GOVERNMENT OF
WESTERN AUSTRALIA

CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

Purpose Permit number:	CPS 9601/1
Permit Holder:	Department of Water and Environmental Regulation
Duration of Permit:	From 9 October 2025 to 9 October 2035

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

ADVICE NOTE

Allocation of *offset* site
In relation to condition 10 of this permit, a total area of 13.61 hectares at Reserve 17068, Lot 1976 on Deposited Plan 88496, Wongan Hills, will be attributed to the *offset* for the *native vegetation* clearing authorised under this permit. The nominated site will be *revegetated* to provide suitable foraging habitat for Carnaby's black cockatoo (*Zanda latirostris*) species and to *offset* clearing of *native vegetation* within an extensively cleared landscape. This area is to be conserved, in perpetuity, under condition 12.

In relation to condition 11 of this permit, a total area of 5.26 hectares at Reserve 30541, Lot 29684 on Deposited Plan 39623, Koorda, will be attributed to the *offset* for the *native vegetation* clearing authorised under this permit. The nominated site will be *revegetated* to *offset* clearing of *native vegetation* within an extensively cleared landscape.

PART I – CLEARING AUTHORISED

1. Clearing authorised (purpose)

The permit holder is authorised to clear *native vegetation* for the purpose of drainage and catchment maintenance.

2. Land on which clearing is to be done

Lot 12071 on Deposited Plan 219079 (Crown Reserve 18321), Gutha
Lot 12072 on Deposited Plan 219079 (Crown Reserve 18321), Gutha
Gutha West Road Reserve (PIN 11443127), Gutha
Lot 174 on Deposited Plan 221335 (Crown Reserve 18555), Perenjori
Lot 801 on Deposited Plan 415742 (Crown Reserve 53393), Buntine
Lot 300 on Deposited Plan 414258 (Crown Reserve 14087), Ballidu
Lot 844 on Deposited Plan 214654 (Crown Reserve 28291), Bodallin

Stephen Road Reserve (PIN 11716794), Bodallin

Lot 19211 on Deposited Plan 229738 (Crown Reserve 27521), Cramphorne

Lot 15836 on Deposited Plan 218528 (Crown Reserve 16712), Arthur River

Lot 2682 on Deposited Plan 210117 (Crown Reserve 20274), Magenta

3. Clearing authorised

The permit holder must not clear more than:

(a) 0.82 hectares of *native vegetation* within the area cross-hatched yellow in Figure 1 Schedule 1.

(b) 3.38 hectares of *native vegetation* within the area cross-hatched yellow in Figure 2 Schedule 1.

(c) 2.92 hectares of *native vegetation* within the area cross-hatched yellow in Figure 3 Schedule 1.

(d) 4.09 hectares of *native vegetation* within the area cross-hatched yellow in Figure 4 Schedule 1.

(e) 0.136 hectares of *native vegetation* within the area cross-hatched yellow in Figure 5 Schedule 1.

(f) 0.04 hectares of *native vegetation* within the area cross-hatched yellow in Figure 6 Schedule 1.

(g) 2.74 hectares of *native vegetation* within the area cross-hatched yellow in Figure 7 Schedule 1.

(h) 0.34 hectares of *native vegetation* within the area cross-hatched yellow in Figure 8 Schedule 1.

4. Period during which clearing is authorised

The permit holder must not clear any *native vegetation* after 9 October 2030.

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:

(a) conduct clearing activities in a slow, progressive manner towards adjacent *native vegetation*; and

(b) allow a reasonable time for fauna present within the area being cleared to move into adjacent *native vegetation* ahead of the clearing activity.

8. Vegetation management – Trees not authorised to clear

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

(a) identify, record and photograph all standing *trees* with a diameter at breast height of 30 centimetres or greater (measured at 150 centimetres from the base of the tree) within the area cross hatched yellow in Figures 1-8 of Schedule 1;

(b) demarcate a two (2) metre radius buffer around the *trees* identified in condition 8(a);

(c) retain all standing *trees* with a diameter at breast height of 30 centimetres or greater (measured at 150 centimetres from the base of the tree) identified in condition 8(a);

(d) not cause or allow clearing within the areas demarcated under condition 8(b); and

(e) on completion of clearing authorised under this permit, the permit holder must identify, record, and photograph all *tree* individuals and their two metres buffer retained in accordance with conditions 8(c) and 8(d).

9. Flora management

The permit holder must ensure that:

(a) prior to clearing, the boundaries of the area to be cleared are identified and demarcated using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 2020 (GDA20), expressing the geographical coordinates in Eastings and Northings or decimal degrees;

(b) where priority flora listed in the Table 1 below are identified in the area cross hatched yellow on Figure 1, Figure 3 and Figure 7 of Schedule 1, the permit holder shall engage a *botanist* to demarcate all *priority flora* individuals and their 10-metre *buffer*, located within the areas cross-hatched yellow on Figure 1, Figure 3 and Figure 7 of Schedule 1; and

(c) no clearing of the *priority flora* species listed in the Table 1 below or their 10 metres buffer occurs.

Table 1 - Priority flora identified within the application area.

Flora species	Abundance	Conservation code	Area ID	Figure
Acacia scalena	1	Priority 3	4	3
Banksia xylothemelia	2	Priority 3	11	7
Enekbatus planifolius	2	Priority 1	2	1

10. Offset (Reserve 17068) – Revegetation

Within 12 months of the commencement of clearing authorised under this permit, the permit holder must implement and adhere to the *Reserve 17068 Revegetation Plan*, including but not limited to the following actions:

(a) commence *revegetating* and *rehabilitating* 13.61 hectares within the area cross-hatched red on Figure 9 of Schedule 1 (Reserve 17068, Lot 1976 on Deposited Plan 88496), with plant species which provide suitable foraging habitat for Carnaby's black cockatoo species (*Zanda latirostris*) by the way of:

  (i) ripping the soil prior to *planting*;

  (ii) at an *optimal time*, deliberately *planting* tube stock, and spreading of seeds and salvaged *native vegetation* that will result in similar species composition, structure and density of *native vegetation* of the *reference sites (Wongan Hills)*; and

  (iii) ensuring only *local provenance* seeds and propagating material are used to *revegetate* and *rehabilitate* the area;

(b) undertake *weed* control activities prior to *planting* and/or *direct seeding* and annually thereafter for three years or until the completion criteria, as listed in Table 3 of Schedule 2, have been met;

(c) fence the area cross hatched red on Figure 9 of Schedule 1 prior to *revegetation* activities commencing and undertake regular monitoring of the fence for the entire duration of this permit;

(d) water planted vegetation for the first two years post planting as required;

(e) install signage to educate uses of the *revegetation* and *rehabilitation* activities being undertaken;

(f) implement hygiene protocols by cleaning earth-moving machinery of soil and vegetation prior to entering and leaving the site;

(g) establish at least nine 20 x 20 metre quadrats within the *revegetation* and *rehabilitation* areas, in the area cross-hatched red in Figure 9 of Schedule 1;

(h) engage an *environmental specialist* to monitor quadrats specified in condition 10(g) annually until the completion criteria, outlined in Table 3 of Schedule 2, have been met and maintained for a minimum of two years.

(i) undertake remedial actions for area *revegetated* and *rehabilitated* where monitoring indicates that *revegetation* and *rehabilitation* has not met the completion criteria, specified in Table 3 of Schedule 2, including:

  (i) deliberately *planting native vegetation* within the areas cross-hatched red in Figure 9 of Schedule 1, that will result in the completion criteria specified in Table 3 of Schedule 2 being met, ensuring only *local provenance* seeds and propagating material are used;

  (ii) undertake additional *weed* control activities;

  (iii) undertake further watering activities; and

  (iv) continue the annual monitoring of *revegetation* and *rehabilitation* areas, in the areas cross-hatched red in Figure 9 of Schedule 1, by an *environmental specialist* until the completion criteria outlined in Table 3 of Schedule 2, are met.

11. Offset (Reserve 30541) – Revegetation

Within 12 months of the commencement of clearing, the permit holder must implement and adhere to the *Reserve 30541 Revegetation Plan*, including but not limited to the following actions:

(a) commence *revegetating* and *rehabilitating* 5.26 hectares within the area cross-hatched red on Figure 10 of Schedule 1 (Reserve 30541, Lot 29684 on Deposited Plan 39623, Koorda), by way of:

  (i) ripping the soil prior to *planting*;

  (ii) at an *optimal time*, deliberately *planting* tube stock, and spreading of seeds and salvaged *native vegetation* that will result in similar species composition, structure and density of *native vegetation* of the *reference sites (Koorda)*; and

  (iii) ensuring only *local provenance* seeds and propagating material are used to *revegetate* and *rehabilitate* the area.

(b) undertake weed control activities prior to *planting* and/or *direct seeding* and annually thereafter for three years or until the completion criteria, as listed in Table 4 of Schedule 2, have been met.

(c) fencing of the area cross hatched red on Figure 10 of Schedule 1 prior *revegetation* and *rehabilitation* activities commencing and undertake regular monitoring of the fence for the entire duration of this permit;

(d) water planted vegetation for the first two years and post *planting* as required;

(e) install signage to educate uses of the *revegetation* and *rehabilitation* activities being undertaken;

(f) implement hygiene protocols by cleaning earth-moving machinery of soil and vegetation prior to entering and leaving the site;

(g) establish at least eight 20 x 20 metre quadrats within the *revegetation* and *rehabilitation* areas, in the area cross-hatched red in Figure 10 of Schedule 1;

(h) engage an *environmental specialist* to monitor quadrats specified in condition 10(g) annually until the completion criteria, outlined in Table 4 of Schedule 2, have been met and maintained for a minimum of two years.

(i) undertake remedial actions for area *revegetated* and *rehabilitated* where monitoring indicates that *revegetation* and *rehabilitation* has not met the completion criteria, specified in Table 4 of Schedule 2, including:

  (i) deliberately *planting native vegetation* within the areas cross-hatched red in Figure 10 of Schedule 1, that will result in the completion criteria specified in Table 4 of Schedule 2 being met, ensuring only *local provenance* seeds and propagating material are used;

  (ii) undertake additional *weed* control activities;

  (iii) undertake further watering activities; and

  (iv) continue the annual monitoring of *revegetation* and *rehabilitation areas*, in the areas cross-hatched red in Figure 10 of Schedule 1, by an *environmental specialist* until the completion criteria outlined in Table 4 of Schedule 2, are met.

12. Offset – Conservation covenant

Within 12 months of the commencement of clearing and no later than 9 October 2026, the permit holder must provide to the *CEO* a copy of a conservation covenant given under section 30B of the *Soil and Land Conservation Act 1945*, for the protection and

management of vegetation in perpetuity over the area cross-hatched red in Figure 9 of Schedule 1.

PART III - RECORD KEEPING AND REPORTING

13. 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 2.

Table 2: Records that must be kept

No.	Relevant matter	Specifications
1.	In relation to the authorised clearing activities generally	(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) the direction of the clearing; (f) actions taken to avoid, minimise, and reduce the impacts and extent of clearing in accordance with condition 5; and (g) actions taken to minimise the risk of the introduction and spread of *weeds* and *dieback* in accordance with condition 6; and
2.	In relation to the vegetation management pursuant to condition 8	(a) the location of the trees retains, recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 2020 (GDA2020), expressing the geographical coordinates in Eastings and Northings or decimal degrees; (b) photographs of the trees retained, taken prior to clearing authorized under this permit. (c) photographs of the trees retained, taken after completing the clearing authorized under this permit.
3.	In relation to flora management pursuant to condition 9	(a) methodology used to identify the locations of the flora species; (b) actions taken to demarcate each priority flora species recorded and their buffers; (c) the name and location of each priority

No.	Relevant matter	Specifications
		flora species, recorded using a Global Positioning System (GPS) unit set to GDA2020, expressing the geographical coordinates in Eastings and Northings; and (d) actions taken to avoid the clearing of priority flora species.
4.	In relation to *revegetation/rehabilitation* management pursuant to condition 10	(a) a description of the *revegetation* and *rehabilitation* activities undertaken, including actions taken to implement watering and *weed* control; (b) the list of *native vegetation* species planted; (c) the boundaries of the area *revegetated* and *rehabilitated* (recorded digitally as a shapefile); (d) the size of the areas *revegetated* and *rehabilitated* (in hectares) (e) the date that *revegetation* and *rehabilitation* works began; (f) any remediation works undertaken; (g) a copy of *environmental specialist* reports; and (h) the date that completion criteria are considered to be met.
5.	In relation to *revegetation/ rehabilitation* management pursuant to condition 11	(a) description of the *revegetation* and *rehabilitation* activities undertaken, including actions taken to implement watering and *weed* control; (b) the list of *native vegetation* species planted; (c) the boundaries of the area *revegetated* and *rehabilitated* (recorded digitally as a shapefile); (d) the size of the areas *revegetated* and *rehabilitated* (in hectares) (e) the date that *revegetation* and *rehabilitation* works began; (f) any remediation works undertaken; (g) a copy of *environmental specialist* reports; and (h) the date that completion criteria are considered to be met.
6.	In relation to the Conservation Covenant pursuant to condition 12	(a) Provide to the CEO a copy of a conservation covenant given under section 30B of the *Soil and Land Conservation Act 1945*, for the protection

No.	Relevant matter	Specifications
		and management of vegetation in perpetuity over the area cross-hatched red in Figure 9 of Schedule 1.

14. Reporting

(a) The permit holder must provide to the CEO, on or before 31 December of each calendar year, a written report containing:

(i) the records required to be kept under condition 13; and

(ii) records of activities done by the permit holder under this permit between 1 July of the preceding calendar year and 30 June of the current calendar year.

(b) If no clearing authorised under this permit has been undertaken, a written report confirming that no clearing under this permit has been undertaken, must be provided to the *CEO* on or before 31 December of each calendar year.

(c) The permit holder must provide to the *CEO*, no later than 90 calendar days prior to the expiry date of the permit, a written report of records required under condition 13, where these records have not already been provided under condition 14(a).

DEFINITIONS

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

Table 2: Definitions

Term	Definition
botanist	means a person who holds a tertiary qualification specialising in environmental science or equivalent, and has a minimum of two (2) years work experience in Western Australian flora identification and undertaking flora surveys native to the bioregion being inspected or surveyed, or who is approved by the CEO as a suitable environmental specialist for the bioregion, and who holds a valid flora licence issued under the *Biodiversity Conservation Act 2016*.
buffer	Means a 10-metre radius for priority flora identified
CEO	Chief Executive Officer of the department responsible for the administration of the clearing provisions under the *Environmental Protection Act 1986*.
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 *Phytophthora* species on native vegetation.
direct seeding	means a method of re-establishing vegetation through the establishment of a seed bed and the introduction of seeds of the desired plant species.
department	means the department established under section 35 of the *Public Sector Management Act 1994* (WA) and designated as responsible for the administration of the EP Act, which includes Part V Division 3.

Term	Definition
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	*Environmental Protection Act 1986* (WA)
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	means a direct offset as described in the Government of Western Australia, *WA Environmental Offsets Policy, September 2011*.
optimal time	means the period from April to June.
planting	means the re-establishment of vegetation by creating favourable soil conditions and planting seedlings of the desired species.
priority flora	means those plant taxa described as priority flora classes 1, 2, 3, or 4 in the Department of Biodiversity, Conservation and Attractions *Threatened and Priority Flora List* for Western Australia (as amended from time to time).
reference sites (Koorda)	Means Sites 06, 18, 32, 17 and 19 as described in the report *A reconnaissance level vegetation and flora survey of the DWER Koorda Water Reserve* prepared by M.E. Trudgen and Associates.
reference sites (Wongan Hills)	Means Sites 01 to 05 as described in the report *A reconnaissance level vegetation and flora survey of the DWER Elphin Water Reserve* prepared by M.E. Trudgen and Associates.
Reserve 17068 Revegetation Plan	Means the report *Revegetation Plan for Lot 1976 on Deposited Plan 88496 (R 17068)* prepared by Dylan Copeland (DWER Ref: DWERDT1115474)
Reserve 30541 Revegetation Plan	Means the report *Revegetation Plan for Lot 29684 on Deposited Plan 39623 (R 30541)* prepared by Dylan Copeland (DWER Ref: DWERDT1114915)
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 regeneration, direct seeding and/or planting, so that the species composition, structure and density is similar to pre-clearing vegetation types in that area.
revegetate/ed/ion	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.
tree/s	means a perennial plant having a permanent, woody, self-supporting main stem or trunk, usually growing to a considerable height, and usually developing branches at some distance from the ground
weeds	means any plant – (a) that is a declared pest under section 22 of the *Biosecurity and Agriculture Management Act 2007*; or (b) published in a Department of Biodiversity, Conservation and

Term	Definition
	Attractions species-led ecological impact and invasiveness ranking summary, regardless of ranking; or (c) not indigenous to the area concerned.

END OF CONDITIONS

Digitally signed by Caitlin Conway
Date: 2025.09.16 16:52:38 +08'00'

Caitlin Conway
MANAGER
NATIVE VEGETATION REGULATION

Officer delegated under Section 20
of the Environmental Protection Act 1986

16 September 2025

Schedule 1

The boundary of the area authorised to be cleared is shown in the map below (Figure 1-8).

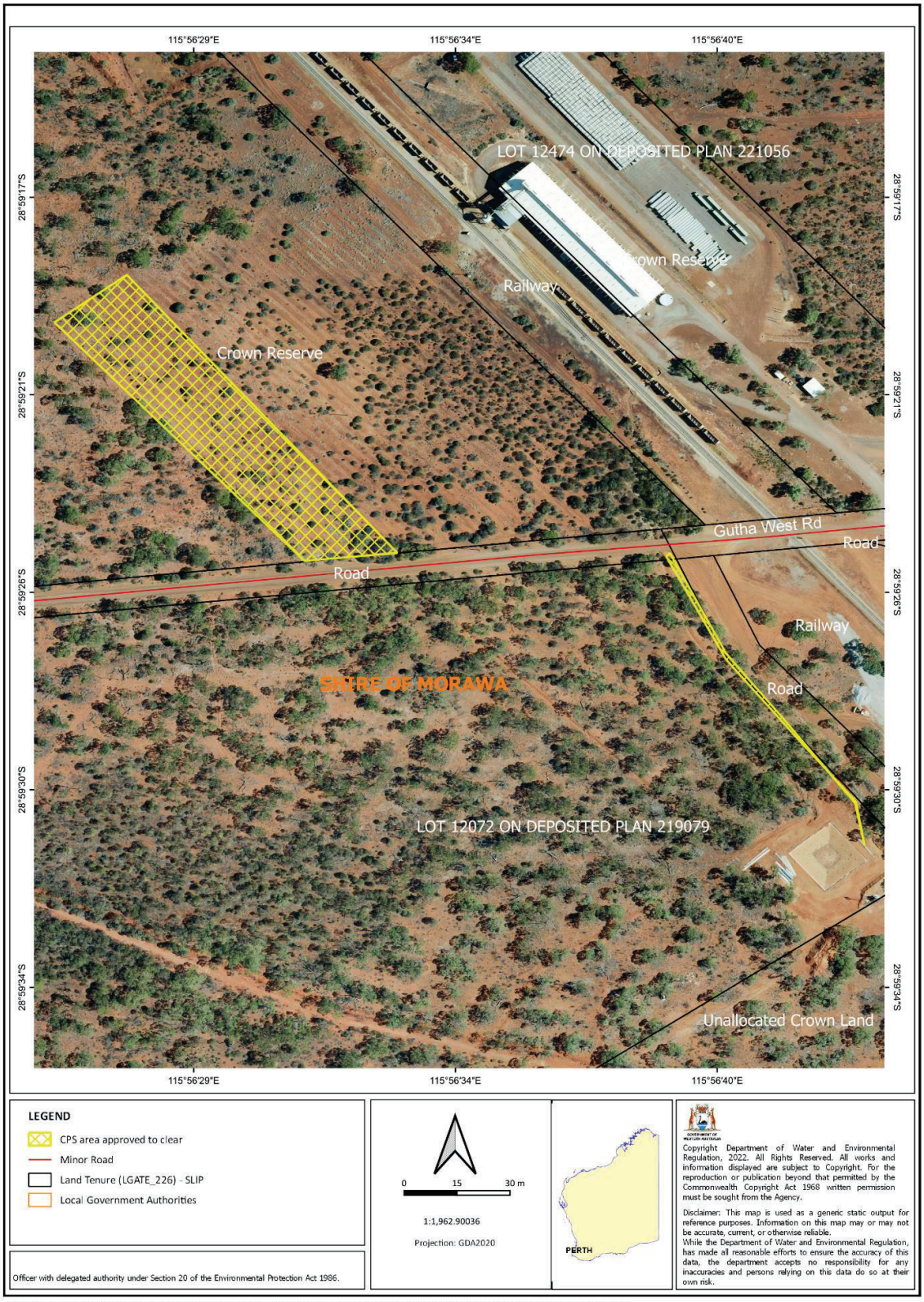

Figure 1: Map of the boundary of the area within which clearing may occur (Area 2).

Figure 2: Map of the boundary of the area within which clearing may occur (Area 3).

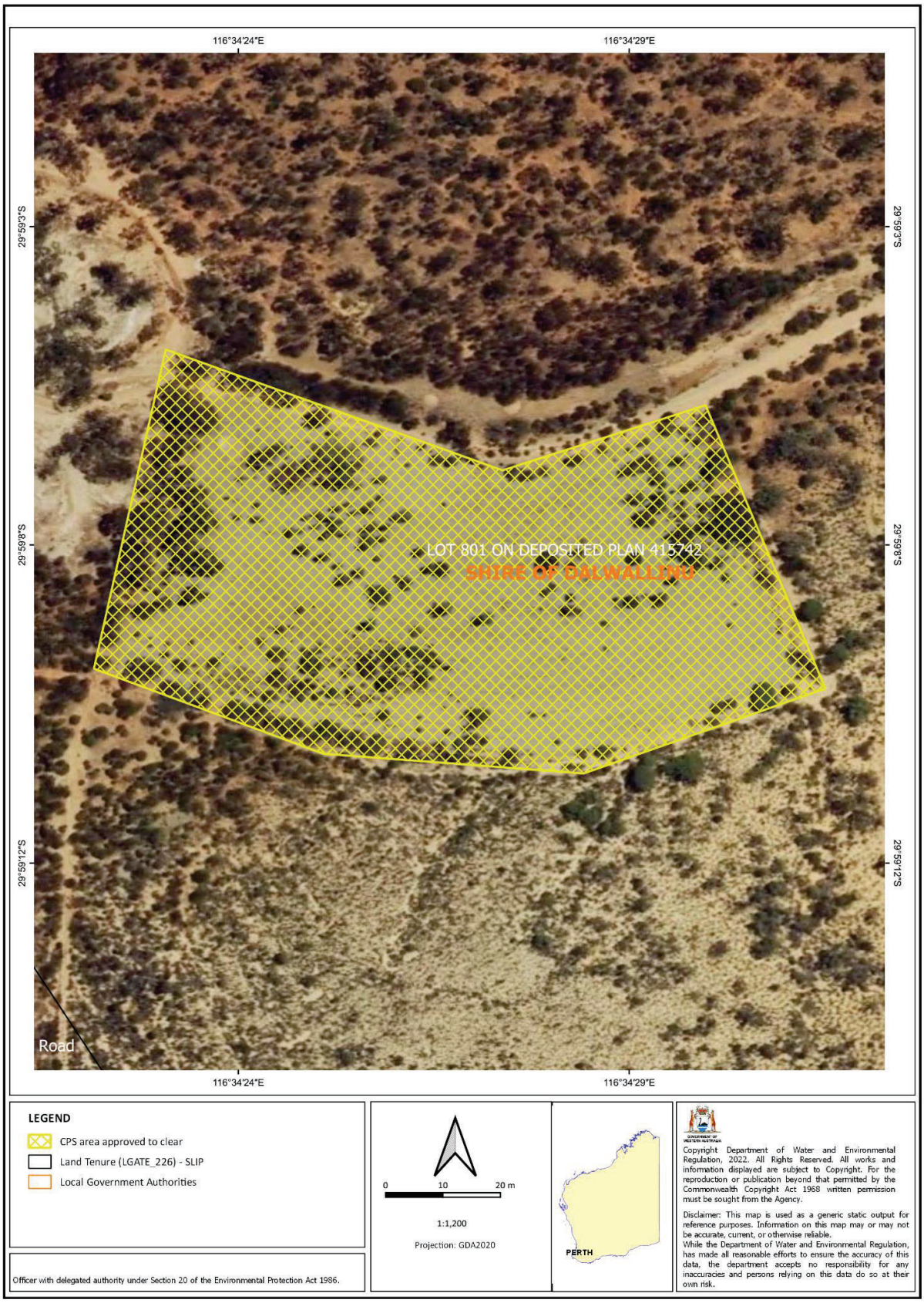

Figure 3: Map of the boundary of the area within which clearing may occur (Area 4).

Figure 4: Map of the boundary of the area within which clearing may occur (Area 5)

Figure 5: Map of the boundary of the area within which clearing may occur (Area 8)

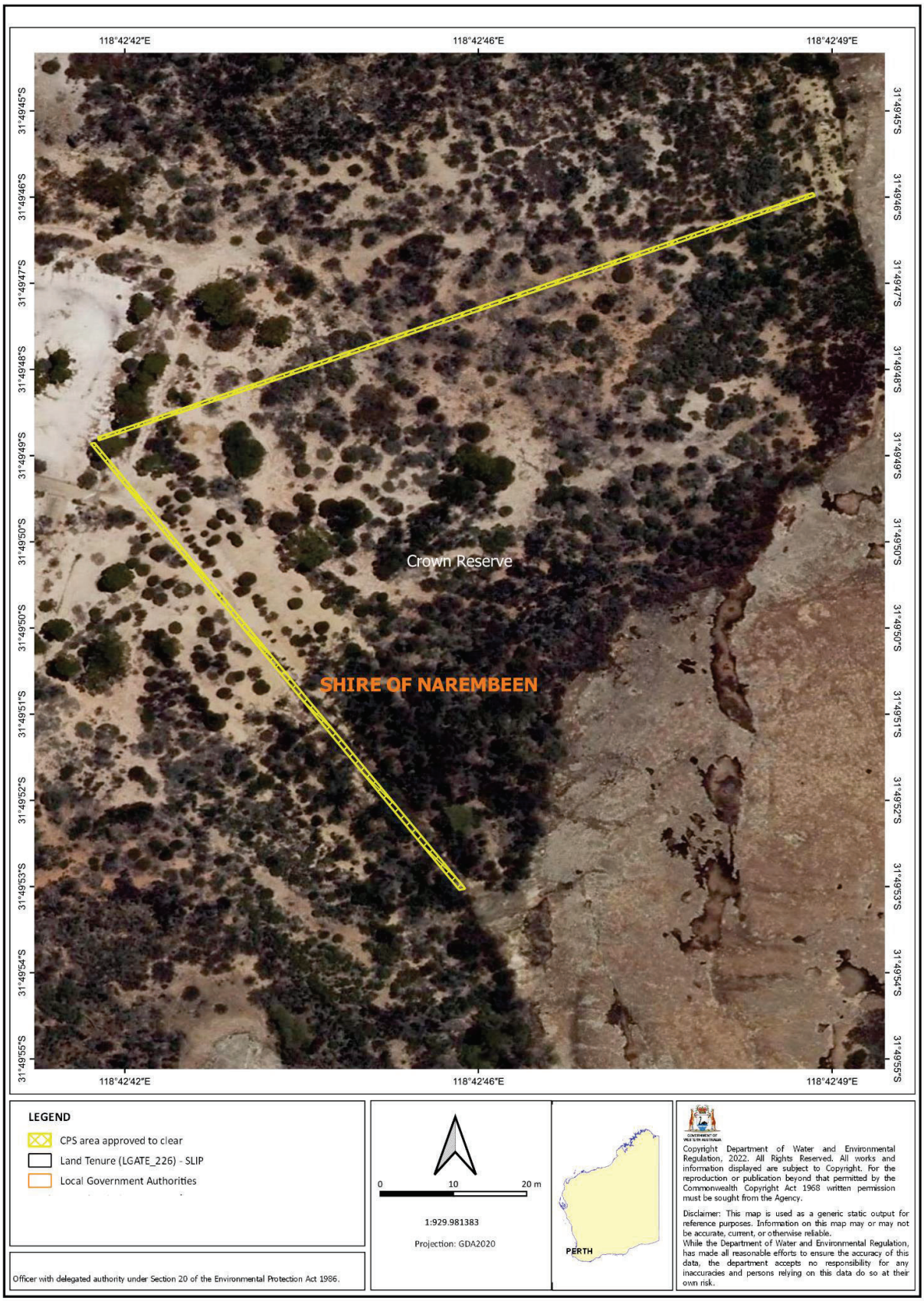

Figure 6: Map of the boundary of the area within which clearing may occur (Area 9)

Figure 7: Map of the boundary of the area within which clearing may occur (Area 11)

Figure 8: Map of the boundary of the area within which clearing may occur (Area 13)

Figure 9: Map of the boundary of the area within which revegetation conditions apply.

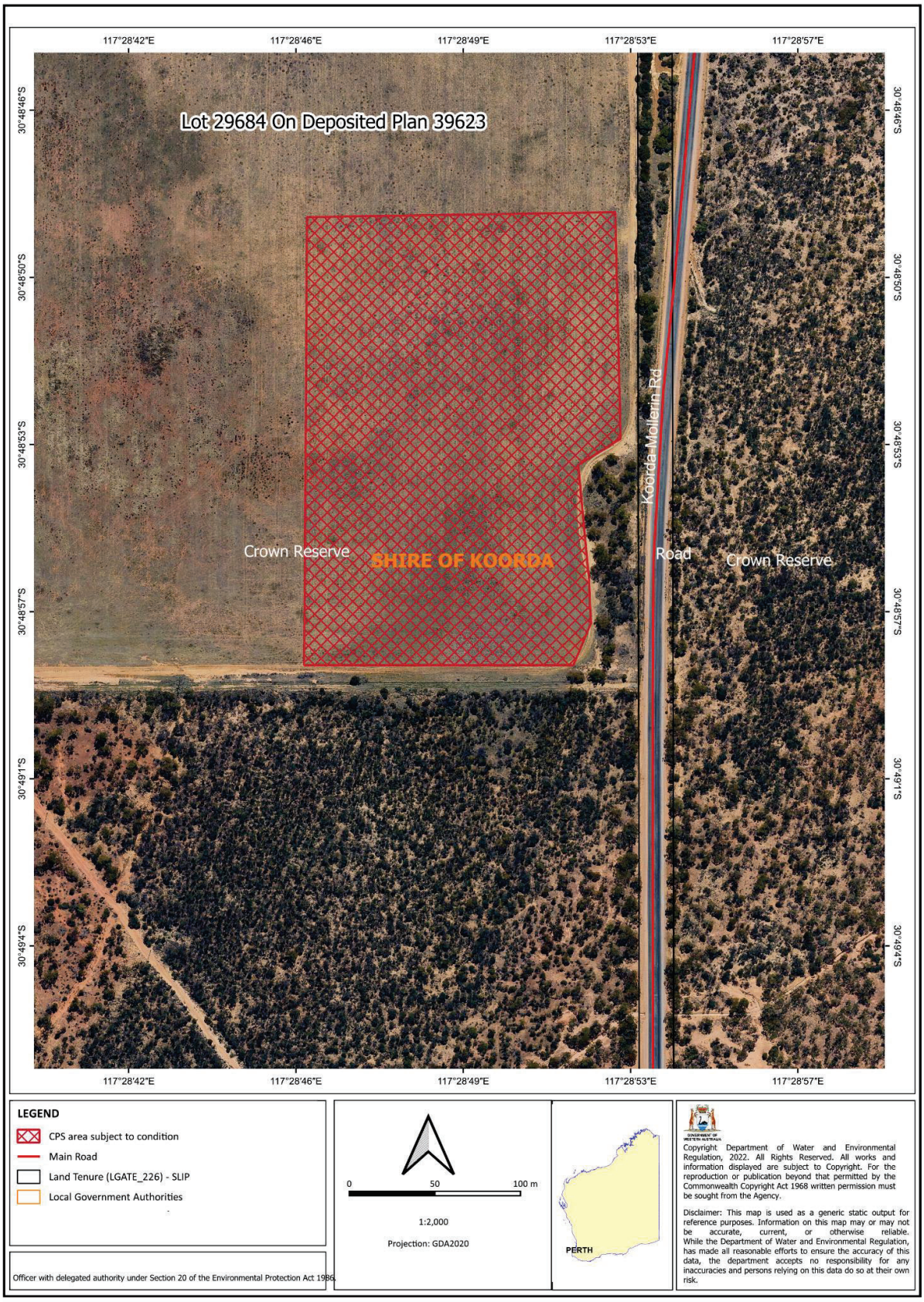

Figure 10: Map of the boundary of the area within which revegetation conditions apply

Schedule 2

Table 3: Completion criteria for the revegetation/rehabilitation within the areas cross-hatched red in Figure 9 of Schedule 1 as referred to under condition 10 of this permit.

Aspect	Baseline floristic data	Completion target	Completion criteria	Monitoring
Species richness	site species richness is 29 (native sp. only)	Minimum of 60% of native species returned, based on *reference sites (Wongan Hills)*. Species returned must include Carnaby's black cockatoo foraging species (*Allocasuarina, Banksia, Eucalyptus, Grevillea*, and *Hakea*).	The revegetation site needs to achieve a minimum species richness of 18 native species, as recorded at the *reference sites (Wongan Hills)*	Once in spring for a period of three consecutive years after the initial planting, by an environmental specialist through: • Photo monitoring • Establishing quadrats If completion criteria have not been met, monitoring will continue for another 2 years
	average number of species per quadrat is 9		The revegetation site needs to achieve a minimum species richness of 6 native species, within any monitoring quadrat (20 m x 20 m)	
	Shrub species richness is 15		The revegetation site needs a minimum of 9 shrub species, as recorded at the *reference sites (Wongan Hills)*, within any monitoring quadrat (20 m x 20 m).	
	three dominant tree species	Return dominant tree species present at *reference sites (Wongan Hills)*	The revegetation site needs to have the three dominant tree species that were recorded at the *reference sites (Wongan Hills)*	
Species density	400 stems/hectare	Minimum of 60% of stems/ha for dominant tree species returned.	The revegetation site needs a minimum of 240 stems/ha.	
	640 stems/ hectare for shrubs.		The revegetation site needs a minimum of 384 stems/ha for shrubs.	
Weed cover	Absent	Weed cover is no greater than in the *reference sites (Wongan Hills).*	The revegetation site should have a maximum of 25% weed cover. The reference polygons were mostly weed free. As the proposed revegetation site was previously agricultural land it is likely that some weed species will persist at the site for at least the medium-term.	Annually in late spring with a follow-up in Autumn as required, for a minimum of 3 years following cessation of planting (including replacement or infill planting)
	no declared weeds are present	Managed as required by the *Biosecurity and Agriculture Management Regulations 2013.*	Absent	
Bare ground	Bare ground is 40%	No more than 5% greater than in the *reference sites (Wongan Hills)*	No more 45% of bare ground as an average for the revegetation site	Through a reconnaissance survey until completion criteria have been met and maintained for two years.
Survival rate	Survival rate to be achieved	If after 5 years of planting a survival rate of at least 50% is not achieved, all planted trees that have not survived must be replanted within 12 months and monitored for a further 2 years.	The revegetation site needs to ensure a survival rate for trees of at least 50% is achieved after five years. In-fill revegetation may be required to ensure this target is met.	Monitoring by an environmental specialist through: • Photo monitoring • Establishing quadrats

Table 4: Completion criteria for the revegetation/ rehabilitation within the areas cross-hatched red in Figure 10 of Schedule 1 as referred to under condition 11 of this permit.

Aspect	Baseline floristic data	Completion target	Completion criteria	Monitoring
Species richness	Site species richness is 20 (native sp. only). (Total number of species plus 10% to accommodate survey limitation).	Minimum of 60% of native species returned, based on *reference sites (Koorda)*.	The revegetation site needs to achieve a minimum species richness of 12 native species *(Koorda)*	Once in spring for a period of three consecutive years after the initial planting, by an environmental specialist through: • Photo monitoring • Establishing quadrats If completion criteria have not been met, monitoring will continue for another 2 years
	average number of species per quadrat is 10		The revegetation site needs to achieve a minimum species richness of 6 native species, within any monitoring quadrat (20 m x 20 m)	
	Shrub species richness is 11		The revegetation site needs a minimum of 7 shrub species, as recorded at the *reference sites (Koorda)*, within any monitoring quadrat (20 m x 20 m).	
	two dominant tree species	Return dominant tree species present at *reference sites (Koorda)*	The revegetation site needs to have the two dominant tree species (*Acacia resinimarginea* and *Melaleuca uncinata*) that were recorded at the *reference sites (Koorda)*	
Species density	400 stems/hectare	Minimum of 60% of stems/ha for dominant tree species returned.	The revegetation site needs a minimum of 240 stems/ha.	
	640 stems/ hectare for shrubs.		The revegetation site needs a minimum of 384 stems/ha for shrubs.	
Weed cover	Absent	Weed cover is no greater than in the *reference sites (Koorda)*.	The revegetation site should have a maximum of 25% weed cover. The reference polygons were mostly weed free. As the proposed revegetation site was previously agricultural land it is likely that some weed species will persist at the site for at least the medium-term.	Annually in late spring with a follow-up in Autumn as required, for a minimum of 3 years following cessation of planting (including replacement or infill planting)
	no declared weeds are present	Managed as required by the *Biosecurity and Agriculture Management Regulations 2013*.	Absent	
Bare ground	Bare ground is 40%	No more than 5% greater than in the *reference sites (Koorda)*	No more 45% of bare ground as an average for the revegetation site	Through a reconnaissance survey until completion criteria have been met and maintained for two years.
Survival rate	Survival rate to be achieved	If after 5 years of planting a survival rate of at least 50% is not achieved, all planted trees that have not survived must be replanted within 12 months and monitored for a further 2 years.	The revegetation site needs to ensure a survival rate for trees of at least 50% is achieved after five years. In-fill revegetation may be required to ensure this target is met.	Monitoring by an environmental specialist through: • Photo monitoring • Establishing quadrats

Government of Western Australia
Department of Water and Environmental Regulation

Clearing Permit Decision Report

1 Application details and outcome

1.1. Permit application details

Permit number:	CPS 9601/1
Permit type:	Purpose permit
Applicant name:	Department of Water and Environmental Regulation
Application received:	22 February 2022
Application area:	14.47 (revised) hectares of native vegetation
Purpose of clearing:	Drainage and catchment maintenance
Method of clearing:	Mechanical
Property:	Lot 12071 on Deposited Plan 219079 (Crown Reserve 18321) Lot 12072 on Deposited Plan 219079 (Crown Reserve 18321) Gutha West Road Reserve (PIN 11443127) Unnamed Road Reserve (PIN 11405297) Lot 174 on Deposited Plan 221335 (Crown Reserve 18555) Lot 801 on Deposited Plan 415742 (Crown Reserve 53393) Lot 300 on Deposited Plan 414258 (Crown Reserve 14087) Lot 844 on Deposited Plan 214654 (Crown Reserve 28291) Stephen Road reserve (PIN 11716794) Lot 19211 on Deposited Plan 229738 (Crown Reserve 27521) Lot 15836 on Deposited Plan 218528 (Crown Reserve 16712) Lot 2682 on Deposited Plan 210117 (Crown Reserve 20274)
Location (LGA area/s):	Shire of Morawa Shire of Perenjori Shire of Dalwallinu Shire of Wongan-Ballidu Shire of Yilgarn Shire of Narembeen Shire of West Arthur Shire of Lake Grace
Localities (suburb/s):	Ballidu Bodallin Buntine

	Cramphorne
	Gutha
	Magenta
	Perenjori
	Arthur River

1.2. Description of clearing activities

The vegetation proposed to be cleared is distributed across eight separate areas (hereafter referred to as Areas 2 – 5, 8, 9, 11 and 13) north from Buntine, south-west to West Arthur, and south-east to Lake Grace, totalling 14.47 hectares (see Table 1 below and Figures 1-8, Section 1.5). In Areas 2, 3, 4, 5, 9, 11 and 13, clearing of native regrowth in historically cleared dam catchments and channels is required for drainage and catchment maintenance to allow continued use of the dam infrastructure as a water supply (RWP, 2021a). Clearing of remnant native vegetation is proposed in Area 8 for the installation of a water tank and an associated clearway and vehicle turnaround area for access (RWP, 2021a). The dam areas and water tanks are intended to support drainage maintenance activities.

Table 1. Application area description.

Area ID	Figure	Dam Name	Project Type	Shire	Clearing size (ha)
Area 2	Figure 1	Gutha Dam	Earthen catchment and channel maintenance to remove saplings and tidy the area.	Morawa	0.82
Area 3	Figure 2	Perenjori Station Dam	Earthen catchment, bitumen catchment and drainage maintenance. This area was previously a bitumen to collect water catchments to then drain into the dam. Vegetation has regrown in this area now.	Perenjori	3.38
Area 4	Figure 3	Buntine Dam	Bitumen catchment and channel maintenance	Dalwallinu	2.92
Area 5	Figure 4	Ballidu Dam	Earthen catchment and channel maintenance. Clearing to bring back the catchment as the area has regrowth throughout the site.	Wongan-Ballidu	4.09
Area 8	Figure 5	Bodallin Dam	Clearway to clear view, vehicle turnaround and water tank	Yilgarn	0.136
Area 9	Figure 6	Mount Cramphorne Dam	Channel maintenance. The channels require a 'refresh' by removing saplings and tidying the channel.	Narembeen	0.04
Area 11	Figure 7	Lake Magenta North Dam	Earthen catchment and channel maintenance	Lake Grace	2.74
Area 13	Figure 8	Kylie Railway Dam	Channel maintenance	West Arthur	0.34
				TOTAL	**14.47**

1.3. Decision on application

Decision:	Granted
Decision date:	16 September 2025
Decision area:	14.47 hectares of native vegetation, as depicted 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 (the department) advertised the application for 21 days and no submissions were received. The application was re-advertised for an addition seven days due to the inclusion of a new area. No submissions were received during this advertisement period.

In making this decision, the Delegated Officer had regard for:

- avoidance and mitigation actions implemented by the applicant, especially that the application area has been extensively reduced;

- the site characteristics and analysis of flora, fauna and ecological communities recorded/mapped within the local area (10 kilometre or 20 kilometre radius buffer from the application areas, depending on their location);
- the 10 Clearing Principles set out in Schedule 5 of the EP Act (see Appendix C);
- a detailed assessment of the clearing impacts on environmental values (see Section 3.2);
- the additional information obtained during the assessment, including;
    - flora and vegetation survey and targeted fauna habitat assessment that was conducted by Natural Area Consulting (2023);
    - site characteristics of all dams and the scope of work within each of the dam sites;
    - photographs of the dam sites;
    - surveys of the proposed offset sites (Trudgen and Associates, 2024a and 2024b); and
    - revegetation plans of the proposed offset sites (Copeland, 2025a and2025b).
- advice received from:
    - Department of Biodiversity, Conservation and Attractions (DBCA) (DBCA, 2024);
    - the department (DWER, 2022a and 2022b); and
    - Local Government Authorities.

The Delegated Officer also considered that the proposed dam catchments have not been maintained for many years and have not been cleared for over ten years such that exemptions are not available through the clearing regulations of the EP Act. Due to the lack of scheme water resources in Wheatbelt towns, there is a growing need to restore these dams and catchments. The increasing demand for non-potable water has led the Rural Water Planning (RWP) team within the department to identify the necessity of maintaining drainage systems and catchments. RWP has advised that current farming practices have resulted in reduced rainfall runoff into the dams. The RWP's proposed works aim to support local communities by ensuring access to water for livestock and fire management, thereby easing concerns regarding the availability of essential water sources (RWP, 2024a).

After consideration of the above information, as well as the avoidance, minimisation and mitigation actions undertaken by the applicant, the Delegated Officer determined that the propose clearing would result in the following significant residual impacts:

- loss of 3.75 hectares of foraging habitat for *Zanda latirostris* (Carnaby's black cockatoo); and
- loss of 11.59 hectares of native vegetation that is significant as a remnant within an area that has been extensively cleared.

To address the above significant residual impacts and applying the WA environmental offsets metric (the offsets metric) along with the environmental offsets metric guideline, and consistent with the WA Environmental Offsets Policy (2011) (the Offsets Policy) and Western Australia's Environmental Offsets Guidelines (2014) (the Offsets Guidelines), the Delegated Officer determined that the following offsets would address 100 per cent of the significant residual impacts of the clearing:

- revegetation/rehabilitation and conservation of 13.61 hectares of remnant native vegetation from a completely degraded condition (Keighery, 1994) to good (Keighery, 1994) condition with species that provides foraging habitat for black cockatoo birds, in accordance with a revegetation plan; and
- revegetation/rehabilitation of 5.26 hectares of remnant native vegetation from a completely degraded (Keighery, 1994) condition to good (Keighery, 1994) condition in accordance with a revegetation plan.

The Delegated Officer determined that the above offset was sufficient to counterbalance the significant residual impacts associated with this project. Further information on the suitability of the offset provided is summarised in Section 4.

In addition to the above, the assessment identified that:

- the proposed clearing may result in the potential introduction and spread of weeds into adjacent vegetation, which could impact on the quality of the adjacent vegetation and its habitat values;
- the proposed clearing area contains individuals of priority flora species;
- the proposed clearing may result in potential mortality of fauna individuals utilising the application area at the time of clearing; and
- the proposed clearing area contains vegetation that is part of patches of the Eucalypt Woodlands TEC/PEC, although impacts to the TEC/PEC are unlikely to be significant.

The Delegated Officer determined that that management, mitigation and offset measures conditioned on the permit will mitigate and offset any potential impacts, such that the proposed clearing is unlikely to have any long-term adverse impacts on the environment. The Delegated Officer decided to grant a clearing permit subject to conditions to:

- avoid, minimise to reduce the impacts and extent of clearing;

- take hygiene steps to minimise the risk of the introduction and spread of weeds;
- undertake slow, progressive one directional clearing to allow terrestrial fauna to move into adjacent habitat ahead of the clearing activity;
- retain all trees with a diameter at breast height of 30 centimetres or greater (measured at 150 centimetres from the base of the tree);
- engage a botanist to demarcate the application area boundaries and avoid removal of priority flora species (*Acacia Scalena, Banksia xylothemelia* and *Enekbatus planifolius*) individuals with a 10-metre buffer;
- implement offset conditions as described above.

Note that the Department of Mines, Petroleum and Exploration (DMPE) Resource and Environmental Compliance Division (which assess clearing permit applications for mineral and petroleum activities under delegated authority) were requested to conduct a review of the proposed decision prior to a determination being made on the application. DMPE supported the assessment and determination that this application be granted. This action was considered appropriate for the purposes of transparency given that the department is the applicant proposing to undertake the clearing.

1.5. Site maps

The areas crosshatched yellow (Figures 1-8) indicate the areas authorised to be cleared under the granted clearing permit.

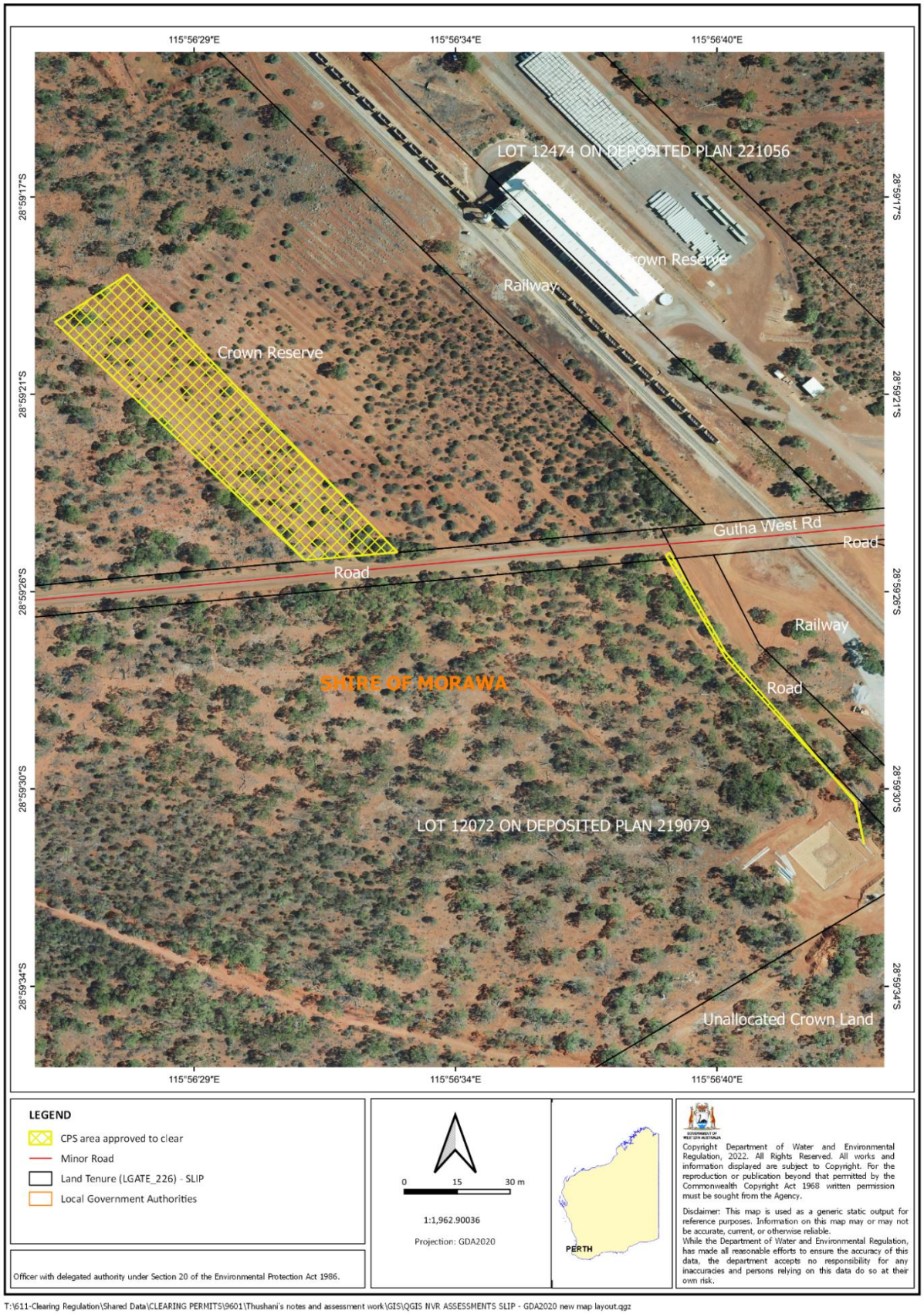

Figure 1: Map of the application area at Area 2 (Shire of Morawa)

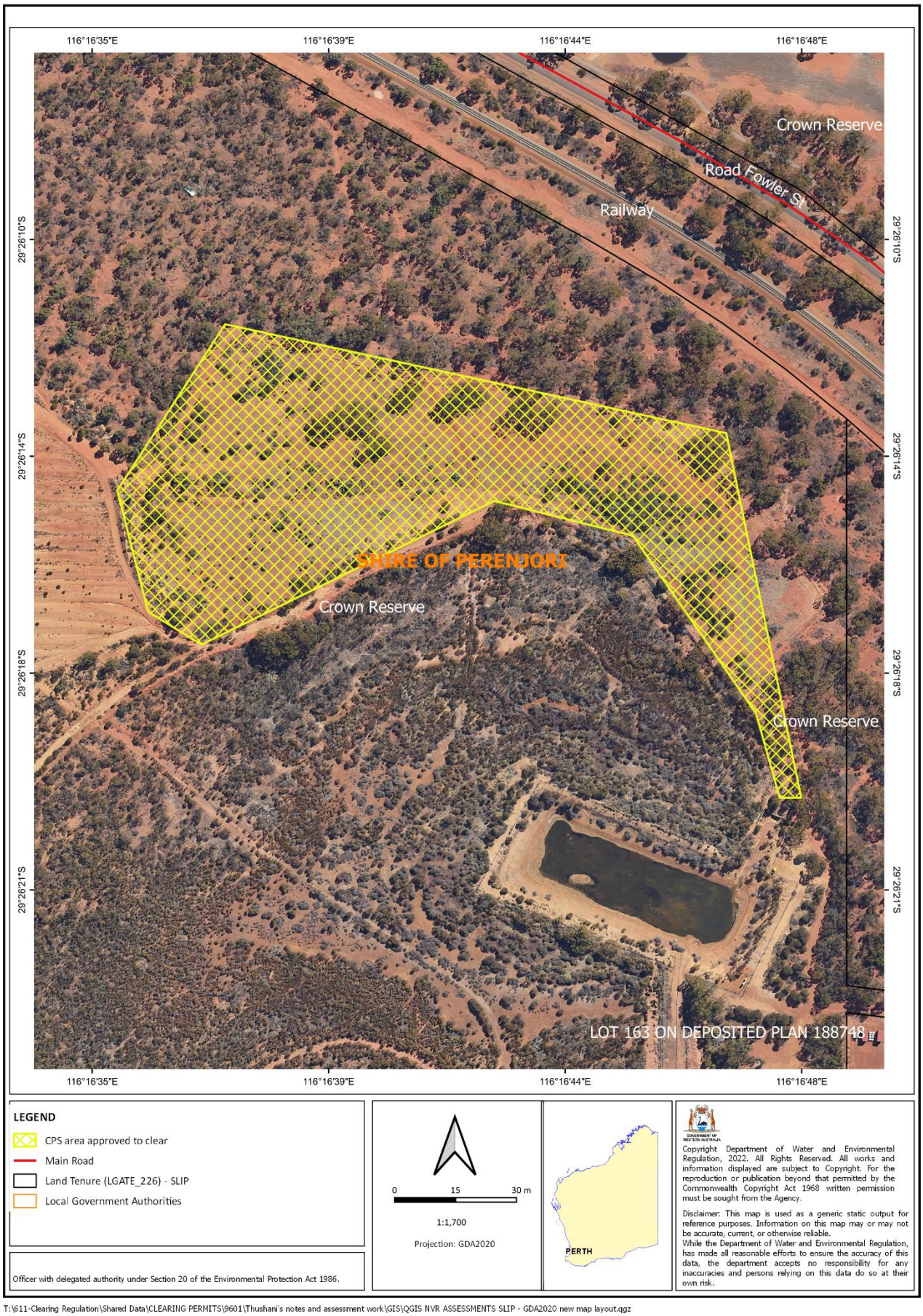

Figure 2: Map of the application area at Area 3 (Shire of Perenjori)

Figure 3: Map of the application area at Area 4 (Shire of Dalwallinu)

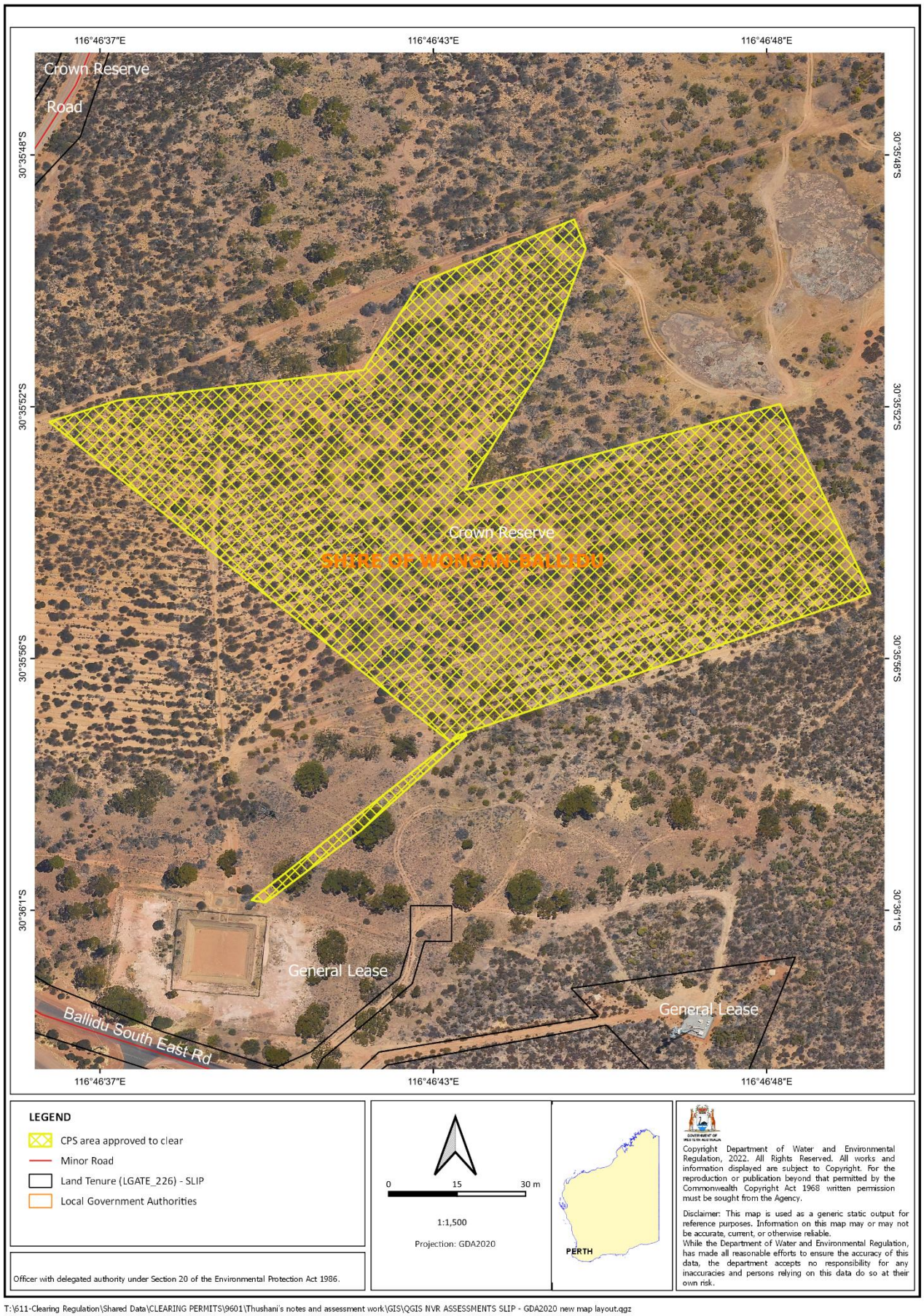

Figure 4: Map of the application area at Area 5 (Shire of Wongan-Ballidu)

Figure 5: Map of the application area at Area 8 (Shire of Yilgarn)

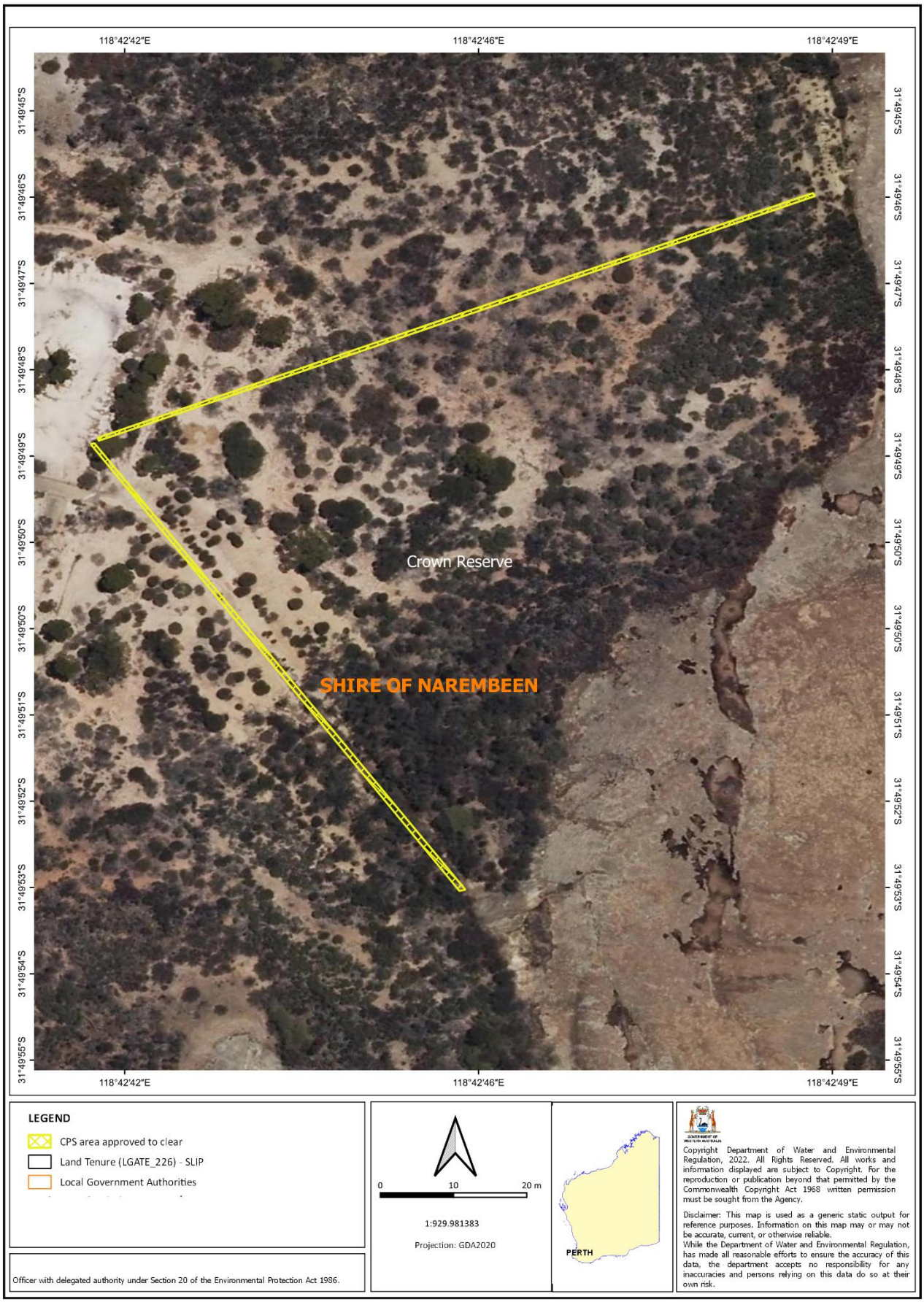

Figure 6: Map of the application area at Area 9 (Shire of Narambeen)

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Figure 7: Map of the application area at Area 11 (Shire of Lake Grace)

Figure 8: Map of the application area at Area 13 (Shire of West Arthur)

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 principle of intergenerational equity
- 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* (WA) (RIWI Act)
- *Soil and Land Conservation Act 1945* (WA)

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 Vertebrate Fauna Surveys for Environmental Impact Assessment* (EPA, 2020)

3 Detailed assessment of application

3.1. Avoidance and mitigation measures

During the assessment process, the proposed clearing area was progressively reduced from 35.68 hectares to 14.47 hectares. This reduction resulted from the removal of five areas from the application by the applicant from within the Shires of Morawa, Wyalkatchem, Nungarin, Dumbleyung, and Jerramungup. The location originally proposed at the Perenjori site was relocated to an alternative area to avoid impacts on *Grevillea granulosa* individuals identified during the flora survey (Natural Area, 2023). Additionally, both the Gutha and Ballidu sites were changed to ensure the avoidance of impacts on *Grevillea granulosa* and *Microcorys tenuifolia* observed at those locations (RWP, 2024b). These reductions in the application area are summarised in Table 2 below.

Table 2: The initial areas that were proposed for clearing in comparison to the revised areas.

Area ID	Dam Name	Shire	Original clearing size (ha)	Revised clearing size (ha)
Area 1	Canna Dams	Morawa	0.18	removed
Area 2	Gutha Dam	Morawa	4.67	0.82
Area 3	Perenjori Station Dam	Perenjori	12.53	3.38
Area 4	Buntine Dam	Dalwallinu	2.98	2.92
Area 5	Ballidu Dam	Wongan-Ballidu	7.23	4.09
Area 6	Wyalkatchem Siding Dam	Wyalkatchem	0.39	removed
Area 7	Knungajin Dam	Nungarin	0.4	removed
Area 8	Bodallin Dam	Yilgarn	0.25	0.136
Area 9	Mount Cramphorne Dam	Narembeen	0.04	0.04
Area 10	Horse Paddock Dam	Dumbleyung	4.01	removed
Area 11	Lake Magenta North Dam	Lake Grace	2.74	2.74
Area 12	Kylie Railway Dam	West Arthur	0.78	removed
Area 13	Kylie Railway Dam	West Arthur	-	0.34
		TOTAL	**36.2**	**14.47**

In addition to the above, the applicant also proposed the following mitigation measures to manage impacts, which will be implemented through conditions on the permit:

- Retention of all habitat trees with a Diameter at Breast Height (DBH) greater than 30 centimetres, plus a two-metre radius buffer around these trees; and
- Retention of any vegetation within 10 metres from the following priority flora individuals identified through the flora surveys (Natural Area, 2023):
    - *Acacia scalena* in Area 4
    - *Banksia xylothemelia* in Area 11
    - *Enekbatus planifolius* in Area 2

After consideration of avoidance and mitigation measures, it was determined that an offset to counterbalance the significant residual impacts to foraging habitat for Carnaby's black cockatoos and clearing within an extensively cleared landscape were necessary. In accordance with the Government of Western Australia's *Environmental Offsets Policy* and *Environmental Offsets Guidelines*, these significant residual impacts have been addressed through the conditioning of environmental offset requirements on the permit. The nature and suitability of the offsets provided are summarised in Section 4.

3.2. Assessment of impacts on environmental values

In assessing the application, the Delegated Officer has had regard for the site characteristics (see Appendix C) and the extent to which the impacts of the proposed clearing present a risk to biological, conservation, or land and water resource values.

The assessment against the clearing principles (see **Error! Reference source not found.**) identified that the impacts of the proposed clearing present a risk to biological values (fauna, flora, and ecological communities), significant remnant vegetation, and land and water resources. 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 Principle (a and c)

The department undertook a desktop assessment for flora at each of the areas under application. The results of the desktop assessment are within Table B.1.9 of the decision report. A likelihood of occurrence assessment of conservation significant flora within the local area was undertaken for the application areas. The desktop assessment included an analysis of the distribution and preferred habitat types, including soil and vegetation types mapped within the application areas. Twelve flora species, as identified in Table B.3, were considered likely to occur noting the application area contained suitable vegetation types, soil types and habitats. However, these species were not found in the flora and vegetation survey (Natural Area, 2023), and the survey was considered adequate to rule out their presence. While nine of these species have flowering periods that do not align with the timing of the survey, eight were identified as perennial shrubs and sedges, which can typically be recognized outside their flowering periods. Consequently, these eight species are considered unlikely to occur within the survey areas. The remaining species, *Gyrostemon reticulatus*, requires fire to trigger germination. As no signs of recent fire were observed in any of the survey areas, it is unlikely that *Gyrostemon reticulatus* could be present within the application area.

The flora and vegetation survey confirmed the following (Natural Area, 2023):

- **Gutha (Area 2)**
    - a total of 87 flora species from 26 families were identified during the field survey, including 15 introduced (weeds) and 74 native species.
    - one Declared Pest and WoNS: Paterson's Curse (**Echium plantagineum*).
    - two vegetation types: Acacia spp. Mixed Shrubland and *Eucalyptus loxophleba* subsp. *loxophleba* open forest.
    - vegetation condition ranged from good to degraded (Keighery, 1994).
    - two individuals of *Enekbatus planifolius* (P1) are within the revised application area, applicant has committed to avoid these individuals – permit conditioning.
    - the mapped vegetation within the long, narrow part of the application area is considered to consist of species representative of Eucalypt Woodlands of the Western Australian Wheatbelt' TEC.

- **Perenjori Station (Area 3)**
    - a total of 117 flora species from 34 families were identified during the field survey, including 11 introduced (weeds) and 106 native species.
    - one Declared Pest and WoNS: Paterson's Curse (**Echium plantagineum*).
    - one vegetation type within the revised application area: Eucalyptus sp. woodland.
    - vegetation condition within the revised application area is mapped as degraded (Keighery, 1994).

- three conservation significant flora species; *Grevillea granulosa* (P3), *Grevillea asparagoides* (P3) and *Stylidium torticarpum* (P3) was identified from the survey area (previous clearing area). However, the applicant has removed these areas completely from the application area. The revised application area does not include any conservation significant flora species.
- quadrat data (Q3) from the survey identified an approximate crown cover of 5 per cent with only three trees over the 30-centimetre DBH present within the application area, not meeting the requirements of the Eucalypt Woodlands of the Western Australian Wheatbelt' TEC.

- **Buntine (Area 4)**
  - a total of 73 flora species from 25 families were identified during the field survey, including eight introduced (weeds) and 65 native species.
  - no Declared Pests WoNS.
  - two vegetation type within the revised application area: *Acacia acuminata* tall open shrubland and *Eucalyptus* spp. low open woodland.
  - vegetation condition within the revised application area is mapped as degraded (Keighery, 1994).
  - one conservation significant flora species: *Acacia scalena* (P3) - applicant has committed to avoid this individual – permit conditioning.

- **Ballidu (Area 5)**
  - a total of 99 flora species from 34 families were identified during the field survey, including eight introduced (weeds) and 91 native species.
  - no Declared Pests or WoNS.
  - one vegetation type: mixed acacia shrubland.
  - vegetation condition within the revised application area is mapped as very good (Keighery, 1994).
  - Not representative of 'Eucalypt Woodlands of the Western Australian Wheatbelt' TEC.

- **Bodallin Dam (Area 8)**
  - a total of 67 flora species from 27 families were identified during the field survey, including seven introduced (weeds) and 59 native species.
  - no Declared Pests or WoNS.
  - one vegetation type; *Allocasuarina acutivalvis* and Melaleuca sp. mixed open shrubland.
  - vegetation condition was good (Keighery, 1994).
  - no conservation significant flora.
  - not representative of 'Eucalypt Woodlands of the Western Australian Wheatbelt' TEC.

- **Mt Cramphorne (Area 9)**
  - a total of 55 flora species from 20 families during the field survey, including four introduced (weeds) and 51 native species.
  - no Declared Pests or WoNS.
  - one vegetation type; *Allocasuarina huegeliana* and *Leptospermum roei* tall open shrubland.
  - vegetation condition ranged from good to very good (Keighery, 1994).
  - no conservation significant flora.
  - not representative of 'Eucalypt Woodlands of the Western Australian Wheatbelt' TEC.

- **Lake Magenta North (Area 11)**
  - a total of 148 flora species from 39 families were identified during the field survey, including 15 introduced species (weeds) and 130 native species.
  - no declared pests or WoNS.
  - one vegetation type: Mixed Shrubland.
  - vegetation condition of the revised application area ranged from degraded (Keighery, 1994) to completely degraded (Keighery, 1994).
  - one conservation significant flora species: *Banksia xylothemelia* (P3) - applicant has committed to avoid this individual – permit conditioning.
  - not representative of 'Eucalypt Woodlands of the Western Australian Wheatbelt' TEC.

- **Kylie Railway Dam (Area 13)**
  - no survey has been conducted within Area 13.
  - from a desktop review the area appears to be in a completely degraded (Keighery, 1994) condition state.
  - it is unlikely that the application area will provide habitat for any conservation significant flora species at this location.

- It is unlikely for the application area to be representative of Eucalypt Woodlands of the Western Australian Wheatbelt TEC.

In summary, five conservation significant flora species were identified from the original application areas (Natural Area, 2023).

- *Balaustion baiocalyx* (P1)
- *Enekbatus planifolius* (P1)
- *Microcorys tenuifolia* (P3)
- *Banksia xylothemelia* (P3)
- *Acacia scalena* (P3)

The department sought expert advice from DBCA regarding the potential significance of the clearing's impact on the above species identified within the application areas. DBCA provided the advice below (DBCA, 2024):

- *Enekbatus planifolius* (P1)
  - *Enekbatus planifolius* is a spreading shrub, to 1.1 metres high, found on orange-brown fine silty sand on gentle slopes. This species is known from seven records across the Merredin IBRA subregion of the Avon Wheatbelt (WA herbarium, 1988-)
  - The exact locations of *Enekbatus planifolius* within the Gutha (Area 2) application area were not recorded during the 2022 survey as positive identification was made following the completion of field survey works upon review of all available reference material. A follow-up survey was conducted in October 2023 but *Enekbatus planifolius* was not recorded (Natural Area 2023).
  - Natural Area (2023) noted that despite the survey being conducted during the recommended surveying time (optimal flowering period) for the species, the weather experienced prior to the survey in the region was not consistent with long term climate data; that being 2023 experienced lower average rainfall and higher temperatures as compared to previous years.
  - DBCA advised that regional staff conducted a survey for this species within the application area (Gutha - Area 2) in August 2023. Approximately 80 plants were recorded within the application area. DBCA advised that the removal of these plants is likely to be locally and regionally significant and could compromise to the conservation of this species, therefore clearing should be avoided. A buffer of 50 metres around the individuals represented by Figure 9 below was recommended, as this species is highly restricted and only known from the Gutha area.
  - DBCA advised the department of the location of this species that needs protection and advised that clearing must not occur within a 50-metre buffer of this population. Figure 9 below indicate the findings by DBCA.

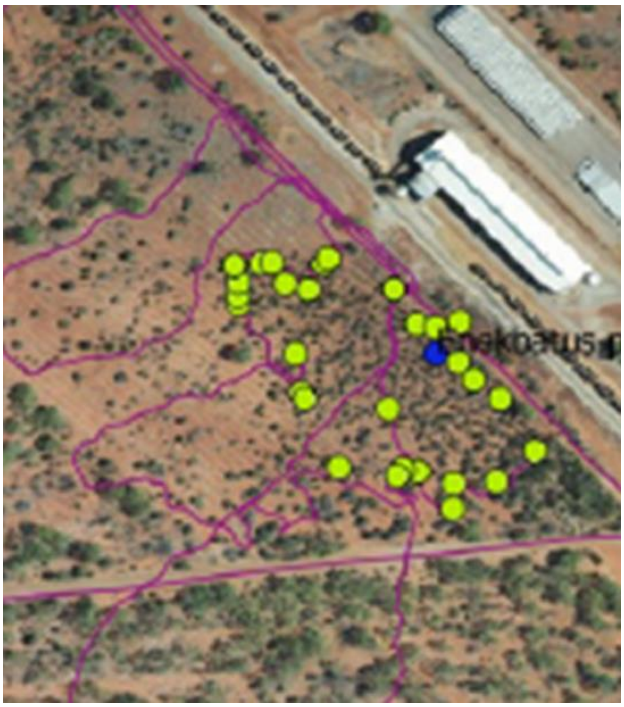

Figure 9: Locations of the *Enekbatus planifolius* identified by DBCA.

- Following DBCA advice, the application area was moved 50 metres away from these abundant flora records as represented in Figure 10 below.

Figure 10: A map representing the location of abundant *Enekbatus planifolius* that is retained from clearing.

- Within the revised clearing area, two individuals of this flora were recorded by Natural Area in its 2022 flora survey. However, this flora was not identified in this location during the October 2023 follow up survey. To ensure that these two individuals are not impacted if it was to occur during the clearing works, the department has implemented a condition on the clearing permit for the applicant to avoid clearing within 10-metres of these records.

- *Balaustion baiocalyx* (P1)

  - *Balaustion baiocalyx* is known from 9 records across the Merredin IBRA subregion of the Avon Wheatbelt (WA Herbarium, 1998-).
  - The six plants recorded within the Ballidu (Area 5) site during the October 2023 survey, represent a new location for this poorly known species and a range extension of approximately 23 kilometres to the Northwest of the nearest known record (DBCA, 2024). This new location increases the extent of occurrence of this species to approximately 1,750 kilometre squared. It is not known if there are additional plants within suitable habitat adjacent to the application area.
  - DBCA advised that the removal of six individuals is likely to be locally and regionally significant and may impact the conservation of this species. DBCA recommends that a large buffer of 50 metres should be considered to avoid creating a 20-metre circular “islands” within a cleared area which could expose the individual plants to secondary impacts such as weed incursion, erosion and changed hydrology (DBCA, 2024).
  - The applicant revised the application area be 50 metres away from these flora records as per the image below, and the revised application area does not contain any identified *Balaustion baiocalyx* species.

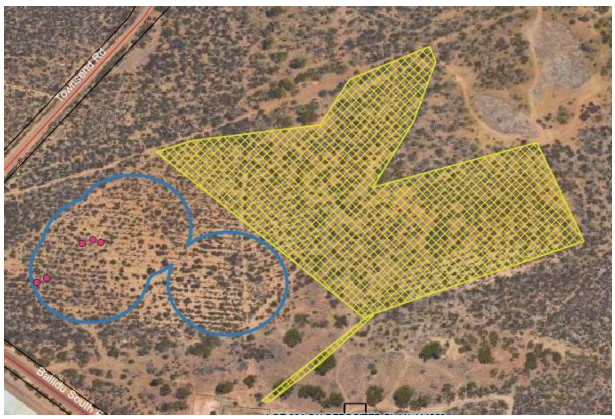

Figure 10: A map representing the locations of *Balaustion baiocalyx* (Pink) in comparison to the revised application area (Yellow).

- *Microcorys tenuifolia* (P3)

- *Microcorys tenuifolia* is a shrub, 0.5 to 1.8 metres high, found on red/brown sand, lateritic gravelly soils on undulating plains. This species is known from 17 records across the Avon Wheatbelt, Geraldton Sandplains, Yalgoo IBRA region of the Avon Wheatbelt (WA herbarium, 1988-).
- The five plants recorded within the Ballidu (Area 5) site during the October 2023 survey, represent a new location for *Microcorys tenuifolia* within the southern extent of its known distribution. The nearest previously known record occurring approximately 30 kilometres South Southwest (SSW) of Area 5. It is not known if there are additional plants within suitable habitat adjacent to the application area (Natural Area, 2023).
- DBCA advised that removal of all five individuals would potentially clear an entire local population and would therefore be locally significant. The impacts, however, are not considered to be significant to the conservation of the species as there are a number of known locations including several at the southern end of the species range, and other larger populations within the conservation reserve system (DBCA, 2024).
- The applicant revised the application area to be 50 metres away from the flora records, as per Figure 11 below.

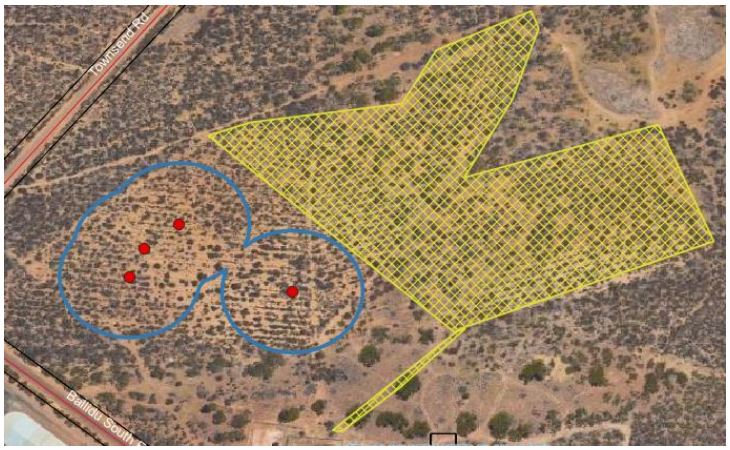

Figure 11 – A map representing the locations of *Microcorys tenuifolia* (red) in comparison to the revised application area (Yellow).

In addition to the above species, Natural Area (2023) identified that the proposed clearing areas at Buntine Dam (Area 4) and Lake Magenta North Dam (Area 11), contains one individual of *Acacia scalena* (P3), and two individuals of *Banksia xylothemelia* (P3) respectively. Clearing of these flora species was not determined to result in a significant residual impact and DBCA did not provide any recommendations regarding these two species. The applicant advised that *Acacia scalena* and *Banksia xylothemelia* individuals could be avoided and the department has imposed a condition on the clearing permit requiring the retention of these individuals, along with a minimum buffer of 10 metres surrounding each specimen

Conclusion

Following the advice provided by DBCA, the applicant has amended and repositioned the proposed application areas to avoid significant impacts on priority flora species *Enekbatus planifolius, Balaustion baiocalyx* and *Microcorys tenuifolia*. A condition of the permit to retain all vegetation within a 10 buffer around remaining *Enekbatus planifolius* individuals will further prevent impacts to this species. Potential impacts to *Acacia scalena* and *Banksia xylothemelia* individuals present within the application area are also considered unlikely, as the permit includes a condition to retain vegetation within a 10 metre buffer around individuals of these species.

Conditions

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

- Prior to clearing, the applicant must demarcate the boundaries of the application areas to avoid inadvertent clearing of flora outside the application areas
- The applicant must engage a botanist to demarcate all individuals of *Acacia scalena, Banksia xylothemelia* or *Enekbatus planifolius*, and shall not clear vegetation within a 10 metre buffer of these individuals.

3.2.2. Biological values (fauna) - Clearing Principles (a) and (b)

Assessment

Noting the findings of the targeted fauna habitat assessment (Natural Area, 2023), the site characteristics (see Appendix B), and the habitat preferences of the conservation significant fauna species recorded in the local area, the application areas were considered to contain suitable habitat for the following species:

- *Aspidites ramsayi* (southwest subpop.) (Woma) (listed as Priority 1 by DBCA),
- *Calyptorhynchus banksii naso* (Forest red-tailed black cockatoo (FRTBC) (listed as Vulnerable under the BC Act and Endangered under the EPBC Act),
- *Egernia stokesii badia* (western spiny-tailed skink) (listed as Vulnerable under the BC Act and Endangered under the EPBC Act),
- *Falco peregrinus* (peregrine falcon) (listed as other specially protected fauna by DBCA),
- *Idiosoma intermedium* (Coolgardie shield-backed trapdoor spider) (listed as Priority 3 by DBCA),
- *Idiosoma kopejtkaorum* (Lake Goorly shield-backed trapdoor spider) (listed as Endangered under the BC Act),
- *Leipoa ocellata* (malleefowl) (listed as Vulnerable under the BC Act and EPBC Act),
- *Zanda baudinii* (Baudin's cockatoo) (listed as Endangered under the BC Act and EPBC Act), and
- *Zanda latirostris* (Carnaby's cockatoo) (listed as Endangered under the BC Act and EPBC Act).

The applicant may have notification responsibilities under the EPBC Act for impacts to Baudin's cockatoo, Carnaby's cockatoo, the forest red-tailed black cockatoo, shield-backed trapdoor spiders, malleefowl or their habitats, as set out in the EPBC Act referral guidelines for the species. The applicant has been advised to contact the federal Department of Climate Change, Energy, the Environment and Water (DCCEEW) to discuss EPBC Act referral requirements.

Black cockatoo species (*Calyptorhynchus banksii naso, Zanda baudinii* & *Zanda latirostris*)

Habitat for forest red-tailed black cockatoo (FRTBC), Baudin's cockatoo and Carnaby's cockatoo (hereafter referred to as black cockatoo species) can be considered in terms of breeding habitat, night roosting habitat, and foraging habitat. Carnaby's Cockatoo will generally forage up to 12 kilometres from an active breeding site (Commonwealth of Australia, 2022; DAWE, 2022; DPaW, 2013). Following breeding, they will flock in search of food, usually within six kilometres of a night roost (DAWE, 2022) but may range up to 20 kilometres or more (Commonwealth of Australia, 2022). Food resources within the range of breeding sites and roost sites are important to sustain populations, and foraging resources are therefore viewed in the context of known breeding and night roosting sites, particularly within 12 kilometres of a breeding site or 20 kilometres of a roost site (Commonwealth of Australia, 2022).

Natural Area (2023) undertook a black cockatoo habitat tree assessment within portions of the application areas containing trees with a diameter at breast height (DBH) over 300 mm, and assessed foraging habitat in each of the survey areas A summary of these findings are compiled in the Table 3 below.

Table 3: A summary of the black cockatoo habitat assessment

Area ID	Figure	Black cockatoo habitat			Black cockatoo distribution
		Foraging	Breeding	Roosting	
Area 2	Figure 1	BCs observed flying overhead. Carnaby's black cockatoo foraging habitat (York gum) present (0.029). No evidence of foraging.	Potential future breeding habitat, one dead stag with 2 small hollows present.	Potential roosting habitat available.	Not within the modelled distribution zone of any of the three species of Black cockatoos.
Area 3	Figure 2	foraging habitat for Carnaby's (York gum) present across entire area (3.38 ha), no evidence of foraging.	4 Eucalyptus trees larger than 30 cm DBH present. None has hollows.	Potential roosting habitat available.	Within the modelled distribution zone of Carnaby's black cockatoos only
Area 4	Figure 3	No foraging habitat present	2 Eucalyptus trees larger than 30 cm DBH present. None has hollows. To be retained from clearing.	Potential roosting habitat	Within the modelled distribution zone of Carnaby's black cockatoos only
Area 5	Figure 4	No foraging habitat present	No breeding habitat present	No roosting opportunity	Within the modelled distribution zone of Carnaby's black cockatoos only.

Area 8	Figure 5	No foraging habitat present	No breeding habitat present	No roosting opportunity	Within the modelled distribution zone of Carnaby's black cockatoos only.
Area 9	Figure 6	No foraging habitat present	No breeding habitat present	No roosting opportunity	Within the modelled distribution zone of Carnaby's black cockatoos only.
Area 11	Figure 7	No foraging habitat present	No breeding habitat present	No roosting opportunity	Within the modelled distribution zone of Carnaby's black cockatoos only.
Area 13	Figure 8	unsurveyed. Potential foraging habitat for all three species (jarrah, marri and wandoo) (0.34 ha).	Potential for habitat trees. Any habitat trees will be retained.	Potential roosting habitat	Within the modelled distribution zone of all three species of black cockatoos.

According to the above findings, the eucalypt canopy of the application areas 2, 3 and 13 provides potential foraging habitat for black cockatoos consisting of approximately 3.75 hectares. The clearing of Area 2 and Area 3 is only likely to impact on Carnaby's black cockatoos, whereas the clearing of Area 13 may also impact Baudin's black cockatoo and FRTBC. The following areas consists of vegetation that considered to be black cockatoo foraging habitat.

- Area 2 (0.292 ha) - *Eucalyptus loxophleba* subsp. *Loxophleba* open forest over Atriplex sp. and *Waitzia acuminata* var. *acuminata.*
- Area 3 (3.38 ha)- Eucalyptus sp. woodland over mixed Acacia spp., *Waitzia acuminata* var. *acuminata*, and *Ptilotus polystachyus.*
- Area 13 (0.34) - Although no surveys are present to confirm tree species, the precautionary principle has been applied and the vegetation apparent from the photos (*Eucalyptus* spp. low woodland) is assumed to be consistent with the mapped vegetation type (jarrah, marri and wandoo).

Vegetation available for foraging by Carnaby's cockatoo is fragmented and underrepresented in conservation reserves (Commonwealth of Australia, 2022). Consequently, the remaining native vegetation that provides habitat for Carnaby's cockatoos, regardless of its current use is considered ecologically significant. The cumulative removal of 3.75 hectares of foraging habitat within Areas 2, 3 and 13 is likely to result in a significant residual impact on Carnaby's black cockatoo. Based on this assessment, the department has determined that the proposed clearing should be subject to offset requirements for Carnaby's cockatoo, as discussed in Section 4.

Area 13 may also contain foraging habitat for Baudin's black cockatoo and the Forest Red-tailed Black Cockatoo. The vegetation within this area has been assessed as degraded to completely degraded (Keighery, 1994) condition, which significantly reduces its ecological value for these species. All trees within Area 13 with a DBH greater than 30 centimetres will be retained under the conditions of the clearing permit, thereby preserving potential foraging resources. There are no known breeding or roosting sites for either species within a 12-kilometre radius of the application area, and the location lies near the eastern extent of their known distribution ranges, suggesting limited utilisation of the site. Furthermore, this 0.34 hectare area is the only clearing of foraging habitat for these species in this application. Considering the above, the clearing of Area 13 is not expected to result in a significant residual impact to Baudin's black cockatoo or forest red-tailed black cockatoo foraging habitat.

All areas of breeding habitat are critical to black cockatoos. Breeding habitat for black cockatoos includes trees that either have a suitable nest hollow or are of a suitable DBH to develop a nest hollow. A suitable DBH for trees to develop black cockatoo nest hollows is 500 millimetres for most tree species (Commonwealth of Australia, 2012; DAWE, 2022) but only 300 millimetres for wandoo and salmon gum (Commonwealth of Australia, 2012). As mentioned in the Table 3 above, there are seven trees with a DBH greater than the 30 centimetres within the application areas. The applicant has committed to retain these trees with a 2-metre buffer around trees that are identified to be greater than 30 centimetres in DBH. Based on this, the proposed clearing will not result in any impact on black cockatoo nesting habitat.

Black cockatoo species tend to roost in the tallest trees in an area (DAWE, 2022). Given the applicant has committed to retain trees with DBH greater than 30 centimetres, which are likely to be taller than those with a smaller DBH, it is considered that the proposed clearing is unlikely to impact black cockatoo roosting habitat.

Other avian fauna

Malleefowl (*Leipoa ocellata)*
Found within local area of Area 4 and Area 8 – Malleefowl is usually associated with shrublands and low woodlands dominated by mallee, can occur in woodlands dominated by eucalypts; construct mounds that act as incubator-nests,

require a sandy substrate with abundant leaf litter; generalist feeders, forage on seeds, flowers, fruits, herbs, invertebrates, tubers and fungi (DEE, 2018).

Woodland and shrubland habitats within the application areas 4 and 8 may provide suitable foraging and movement corridors for Malleefowl. Open woodland habitat associated with York gum are not a preferred habitat type by Malleefowl today. However, the shrubland vegetation types found within the application areas may still provide suitable habitat for this species. Malleefowl are found across much of southern Western Australia, including large parts of the wheatbelt. While their numbers have declined in this region since the mid-1920s, the species remains broadly distributed throughout the wheatbelt. Many of the remaining areas in the wheatbelt still contain habitat considered suitable for malleefowl (Parson, 2008).

Targeted fauna surveys conducted across the application areas did not identify any active or inactive Malleefowl mounds, indicating a low likelihood of current occupancy or breeding activity within these areas (Natural Area, 2023).

The application areas are historically disturbed, primarily comprising cleared channels and catchment zones, which have reduced their ecological function and suitability as core habitat. Importantly, suitable habitat remains available in adjacent areas outside the application area boundaries. The implementation of directional clearing conditions will facilitate the movement of any individuals present, allowing them to relocate to nearby suitable habitat with minimal disruption.

Given the absence of mounds, the historically disturbed (Keighery, 1994) nature of the habitat within the application areas (Natural Area, 2023), and the availability of adjacent suitable habitat, the proposed clearing is not expected to result in a significant residual impact on the Malleefowl population. Therefore, the clearing is considered unlikely to affect the species' long-term viability in the region.

Peregrine falcon (*Falco peregrinus*)
Found within local area of Area 4 and Area 8 – Peregrine falcon is associated with range of habitats, usually coastal and inland cliffs or open woodland near water; Breeding habitat usually includes cliff faces, and rock ledges (Australian Museum, 2021).

The application areas contain woodland and shrubland habitats that may be suitable for foraging activities by Peregrine falcon (Natural Area, 2023). However, due to the species' known ecological flexibility and ability to utilise a wide range of habitat types, habitats within the application areas are unlikely to be critical to the species' survival or long-term viability (Australian Museum, 2021). As such, the proposed clearing is not likely to have a significant impact to the species.

Reptiles

Woma (*Aspidites ramsayi*) and Western spiny-tailed skink (*Egernia stokesii badia*)

Found within local area of Area 4 – Woma is associated with semi-arid areas and sandy plains, usually with hummock grasses and hollow logs or burrows for shelter (Watson and, Ehmann, 2011).

Found within local area of Area 4 – Western spiny-tailed skink inhabits open eucalypt woodlands and Acacia-dominated shrublands and is known to shelter in logs, cavities in the trunks and branches of shrubs, and accumulations of old corrugated iron (DEC, 2012).

Area 4 contains woodland and shrubland habitats that may offer suitable conditions for Woma and the Western spiny-tailed skink species (Natural Area, 2023). However, these areas have been historically disturbed for cleared channels and catchment zones, which has reduced their ecological value. The department notes that suitable and higher-quality habitat remains available in adjacent areas outside the application area. The implementation of directional clearing conditions will facilitate the movement of Woma and Western spiny-tailed skink species, if present within the application area at the time of clearing, into these adjacent habitats, thereby reducing the likelihood of displacement or mortality. Given the availability of nearby suitable habitat and the species' capacity to relocate, the proposed clearing is not expected to result in a significant residual impact on these fauna species.

Invertebrates

Coolgardie shield-backed trapdoor spider (***Idiosoma intermedium)*** – Area 8 – woodland and shrubland habitat may be suitable for this species. Species is described as having a widespread but poorly defined distribution and priority status was awarded mostly due to the prevalence of mining throughout its range (Rix et. al., 2018). This species extent of occurrence of 14,500 kilometre squared, range extends from Bodallin north to Billiburning Rock in

the eastern Wheatbelt, and east to the Helena-Aurora Range, Mount Manning, and Koolyanobbing in the Coolgardie region. Given the species limited distribution and the extent of suitable habitat to be cleared (0.136 hectares), it is unlikely that this species would occur within the application area, and impacts of the proposed clearing to this species are unlikely to be significant.

Lake Goorly shield-backed trapdoor spider (***Idiosoma kopejtkaorum)*** **–** Area 4 – This spider is a poorly known invertebrate (SRE), with restricted distribution to a small area surrounding Lake Goorly, extending from Charles Darwin Nature Reserve, Mount Gibson, and Mummaloo-Wyebubba Hill in the north, south-west to near Coorow, and south to near Goodlands and the Maya, Buntine and Snake Gully Nature Reserves; distribution strongly correlated with annual rainfall of 250-300 mm and red clay soils in the Lake Goorly and southern Lake Moore catchments(Rix et al, 2018).

The woodland and shrubland habitats within the vicinity of the application areas may offer potentially suitable conditions for the species. However, Area 4 is a historically cleared catchment zone, within vegetation in a degraded (Keighery, 1994) condition. Any remaining viable habitat is expected to be located in the adjacent better quality vegetation. Importantly, local population records for the species are securely established within the Buntine Nature Reserve, which lies outside the impact zone and provides a protected and stable habitat.

Given the degraded (Keighery, 1994) nature of the application area, its historical land use, and the availability of more secure habitat nearby, it is unlikely that the application area contains individuals of this species or constitutes a significant habitat for the species. Therefore, the overall impact on the species is expected to be minimal.

Conclusion
Based on the above assessment, the proposed clearing will result in the loss of suitable 3.75 hectares of foraging habitat for Carnaby's black cockatoos.

The proposed clearing is unlikely to significantly impact other conservation significant fauna species.

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

- slow directional clearing to allow fauna to move into adjacent vegetation ahead of the clearing activity will minimise impact to individuals.
- retain all trees with greater than 30 centimetres DBH and vegetation within a 2-metre radius around these identified trees to ensure that any breeding habitat is not impacted.
- offset proposal to counterbalance environmental impacts to Carnaby's cockatoo foraging habitat (refer to Section 4).

3.2.3. Biological values (ecological communities) - Clearing Principles (a) and (d)

Assessment
A desktop assessment identified that Area 2 and Area 3 may contain the 'Eucalypt Woodlands of the Western Australian Wheatbelt' EPBC Act listed threatened and state priority ecological community (hereafter referred to as Eucalypt Woodlands TEC/PEC) (Natural Area, 2023).

The approved conservation advice for the Eucalypt Woodlands TEC/PEC provides a guide to identify and assess the occurrence of Eucalypt Woodlands TEC/PEC (DotE, 2015). Patch size and vegetation condition are important determinants in assessing the presence of the Eucalypt Woodlands TEC/PEC (DotE, 2015). The vegetation condition thresholds to confirm the Eucalypt Woodlands community generally exclude degraded (Keighery, 1994) patches such as roadside remnants that are too small and narrow, or where the tree canopy has become discontinuous, and the understorey has lost considerable elements of its native structure and diversity (DotE, 2015).

Although Area 2 is not mapped within an area of Eucalypt Woodlands TEC/PEC by the DBCA's mapping, based on the surveyed vegetation type, vegetation within the 0.04 hectare southern portion of this area is representative of the Eucalypt Woodlands TEC/PEC due to the presence of York gum and a native understorey (Natural Area, 2023). A visual assessment concluded that a surrounding patch of Eucalypt Woodlands TEC/PEC extends to approximately 111 hectares beyond the application area (Natural Area, 2023).

While the clearing of Area 2 may clear vegetation that is part of a patch of Eucalypt Woodlands TEC/PEC, impacts to the Eucalypt Woodlands TEC/PEC are unlikely to be significant, noting the following:

- As a condition of the clearing permit, the applicant will be required to retain large trees with a DBH of greater than 30 centimetres (noting that DotE (2015) states that avoiding the removal of large trees that have hollows, regardless of whether trees are living or dead, is one of the highest priorities to protect and recover the WA Wheatbelt woodlands, noting they provide high value fauna habitat);
- The proposed work within this portion of Area 2 is to remove debris, weeds and samplings to improve the water flow from catchment to the dam (RWP, 2021b), and is not likely to impact more substantial vegetation;
- This patch is 0.04 hectares and only up to 3 metres wide, which is small in the context of the surrounding 111-hectare patch;
- Weed and dieback management conditions implemented on the clearing permit will ensure that indirect impacts to the adjacent vegetation are mitigated.

Area 3 is within a mapped occurrence of the Eucalypt Woodlands TEC/PEC and the flora and vegetation survey (Natural Area, 2023) concluded that vegetation within the survey area at the Perenjori site (which contains Area 3) met the criteria for the Eucalypt Woodlands TEC/PEC. It is noted that the surrounding area was not surveyed by Natural Area (2023), but they concluded that based upon a visual assessment of the surrounding vegetation within Perenjori Station, the vegetation within the application area was considered to be part of a wider patch of the Eucalypt Woodlands TEC/PEC. It is noted that a patch of Eucalypt Woodlands TEC/PEC can have breaks of up to 50 metres of bare ground or weeds (DotE, 2015). It is considered that without a survey of surrounding vegetation, the amount of Eucalypt Woodlands TEC/PEC within Area 3 cannot be quantified, however some of the application area may qualify as part of a patch of Eucalypt Woodlands TEC/PEC.

While the clearing of Area 3 may clear vegetation that is part of a patch of Eucalypt Woodlands TEC/PEC, impacts to the Eucalypt Woodlands TEC/PEC are unlikely to be significant, noting the following:

- The vegetation has been previously cleared, and is in degraded condition
- The application area was previously bituminised, demonstrating significant disturbance has occurred to the vegetation
- While vegetation in the application area may be part of a wider patch, in itself it does not meet the requirements of the Eucalypt Woodlands TEC/PEC:
    - The black cockatoo habitat survey only identified four trees that are over the 30-centimetre DBH within the entire Area 3, not meeting the TEC criteria requirement of 5 mature trees per 0.5 hectares (DoE, 2015)
    - Quadrat data from the flora and vegetation survey identified a 5 per cent canopy cover (Natural Area, 2023), not meeting the TEC criteria requirement of a minimum of 10 per cent tree canopy cover (DoE, 2015)
- As a condition of the clearing permit, the applicant will be required to retain large trees with a DBH of greater than 30 centimetres
- Weed and dieback management conditions implemented on the clearing permit will ensure that indirect impacts to the adjacent vegetation are mitigated.

For other application areas, vegetation was not representative of the Eucalypt Woodlands TEC/PEC (Natural Area, 2023).

Conclusion

For the reasons set out above, while Areas 2 and 3 are likely to contain vegetation that is part of patches of the Eucalypt Woodlands TEC/PEC, the proposed clearing is unlikely to result in a significant residual impact to the TEC/PEC subject to conditions on the permit to mitigate impacts.

Conditions

- Retain trees with greater than 30 centimetres DBH and vegetation within a 2-metre radius around these identified trees.
- Take hygiene steps to minimise the risk of the introduction and spread of weeds and dieback into adjacent areas of native vegetation.

3.2.4. Significant remnant vegetation - Clearing Principles (a) and (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 prior to 1750, below which species loss appears to accelerate exponentially at an ecosystem level (Commonwealth of Australia, 2001). The application areas

are mapped within the Avon Wheatbelt, Mallee and Jarrah Forest IBRA regions where 18.51 per cent, 53.25 per cent and 56.53 per cent of vegetation remains respectively.

The Table 4 below identified the extent of vegetation that is remaining in the local areas of the application areas. Based on this information, the department has determined that a total of 11.59 hectares of native vegetation proposed to be cleared, from Areas 2, 3, 4, 5, 9, 10 and 13, is considered to be within extensively cleared areas.

Table 4: Native vegetation extent remaining within the local areas of the application areas.

Area	Extent remaining within local area (ha)
Area 2	11.32
Area 3	8.20
Area 4	10.05
Area 5	3.33
Area 8	32.77
Area 9	9.29
Area 10	9.07
Area 11	36.84
Area 13	16.16

These areas are considered to be significant as remnants of native vegetation. Although vegetation within some of these areas is degraded, these areas would still provide refuges for fauna and flora, as well as other ecosystem services (e.g. habitat for pollinators). As such, an offset is required to counterbalance the significant residual impact of this clearing (refer to Section 4 for further details).

Native vegetation within the Areas 2, 3, 4,11 and 13 is degraded (Keighery, 1994) to completely degraded (Keighery, 1994). Based on the vegetation condition, it is unlikely that these areas will represent the vegetation associations of these areas. Mapped vegetation within Area 5, Area 8 and Area 9 was not considered to be representative of vegetation associations 1024, 8 and 128 respectively.

Ecological linkages

As further discussed under B.1.1 of this decision report, Area 3 and Area 5 are likely to contribute towards ecological linkages within an extensively cleared area.

Area 3 comprises approximately 3.38 hectares of regenerating shrubland, situated within a larger remnant vegetation patch in a landscape that has undergone extensive clearing. This area is likely to contribute to the ecological connectivity of the broader remnant, supporting the movement of native fauna and the continuity of ecological processes. Its position within the landscape, particularly along Mullewa-Wubin Road and Fowler Street suggests it may function as a linkage corridor and enhancing habitat connectivity across fragmented vegetation.

Similarly to Area 3, Area 5 comprises approximately 4.09 hectares of regenerating woodland, located on the centre of a larger remnant vegetation patch within a landscape that has been subject to significant clearing and fragmentation. The vegetation within Area 5 is likely to provide important ecological linkage functions, facilitating connectivity between remnant habitats and contributing to the movement of native fauna and the maintenance of ecological processes.

The department has determined that although the above areas are likely to serve as ecological corridors, the retention of larger trees within these areas would suggest that the entire area will not be cleared. Birds are still able to utilise the trees to facilitate their movement across the landscape. These areas are also surrounded by adjacent vegetation, meaning that the impact from clearing will not sever an ecological connectivity.

The department also notes the ecological benefits the proposed offset sites will deliver in enhancing ecological connectivity within an extensively cleared landform. Both revegetation offset sites are located within extensively cleared landforms. The Department has considered that the revegetation activities will result in consolidate the ability for these sites to act as habitat stepping-stones, and that the 13.61 hectares of revegetation at the Wongan Hills site will reinstate an ecological linkage between vegetation to the west and east (refer to Section 4 for further details). There will be environmental benefits to fauna species moving through the fragmented landscape gained through the offset revegetation activities. As such, the department considers that impacts to ecological corridors will be offset through the revegetation outlined in Section 4.

Conclusion

Based on the above assessment, the proposed clearing is likely to impact on 11.59 hectares of vegetation that is significant remnant within an extensively cleared landscape, 7.47 hectares of which contribute to ecological corridors.

A significant residual impact remains after avoidance and minimisation efforts. An offset consistent with the Government of Western Australia's Environmental Offsets Policy and Environmental Offsets Guidelines has been conditioned on the permit to counterbalance this residual impact. The department has considered the offset as suitable and appropriate to counterbalance the impact of clearing (refer to Section 4 for further information).

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
- provide an offset to counterbalance the significant residual impacts to 11.59 hectares of native vegetation.

3.3. Relevant planning instruments and other matters

The clearing permit application was advertised on the department's website on 12 April 2022, inviting submissions from the public within a 21-day period. No submissions were received in relation to this application.

The following zonings are applicable to the application areas.

- Area 2 – Zoned as Drainage and waterways under the Shire of Morawa's Local Planning Scheme no 3
- Area 3 – Zoned as a reserve, vested under Shire of Perenjori or the purpose of water supply
- Area 4 – Zoned as public purpose under the Shire of Dalwallinu's Local Planning Scheme no 2
- Area 5 - Zoned as public purpose under the Shire of Wongan-Ballidu's Local Planning Scheme no 5
- Area 8 – Zoned as public purpose under the Shire of Yilgarn's Local Planning Scheme no 2
- Area 9 – Zoned as Recreational and open space under Shire of Narembeen's Local Planning Scheme no 2
- Area 11 – Zoned as public purpose under the Shire of Lake Grace's Local Planning Scheme no 4
- Area 13 – Zoned as Recreational and open space under Shire of West-Arthur's Local Planning Scheme no 2

The department sought advice from each of the relevant Local Government Authorities regarding the proposed works. Two Shires responded to the department's request for advice correspondence:

- Shire of Morawa – no concerns with clearing at Area 2 (Shire of Morawa, 2022);
- Shire of Lake Grace – no concerns with clearing or approvals required at Area 11 (Shire of Lake Grace, 2022);
- No response received from:
    - Shire of Perenjori (Area 3)
    - Shire of Dalwallinu (Area 4)
    - Shire of Wongan-Ballidu (Area 5)
    - Shire of Yilgarn (Area 8)
    - Shire of Narembeen (Area 9)
    - Shire of West Arthur (Area 12)

The Dumbleyung LCDC advised they had no concerns with clearing at Area 11, and were supportive of water storage for community benefit (Shire of Dumbleyung, 2022).

The assessment has identified that Area 5 is located within the Avon River System, a surface water area proclaimed under the *Rights in Water and Irrigation Act 1914* (RIWI Act). Noting that the clearing proposed in these areas is for the purpose of re-establishing catchments and channels, a license under the RIWI Act is not required to take surface water in these areas (DWER, 2022b).

- Area 2 (Gutha dam) and Area 3 (Perenjori Station dam) are located within the Gascoyne Groundwater Area, and Area 8 (Bodallin dam) and Area 9 (Mount Caramphorne dam) are located within the Westonia Groundwater Area, both proclaimed under the RIWI Act. Following advice received from DWER (2022a) (2022b), given the proposal does not involve the taking of groundwater, a permit to take water is not required within these areas.

In addition, as the taking of surface water is not involved in the proposal, a licence under section 5C of the RIWI Act to take surface water is also not required (DWER, 2022a).

No Aboriginal sites of significance have been mapped within the application area. It is the permit holder's responsibility to comply with the *Aboriginal Heritage Act 1972* (WA) and ensure that no Aboriginal Sites of Significance are damaged through the clearing process.

4 Suitability of offsets

Through the detailed assessment outlined in Section 3.2 above, the Delegated Officer has determined that the following significant residual impacts remain after the application of the avoidance and mitigation measures summarised in Section 3.1:

- loss of 3.75 hectares of foraging habitat for *Zanda latirostris* (Carnaby's black cockatoo) (Areas 2, 3 and 13)
    - Area 2 (0.292 ha) - *Eucalyptus loxophleba* subsp. *loxophleba* open forest over Atriplex sp. and *Waitzia acuminata* var. acuminata.
    - Area 3 (3.38 ha) - Eucalyptus sp. woodland over mixed Acacia spp., *Waitzia acuminata* var. *acuminat*a, and *Ptilotus polystachyus.*
    - Area 13 (0.34) - No surveys. Precautionary principle applied and have assumed the area has Carnaby's foraging habitat.
- loss of 11.59 hectares of native vegetation that is significant as a remnant within an area that has been extensively cleared (Areas 2, 3, 4, 5, 9 and 13).

In determining the appropriateness of an offset, the Delegated Officer took into consideration the applicant's implementation of the mitigation hierarchy and the public benefit of the proposed clearing (see Section 3.1). In considering these matters, the Delegated Officer determined that it was appropriate to grant the clearing permit in relation to the significant residual impacts, on the basis that a suitable environmental offset was implemented to counterbalance the impacts

Offset

To counterbalance the significant residual impact of the proposed clearing, the applicant has proposed revegetation offsets at two locations, both of which are reserves.

1. Reserve 17068 (Lot 1976 on Deposited Plan 88496, Shire of Wongan-Ballidu) – currently vested under the water and rivers commission of the department for the purpose of water.
    - The applicant proposes to revegetate land within this reserve to address impacts on foraging habitat for Carnaby's black cockatoos and the extensively cleared vegetation.
    - The proposed offset area is located within the Avon Wheatbelt IBRA region.
    - The proposed revegetation/rehabilitation site has historically been cleared and used for agriculture.
    - A revegetation plan has been prepared for the site (Copeland, D, 2025a).
    - The proposed revegetation species were selected through a desktop survey of species found within 25 kilometres of Reserve 17068. These include species that serve as primary foraging habitat for Carnaby's black cockatoos.
    - The targets and completion criteria are comparable to naturally occurring vegetation in the local area (Copeland, D, 2025a).
    - The revegetation is likely to provide a linkage between remnant vegetation to the east and west.

2. Reserve 30541 (Lot 29684 on Deposited Plan 39623, Shire of Koorda) – current vesting is conservation under DBCA for the purpose of water and conservation of flora and fauna.
    - The applicant proposes to revegetate land within this reserve to address any remaining impact of vegetation clearing.
    - The proposed offset area is located within the Avon Wheatbelt IBRA region.
    - Approximately 23 hectares are available for revegetation on the property.
    - A revegetation plan has been prepared for the site (Copeland, D, 2025b).
    - The site was historically cleared and used for cropping and grazing.
    - The proposed revegetation species were selected based on their presence elsewhere within Reserve 30541.
    - The targets and completion criteria are comparable to naturally occurring vegetation in the local area (Copeland, D, 2025b).
    - The site is surrounded by conservation reserves.

In reviweing the above offset proposal, in addition to the items listed above, the department also had regard for the distance from the application area to the offset area. These are presented in the Table 5 below.

Table 5: Approximate distance from application areas to the proposed offset areas.

Application area		Distance from application area to the offset areas (km)	
	IBRA region	Reserve 17068 - Wongan	Reserve 30541 - Koorda
Area 2 – Morawa	Avon Wheatbelt	216	254
Area 3 – Perenjori	Avon Wheatbelt	159	190
Area 4 – Dalwallinu	Avon Wheatbelt	94	127
Area 5 – Wongan-Ballindu	Avon Wheatbelt	27	70
Area 8 – Yilgarn	Avon Wheatbelt	211	140
Area 9 – Mt Cramphorne	Avon Wheatbelt	222	163
Area 11 – Lake Grace	Mallee	370	326
Area 13 - Wagin	Jarrah forest	288	295

It is acknowledged that the proposed offset area is situated outside the 20-kilometre local radius of the application area. However, the Department recognises that, due to regional constraints and the dispersed nature of multiple offset sites, the applicant faced significant challenges in securing an offset location in closer proximity to all impacts.

Given that the significant residual impact being offset is Carnaby's black cockatoo foraging habitat, and considering that the proposed offset site lies within the mapped breeding distribution area with known records of Carnaby's black cockatoo in the vicinity, the vegetation within the offset area is likely to be utilised for foraging by the species. On this basis, the proposed offset sites are considered acceptable.

Based on the information received through the offset proposal, an offset calculation using the WA offset metric 'calculator' was undertaken by the department. The calculation has identified that:

- the revegetation of 13.61 hectares from a completely degraded condition (Keighery, 1994) to good condition (Keighery, 1994) within Reserve 17068 (Wongan Hills site) would:
  - counterbalance the significant residual impact to clearing Carnaby's black cockatoo foraging habitat by 157 per cent.
  - counterbalance the significant residual impact to remnant vegetation within an area that has been extensively cleared by 72.7 per cent.
- the revegetation of 5.26 hectares in completely degraded condition (Keighery, 1994) to good condition (Keighery, 1994) within Reserve 30541 (Koorda site) would:
  - counterbalance the significant residual impact to remnant vegetation within an area that has been extensively cleared by 27.3 per cent.

The revegetation of 13.61 hectares within the Reserve 17068 and revegetation of 5.26 hectares within the Reserve 30541 counterbalance the significant residual impact of the proposed clearing by 100 per cent.

Conclusion

The Delegated Officer considers the proposed offset is consistent with the WA Environmental Offsets Policy (2011) and the WA Environmental Offsets Guidelines (2014), and that it adequately counterbalances the significant residual impacts to native vegetation that is representative of foraging habitat for Carnaby's black cockatoo and vegetation within an extensively cleared landscape. The justification for the values used in the offset calculation is provided in Appendix E.

End

Appendix A. Additional information provided by applicant

Information	Description
Flora and vegetation survey and targeted fauna habitat assessment (Natural Area, 2023)	The applicant commissioned Natural Area Consulting to undertake a biological survey of the application areas. The survey was submitted to the department on 2 February 2023 in response to a formal Request for Further Information Issued by the department's Native Vegetation Regulation. On 21 March 2023, the applicant provided an updated version of the flora and vegetation survey and targeted fauna habitat assessment (Natural Area, 2023b), to include additional information obtained during the surveys, as requested by the department. In November 2023, another version of the report was submitted including the findings from the October 2023 targeted spring flora. The findings of the flora and vegetation survey and targeted fauna habitat assessment (Natural Area, 2023) were used to inform the site characteristics summarised in Appendix B and were considered in the *Assessment of impacts on environmental values* (see Section 3.2).
Information sheet regarding a number of application areas under the clearing permit application (RWP, 2021b)	The applicant has compiled an information sheet with details regarding the scope of work, location of work, specific conditions and maps of the application areas to support the clearing permit application (RWP, 2021b)
Part response to Request for Further Information 2 June 2023 (RWP, 2024).	The applicant significantly reduced the areas proposed for clearing within the Perenjori Station Dam and the Bodallin Dam.
Offset proposal plan with revegetation plans for the Reserve 17068 and Reserve 30541 (Copeland, 2025a; Copeland, 2025b)	The applicant commissioned Dylan Copeland to prepare an offset proposal along with two separate revegetation plans to support the proposed offset. The applicant provided an offset proposal to counterbalance significant residual impacts to Carnaby's cockatoo foraging habitat, and significant remnant vegetation (Copeland, 2025a; Copeland, 2025b).
A reconnaissance level vegetation and flora survey of the Department's Koorda Water Reserve 30541 (M.E Trudgen and Associates, 2024a).	A flora survey of Reserve 30541 was undertaken to determine the general composition and condition of the vegetation. The findings of this report were used to inform the details of the revegetation plan.
A reconnaissance level vegetation and flora survey of the Elphin Water Reserve (17068) (M.E Trudgen and Associates 2024b)	Aa flora survey of Reserve 17068 was undertaken to determine the general composition and condition of the vegetation. The findings of this report were used to inform the details of the revegetation plan.

Appendix B. Site characteristics

B.1. Site characteristics

The information provided below describes the key characteristics of the areas proposed to be cleared and is based on the best information available to the department at the time of this assessment. This information was used to inform the assessment of the clearing against the Clearing Principles, contained in Appendix C.

B.1.1 Local context

Area ID	Local context details
Area 2	Area 2 comprises of two areas of native vegetation: An area of 0.82 hectares to remove debris, tidy, grade or compact to improve water flow and a 0.029-hectare area that is an access track to remove debris, weeds, saplings to improve water flow from catchment to dam. These areas are located within the intensive land use zone of Western Australia. The application area borders Gutha West Road to the south and Simpson Street to the east. Spatial data indicates the local area (10-kilometre radius from Area 2) retains approximately 11.32 per cent of the original native vegetation cover (see Appendix B.2).
Area 3	Area 3 comprises of 3.38 hectares of native vegetation clearing within an intensive land use zone of Western Australia. It is located within a larger remnant of native vegetation of approximately 79.6 hectares within Crown Reserve 53393 and borders Mullewa-Wubin Road and Fowler Street to the north-east. Spatial data indicates the local area (10-kilometre radius from Area 3) retains approximately 8.2 per cent of the original native vegetation cover (see Appendix B.2).
Area 4	Area 4 comprises of one 2.92-hectare historically cleared bitumen catchment at Buntine Dam, in the intensive land use zone of Western Australia. It is located within a larger remnant of native vegetation of approximately 2599 hectares within Crown Reserve 18555 and borders Mullewa-Wubin Road to the west and Buntine Nature Reserve to the east. Spatial data indicates the local area (10-kilometre radius from Area 4) retains approximately 10.05 per cent of the original native vegetation cover (see Appendix B.2).
Area 5	Area 5 comprises of 4.09 hectares of native vegetation clearing in the intensive land use zone of Western Australia. It is located within a 41.6-hectare remnant of native vegetation within Crown Reserve 14087 and borders Townsend Road to the west and Ballidu South East Road to the south. Spatial data indicates the local area (10-kilometre radius from Area 5) retains approximately 3.3 per cent of the original native vegetation cover.
Area 8	Area 8 comprises four areas of previously undisturbed native vegetation varying in size in the vicinity of Bodallin Dam, in the intensive land use zone of Western Australia. It is located within a 399.9-hectare remnant of native vegetation within Crown Reserve 28291 and an unnamed road reserve. Spatial data indicates the local area (10-kilometre radius from Area 8) retains approximately 32.77 per cent of the original native vegetation cover (see Appendix B.2).
Area 9	Area 9 comprises two narrow, linear areas of native vegetation totalling 0.04 hectares in the intensive land use zone of Western Australia. It is contained within a 443.1-hectare remnant of native vegetation within Crown Reserve 27521 and includes historically cleared channels to the east of Mount Cramphorne Dam. Spatial data indicates the local area (10-kilometre radius from Area 9) retains approximately 9.29 per cent of the original native vegetation cover (see Appendix B.2).
Area 11	Area 11 comprises two areas of native vegetation: one 2.7-hectare historically cleared earth catchment and a 0.04-hectare channel at Lake Magenta North Dam, in the intensive land use zone of Western Australia. It intersects a 114.3-hectare remnant of native vegetation within Crown Reserve 20274 and borders Magenta Road to the south-west. Spatial data indicates the local area (10-kilometre radius from Area 11) retains approximately 36.84 per cent of the original native vegetation cover (see Appendix B.2).
Area 13	Area 13 comprises a 0.34-hectare historically cleared channel at Kylie Railway Dam, in the intensive land use zone of Western Australia. Spatial data indicates the local area (10-kilometre radius from Area 13) retains approximately 16.16 per cent of the original native vegetation cover (see Appendix B.2).

B.1.2 Ecological linkage

Area ID	Ecological linkage details
Area 2	Area 2 do not intersect with a mapped ecological linkage. Noting that Area 2 is surrounded by vegetation that is in better condition in comparison to the application area, it is unlikely that the Area 2 is contributing significantly to an informal ecological linkage in the local area.
Area 3	Area 3 does not intersect any mapped ecological linkages. However, noting Area 3 comprises 3.38 hectares of shrubland regrowth within a larger remnant in an extensively cleared area, the vegetation with Area 3 is likely to be contributing to ecological linkage values within the greater patch of remnant vegetation and the broader landscape along Mullewa-Wubin Road and Fowler Street.
Area 4	Area 4 does not intersect any mapped ecological linkages. Noting that the Area 4 comprises three hectares of sparse, disturbed vegetation in the centre of a larger remnant of contiguous vegetation, it is unlikely that the vegetation within the Area 4 is contributing significantly to any formal or informal ecological linkages in the local area.
Area 5	Area 5 is adjacent to a mapped ecological linkage along Ballidu South East Road that was defined under the RCC's roadside conservation value mapping program, which was undertaken in the Shire of Wongan-Ballidu in 2005. The surveyed vegetation was given a conservation value of 9, described as high conservation value roadsides characterised by intact nature structure consisting of a number of layers, extent of native vegetation greater than 80 per cent, high diversity of native flora (greater than 20 species), weeds comprising less than 20 per cent of total plants, and high value as a biological corridor (RCC, 2005a). As Area 5 comprises 4.09 hectares of woodland regrowth on the edge of a larger remnant in a highly cleared and fragmented local area, the vegetation within Area 5 is likely to be contributing to ecological linkage values within the greater patch and broader landscape.
Area 8	Area 8 does not intersect any mapped ecological linkages. Noting that Area 8 comprises 0.136 hectares of vegetation on the edge of a larger remnant of contiguous vegetation, it is unlikely that the vegetation within Area 8 is contributing significantly to any formal or informal ecological linkages in the local area.
Area 9	Area 9 does not intersect any mapped ecological linkages. Noting that Area 9 comprises 0.04 hectares of disturbed, linear vegetation in the centre of a larger remnant of contiguous vegetation, it is unlikely that the vegetation within Area 9 is contributing significantly to any formal or informal ecological linkages in the local area.
Area 11	Area 11 is mapped within Strategic Zone C of the South West Macro Corridor, which represents a regional-scale continuous strip of native vegetation that extends 700 kilometres from Israelite Bay, east of Esperance and west through Albany along Western Australia's southern coastline (Wilkins, et al., 2006). The main objective of the South West Macro Corridor project was to improve the long-term future of wildlife within national parks and nature reserves within the South Coast Region of Western Australia by further developing and promoting a regional-scale Macro Corridor Network of native vegetation with inland linkages along major river systems to protected areas and uncleared bushland (Wilkins, et al., 2006). Zone C is described as potentially providing habitat for wildlife at the local scale but requires closer assessment to determine its value for a regional scale Macro Corridor Network (Wilkins, et al., 2006). Given Area 11 comprises sparsely distributed, highly disturbed vegetation in the centre of a larger remnant of contiguous vegetation, it is unlikely that the vegetation within Area 11 is contributing significantly to the functionality of the South West Macro Corridor or to any informal ecological linkages in the local area.
Area 13	Area 13 does not intersect any mapped ecological linkages. Noting that Area 13 comprises 0.34 hectares of disturbed vegetation in the centre of a larger remnant of contiguous vegetation, it is unlikely that the vegetation within Area 13 is contributing significantly to any formal or informal ecological linkages in the local area.

B.1.3 Vegetation description

The vegetation descriptions for the application areas (Areas 2, 3, 4, 5, 8, 9 and 11) described in the table below were determined through vegetation surveys (Natural Area, 2023) and vegetation of Area 13 was determined by photographs supplied by the applicant (RWP, 2021b), and reviews of aerial imagery. Representative photos are available in Appendix F.

Area ID	Vegetation Type	Description
Area 2	Acacia spp. Mixed Shrubland	Acacia spp. Mixed Shrubland over *Waitzia acuminata* var. *acuminata* and *Ptilotus gaudichaudii*
Area 3	Eucalyptus sp. Woodland	Eucalyptus sp. Woodland over mixed Acacia spp., *Waitzia acuminata* var. *acuminata*, *and Ptilotus polystachyus*
Area 4	*Acacia acuminata* Tall Open Shrubland	A tall open shrubland dominated by *Acacia acuminata* over *Waitzia acuminata* var. *acuminata* and other mixed native herbs and grasses.
Area 5	Acacia spp. Mixed Tall Shrubland	Acacia spp. mixed tall shrubland over *Waitzia axuminata* var. *acuminata*, *Amphipogon caricinus* and *Scholtzia drummondii.*
Area 8	*Allocasuarina acutivalvis* and *Melaleuca* sp. Mixed Open Shrubland	Open shrubland of *Allocasuarina acutivalvis*, *Melaleuca conothamnoides*, and *Melaleuca hamata* over mixed native shrubs.
Area 9	*Allocasuarina huegeliana* and *Leptospermum roei* Tall Open Shrubland	A tall open shrubland of *Allocasuarina huegeliana* and *Leptospermum roei* over mixed shrubs, *Lepidosperma* spp. and *Podolepis aristata.*
Area 11	Mixed Shrubland	Mixed shrubland dominated by *Verticordia* spp., *Austrostipa* spp., *Grevillea* spp. and *Synaphea* spp. over an understorey of mixed native herbs.
Area 13	*Eucalyptus* spp. low woodland	A low woodland of *Eucalyptus* species over sparse native shrubs, herbs, and grasses.

Area ID	Mapped vegetation type	Description (Shepherd et al, 2001)
Area 2	Beard association 142	Medium woodland; York gum & salmon gum
Area 3	Beard association 352	Medium woodland; York gum
Area 4	Beard association 435	Shrublands; *Acacia neurophylla*, *A. beauverdiana* & *A. resinomarginea* thicket.
Area 5	Beard association 1024	Shrublands; mallee & casuarina thicket
Area 8	Beard association 8	Medium woodland; salmon gum & gimlet.
Area 9	Beard association 128	Bare areas; rock outcrops.
Area 11	Beard association 519	Shrublands; mallee scrub, *Eucalyptus eremophila*.
Area 13	Beard association 4	Medium woodland; marri & wandoo

B.1.4 Vegetation condition

The vegetation condition for the application areas described in the table below were determined through vegetation surveys (Natural Area, 2023) (Areas 2 to 11), photographs supplied by the applicant (RWP, 2021b), and reviews of aerial imagery (Area 13).

Area	Vegetation condition (Keighery, 1994)

Area 2	Approximately 80 per cent degraded, 20 percent good
Area 3	Degraded
Area 4	Degraded
Area 5	Very good
Area 8	Good
Area 9	Ranges from good to very good
Area 11	Ranges from degraded to completely degraded
Area 13	Degraded to completely degraded

B.1.5 Conservation areas

Area ID	Nearest conservation area	Distance from application area (km)
Area 2	Pintharuka Well Nature Reserve	10.8
Area 3	West Perenjori Nature Reserve	5.6
Area 4	Buntine Nature Reserve	0.15
Area 5	Damboring Nature Reserve	9.2
Area 8	Un-named Nature Reserve	1.2
Area 9	Cairn Nature Reserve	10.7
Area 11	Un-named Nature Reserve	3.2
Area 13	Dead Mans Swamp Nature Reserve	7.1

B.1.6 Climate and landform

Area ID	Climate and landform details
Area 2	Area 2 occurs on flat topography with no rises or depressions. Area 2 has a mean annual maximum temperature of 28.3°C and a mean annual minimum temperature of 12.9°C. The mean annual rainfall and evapotranspiration rate are both approximately 400 millimetres.
Area 3	Area 3 occurs on generally flat topography with a slight depression in the easternmost portion from 290 metres Australian Height Datum (mAHD) to 280mAHD. Area 3 has a mean annual maximum temperature of 28.3°C and a mean annual minimum temperature of 12.9°C. The mean annual rainfall and evapotranspiration rate are both approximately 400 millimetres.
Area 4	Area 4 occurs on generally flat topography with a slight rise from 310 m AHD to 320 m AHD in the western portion. Area 4 has a mean annual maximum temperature of 26.4°C and a mean annual minimum temperature of 11.7°C. The mean annual rainfall and evapotranspiration rate are both approximately 400 millimetres.
Area 5	Area 5 occurs on flat topography with no rises or depressions. Area 5 has a mean annual maximum temperature of 25.8°C and a mean annual minimum temperature of 12.0°C. The mean annual rainfall and evapotranspiration rate are both approximately 400 millimetres.
Area 8	Area 8 occurs on generally flat topography with a slight rise from 390 m AHD to 400 m AHD in the north-west of the area. Area 8 has a mean annual maximum temperature of 25.9°C and a mean annual minimum temperature of 10.5°C. The mean annual rainfall and evapotranspiration rate are both approximately 400 millimetres.
Area 9	Area 9 occurs on flat topography with no rises or depressions. Area 9 has a mean annual maximum temperature of 25.4°C and a mean annual minimum temperature of 10.7°C. The mean annual rainfall and evapotranspiration rate are both approximately 400 millimetres.
Area 11	Area 11 occurs on generally flat topography with a slight rise from 300 m AHD to 310 m AHD in the north-west of the area. Area 11 has a mean annual maximum temperature of 23.6°C and a mean annual minimum temperature of 10.4°C. The mean annual rainfall and evapotranspiration rate are both approximately 400 millimetres.
Area 13	Area 13 occurs on gently undulating topography with slight rises and depressions from 260 m AHD to 270 m AHD throughout the channel lengths. Area 13 has a mean annual maximum temperature of 23.0°C and a mean annual minimum temperature of 9.8°C. The mean annual rainfall and evapotranspiration rate are both approximately 500 millimetres.

B.1.7 Soil description and land degradation risk

Area ID	Mapped soil type	Description	Proportion of area (%)	Land degradation risk
Area 2	Koolanooka System (270Ko)	Low hills and rises and slopes. Banded Iron and colluvium. Red-brown hardpan shallow loam and red earths, loams, sands and duplexes.	90	The mapped soil types within Area 2 have a low risk of land degradation resulting from water erosion, wind erosion, salinity, waterlogging, and flooding, but have a moderate to high risk of phosphorus export and subsurface acidification (DPIRD, 2022).
	Noolagabbi East System (270Ni)	Alluvial plain. Red brown hardpan shallow loam with red duplexes and earths. Some saline.	10	
Area 3	Noolagabbi 1 Subsystem (271Ng_1)	Level to very gently inclined valley flats; brown loamy duplexes and red shallow loams over hardpans	50	The mapped soil types within Area 3 have a low risk of land degradation resulting from water erosion, wind erosion, salinity, waterlogging, and flooding, but have a moderate to high risk of phosphorus export and subsurface acidification (DPIRD, 2022).
	Noolagabbi 7 Subsystem (271Ng_7)	Narrow drainage line, moderate secondary salinity; saline loamy soils, often with red-brown hardpans	45	
	Pindar 2 Subsystem (271Pi_2)	Gently undulating sandplain and gentle slopes; acid yellow deep sand and sandy earths with some loamy earths and hardpan soils	5	

Area ID	Mapped soil type	Description	Proportion of area (%)	Land degradation risk
Area 4	Ballidu 4 Subsystem (258Bd_4)	Gently undulating sandplain to gently undulating sandy rises with long gentle slopes from weathered granite. Yellow deep sands and earths, often acid, some gravels and sandy duplexes	95	The mapped soil types within Area 4 have a low risk of land degradation resulting from water erosion, wind erosion, salinity, waterlogging, flooding, and phosphorus export, but have a high risk of subsurface acidification (DPIRD, 2022).
	Ballidu 8 Subsystem (258Bd_8)	Areas of tertiary salinity; often heads of drainage lines, shallow depressions and areas of recent salt encroachment. Soils are salt affected variants of red-brown hardpan shallow loams and other soils of adjacent systems.	5	
Area 5	Ballidu 3 Subsystem (258Bd_3)	Undulating plain, crests and upper slopes from weathered granite. Mainly loamy gravel, yellow deep sand, sandy and loamy earth, Red shallow loamy duplex, minor of sandy loamy duplex.	100	The mapped soil types of Area 5 have a low risk of land degradation resulting from water erosion, salinity, waterlogging, flooding, and phosphorus export, but have a high risk of wind erosion and subsurface acidification (DPIRD, 2022).
Area 8	Tandegin 3 granite Phase (258Ta_3g)	Small areas of rock outcrop surrounded by shallow sandy skeletal soils and duplex soils (often sodic) forming from siliceous granite in irregularly undulating uplands of the eastern wheatbelt around Bruce Rock, Muntadgin and Merredin.	100	The mapped soil types of Area 8 have a low risk of land degradation resulting from water erosion, salinity, waterlogging, flooding, and phosphorus export, but have a moderate to high risk of wind erosion and subsurface acidification (DPIRD, 2022).
Area 9	Tandegin 3 rock outcrop Phase (258Ta_3r)	Rock outcrops and shallow soils supporting Acacia and Sheoak woodlands in irregularly undulating uplands of the eastern wheatbelt around Bruce Rock, Muntadgin and Merredin.	100	The mapped soil types of Area 9 have a low risk of land degradation resulting from water erosion, wind erosion, salinity, waterlogging, flooding, phosphorus export and subsurface acidification (DPIRD, 2022).
Area 11	Newdegate System (250Nw)	Undulating rises, in the South-eastern Zone of Ancient Drainage. Grey and yellow/brown sandy duplex soils, alkaline grey shallow duplex soils, shallow gravels and duplex sandy gravels. Mallee-heath.	100	The mapped soil types of Area 11 have a low risk of land degradation resulting from water erosion, wind erosion, salinity, flooding, and phosphorus export, but have a moderate to high risk of waterlogging and subsurface acidification (DPIRD, 2022).
Area 13	Dellyanine 2 Subsystem (257De_2)	Hillslopes and hillcrests with mainly grey deep sandy duplex soils and significant areas of grey shallow sandy duplex and moderately deep sandy gravels.	70	The mapped soil types within Area 13 have a low risk of land degradation resulting from water erosion, salinity, waterlogging, flooding, and phosphorus export, but have a high risk of wind erosion and subsurface acidification (DPIRD, 2022).
	Dellyanine 1 Subsystem (257De_1)	Gravelly crests and upper slopes usually bounded by breakaways with mainly deep and moderately deep sandy gravels and significant areas of shallow gravels.	30	

B.1.8 Waterbodies and hydrography

Area ID	Waterbodies	Distance from application area (km)	Wetlands	Distance from application area (km)
Area 2	Non-perennial tributary (Yarra Yarra Lakes system)	1.1	Flat (Yarra Monger Catchment)	0.4
Area 3	Non-perennial tributary (Yarra Yarra Lakes system)	0.12	Basin (Yarra Monger Catchment)	3.3
Area 4	Non-perennial tributary (Yarra Yarra Lakes system)	0.0	Inundation area (inland flat)	2.0
Area 5	Non-perennial tributary (Damboring Lake System)	2.3	Flat (Swan Avon - Mortlock catchment)	1.5
Area 8	Non-perennial tributary (Yilgarn River System)	0.0	Granite outcrop	0.1
Area 9	Manmade Earthdam (Yilgarn River system)	0.02	Granite outcrop	0.0
Area 11	Non-perennial tributary (Lake Magenta System)	0.4	Reservoir (Swan Avon – Lockhart Catchment)	0.0
Area 13	Manmade dam (Blackwood River System)	0.0	Unnamed Creek	0.11

Area ID	Hydrography details
Area 2	Area 2 is mapped within the Gascoyne Groundwater Area, proclaimed under the RIWI Act. Area 2 does not transect any surface water areas proclaimed under the RIWI Act or any other proclaimed water resources.
Area 3	Area 3 is mapped within the Gascoyne Groundwater Area, proclaimed under the RIWI Act. Area 3 does not transect any surface water areas proclaimed under the RIWI Act or any other proclaimed water resources
Area 4	Area 4 does not transect any surface or groundwater areas proclaimed under the RIWI Act or any other proclaimed water resources.
Area 5	Area 5 is mapped within the Avon River System, a surface water area proclaimed under the RIWI Act. Area 3 does not transect any groundwater areas proclaimed under the RIWI Act or any other proclaimed water resources
Area 8	Area 8 is mapped within the Westonia Groundwater Area, proclaimed under the RIWI Act. Area 8 does not transect any surface water areas proclaimed under the RIWI Act or any other proclaimed water resources.
Area 9	Area 9 is mapped within the Westonia Groundwater Area, proclaimed under the RIWI Act. Area 9 does not transect any surface water areas proclaimed under the RIWI Act or any other proclaimed water resources.
Area 11	Area 11 does not transect any surface or groundwater areas proclaimed under the RIWI Act or any other proclaimed water resources.
Area 13	Area 13 does not transect any surface or groundwater areas proclaimed under the RIWI Act or any other proclaimed water resources.

B.1.9 Flora

Area ID	Flora details
Area 2	The desktop assessment identified that a total of 12 conservation significant flora species have been recorded within a 10-kilometre radius of Area 2, comprising two P1 flora, one P2 flora, seven P3 flora, one P4 flora, and one threatened flora (Western Australian Herbarium, 1998-). One of these records occurs within Area 2, being an occurrence of *Enekbatus planifolius* (P1).
Area 3	The desktop assessment identified that a total of 29 conservation significant flora species have been recorded within a 10-kilometre radius of Area 3, comprising 11 P1 flora, one P2 flora, 11 P3 flora, one P4 flora, and five threatened flora (Western Australian Herbarium, 1998-). None of these existing records occur within the application area, with the closest record being an occurrence of *Grevillea granulosa* (P3) approximately 250 metres from Area 3.
Area 4	The desktop assessment identified that a total of 31 conservation significant flora species have been recorded within a 10-kilometre radius of Area 4, comprising four Priority 1 (P1) flora, four Priority 2 (P2) flora, 15 Priority 3 (P3) flora, two Priority 4 (P4) flora, and six threatened flora (Western Australian Herbarium, 1998-). None of these existing records occur within the application area, with the closest record being an occurrence of *Grevillea nana subsp. abbreviata* (P2) approximately 230 metres from Area 4. A detailed flora and vegetation survey was undertaken within Area 4 during the 2022 spring season (Natural Area, 2023). Three individuals of *Acacia scalena* (P3) were recorded during the survey, located within the *Acacia acuminata* Tall Open Shrubland in close proximity to the southern boundary of the catchment area (Natural Area, 2023). One individual of *A. scalena* was located within the proposed clearing area at Area 4 and two individuals were outside of the clearing boundary (Natural Area, 2023). The survey timing was within the recorded flowering period for the majority of conservation significant flora species known from the local area. The remaining conservation significant flora are perennial shrub, sedge, and herb species and identification of these species would have been possible outside of their flowering periods. Therefore, the flora and vegetation survey is considered adequate to determine the presence or absence of conservation significant flora within Area 4 and it is unlikely that any other threatened or priority flora species occur within this area.
Area 5	The desktop assessment identified that a total of 21 conservation significant flora species have been recorded within a 10-kilometre radius of Area 5, comprising four P1 flora, five P2 flora, eight P3 flora, one P4 flora, and three threatened flora (Western Australian Herbarium, 1998-). None of these existing records occur within the application area, with the closest record being an occurrence of *Grevillea dryandroides subsp. dryandroides* (T) approximately 350 metres from Area 5.
Area 8	The desktop assessment identified that a total of five conservation significant flora species have been recorded within a 10-kilometre radius of Area 8, all being P3 flora species (Western Australian Herbarium, 1998-). None of these existing records occur within the application area, with the closest record being an occurrence of *Acacia filifolia* (P3) approximately 2.7 kilometres from Area 8. A basic flora and vegetation survey was undertaken within Area 8 during the 2022 spring season, which did not identify any threatened or priority flora species within the application area (Natural Area, 2023). The conservation significant flora species known from the local area may not have been flowering at the time of the surveys but are perennial shrub, sedge, and herb species for which identification would have been possible outside of their flowering periods. With consideration for the site characteristics set out above, relevant datasets (see Appendix G.1), the habitat preferences and conservation statuses of these species, the distribution and extent of existing records, and the results of the flora and vegetation survey (Natural Area, 2023), Area 8 is unlikely to provide significant habitat for any threatened and priority flora species and impacts to conservation significant flora species did not require further consideration.

Area ID	Flora details
Area 9	The desktop assessment identified that a total of three conservation significant flora species have been recorded within a 10-kilometre radius of Area 9, comprising two P2 flora species and one threatened flora species (Western Australian Herbarium, 1998-). None of these existing records occur within the application area, with the closest record being an occurrence of *Lepidosperma sp. Billyacatting (S.D. Hopper 8630)* (P2) approximately 20 metres from Area 9. A detailed flora and vegetation survey was undertaken within Area 9 during the 2022 spring season, which did not identify any threatened or priority flora species within the application area (Natural Area, 2023). The conservation significant flora species known from the local area are perennial shrub, sedge, and herb species and identification of these species would have been possible within and outside of their flowering periods. Therefore, the flora and vegetation survey is considered adequate to determine the presence or absence of conservation significant flora within Area 9 and it is unlikely that any other threatened or priority flora species occur within this area.
Area 11	The desktop assessment identified that a total of 32 conservation significant flora species have been recorded within a 10-kilometre radius of Area 11, comprising two P1 flora species, five P2 flora species, 18 P3 flora species, three P4 flora species, and four threatened flora species (Western Australian Herbarium, 1998-). None of these existing records occur within the application area, with the closest record being an occurrence of *Banksia xylothemelia* (P3) approximately 200 metres from Area 11. A detailed flora and vegetation survey was undertaken within Area 11 during the 2022 spring season (Natural Area, 2023). Two individuals of *Banksia xylothemelia* (P3) were recorded during the survey, located in the north-western section of the catchment area (Natural Area, 2023). Both individuals of *B. xylothemelia* are located within the proposed clearing area at Area 11 (Natural Area, 2023). The conservation significant flora species known from the local area would have been flowering at the time of the flora and vegetation survey or are perennial shrub, sedge, and herb species for which identification would have been possible outside of their flowering periods. Therefore, the flora and vegetation survey is considered adequate to determine the presence or absence of conservation significant flora within Area 11 and it is unlikely that any other threatened or priority flora species occur within this area.
Area 13	The desktop assessment identified that a total of 11 conservation significant flora species have been recorded within a 10-kilometre radius of Area 13, comprising two P1 flora species, one P2 flora species, five P3 flora species, and three threatened flora species (Western Australian Herbarium, 1998-). None of these existing records occur within the application area, with the closest record being an occurrence of *Thomasia julietiae* (P1) approximately 5.3 kilometres from Area 13. Photographs and aerial imagery of Area 13 indicate that it comprises Degraded (Keighery, 1994) condition channels with scattered *Eucalyptus* species and *Allocasuarina huegeliana* over very limited native understorey or mid-storey species. With consideration for the site characteristics set out above, relevant datasets (see Appendix G.1), the habitat preferences and conservation statuses of these species, the distribution and extent of existing records, and the severely degraded (Keighery, 1994) nature of the vegetation, Area 13 is unlikely to provide significant habitat for any threatened or priority flora species and impacts to conservation significant flora species were determined not to require further consideration or survey.

B.1.10 Ecological communities

Area ID	Ecological community details
Area 2	The desktop assessment identified that the closest mapped significant ecological community is an occurrence of the Plant assemblages of the Moonagin System as originally described in Beard (1976) state-listed TEC, approximately 4.8 kilometres north of Area 2.
Area 3	Area 3 intersects a mapped occurrence of the Eucalypt woodlands of the Western Australian Wheatbelt, state-listed PEC and federally listed TEC.

Area ID	Ecological community details
	Through the information that was available from the biological survey, it was determined that the vegetation at Area 3 does not meet all the necessary criteria and key diagnostic characteristics of the Wheatbelt TEC.
Area 4	Area 4 occurs within 20 metres of a mapped occurrence of the Eucalypt woodlands of the Western Australian Wheatbelt, state-listed PEC and federally listed TEC. The flora and vegetation survey of Area 4 identified that, while the *Eucalyptus* spp. Low Open Woodland vegetation type has affinities to the Wheatbelt Woodlands TEC with respect to location and composition, the surveyed area did not exhibit the canopy structure associated with the community (Natural Area, 2023). The flora and vegetation survey noted that the crown cover within the *Eucalyptus* spp. Low Open Woodland vegetation was between two and five per cent (Natural Area, 2023), where the key diagnostic characteristics state that there is a minimum of 10 per cent crown cover for the tree canopy within the Wheatbelt Woodlands TEC (DotE, 2015). The flora and vegetation survey also noted that the surveyed area at Area 4 is primarily in a degraded (Keighery, 1994) condition and is unlikely to meet the minimum patch size and condition thresholds for the Wheatbelt Woodlands TEC (DotE, 2015).
Area 5	The desktop assessment identified that the closest mapped significant ecological community is an occurrence of the Wheatbelt Woodlands state-listed PEC and federally listed TEC, approximately 4.5 kilometres north of Area 5.
Area 8	Area 8 intersects a mapped occurrence of the Eucalypt woodlands of the Western Australian Wheatbelt, state-listed PEC and federally listed TEC. The flora and vegetation survey identified that Area 8 consists of *Allocasuarina acutivalvis* and *Melaleuca* sp. Mixed Open Shrubland (Natural Area, 2023). The flora and vegetation survey determined that Area 8 and the adjacent broader remnant lacked dominant or co-dominant key Eucalypt species (DotE, 2015) and therefore, were not likely to be representative of a patch of the Wheatbelt Woodlands TEC (Natural Area, 2023).
Area 9	The desktop assessment identified that the closest mapped significant ecological community is an occurrence of the Granite outcrop pools with endemic aquatic fauna (Granite pool invertebrate assemblages) PEC, approximately 12.2 kilometres east of Area 9. The closest mapped TEC is an occurrence of the Plant assemblages of the Moonagin System as originally described in Beard (1976) state-listed TEC, approximately 77.4 kilometres east of Area 9. The flora and vegetation survey identified that Area 9 consists of *Allocasuarina huegeliana* and *Leptospermum roei* Tall Open Shrubland, which is not likely to be representative of any state or federally listed ecological community (Natural Area, 2023). With consideration for the site characteristics set out above, relevant datasets (see Appendix G.1), and the results of the flora and vegetation survey (Natural Area, 2023), impacts to TECs or PECs are unlikely to result from the proposed clearing within Area 9 and did not require further consideration.
Area 11	The desktop assessment identified that the closest mapped significant ecological community is an occurrence of the Wheatbelt Woodlands state-listed PEC and federally listed TEC, approximately 1.3 kilometres south of Area 11. The flora and vegetation survey identified that Area 11 consists of Mixed Shrubland (Natural Area, 2023). The flora and vegetation survey determined that Area 11 and the adjacent broader remnant did not contain any Eucalyptus species (DotE, 2015) and therefore, were not likely to be representative of a patch of the Wheatbelt Woodlands TEC (Natural Area, 2023).
Area 13	The desktop assessment identified that the closest mapped significant ecological community is an occurrence of the Wheatbelt Woodlands state-listed PEC and federally listed TEC, approximately 1.7 kilometres west of Area 13.

B.1.11 Fauna

Area ID	Fauna details
Area 2	The desktop assessment identified that a total of three conservation significant fauna species have been recorded within the local area, including two threatened fauna species and one priority fauna species (DBCA, 2007-). None of these existing records occur within the application area, with the closest record being an occurrence of *Teyl* sp. (Minnivale trapdoor spider), approximately 150 metres from Area 2.
Area 3	The desktop assessment identified that a total of six conservation significant fauna species have been recorded within the local area, including four threatened fauna species, one priority fauna species, and one other specially protected fauna species (DBCA, 2007-). None of these existing records occur within the application area, with the closest record being an occurrence of Carnaby's cockatoo, approximately 180 metres from Area 3.
Area 4	The desktop assessment identified that a total of eight conservation significant fauna species have been recorded within the local area, including four threatened fauna species, three priority fauna species, and one other specially protected fauna species (DBCA, 2007-). None of these existing records occur within the application area, with the closest record being an occurrence of *Egernia stokesii badia* (Western spiny-tailed skink), approximately 260 metres from Area 4.
Area 5	The desktop assessment identified that a total of two threatened fauna species have been recorded within the local area (DBCA, 2007-). None of these existing records occur within the application area, with the closest record being an occurrence of *Egernia stokesii badia* (Western spiny-tailed skink), approximately 600 metres from Area 5.
Area 8	The desktop assessment identified that a total of three conservation significant fauna species have been recorded within the local area, including one threatened fauna species, one priority fauna species, and one other specially protected fauna species (DBCA, 2007-). None of these existing records occur within the application area, with the closest record being an occurrence of *Leipoa ocellata* (malleefowl) approximately 1.2 kilometres from Area 8.
Area 9	The desktop assessment identified that a total of two conservation significant fauna species have been recorded within the local area, both being threatened fauna species (DBCA, 2007-). None of these existing records occur within the application area, with the closest record being a historical record of *Macrotis lagotis* (bilby) approximately 1.1 kilometres from Area 9.
Area 11	The desktop assessment identified that a total of 10 conservation significant fauna species have been recorded within the local area, including six threatened fauna species and four priority fauna species (DBCA, 2007-). None of these existing records occur within the application area, with the closest record being a historical record of *Thinornis rubricollis* (hooded plover) approximately 3.2 kilometres from Area 11.
Area 13	The desktop assessment identified that a total of 6 conservation significant fauna species have been recorded within the local area, including two threatened fauna species, three priority fauna species, and one other specially protected fauna species (DBCA, 2007-). None of these existing records occur within the application area, with the closest record being a record of *Calyptorhynchus* sp. 'white-tailed black cockatoo' approximately 4.8 kilometres from Area 13. This record is assumed to be either Carnaby's cockatoo or Baudin's cockatoo but has not been identified to species level.

B.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
Jarrah Forest	4,506,660.25	2,399,838.15	53.25	1,673,614.25	37.14
Mallee	7,395,894.36	4,180,937.68	56.53	1,289,384.08	17.43
Beard vegetation association*					
4	1,054,279.89	284,102.41	26.95	67764.67	6.43
8	694,638.14	346,425.77	49.87	47035.60	6.77
128	327,982.50	288,766.05	88.04	69053.50	21.05
142	787,948.47	208,347.17	26.44	8177.57	1.04
352	724,268.73	142,012.22	19.61	12672.52	1.75
435	994,575.28	762,428.26	76.66	213958.81	21.51
519	2,333,413.96	1,440,062.48	61.71	244095.67	10.46
1024	742,950.54	87,192.44	11.74	8762.67	1.18
Local area					
Area 2	25,094.63	2,839.98	11.32	-	-
Area 3	36,495.04	2,991.28	8.20	-	-
Area 4	96,408.18	9,692.43	10.05	-	-
Area 5	31,767.99	1,056.92	3.33	-	-
Area 8	31,761.53	10,408.34	32.77	-	-
Area 9	32,049.97	2,977.92	9.29	-	-
Area 11	21,878.35	8,059.22	36.84	-	-
Area 13	23,879.74	3,860.05	16.16	-	-

*Government of Western Australia (2019)

B.3. Flora analysis table

With consideration for the site characteristics set out above, relevant datasets (see Appendix G.1), the distribution and extent of existing records, and flora and vegetation surveys (Natural Area, 2023), The following flora species were considered likely to occur within the application area. The surveys undertaken were consistent with the EPA's *Technical Guidance: Flora and Vegetation Surveys for Environmental Impact Assessment* (December 2016) and were deemed adequate to determine the presence of these species. All listed flora were assessed and documented in the flora report prepared by Natural Area (2023).

Species name	Conservation status (WA)	Area ID	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)	Did survey identify? [Y, N, N/A]
Acacia scalena	P3	Area 4	Y	Y	Y	0.65	25	Y
Banksia xylothemelia	P3	Area 11	Y	Y	Y	0.2	5	Y
Cheyniana rhodella	P2	Area 2	Y	Y	Y	0.9	2	N
Dasymalla axillaris	T	Area 3	Y	Y	Y	0.5	7	N
		Area 4	Y	Y	Y	0.4	23	N
Enekbatus planifolius	P1	Area 2	Y	Y	Y	0	7	Y
Eremophila rostrata subsp. *trifida*	T	Area 3	Y	Y	Y	6.4	1	N
Eucalyptus synandra	T	Area 2	Y	Y	Y	5.4	4	N
Grevillea asparagoides	P3	Area 3	N	N	Y	0.43	7	Y
Grevillea granulosa	P3	Area 3	N	N	Y	0.43	3	Y
Grevillea involucrata	T	Area 11	Y	Y	Y	5.3	1	N
Hibbertia carinata	P1	Area 11	Y	Y	Y	0.5	1	N
Lepidosperma sp. Billyacatting (S.D. Hopper 8630)	P2	Area 9	Y	Y	Y	0.02	2	N
Microcorys tenuifolia	P3	Area 5	Y	Y	Y	0.054	-	Y
Stylidium torticarpum	P3	Area 3	N	N	Y	0.43	-	Y

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

B.4. Fauna analysis table

With consideration for the site characteristics set out above, relevant datasets (see Appendix G.1), the distribution and extent of existing records, and targeted fauna habitat assessment (Natural Area, 2023), impacts to the following conservation significant fauna required further consideration.

Species name	Conservation status (WA)	Area ID	Suitable habitat features? [Y/N]	Suitable vegetation 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]
Aspidites ramsayi (southwest subpop.) (Woma)	P1	Area 4	Y	Y	0.3	3	N/A
Calyptorhynchus banksii naso (Forest red-tailed black cockatoo)	VU	Area 13	Y	Y	6.9	2	N/A
Egernia stokesii badia (Western spiny-tailed skink)	VU	Area 4	Y	Y	0.2	12	N/A
Falco peregrinus (Peregrine falcon)	OS	Area 4	Y	Y	6.0	3	N/A
		Area 8	Y	Y	7.3	1	N/A
Idiosoma intermedium (Coolgardie shield-backed trapdoor spider)	P3	Area 8	Y	Y	5.3	1	N/A
Idiosoma kopejtkaorum (Lake Goorly shield-backed trapdoor spider)	EN	Area 4	Y	Y	5.8	6	N/A
Leipoa ocellata (Malleefowl)	VU	Area 4	Y	Y	0.3	34	N/A
		Area 8	Y	Y	0.1	22	N/A
Platycercus icterotis xanthogenys (Western rosella (inland))	P4	Area 13	Y	Y	8.8	3	N/A
Zanda baudinii (previously *Calyptorhynchus baudinii*) (Baudin's cockatoo)	EN	Area 13	Y	Y	18.8	0	N/A
Zanda latirostris (previously *Calyptorhynchus latirostris*) (Carnaby's cockatoo)	EN	Area 4	Y	Y	9.7	0	Y
		Area 9	Y	Y	42	0	N/A
		Area 13	Y	Y	10.2	0	N/A

T: threatened, CR: critically endangered, EN: endangered, VU: vulnerable, P: priority, CD: Conservation dependent fauna, OS: Other specially protected fauna species

Appendix C. Assessment against the clearing principles

Assessment against the clearing principles	Variance level	Is further consideration required?
Environmental value: biological values		
Principle (a): *"Native vegetation should not be cleared if it comprises a high level of biodiversity."* Assessment: The areas proposed to be cleared predominantly consist of historically cleared dam catchment areas and supply channels in Good (Keighery, 1994) to completely degraded (Keighery, 1994) condition and are not likely to be floristically diverse. However, the area contains habitat for priority flora and significant foraging habitat for black cockatoos.	At variance	Yes *Refer to Sections 3.2.1, 3.2.2, 3.2.3, and 3.2.4 above.*
Principle (b): *"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."* Assessment: Several of the areas proposed to be cleared contain significant foraging habitat for Carnaby's cockatoo.	At variance	Yes *Refer to Section 3.2.2, above.*
Principle (c): *"Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora."* Assessment: Based on the findings of flora and vegetation surveys, the areas proposed to be cleared are unlikely to contain significant habitat for flora species listed under the BC Act. No threatened flora species were identified within the survey areas.	Not likely to be at variance	No
Principle (d): *"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."* Assessment Areas 2 and 3 are likely to contain vegetation that is part of patches of the Eucalypt Woodlands TEC/PEC. However, given its extent and context, the proposed clearing is unlikely to result in a significant residual impact to the TEC/PEC subject to conditions on the permit to mitigate impacts.	May be at variance	Yes *Refer to Section 3.2.3, above.*
Environmental value: significant remnant vegetation and conservation areas		
Principle (e): *"Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared."* Assessment: The extent of the Avon Wheatbelt IBRA bioregion and native vegetation in the local areas of some of the application areas are inconsistent with the national objectives and targets for biodiversity conservation in Australia. Some of the vegetation proposed to be cleared may be contributing to ecological linkage values in the local area.	At variance	Yes *Refer to Section 3.2.4, above.*
Principle (h): *"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."* Assessment: The majority of the proposed clearing areas occur greater than one kilometre from the nearest conservation area, separated by historically cleared land and road infrastructure, and are unlikely to impact the environmental values of these areas based on this distance and separation. One application area (Area 4) occurs adjacent to Buntine Nature Reserve and has the potential to impact on the environmental values of this area through the spread of weeds. However, given the extent of clearing adjacent to the	Not likely to be at variance	No

Assessment against the clearing principles	Variance level	Is further consideration required?
Nature Reserve is limited to a 0.02-hectare linear channel, a weed and dieback condition is considered suitable to mitigate this risk.		
Environmental value: land and water resources		
Principle (f): *"Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland."* Assessment: Manmade drainage runs through Area 4 and Area 8. Area 11 is adjacent to a manmade dam. Channel areas associated with Area 8 and Area 9 are close to and intersect mapped occurrences of granite outcrop wetlands but do not intersect the main outcrop area. No other areas have watercourses or wetland mapped within the application area. Noting the purpose of the clearing, the clearing is expected to result in impacts to surface water hydrology in these engineered or partly engineered watercourses and wetlands, ultimately resulting in increased water availability for use by the public. However, noting its extent and proximity, the proposed clearing is unlikely to significantly impact the values of any natural wetlands, watercourses. or riparian vegetation.	At variance	No.
Principle (g): *"Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation."* Assessment: The mapped soils in several of the application areas have a moderate to high susceptibility to phosphorus export (Areas 2 and 3), wind erosion (Areas 5, 8 and 13) and waterlogging (Area 11). However, given the areas proposed to be cleared predominantly consist of historically cleared dam catchment areas and supply channels in good to completely degraded (Keighery, 1994) condition and the given larger trees will be retained within the application areas, the proposed clearing is not considered likely to have an appreciable impact on land degradation from wind erosion, , phosphorus export or waterlogging. The department also notes that, with the exception of Area 8, the intended post-clearing land use for the proposed areas is to function as water drainage and catchment areas. As such, any potential water erosion resulting from vegetation clearing is expected to be contained within these designated areas and off-site sediment transport will be prevented. Regarding Area 8, the department considers that the implementation of appropriate development methodologies such as dust control, drainage control and other standard road construction methodologies implemented will ameliorate any potential land degradation in the form of wind and water erosion.	Not likely to be at variance	No
Principle (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."* Assessment: Given that the clearing is being undertaken to facilitate water flow and storage and the proximity of the application areas to watercourses and wetlands, the proposed clearing may impact surface water quality through erosion and subsequent sedimentation and water quality changes into receiving engineered or partly engineered watercourses and waterbodies. However, as the purpose of the clearing is to contain water within these systems, these impacts will be limited to these systems, and are expected to be minimal noting the nature and extent of the proposed clearing.	May be at variance	No

Assessment against the clearing principles	Variance level	Is further consideration required?
Noting its extent and that the proposed clearing is unlikely to intercept the ground water level, it is unlikely that the clearing will impact ground water quality.		
Principle (j): *"Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding."* Assessment: 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. It is also acknowledged that the proposed end land use is to hold surface water in the catchment areas and supply channels. Therefore, it is expected that the catchment layout will ensure no flooding or waterlogging beyond the catchment area and supply channel boundaries occurs.	Not likely to be at variance	No

Appendix D. 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 E. Offset calculator value justification

Revegetation at Reserve 17068 (Wongan Hill site) to offset impacts to black cockatoos (EN) foraging habitat

Field Name	Description	Justification for value used
Area of impact (habitat/community) or Quantum of impact (features/individuals)	The area of habitat/community impacted, or number of features/individuals impacted	3.75 ha - three of the application areas contain suitable foraging habitat for Carnaby's cockatoo (Areas 2, 3, and 13). The total extent of suitable foraging habitat for Carnaby's cockatoo within the application areas identified in the black cockatoo habitat assessments is 3.75 ha.
Quality of impacted area (habitat/community)	The quality score for area of habitat/community being impacted - a measure of how well a particular site supports a particular threatened species or ecological community and contributes to its ongoing viability	6 – Based on the information available from the black cockatoo habitat assessments of the application areas (Natural Area, 2023), the application areas providing foraging habitat for Carnaby's cockatoo contain a combination of Eucalyptus woodland and Allocasuarina shrubland, ranging from degraded (Keighery, 1994) to good (Keighery, 1994) condition. No evidence of use by Carnaby's cockatoo was observed during the black cockatoo habitat assessments. There are no breeding or roosting records within 12 kilometres of Areas 2, 3, or 13. However, Areas 2, 3 and 13 all contain habitat trees which will be avoided from clearing and may provide future breeding and roosting habitat in the local area. The application is also located within an extensively cleared part of the species' range and available foraging habitat in the local area is limited and is likely to provide an ecological linkage for Carnaby's cockatoo moving through an extensively cleared landscape. Area 13 has not been surveyed - values have been assumed.
Time over which loss is averted (habitat/community)	This describes the timeframe over which changes in the level of risk to the proposed offset site can be considered and quantified	20 – the vesting of the reserve will be changed to conservation to be protected in perpetuity. 20 years is the maximum value associated with this field.
Time until ecological benefit (habitat/community) or Time horizon (features/individuals)	This describes the estimated time (in years) that it will take for the main benefit of the quality (habitat/community) or value (features/individuals) improvement of the proposed offset to be realised	17 – time taken for trees to provide foraging material and time taken for revegetation to commence.
Start area (habitat/community) or Start value (features/individuals)	The area of habitat/community or number of features/individuals proposed to offset the impacts	13.61 ha - The applicant proposes to undertake the rehabilitation of 13.61 hectares of native vegetation. This would counterbalance the SRI beyond the required 100 per cent.
Start quality (habitat/community)	The quality score for the area of habitat/community proposed as an offset - a measure of how well a particular site supports a particular threatened species or ecological community and contributes to its ongoing viability	1 – The proposed rehabilitation site is completely degraded (Keighery, 1994) of native vegetation
Future quality without offset (habitat/community) or Future value without offset (features/individuals)	The predicted future quality score (habitat/community) or value (features/individuals) of the proposed offset site without the offset	1 – a change in condition of the vegetation is not expected.
Future quality with offset (habitat/community) or Future value with offset (features/individuals)	The predicted future quality score (habitat/community) or value (features/individuals) of the proposed offset site with the offset	5 – revegetation/rehabilitation will be undertaken in accordance with a revegetation plan prepared in accordance with the Department's Guide to preparing revegetation plans for clearing permits (2018), it is expected that the rehabilitation offset could increase the quality of the native vegetation that provides significant foraging habitat for Carnaby's cockatoo to a Good (Keighery, 1994) condition.
Risk of loss (%) without offset (habitat/community)	This describes the chance that the habitat/community on the proposed offset site will be completely lost (i.e. no longer hold any value for the protected matter of concern) over the foreseeable future without an offset	10% - Given the site (Reserve 17068) is currently zoned for public purposes, there is a moderate to low risk that the offset site would be developed in future without the implementation of the offset.
Risk of loss (%) with offset (habitat/community)	This describes the chance that the habitat/community on the proposed offset site will be completely lost (i.e. no longer hold any value for the protected matter of concern) over the foreseeable future with an offset	5% - vesting of the Department's water reserve will be changed to conservation, which would result in increased security and reduce the risk of loss.

Confidence in result (%)	The capacity of measures to mitigate risk of loss of the proposed offset site	80% - There is a moderate level of confidence that the offset will achieve the predicted result. rehabilitation will be undertaken in accordance with a revegetation plan prepared following the department's Guide to preparing revegetation plans for clearing permits (2018).
% of impact offset	% of the significant residual impact that would be offset by the proposed offset (note: the offset calculations combined should equate to 100% for each residual impact)	157 % - Obtained through the input of variables explained above.

Revegetation at Reserve 17068 (Wongan Hill site) to offset for impacting on native vegetation within an extensively cleared landscape.

Field Name	Description	Justification for value used
Area of impact (habitat/community) or Quantum of impact (features/individuals)	The area of habitat/community impacted, or number of features/individuals impacted	11.73 ha - The proposed clearing will impact on 11.73 ha of native vegetation that is significant as a remnant within areas that has been extensively cleared.
Quality of impacted area (habitat/community)	The quality score for area of habitat/community being impacted - a measure of how well a particular site supports a particular threatened species or ecological community and contributes to its ongoing viability	5 – high/low quality foraging trees across entire application area. Baudin's and FRTBC were observed during the survey. The application area is within the distribution zone of all three black cockatoo species. 2 roost sites within 12 km radius of the application area and 1 breeding site (natural, confirmed) mapped within 20 km buffer of the application area.
Time over which loss is averted (habitat/community)	This describes the timeframe over which changes in the level of risk to the proposed offset site can be considered and quantified	20 - the vesting of the reserve will be changed to conservation to be protected in perpetuity. 20 years is the maximum value associated with this field.
Time until ecological benefit (habitat/community) or Time horizon (features/individuals)	This describes the estimated time (in years) that it will take for the main benefit of the quality (habitat/community) or value (features/individuals) improvement of the proposed offset to be realised	12 – Time required for revegetation to reach a condition of good (Keighery, 1994).
Start area (habitat/community) or Start value (features/individuals)	The area of habitat/community or number of features/individuals proposed to offset the impacts	13.61 ha - The applicant proposes to undertake the revegetation/rehabilitation of 13.61 ha of native vegetation within the Wongan Hill reserve. This will counterbalance the Significant Residual Impact by 72.7 per cent.
Start quality (habitat/community)	The quality score for the area of habitat/community proposed as an offset - a measure of how well a particular site supports a particular threatened species or ecological community and contributes to its ongoing viability	1 – The proposed rehabilitation site is completely degraded (Keighery, 1994) of native vegetation
Future quality without offset (habitat/community) or Future value without offset (features/individuals)	The predicted future quality score (habitat/community) or value (features/individuals) of the proposed offset site without the offset	1 – a change in condition of the vegetation is not expected.
Future quality with offset (habitat/community) or Future value with offset (features/individuals)	The predicted future quality score (habitat/community) or value (features/individuals) of the proposed offset site with the offset	5 - rehabilitation will be undertaken in accordance with a revegetation plan prepared following the Department's Guide to preparing revegetation plans for clearing permits (2018), it is expected that the rehabilitation offset could increase the quality of the native vegetation from a completely degraded condition (Keighery, 1994) to a good (Keighery, 1994) condition.
Risk of loss (%) without offset (habitat/community)	This describes the chance that the habitat/community on the proposed offset site will be completely lost (i.e. no longer hold any value for the protected matter of concern) over the foreseeable future without an offset	10% - Given the site (Reserve 17068) is currently zoned for public purposes, there is a moderate to low risk that the offset site would be developed in future without the implementation of the offset.
Risk of loss (%) with offset (habitat/community)	This describes the chance that the habitat/community on the proposed offset site will be completely lost (i.e. no longer hold any value for the protected matter of concern) over the foreseeable future with an offset	5% - vesting of the Department's water reserve will be changed to conservation, which would result in increased security and reduce the risk of loss.
Confidence in result (%)	The capacity of measures to mitigate risk of loss of the proposed offset site	80% - There is a moderate level of confidence that the offset will achieve the predicted result. rehabilitation will be undertaken in accordance with a revegetation plan prepared following the department's Guide to preparing revegetation plans for clearing permits (2018).

% of impact offset	% of the significant residual impact that would be offset by the proposed offset (note: the offset calculations combined should equate to 100% for each residual impact)	72.7% - Obtained through the input of variables explained above.

Revegetation at Koorda site (Reserve 30541) to offset remaining impact on clearing native vegetation within an extensively cleared landscape.

Field Name	Description	Justification for value used
Area of impact (habitat/community) or Quantum of impact (features/individuals)	The area of habitat/community impacted, or number of features/individuals impacted	11.73 ha - The proposed clearing will impact on 11.73 ha of native vegetation that is significant as a remnant within areas that has been extensively cleared.
Quality of impacted area (habitat/community)	The quality score for area of habitat/community being impacted - a measure of how well a particular site supports a particular threatened species or ecological community and contributes to its ongoing viability	5 – high/low quality foraging trees across entire application area. Baudin's and FRTBC were observed during the survey. The application area is within the distribution zone of all three black cockatoo species. 2 roost sites within 12 km radius of the application area and 1 breeding site (natural, confirmed) mapped within 20 km buffer of the application area.
Time over which loss is averted (habitat/community)	This describes the timeframe over which changes in the level of risk to the proposed offset site can be considered and quantified	20 - the vesting of the reserve will be changed to conservation to be protected in perpetuity. 20 years is the maximum value associated with this field.
Time until ecological benefit (habitat/community) or Time horizon (features/individuals)	This describes the estimated time (in years) that it will take for the main benefit of the quality (habitat/community) or value (features/individuals) improvement of the proposed offset to be realised	12 – Time required for revegetation to reach a condition of good (Keighery, 1994).
Start area (habitat/community) or Start value (features/individuals)	The area of habitat/community or number of features/individuals proposed to offset the impacts	5.26 ha – To offset the remaining significant residual impact of clearing, 5.26 ha is required to offset 100% of the impact. Applicant propose to undertake revegetation/rehabilitation within 5.26 ha of area.
Start quality (habitat/community)	The quality score for the area of habitat/community proposed as an offset - a measure of how well a particular site supports a particular threatened species or ecological community and contributes to its ongoing viability	1 – The proposed rehabilitation site is currently completely degraded (Keighery, 1994) of native vegetation.
Future quality without offset (habitat/community) or Future value without offset (features/individuals)	The predicted future quality score (habitat/community) or value (features/individuals) of the proposed offset site without the offset	1 – a change in condition of the vegetation is not expected.
Future quality with offset (habitat/community) or Future value with offset (features/individuals)	The predicted future quality score (habitat/community) or value (features/individuals) of the proposed offset site with the offset	5 - rehabilitation will be undertaken in accordance with a revegetation plan prepared following the Department's Guide to preparing revegetation plans for clearing permits (2018), it is expected that the rehabilitation offset could increase the quality of the native vegetation from a completely degraded condition (Keighery, 1994) to a good (Keighery, 1994) condition and be maintained this quality in perpetuity.
Risk of loss (%) without offset (habitat/community)	This describes the chance that the habitat/community on the proposed offset site will be completely lost (i.e. no longer hold any value for the protected matter of concern) over the foreseeable future without an offset	5% - Given the site is already zoned as 'conservation' there is a reasonably low risk that the offset site would be developed in future.
Risk of loss (%) with offset (habitat/community)	This describes the chance that the habitat/community on the proposed offset site will be completely lost (i.e. no longer hold any value for the protected matter of concern) over the foreseeable future with an offset	5% - Given the site is already zoned as 'conservation' there is a reasonably low risk that the offset site would be developed in future. NOTE: The proposed revegetation will provide an additional benefit in this scenario.
Confidence in result (%)	The capacity of measures to mitigate risk of loss of the proposed offset site	80% - There is a moderate level of confidence that the offset will achieve the predicted result. rehabilitation will be undertaken in accordance with a revegetation plan prepared following the department's Guide to preparing revegetation plans for clearing permits (2018).
% of impact offset	% of the significant residual impact that would be offset by the proposed offset (note: the offset calculations combined should equate to 100% for each residual impact)	27.3% - Obtained through the input of variables explained above. NOTE: This offset in combination with the revegetation/rehabilitation at Reserve 17068 will

		counterbalance the significant residual impact by 100%.

Appendix F. Biological survey information excerpts and photographs of the vegetation (Natural Area, 2023; RWP, 2021b)

Flora and Vegetation Survey and Targeted Fauna Habitat Assessment (Natural Area, 2023)

The applicant commissioned the *'DWER Rural Water Planning Flora and Vegetation Survey and Targeted Fauna Habitat Assessment'* (Natural Area, 2023) to identify the presence of conservation significant flora, threatened ecological communities, and significant fauna habitat within 10 areas (prior to revision of the application areas) proposed to be cleared for drainage and catchment maintenance, following a request for further information issued by the department's Native Vegetation Regulation. The flora and vegetation survey and targeted fauna habitat assessment comprised a desktop assessment and literature review, an on-ground flora and vegetation survey, and a targeted fauna habitat assessment (Natural Area, 2023).

Desktop Assessment and Literature Review

The desktop assessment and literature review for the flora and vegetation survey was carried out by experienced environmental scientists and botanists and involved the following:

- Reviewing online databases and client documents, including:
  - DBCA's NatureMap system,
  - The Commonwealth Protected Matters Search Tool (PMST),
  - FloraBase (Western Australian Herbarium (1998-)), and
  - Threatened and priority flora and ecological community database searches provided by the department.
- Collating contextual knowledge and determining preliminary site characteristics and summarising these into summary sheets and field guides, including:
  - likely native and non-native flora and fauna species present,
  - current extent of native vegetation,
  - general floristic community types,
  - likely presence of threatened or priority flora species, and
  - likely presence of any threatened or priority ecological communities (Natural Area, 2023).

On-ground Flora and Vegetation Survey

The on-ground flora and vegetation surveys were undertaken by experience botanists, using methodology designed in accordance with the EPA Technical Guidance – *Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA, 2016) and involved the following:

- Field surveys undertaken over 10 days between 24 October and 4 November 2022,
- Sampling within a total of 34 quadrats across all sites (100m^2 quadrats were used in all survey areas with the exception of Area 11, where 400m^2 quadrats were used),
- Photographing of each quadrat in the north-west corner and recording GPS coordinates,
- Identifying and mapping rare flora species by walking through the survey area, including targeting declared rare and priority species identified during the desktop assessment and literature review,
- Assessing boundaries of vegetation type and condition extent and recording boundaries using GPS,
- Recording landscape characteristics including soil types/colour, aspect, slope, surface rock, leaf litter, topography and drainage, using a modified recording sheets based on the NAIA templates developed for the Perth Biodiversity Project,
- Recording vegetation type including dominant over, middle and understorey species and condition using the scale attributed to Keighery (1994),
- Visual assessment of vegetation contained within adjacent properties, undertaken from the survey area boundary to determine extent of potential TEC and significant flora species, and
- Recording evidence of disturbance, such as fire (Natural Area, 2023).

Targeted Fauna Habitat Assessment

A targeted fauna habitat assessment was undertaken in conjunction with other survey works at all survey areas, including opportunistic searches for malleefowl and malleefowl mounds, as well as a black cockatoo habitat assessment undertaken in accordance with the EPA Technical Guidance – *Vertebrate Fauna Surveys for Environmental Impact Assessment* (EPA, 2020) and *Referral guideline for 3 WA threatened black cockatoo species:*

Carnaby's Cockatoo, Baudin's Cockatoo and the Forest Red-tailed Black cockatoo (Commonwealth of Australia, 2022). The black cockatoo habitat assessment included:

- Traversing each survey area to identify potential habitat trees with a DBH ≥ 300 millimetres,
- Recording location and species of each habitat tree,
- Recording hollows if present along with the type and size of the hollow and direction of opening, and
- Recording any secondary evidence of breeding, roosting and foraging activities (e.g., chew marks, feathers, chewed cones and nuts) (Natural Area, 2023).

Photographs of the vegetation

Photographs of the application areas were obtained during the flora and vegetation survey and targeted fauna habitat assessment (Natural Area, 2023) and provided by the applicant for areas that were not included in the surveys (DWER, 2022).

Mt Cramphorne dam

Photos 1-3: Photographs of the Mt Cramphorne dam

Kylie dam

Photos 4-7: Photographs provided by the applicant representing the Kylie dam area.

Ballidu site

Photo 8: The catchment area of the Ballidu dam.

Bodallin Dam

Photos 9-13: Photographs representing the Bodallin dam site.

Lake Magenta

Photos 14-15: Photographs of the Lake Magenta site.

Gutha dam

Photo 16: Photograph of Gutha dam

Perenjori dam

Photo 17 - Photograph of the Perenjori site.

Buntine dam

Photo 18 – Photograph of the Buntine dam site.

Photos 19-24: Habitat trees that were identified within the survey areas

Appendix G. Sources of information

G.1. GIS databases

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

- 10 Metre Contours (DPIRD-073)
- Aboriginal Heritage Places (DPLH-001)
- Bush Forever Areas 2000 (DPLH-019)
- Cadastre (LGATE-218)
- Cadastre Address (LGATE-002)
- CAWSA Part 2A Clearing Control Catchments (DWER-004)
- Consanguineous Wetlands Suites (DBCA-020)
- Contours (DPIRD-073)
- DBCA – Lands of Interest (DBCA-012)
- DBCA Legislated Lands and Waters (DBCA-011)
- DBCA Statewide Vegetation Statistics
- Directory of Important Wetlands in Australia – Western Australia (DBCA-045)
- Environmentally Sensitive Areas (DWER-046)
- Flood Risk (DPIRD-007)
- Groundwater Salinity Statewide (DWER-026)
- Hydrographic Catchments - Catchments (DWER-028)
- Hydrographic Catchments - Divisions (DWER-029)
- Hydrography, Linear (Hierarchy) (DWER-031)
- 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 (DPIRD-006)
- 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 (DPIRD-027)
- Soil Landscape Mapping – Systems (DPIRD-064)
- Wheatbelt Wetlands Stage 1 (DBCA-021)

Restricted GIS Databases used:

- Conservation Covenants Western Australia (DPIRD-023)
- Contaminated Sites Database - Restricted (DWER-073)
- 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)

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