <i>Shire of Goomalling – Offset Site Revegetation Plan – Goomalling- Meckering Road SLK 8.00-SLK21.31</i> (Natural Area Consulting Management Services, 2020b)”.
Weeds	means any plant – <ul style="list-style-type: none"> (a) that is a declared pest under section 22 of the <i>Biosecurity and Agriculture Management Act 2007</i>; or (b) published in a Department of Biodiversity, Conservation and Attractions species-led ecological impact and invasiveness ranking summary, regardless of ranking; or (c) not indigenous to the area concerned.

REFERENCES

- Natural Area Holdings Pty Ltd. (2020a). Additional information in relation to the clearing permit application CPS 8832/1 provided on behalf of the Shire of Goomalling. Received by the Department of Water and Environmental Regulation on 22 October 2020 (DWER Ref: A1946106).
- Natural Area Holdings Pty Ltd. (2020b). Revegetation management plan prepared in relation to the clearing permit application CPS 8832/1 on behalf of the Shire of Goomalling. Received by the Department of Water and Environmental Regulation on 3 May 2021 (DWER Ref: A2002143).
- Munns, R. (2018). *Offset Revegetation Plan for Clearing Permit CPS 7534/1 on Goomalling - Meckering Rd – from SLK 0.00 – 8.00*. Available at <ftp://ftp.dwer.wa.gov.au/permit/7534/>

END OF CONDITIONS



 Ryan Mincham
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Ryan Mincham
 MANAGER
 NATIVE VEGETATION REGULATION

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

17 December 2021

Schedule 1

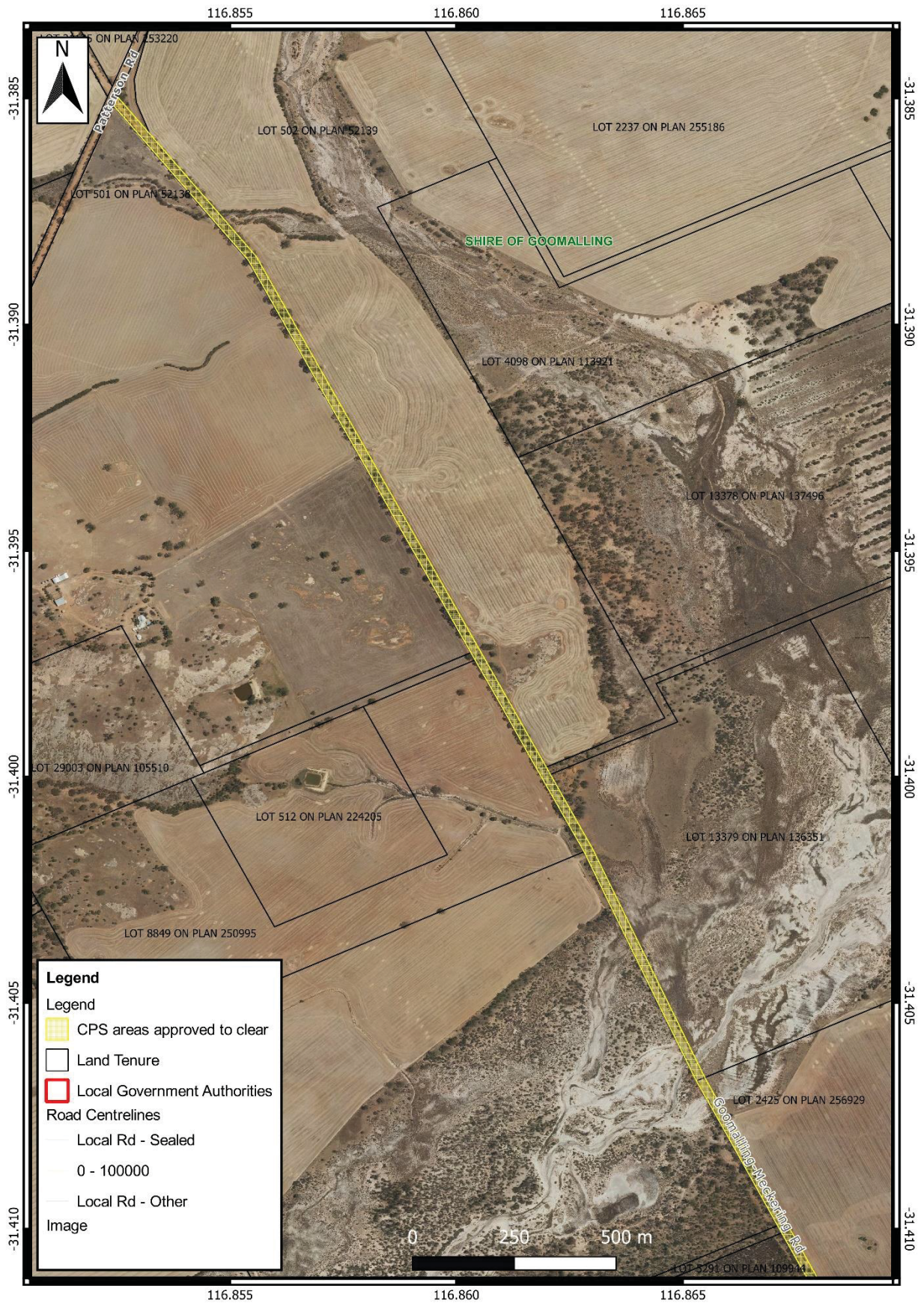


Figure 1A: Map of the boundary of the area (cross-hatched yellow) within which clearing may occur

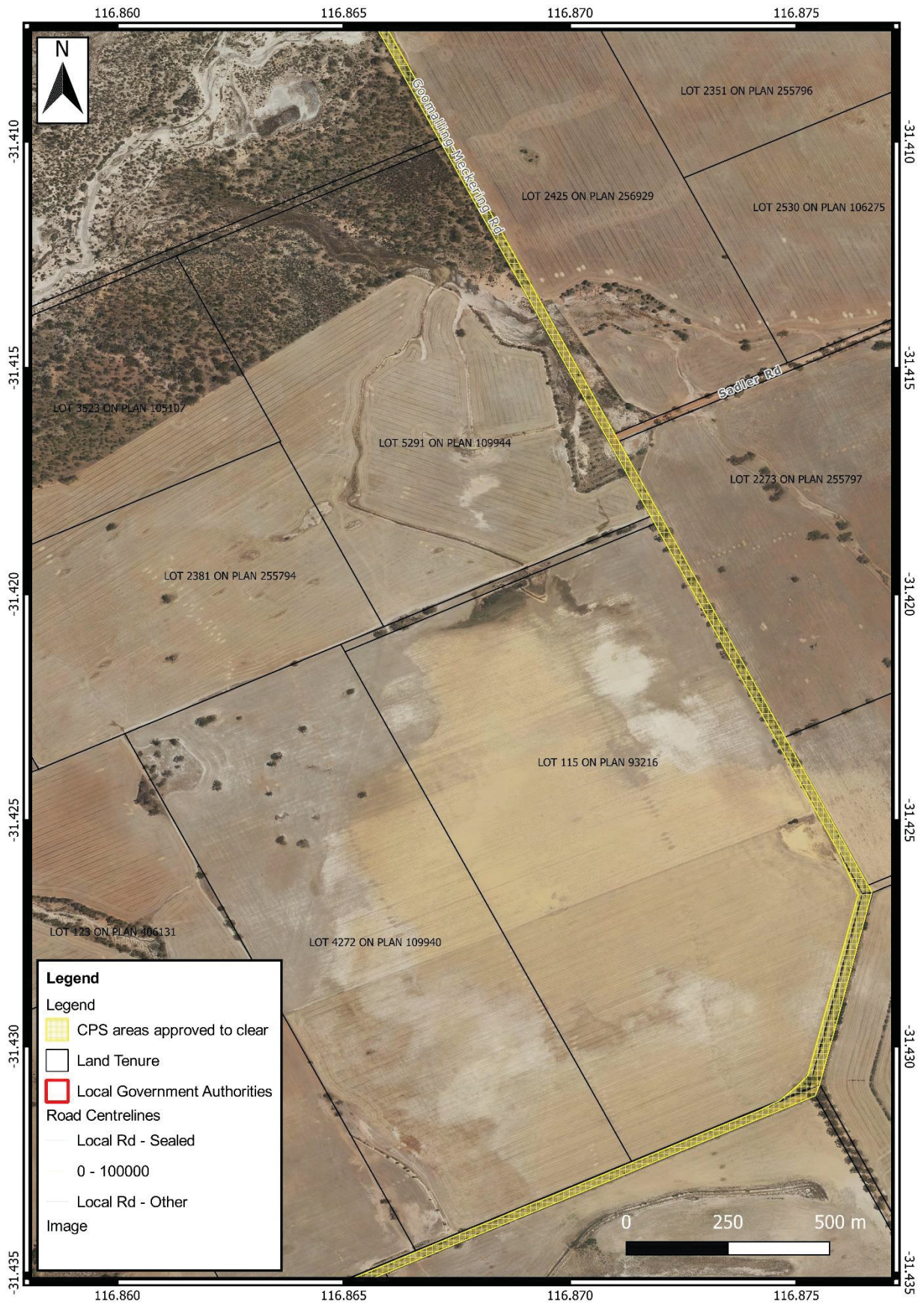


Figure 1B: Map of the boundary of the area (cross-hatched yellow) within which clearing may occur

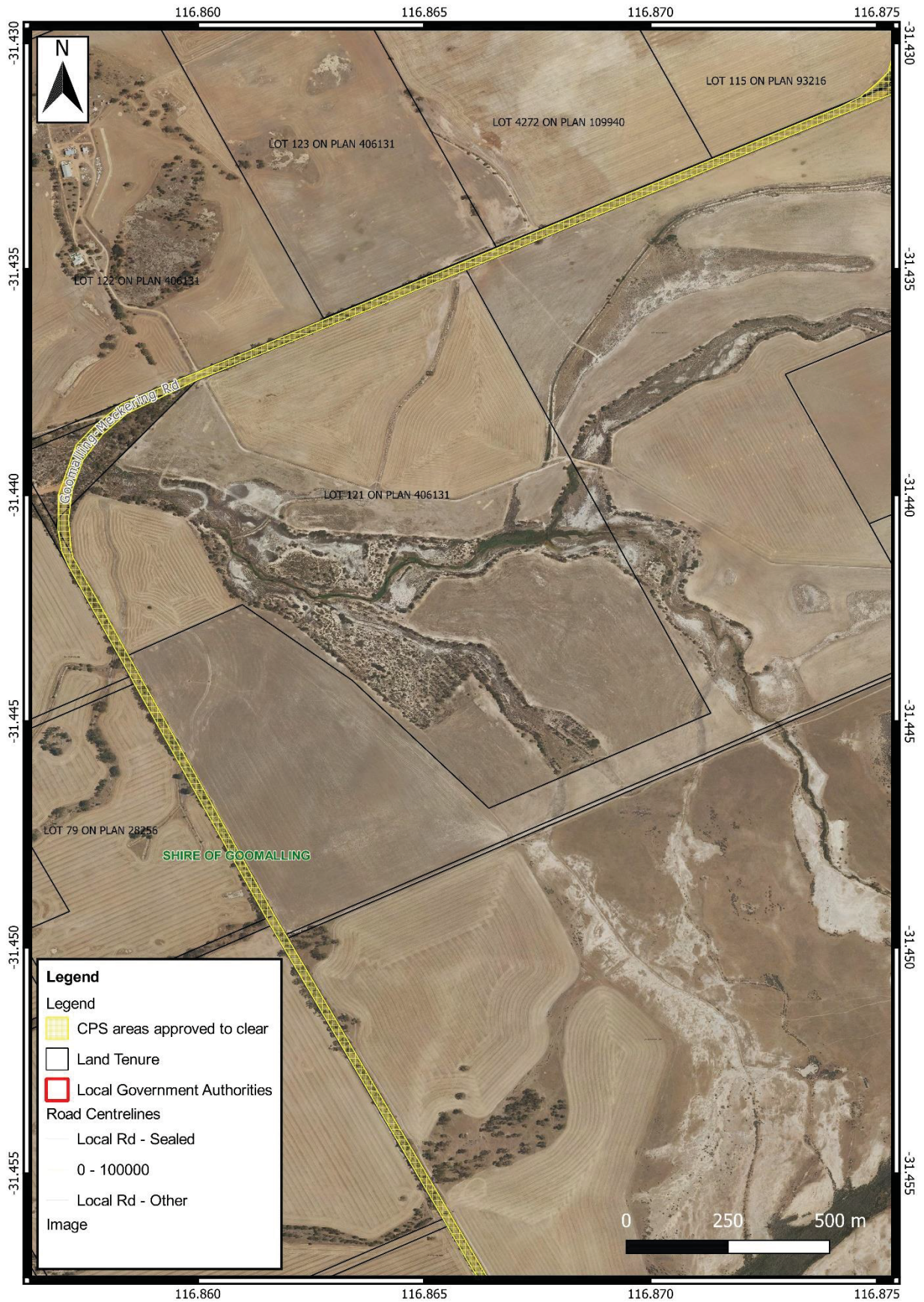


Figure 1C: Map of the boundary of the area (cross-hatched yellow) within which clearing may occur

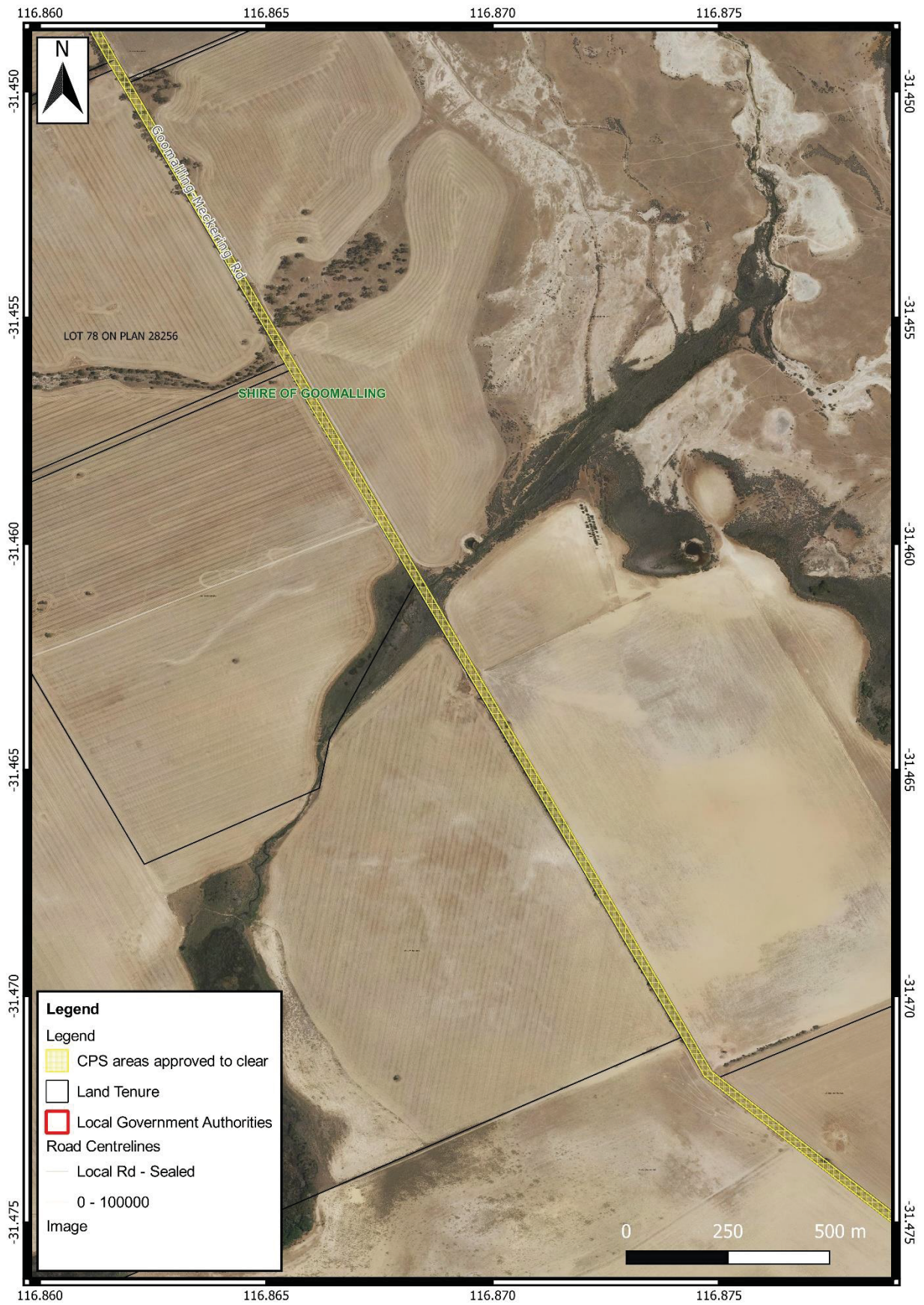


Figure 1D: Map of the boundary of the area (cross-hatched yellow) within which clearing may occur

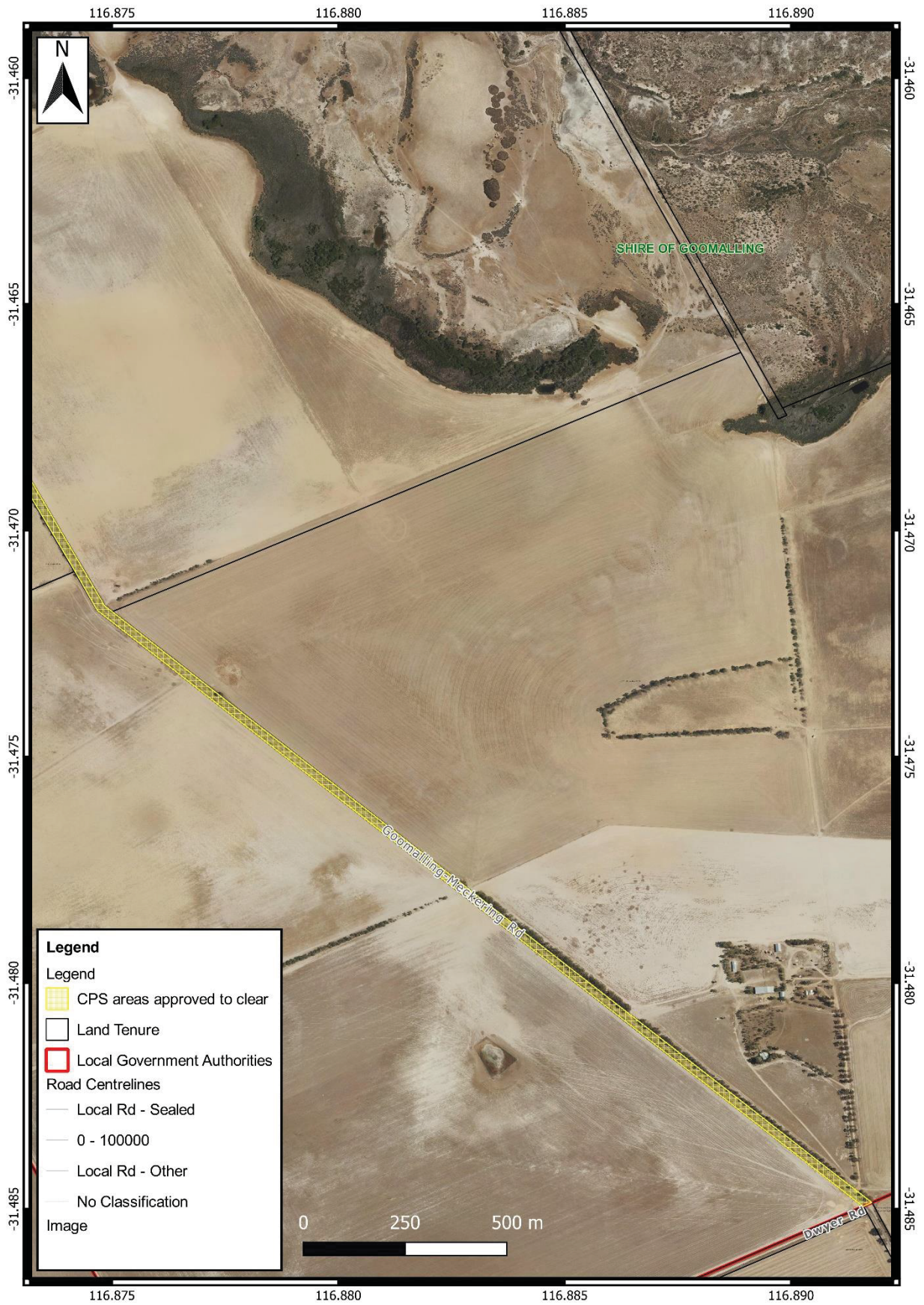


Figure 1E: Map of the boundary of the area (cross-hatched yellow) within which clearing may occur



Figure 2A: Map of the boundary of the area cross-hatched red which will be revegetated in accordance with the offset conditions of this permit



Figure 2B: Map of the boundary of the area cross-hatched red which will be revegetated in accordance with the offset conditions of this permit



Figure 2C: Map of the boundary of the area (crossed-hatched red) which will be revegetated in accordance with the offset conditions of this permit. The area cross-hatched green indicates the area where installation of two (2) artificial black cockatoo nesting hollows must occur.

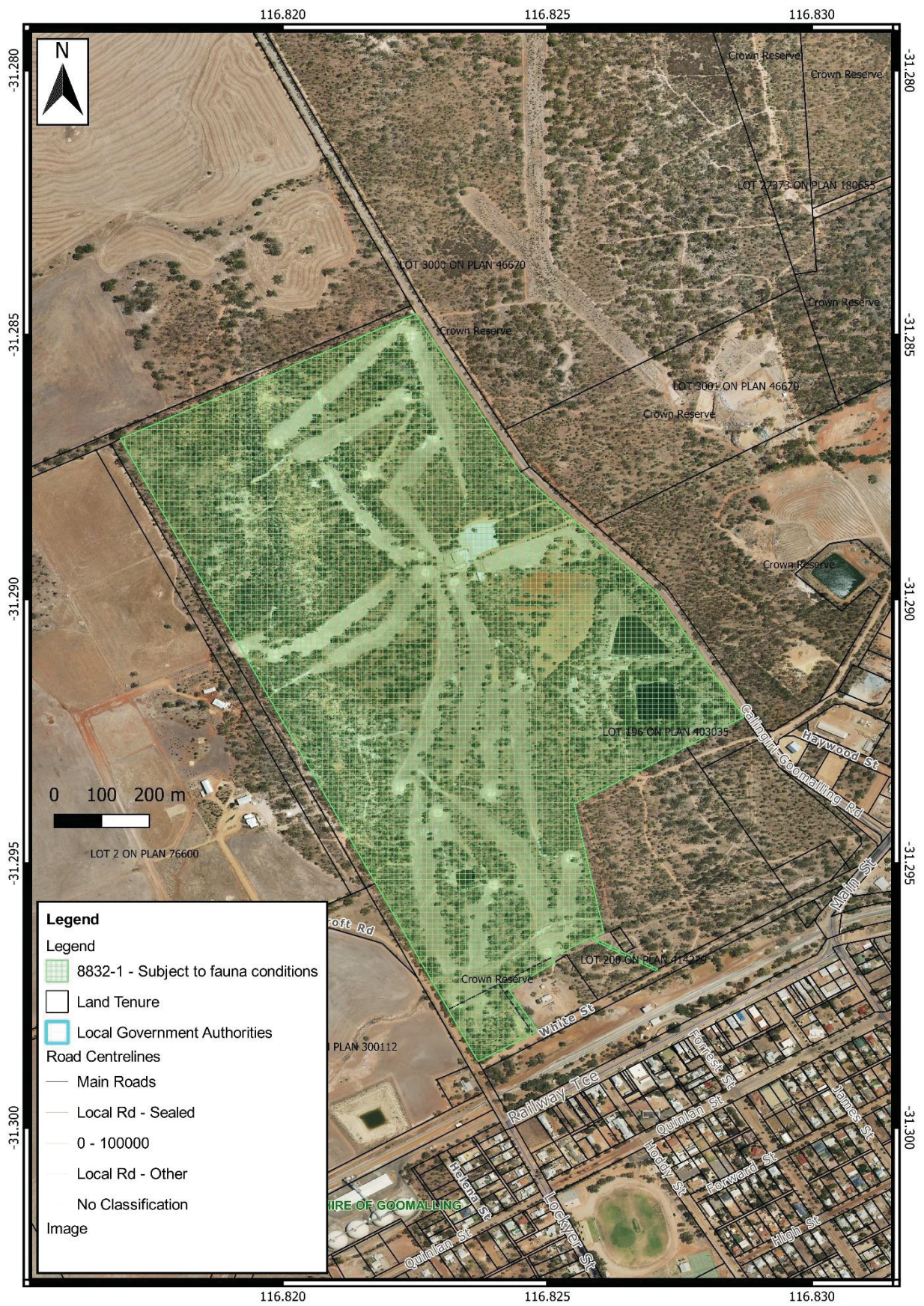


Figure 3A: Map of the boundary of the area within installation of seven (7) artificial black cockatoo nesting hollows must occur

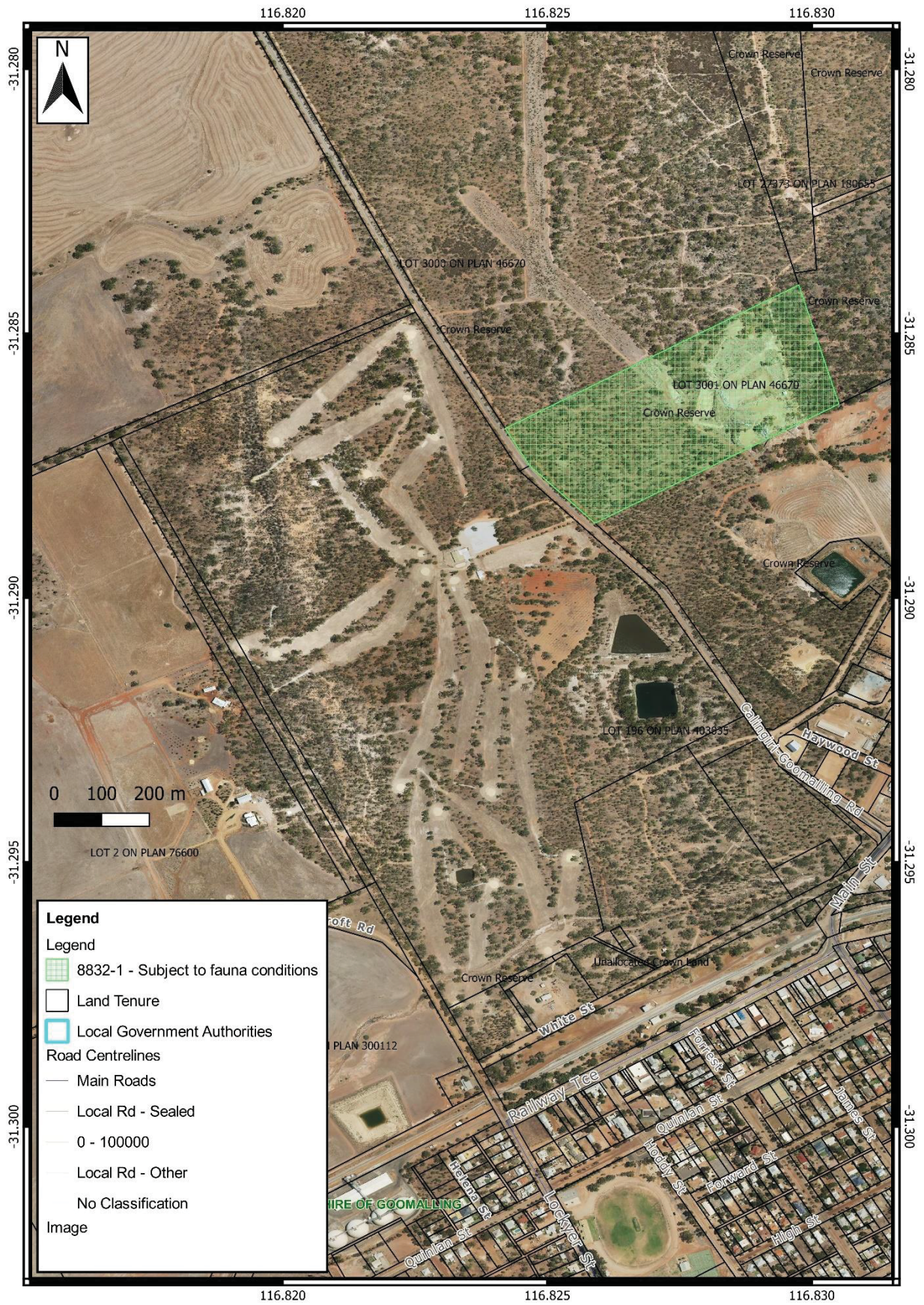


Figure 3B: Map of the boundary of the area within installation of two (2) artificial black cockatoo nesting hollows must occur

Schedule 2 – How to design and place artificial hollows for Carnaby’s cockatoo

Artificial hollows for Carnaby's cockatoo



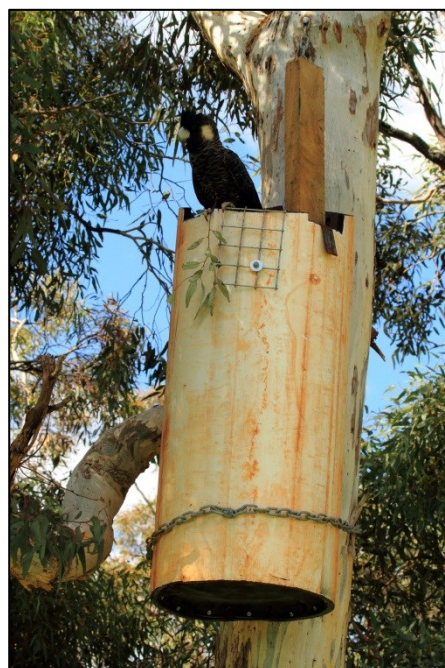
How to design and place artificial hollows for Carnaby's cockatoo

Artificial hollows can be used to help conserve the threatened Carnaby's cockatoo by enabling the cockatoos to breed in areas where natural hollows are limited.

A wide variety of artificial hollow designs have been used with mixed success. Evidence suggests that, while the hollow must meet some basic requirements, other factors such as proximity to existing breeding areas may be more important in determining the success of artificial hollows. Before using this information sheet to construct or install an artificial hollow, you should refer to the criteria listed in the separate information sheet; *When to use artificial hollows for Carnaby's cockatoo*.

This information sheet contains broad guidelines for the design and placement of artificial hollows for Carnaby's cockatoo.

Below are three examples of successful artificial hollows used by Carnaby's cockatoo for nesting. Artificial hollows made from a natural log with cut side entrance (left), white industrial pipe with top entrance (centre) and natural log with natural side entrance (right).



Photos by Christine Groom (left and right) and Rick Dawson (centre)

Walls

The walls of the artificial hollow need to be constructed from a material that is;

- Durable enough to withstand exposure to elements for an extended period of time (i.e. 20+ years).
- Able to simulate the thermal properties of a natural tree hollow.
- Not less than 380 mm in internal diameter.
- Preferably 1.2 m deep overall and 1m deep to top of substrate/nesting material.

Successful artificial hollows have been constructed from sections of salvaged natural hollow, black and white industrial pipe. When using non-natural materials care must be taken to ensure there are no toxic residues and that the materials are safe to ingest.

Base

The base of the artificial hollow must be;

- Able to support the adult and nestling(s).
- Durable enough to last the life of the nest.
- Free draining.
- At least 380 mm in diameter.
- Covered with 200 mm of sterile, dry, free draining material such as charcoal, hardwood woodchips or wood debris.

Do not use:

- Saw dust or fibre products that will retain moisture.

Example materials that could be used for artificial hollow bases include heavy duty stainless steel, galvanised or treated metal (e.g. Zinalume ®), thick hardwood timber slab or marine ply (not chipboard or MDF). The base material must be cut to size to fit internally with sharp or rough edges ground away or curled inwards and fixed securely to the walls.



Carnaby's cockatoo eggs in an artificial hollow.
Photo by Rick Dawson

Entrance

The entrance of the artificial hollow must;

- Have a diameter of at least 270 mm).
- Preferably be top entry which will minimise use by non-target species.

Top entry hollows are unattractive to nest competitors such as feral bees, galahs and corellas. Side entry hollows have been successful in areas where feral bees are not a problem and where galahs and corellas are deterred.

Ladder

For artificial hollows made of non-natural materials, or of processed boards, it is necessary to provide a ladder to enable the birds to climb in and out of the hollow easily.

The ladder must be;

- Securely mounted to the inside of the hollow.
- Made from an open heavy wire mesh such as WeldMesh™ with mesh size of 30 - 50 mm, or heavy chain.

Do not use:

- A material that the birds can chew.
- Galvanized because the birds may grip or chew the ladder and ingest harmful compounds.

If using mesh for the ladder, the width will depend on the curvature of the nest walls. A minimum width of about 60 - 100 mm is recommended.

Sacrificial chewing posts

For artificial hollows made of non-natural materials, or of processed boards, it is necessary to provide sacrificial chewing posts. The birds chew material to prepare a dry base on which to lay their egg(s).

The sacrificial chewing posts must:

- Be made of untreated hardwood such as jarrah, marri or wandoo
- Be thick enough to satisfy the birds' needs between maintenance visits.
- Extend beyond the top of the hollow as an aid to see whether the nest is being used.
- Be placed on the inside of the hollow.
- Be attached in such a way that they are easy to replace e.g. hook over the top of hollow or can slide in/out of a pair of U bolts fitted to the side of the hollow.

It is recommended that at least two posts are provided. Posts 70 x 50 mm have been used, but require replacing at least every second breeding season when the nest is active. Birds do vary in their chewing habits and therefore the frequency at which the chewing posts require replacement will also vary.



Bottom of an artificial hollow showing ladder that is fixed to the wall and a chewed sacrificial post which is 200 mm from the floor.

Photo by Rick Dawson

Mountings

The artificial hollows must be mounted such that:

- The fixings used will last the duration of the nest e.g. galvanized bracket or chain fixed with galvanized coach screws.
- It is secured by more than one anchor for security and stability.
- It is positioned vertically or near vertically.

Placement

Sites should be chosen within current breeding areas and where they can be monitored, but preferably not conspicuous to the general public. It is important that artificial hollows are placed where they will be accessible for future monitoring and maintenance. For more detail refer to the separate information sheet; *When to use artificial hollows for Carnaby's cockatoo*.

The height at which artificial hollows should be placed is variable. The average height of natural hollows in dominant tree species in the area is a good guide. Natural hollows used by Carnaby's cockatoos have been recorded as low as 2 m above the ground. If located on private property the hollows can be placed lower to the ground so they are accessible by ladder or a rope and pulley system can be used. Where public access is possible artificial hollows should be placed at least 7 m high (i.e. higher than most ladders) and on the side of the tree away from public view to reduce the chance of interference or poaching.

Carnaby's cockatoo show no preference for aspect of natural hollows, however, it may still be beneficial to place artificial hollows facing away from prevailing weather and where they receive the most shade and protection.

Artificial hollows to be placed in trees require:

- Accessibility of the tree for a vehicle, elevated work platform or cherry picker.
- A section of trunk 2-3 m long suitable for attaching the hollow

If necessary, artificial hollows may be placed on poles, but this may result in excessive exposure to sun during very hot weather. When erected on poles there should be:

- A hinge at the bottom of the pole that can be secured when the pole is in the upright position.
- Access for a vehicle to assist raising the pole.

Safety

Care needs to be taken when placing artificial hollows to ensure safety is considered at all times. Artificial hollows are heavy and require lifting and manoeuvring into position up to 7 m above the ground.

Maintenance and monitoring

Once artificial hollows have been placed they require monitoring and maintenance to ensure they continue to be useful for nesting by Carnaby's cockatoo. It is important to monitor artificial hollows to determine use by Carnaby's cockatoo, other native species as well as pest species. By undertaking monitoring the success of the design and placement of artificial hollows can be determined and areas for improvement identified for future placement of artificial hollows.

Monitoring can also assess whether any maintenance is required. Without regular maintenance artificial hollows are unlikely to achieve their objective (that is, they will fail to provide nesting opportunities for threatened cockatoos). Therefore it is important to continue a regime of regular maintenance while the artificial hollow is required. It may be several (to many) decades until a natural replacement hollow is available.

For further advice on monitoring and maintenance of artificial hollows please refer to the separate information sheet; *How to monitor and maintain artificial hollows for Carnaby's cockatoo*.



Carnaby's cockatoo female prospecting an artificial hollow.
Photo by Rick Dawson



Example fixing for artificial hollow
Photo by Christine Groom

Acknowledgements

This information sheet is a joint initiative of Birdlife Australia, the Western Australian Museum and the Department of Parks and Wildlife. Many individuals have contributed to its preparation. Special acknowledgement is made for the contributions of Ron Johnstone from the WA Museum, Alan Elliott from the Serpentine-Jarrahdale Land care Centre and Denis Saunders. This updated version was compiled by Rick Dawson Department of Parks and Wildlife).

Other information sheets in the series: Artificial hollows for Carnaby's cockatoo

- *How to design and place artificial hollows for Carnaby's cockatoo*
- *How to monitor and maintain artificial hollows for Carnaby's cockatoo*

Information sheets available on the *Saving Carnaby's cockatoo* webpage:

<http://www.dpaw.wa.gov.au/plants-and-animals/threatened-species-and-communities/threatened-animals/208-saving-carnaby-s-cockatoo>

Schedule 3 - How to monitor and maintain artificial hollows for Carnaby's cockatoo

Artificial hollows for Carnaby's cockatoo



How to monitor and maintain artificial hollows for Carnaby's cockatoo

It is important to monitor and maintain artificial hollows after they have been erected. Monitoring ensures that the effectiveness of the artificial hollow can be determined. It also means that problems with pest species or any maintenance requirements can be identified and resolved.

Without regular maintenance, artificial hollows are likely to fail to achieve their objective (that is, they will fail to provide nesting opportunities for threatened cockatoos). Therefore it is important to continue a regime of regular maintenance while the artificial hollow is required. It may be several (to many) decades until a natural replacement hollow is available.

Monitoring should be undertaken in order to detect:

- Use by Carnaby's cockatoo
- Maintenance requirements
- Use by other native species
- Use by pest species (e.g. feral bees, galahs, corellas etc.)



Carnaby's cockatoo female prospecting an artificial hollow.
Photo by Rick Dawson

How do I monitor artificial hollows?

Before undertaking monitoring of artificial hollows for Carnaby's cockatoo it is recommended that you seek advice from BirdLife Australia, the WA Museum or the Department of Parks and Wildlife. It is also important to contact Parks and Wildlife, Wildlife Licensing Section, to determine if a scientific licence is required (wildlifelicencing@dpaw.wa.gov.au).

Monitoring artificial hollows requires keen observation and naturalist skills. It is often not possible to observe evidence of breeding directly (i.e. nestlings or eggs) and inferences must be made based on observation. There are many techniques available to monitor artificial hollows. A combination of several is likely to achieve the best results.

Looking for signs of use

Cobwebs covering the entrance to the hollow will indicate that the hollow has not been used recently. This would also apply to other light debris that may have fallen to cover the opening partially. Signs of recent use or interest in the hollow include evidence of chewing.

Observing parent behaviour around the hollow

The behaviour of parent birds around a hollow will indicate an approximate age of young in the nest.

Parent behaviour	Approximate age/stage of young
Prospecting for hollow	Unborn
Male only seen out of hollow	Egg or very young nestling (< 3 - 4 weeks)
Both parents seen entering/exiting the hollow	Nestling(s) have hatched (> 3 - 4 weeks)

Observing feeding flocks

Flocks of all male birds indicate that the females are incubating eggs. When flocks are mixed it suggests the birds have either not laid yet or that the nestlings have hatched and no longer require brooding (approximately 3 - 4 weeks old).

Tapping

When females are sitting on eggs they will usually respond to tapping at the base of their tree (or pole) by appearing at the entrance or flying from the hollow opening. This is not a guarantee of breeding activity, but an indication that it is possibly occurring in the hollow.

Observing insect activity around nest

The faecal matter produced by nestlings in a nest attracts insects, especially flies and ants. The type and number of these insects will help indicate how old any nestlings present may be. Factors such as temperature and humidity will also affect insect activity and so observations of insect activity should only be used as supporting evidence for other indications of age/use. Blowflies around a nest usually indicate that a death has occurred.

Listening for nestlings

With experience it is possible to determine if one or two nestlings are present and a broad estimate of age based on the type and loudness of noises they make.

Looking inside the nest

This can be achieved either with the aid of a telescopic pole and camera or mirror, or with the use of a ladder or other climbing equipment. This method can obtain the most detailed monitoring information for artificial hollows. However it is also the most time consuming and difficult to organise. Special equipment is likely to be needed depending on the height and positioning of artificial hollows. There are also safety issues associated with ladder or rope climbing options to reach nests to undertake observations.

How often should I monitor artificial hollows?

The minimum frequency of monitoring and the techniques used will be determined by the aims of the monitoring and the resources available. It is important to limit disturbance to breeding birds and this should be considered when determining the techniques used and frequency.

How do I maintain artificial hollows?

Artificial hollows require maintenance to ensure they continue to have the greatest chance of them being used by Carnaby's cockatoos. Periodic maintenance checks should be undertaken at least every two years, preferably annually. These checks should be undertaken prior to the breeding season which is between July and January with breeding occurring later in this period in southern areas. It is important to maintain a regime of regular maintenance as long as the artificial hollow is required. It may take several (to many) decades until a natural replacement hollow is available.

Maintenance checks should assess the following as a minimum:

- Condition of chewing posts (if present)
- Condition of attachment points
- Condition of hollow bases
- Stability of tree or pole used to mount the artificial hollow



Artificial hollow base needing repair.
Photo by Christine Groom

Repairing hollows

Any problems identified during maintenance checks should be addressed, and any repairs required done, as soon as possible. If breeding is currently occurring, maintenance may need to be delayed if it is likely to disturb the parents or nestling. Likely maintenance needs include replacement of chewing posts (frequently) or nest bases (occasionally) and repairing of any cracks (infrequently). Maintenance concerns regarding the security of attachment points or the stability of the tree or pole should be addressed as a priority for safety reasons.

For artificial hollows known to be used, spare chewing posts should be taken into the field when undertaking maintenance checks.

Monitoring of artificial hollows:

Monitoring aim	Frequency of visits	Monitoring techniques
To determine possible use by Carnaby's cockatoo	At least once during peak breeding season (i.e. between September and December)	<ul style="list-style-type: none"> • Observing behaviour of adults around hollow • Tapping to see if female will flush from hollow (best undertaken between 10am and 3pm when females most likely to be sitting) • Listening for nestlings • Looking for evidence of chewing • Looking inside nest
To confirm use by Carnaby's cockatoo	At least two visits during peak breeding season (i.e. between September and December)	<p>To observe at least two of the following:</p> <ul style="list-style-type: none"> • Breeding behaviour of adults around hollow or evidence of chewing • Female flushed from hollow • Noises from nestlings in hollow <p>Or to observe:</p> <ul style="list-style-type: none"> • Nestlings or eggs in nest
To determine nesting success by Carnaby's cockatoo	The more visits, the better. Preferably fortnightly visits between July and December. As a minimum, at least 3 visits spread throughout breeding season.	<ul style="list-style-type: none"> • Looking inside nest to observe eggs or nestlings.
To determine use by any species	As often as possible.	<ul style="list-style-type: none"> • Inspection from ground as a minimum. • Looking inside nest for detailed observations.
To determine maintenance requirements	At least every two years and preferably annually if hollow fitted with sacrificial chewing posts, can be longer if without.	<ul style="list-style-type: none"> • A basic maintenance check can be undertaken from the ground. A ladder or elevated work platform will be required for a comprehensive check and to replace sacrificial chewing posts

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Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 8832/2
Permit type: Purpose Permit

1.2. Applicant details

Applicant's name: Shire of Goomalling (hereafter referred to as the Shire)
Application received date: 4 March 2020

1.3. Property details

Property: Goomalling-Meckering Road reserve (PINs 11719167, 11719169, 11719181, 11719183, 11719184, 11719186 and 11719247)
Lot 121 on Deposited Plan 406131
Local Government Authority: Shire of Goomalling
Localities: Hulongine and Cunjardine

1.4. Application

Clearing Area (ha) Method of Clearing Purpose category:
2.8 in a 27.1 clearing footprint Mechanical Removal Road construction or upgrades

1.5. Decision on application

Decision on Permit Application: Granted
Decision Date: 17 December 2021

Reasons for Decision:

On 6 May 2021, the Department of Water and Environmental Regulation (DWER) granted the Shire Clearing Permit CPS 8832/1 to clear 2.8 hectares of native vegetation within the abovementioned properties for the purpose of road widening. One appeal was lodged against the conditions of the clearing permit. The appellant questioned the adequacy of the conditions to manage impacts to Priority 1 flora, black cockatoo nesting habitat and the adequacy of the offset condition regarding revegetation.

The clearing permit amendment gives effect to the determination of the Western Australia Minister for Environment (Minister). The Minister generally agreed that the conditions applied to the permit were adequate and appropriate. However, to improve clarity the Minister allowed the appeal to the extent that the following conditions are amended:

- Revision of condition 14 (Records that must be kept) to include an additional requirement to record actions taken to avoid and minimise indirect impacts to priority flora species
- Condition 10 (Fauna management – black cockatoo habitat) be clarified that a total of 11 artificial black cockatoo nesting hollows are required to be installed
- Condition 11 (Offset - revegetation) be amended to require that the retained vegetative material and topsoil be used at the offset sites
- Condition 11 be clarified to require that revegetation completion criteria be achieved within five years and then maintained for a period of two years.

The Minister otherwise dismissed the appeal.

The Delegated Officer had taken the above into consideration and decided to grant an amended clearing permit to reflect the Minister's determination. The Delegated Officer amended the existing conditions on the permit to reflect this.

The Delegated Officer reviewed the information available at the time of the amendment and noted that the site characteristics, assessment against the clearing principles and planning and other matters have not changed from the [Clearing Permit Decision Report CPS 8832/1](#).

2. Site Information

Clearing Description The original application proposed to clear up to 2.8 hectares of native vegetation within a 27.1 ha footprint within Goomalling-Meckering Road reserve (PINs 11719167, 11719169, 11719181, 11719183, 11719184, 11719186, 11719247, 11719266), Lot 115 on Diagram 93216 and Lot 121 on Deposited Plan 406131, Hulongine and Cunjardine, for the purpose of road widening (Figure 1).

The proposed widening is to increase the width of the western side of the road by an additional 3.5 metres along a 13.34 kilometre stretch of road (SLK 8.00 – 21.34). The applicant advised that 3.5 metres was applied for, however, only 2 to 3 metres will be required. The additional area was included in the application

to allow more flexibility. The applicant also advised that the clearing will occur on the western side of the road as there is an existing pipeline along the eastern boundary of the road reserve.

The proposed clearing is the second stage of the road widening within the Goomalling-Meckering Road. A clearing permit for the first stage (SLK 0.00 – 8.00) was granted under CPS 7534/1 in February 2019 subject to conditions requiring weed management measures and the implementation of an offset.

Biological surveys

The applicant commissioned Natural Area Holdings Pty Ltd (Natural Area) to conduct a flora and vegetation survey within the clearing footprint (hereafter referred to as the Flora survey). The Flora survey was conducted on 16 and 17 September 2019 and included the following works (Natural Area, 2020a):

- installing three quadrats per vegetation type, recording landform, soil complex, leaf litter and the abundance of each species within the quadrat;
- determining native and non-native flora species present;
- opportunistically sighting or viewing evidence of fauna species;
- recording vegetation condition and type; and
- undertaking a targeted search for conservation significant flora likely to be present within the application area.

The flora survey noted that despite some limitations, such as availability of herbarium records or information on flora species provided on some databases, 80 to 90 per cent of species within the existing road have been identified (Natural Area, 2020a).

A review of the Flora survey (Natural Area, 2020) noted that the methodology of the survey was in accordance with the Environmental Protection Authority's (EPA) *Technical Guidance – Flora and Vegetation Surveys for Environmental Impact Assessment*.

Vegetation Description

The application area occurs within the 'Katanning' Interim Biogeographic Regionalisation for Australia (IBRA) bioregion, and is mapped as the following Beard vegetation associations (Shepherd et al., 2001):

- 142, described as medium woodland; York gum and salmon gum;
- 694, described as shrublands; scrub-heath on yellow sandplain *Banksia-Xylomelum* alliance in the Geraldton Sandplain and Avon-Wheatbelt Regions;
- 988, described as succulent steppe with thicket; *Melaleuca thyoides* over samphire; and
- 1049, described as medium woodland; wandoo, York gum, salmon gum, morrel & gimlet.

The Flora survey mapped the application area as comprising of three vegetation types as detailed in Table 1 (Natural Area, 2020).

Table 1 - Vegetation types recorded in the application area (Natural Area, 2020).

Vegetation type	Description	Extent in the clearing footprint (ha)	Extent in the clearing footprint (%)
Eucalyptus woodland	<i>Eucalyptus</i> woodland dominated by <i>Eucalyptus loxophleba</i> subsp. <i>loxophleba</i> and <i>Eucalyptus salmonophloia</i> , over <i>Acacia acuminata</i> and <i>Acacia saligna</i> , with an understory of <i>Atriplex semibaccata</i> , <i>Rhagodia drummondii</i> and <i>Enchylaena</i> spp., over mixed herbs and weeds	21.6	79.8
Mixed low woodland	Mixed low woodland dominated by <i>Leptospermum erubescens</i> and <i>Allocasuarina campestris</i> , over an understory of <i>Dianella revoluta</i> and <i>Austrostipa</i> spp. with mixed herbs and weeds	3.3	12.2
Samphire open low heath	Samphire Open Low Heath dominated by <i>Tecticornia</i> spp., <i>Rhagodia drummondii</i> and <i>Frankenia</i> sp., over <i>Cotula cotuloides</i> , <i>Triglochin mucronate</i> and mixed herbs and weeds	2.2	8.00
Total		27.1	100.00

Vegetation Condition

The condition of the vegetation within the application area is considered to range from very good Keighery, 1994) to completely degraded (Keighery, 1994) condition. (Natural Area, 2020a). The condition of the vegetation was determined by the Flora survey (Natural Area, 2020a).

Table 2 - Vegetation condition recorded in the application area (Natural Area, 2020).

Vegetation Condition	Description (Keighery, 1994)	Extent in the clearing footprint (ha)	Extent in the clearing footprint (%)
Very good	Vegetation structure altered; obvious signs of disturbance	1.57	5.8
Good	Structure significantly altered by multiple disturbance; retains basic structure/ability to regenerate	6.69	24.65
Degraded	Structure severely disturbed; regeneration to good condition requires intensive management	10.24	37.8
Completely degraded	No longer intact, completely/almost completely without native species	8.60	31.75
Total		27.1	100.00

Soil type

Four land subsystems as detailed in Table 3 are mapped within the application area (Schoknecht et al., 2004).

Table 3 - Mapped land subsystems in the application area (Schoknecht et al., 2004).

Mapped soil subsystem	Description (Schoknecht et al., 2004)	Extent in the clearing footprint (ha)	Extent in the clearing footprint (%)
Greenhills York Subsystem (256GhYO)	Areas of soils derived from freshly exposed rock. This unit is typified by the red soils of the Avon Valley but also includes areas of similar, but often greyer and lighter textured soils to the east of the valley	12.2	45
Cunderdin subsystem (256PsCU)	Yellow aeolian sand with patches of white sand and some areas of sand over gravel	10.84	40
Greenhills Ewerts Phase 1 (256GhES1)	Hillslopes containing sand and loamy sand over yellowish clay soils, with some gravel ridges, and some heavier soils that often occur immediately below a breakaway	2.71	10
Goomalling Mortlock Subsystem (256GoMO)	Valley floors of the Mortlock River and other similar creeks that predominantly contain sand over yellow-ish clay soils. Prone to salinity and waterlogging	1.35	5
Total		27.1	100

Comments

The local area is considered a 10 kilometre radius from the perimeter of the application area.

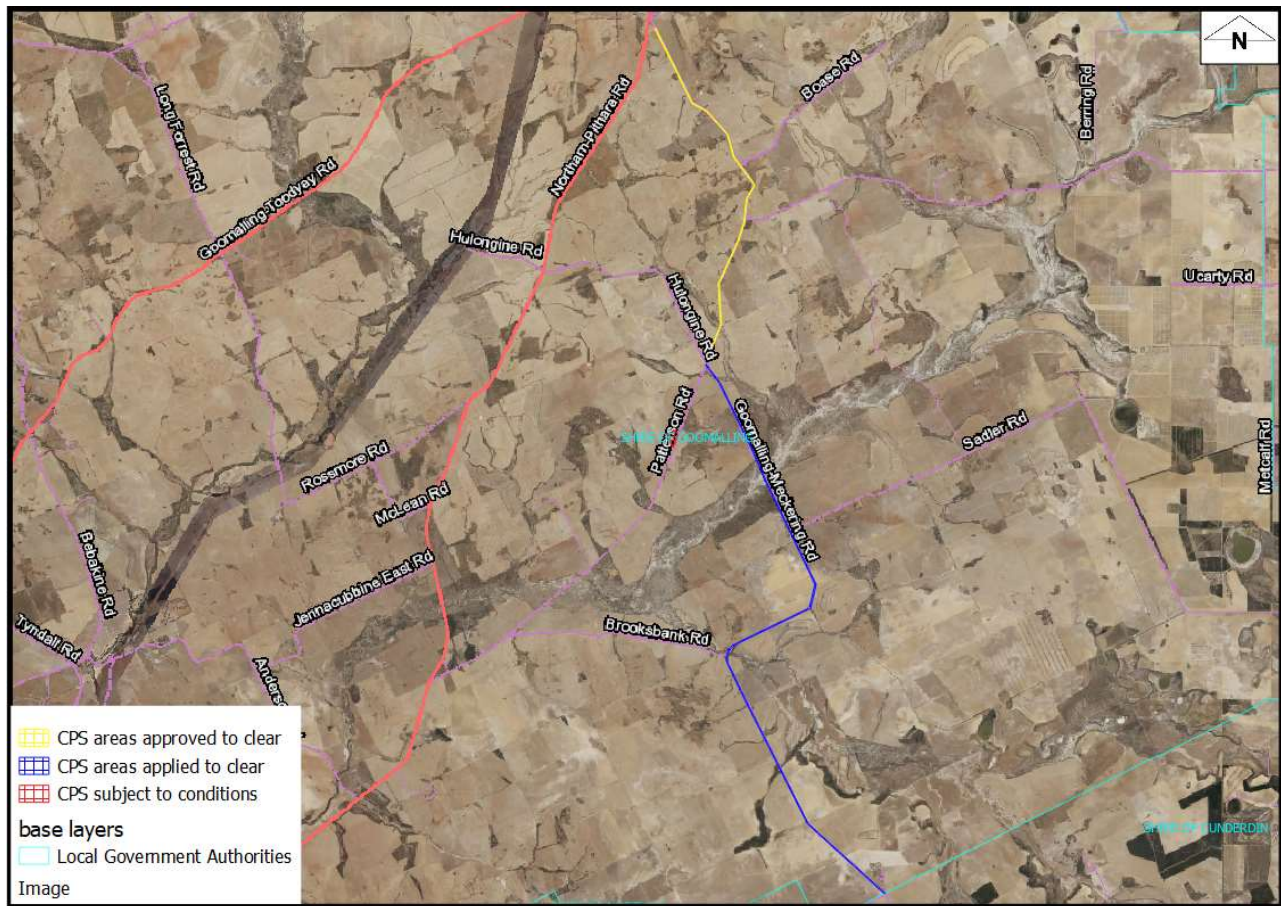


Figure 1 - Application area cross-hatched blue, previously approved area in Goomalling-Meckering road cross-hatched yellow



Figure 2a - *Eucalyptus* woodland



Figure 2b - Mixed low woodland

Figures 2a-b - Representative photos of the vegetation within the application area (Natural Area, 2020a)

3. Assessment of application against clearing principles, planning instruments and other relevant matters

The Delegated Officer reviewed the information available at the time of the amendment and noted that the above site characteristics and assessment against the clearing principles have not changed from the Clearing Permit Decision Report CPS 8832/1.

Planning instruments and other relevant matters.

The assessment against planning instruments and other matters has not changed since the assessment under CPS 8832/1.

On 17 November 2021, in accordance with Section 51M(2) of the EP Act, DWER gave the Shire an opportunity to provide comments on Draft Clearing Permit CPS 8832/2.

On 15 December 2021, the Shire verbally accepted the clearing permit conditions amended by the Delegated Officer on Draft Clearing Permit CPS 8832/2.

4. References

- Keighery, B.J. (1994) Bushland Plant Survey: A Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc). Nedlands, Western Australia.
- Natural Area Holdings Pty Ltd (Natural Area). (2020a). *Shire of Goomalling. Flora and Vegetation Survey. Goomalling-Meckering Road: SLK 8.00 – 21.34*. Flora survey report in relation to clearing permit application CPS 8832/1. DWER Ref: DWERDT259924.
- Schoknecht, N., Tille, P. and Purdie, B. (2004) Soil-landscape mapping in South-Western Australia – Overview of Methodology and outputs' Resource Management Technical Report No. 280. Department of Agriculture.
- Shepherd, D.P., Beeston, G.R. and Hopkins, A.J.M. (2001) Native Vegetation in Western Australia, Extent, Type and Status. Resource Management Technical Report 249. Department of Agriculture, Western Australia.

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

- Aboriginal Heritage Places (DPLH-001)
- Cadastre Address (LGATE-002)
- 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)
- IBRA Vegetation Statistics
- Local Planning Scheme – Zones and Reserves (DPLH-071)
- Regional Parks (DBCA-026)
- Reserves LGATE - 227
- Soil and Landscape Mapping – Best Available

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)