



CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

Purpose Permit number:	CPS 9897/1
Permit Holder:	Department of Water and Environmental Regulation
Duration of Permit:	From 24 July 2023 to 24 July 2033

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

PART I – CLEARING AUTHORISED

1. Clearing authorised (purpose)

The permit holder is authorised to clear *native vegetation* for the purpose of accessing and installing/replacing groundwater monitoring infrastructure.

2. Land on which clearing is to be done

Lot 4023 on Deposited Plan 182746, Moora
Lot 3 on Deposited Plan 408189, Cooljarloo
Lot 306 on Deposited Plan 54549, Cooljarloo
Brand Highway (PIN 11579146), Cooljarloo
Coalara Road (PIN 11675074), Badgingarra
Unnamed road (PIN 11675718), Badgingarra
Dandaragan Road (PIN 11580449), Dandaragan
Unnamed road (PIN 11433242), Dandaragan

3. Clearing authorised

The permit holder must not clear more than 1.09 hectares of *native vegetation* within the combined areas cross-hatched yellow in Figure 1, Figure 2, Figure 3, Figure 4, Figure 5 and Figure 6 of Schedule 1.

4. Period during which clearing is authorised

The permit holder must not clear any *native vegetation* after 24 July 2028.

PART II – MANAGEMENT CONDITIONS

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

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

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

6. Weed and dieback management

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

- (a) clean earth-moving machinery of soil and vegetation prior to entering and leaving the area to be cleared;
- (b) ensure that no known *dieback* or *weed*-affected soil, *mulch*, *fill*, or other material is brought into the area to be cleared;
- (c) restrict the movement of machines and other vehicles to the limits of the areas to be cleared;
- (d) only move soils in *dry conditions*; and
- (e) where dieback or weed-affected soil, mulch, fill or other material is to be removed from the area to be cleared, ensure it is transferred to areas of comparable *soil disease status*.

7. Directional clearing

The permit holder must conduct clearing activities in a slow, progressive manner in one direction to allow fauna to move into adjacent *native vegetation* ahead of the clearing activity.

8. Revegetation and rehabilitation (temporary works)

The permit holder must *revegetate* and *rehabilitate* areas cleared for *temporary works* within six months of the area no longer being required for the purpose for which it was cleared, by:

- (a) retaining the vegetative material and topsoil removed by clearing authorised under this Permit and stockpile the vegetative material and topsoil in an area that has already been cleared.
- (b) *revegetate* and *rehabilitate* areas not required for future use by:
 - (i) ripping the ground on the contour to remove soil compaction; and
 - (ii) laying the vegetative material and topsoil retained under condition 8(a) on the cleared area(s).
- (c) within 24 months of laying the vegetative material and topsoil on the cleared area in accordance with condition 8(b) of this Permit:
 - (i) engage an *environmental specialist* to determine the species composition, structure and density of the area *revegetated* and *rehabilitated*; and

- (ii) where, in the opinion of an *environmental specialist*, the composition structure and density determined under condition 8(c)(i) of this Permit will not result in a similar species composition, structure and density to that of pre-clearing vegetation types in that area, *revegetate* the area by deliberately planting and/or direct seeding native vegetation that will result in a similar species composition, structure and density of native vegetation to pre-clearing vegetation types in that area and ensuring *only local provenance* seeds and propagating material are use.

PART III - RECORD KEEPING AND REPORTING

9. Records that must be kept

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

Table 1: Records that must be kept

No.	Relevant matter	Specifications
1.	In relation to the authorised clearing activities generally	<ul style="list-style-type: none"> (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 2020 (GDA2020), 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); and (e) actions taken to avoid, minimise, and reduce the impacts and extent of clearing in accordance with condition 5; and (f) actions taken to minimise the risk of the introduction and spread of <i>weeds</i> and <i>dieback</i> in accordance with condition 6; and (g) actions undertaken in accordance with condition 7; and (h) actions undertaken to <i>revegetate</i> and <i>rehabilitate</i> in accordance with condition 8.

10. Reporting

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

DEFINITIONS

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

Table 2: Definitions

Term	Definition
CEO	Chief Executive Officer of the department responsible for the administration of the clearing provisions under the <i>Environmental Protection Act 1986</i> .
clearing	has the meaning given under section 3(1) of the EP Act.
condition	a condition to which this clearing permit is subject under section 51H of the EP Act.
environmental specialist	means a person who holds a tertiary qualification in environmental science or equivalent, and has a minimum of 2 years work experience relevant to the type of environmental advice that an environmental specialist is required to provide under this permit, or who is approved by the CEO as a suitable environmental specialist.
fill	means material used to increase the ground level, or to fill a depression.
dieback	means the effect of <i>Phytophthora</i> species on native vegetation.
department	means the department established under section 35 of the <i>Public Sector Management Act 1994</i> (WA) and designated as responsible for the administration of the EP Act, which includes Part V Division 3.
dry conditions	Means when soils (not dust) do not freely adhere to rubber tyres, tracks, vehicle chassis or wheel arches.
EP Act	<i>Environmental Protection Act 1986</i> (WA)
local provenance	means native vegetation seeds and propagating material from natural sources within 50 kilometres and the same IBRA subregion of the area cleared.
mulch	means the use of organic matter, wood chips or rocks to slow the movement of water across the soil surface and to reduce evaporation.
native vegetation	has the meaning given under section 3(1) and section 51A of the EP Act.
revegetate / vegetated / revegetation	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.
soil disease status	means soil types either infested, not infested, uninterpretable or not interpreted with a pathogen.
temporary works	means access tracks, spoil areas, side tracks, site offices, storage areas, laydown areas, extraction sites, camps, project surveys, pre-construction activities, and similar works associated with a project activity that are temporary in nature.
weeds	means any plant – <ul style="list-style-type: none"> (a) that is a declared pest under section 22 of the <i>Biosecurity and Agriculture Management Act 2007</i>; or (b) published in a Department of Biodiversity, Conservation and Attractions species-led ecological impact and invasiveness ranking summary, regardless of ranking; or (c) not indigenous to the area concerned.

END OF CONDITIONS



Meenu Vitarana

Manager

NATIVE VEGETATION REGULATION

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

29 June 2023

Schedule 1

The boundary of the area authorised to be cleared is shown in the maps below.



Figure 1. Map of the boundary of the area within which clearing may occur – Site A

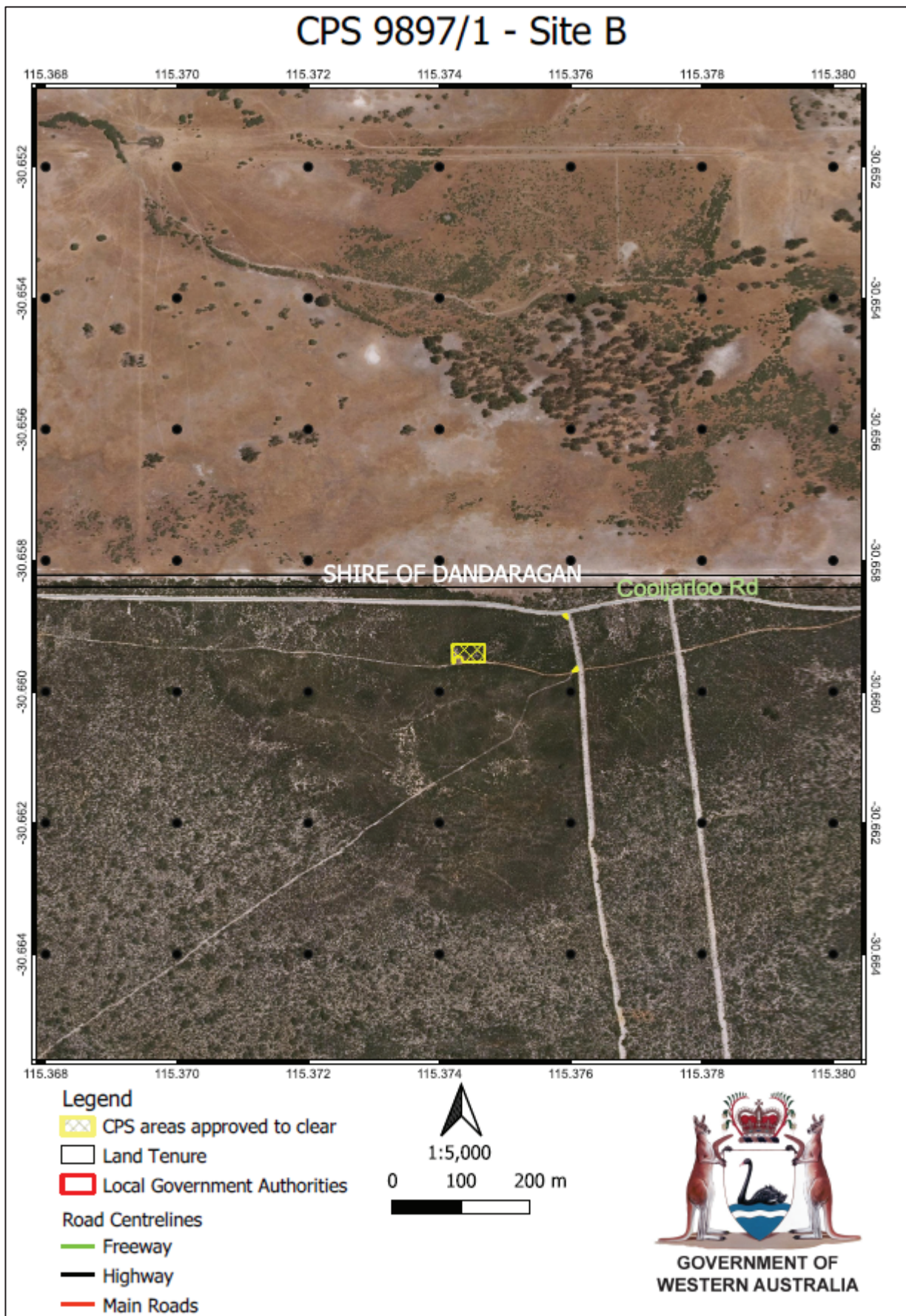


Figure 2. Map of the boundary of the area within which clearing may occur – Site B

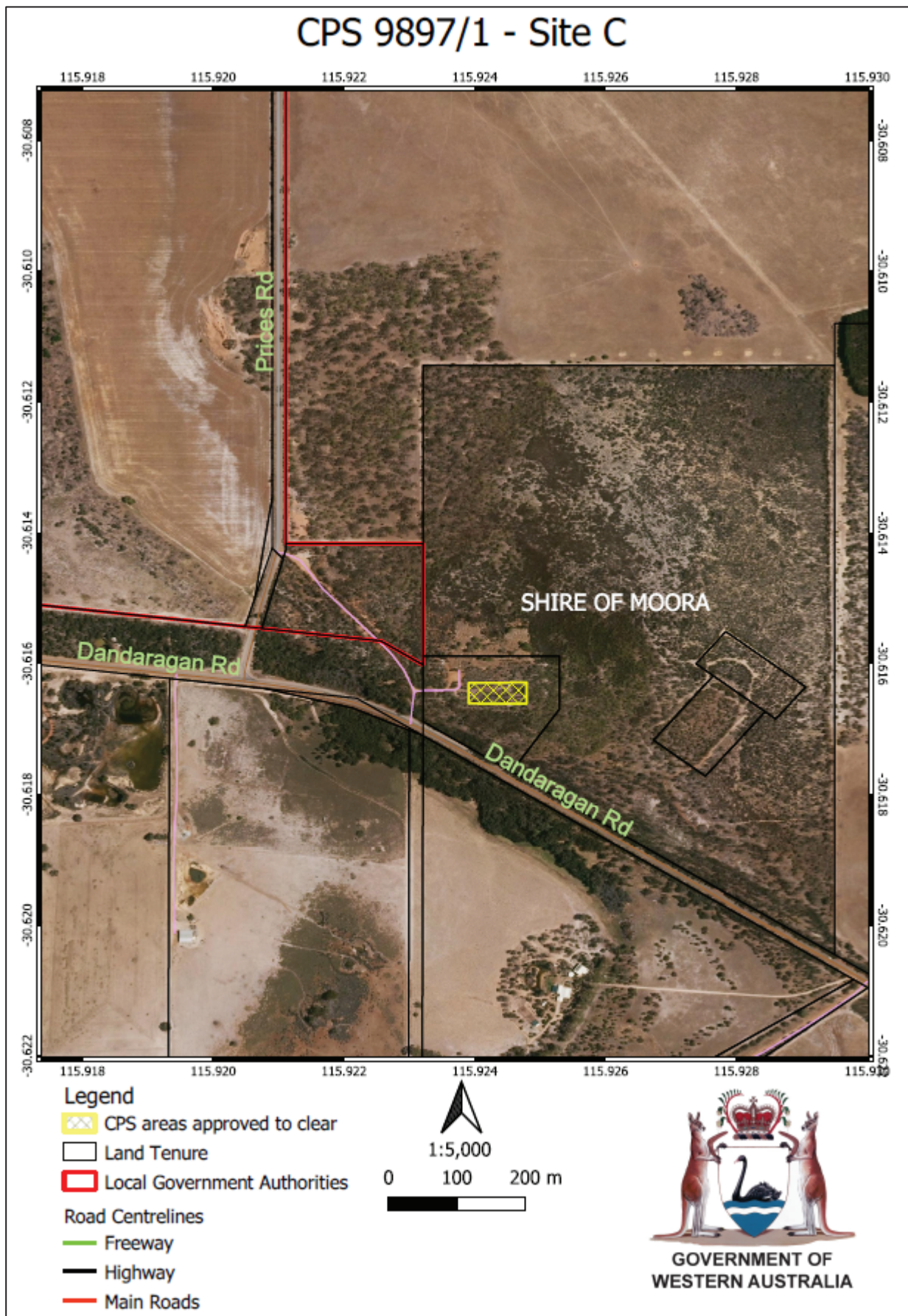


Figure 3. Map of the boundary of the area within which clearing may occur – Site C

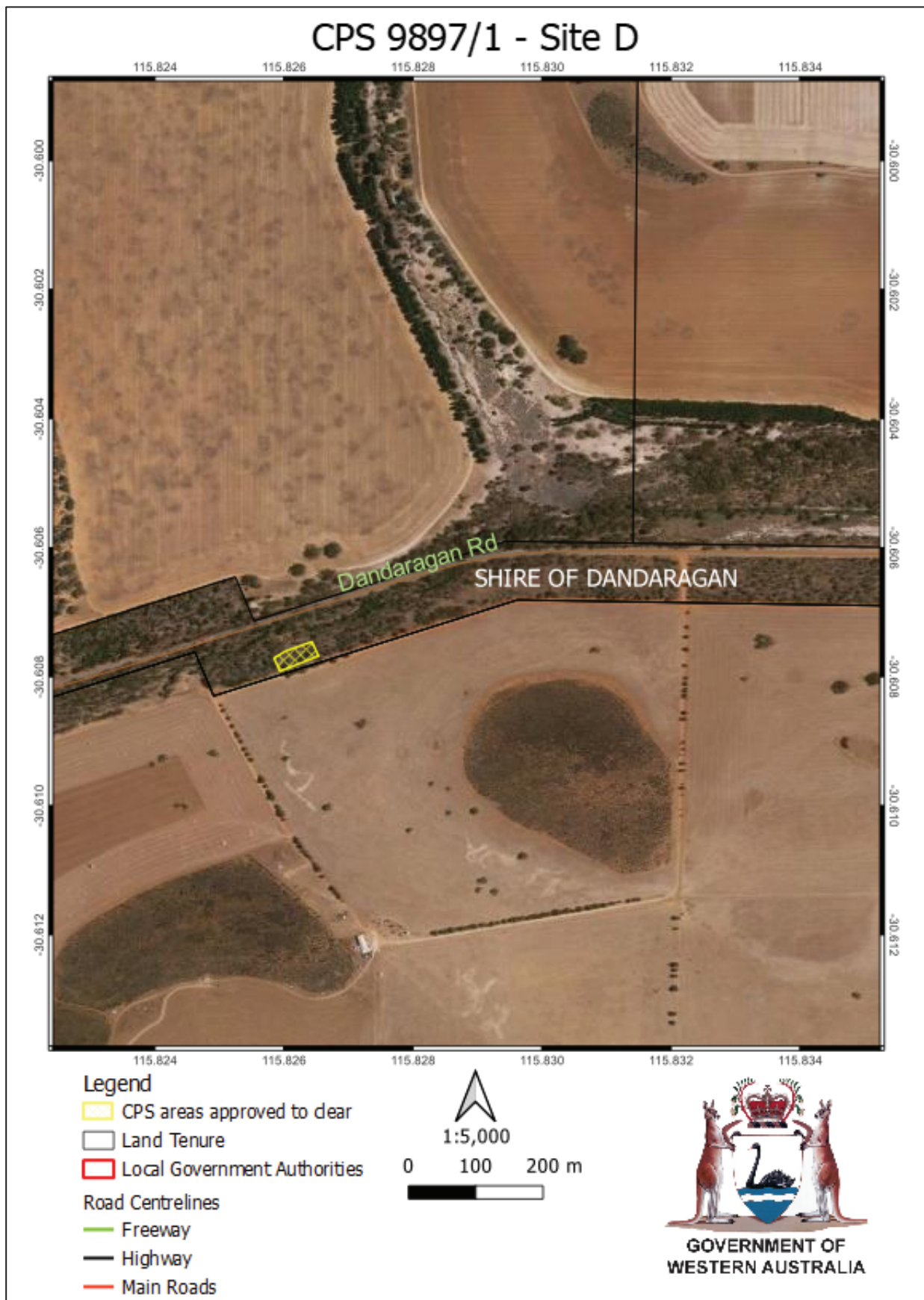


Figure 4. Map of the boundary of the area within which clearing may occur – Site D

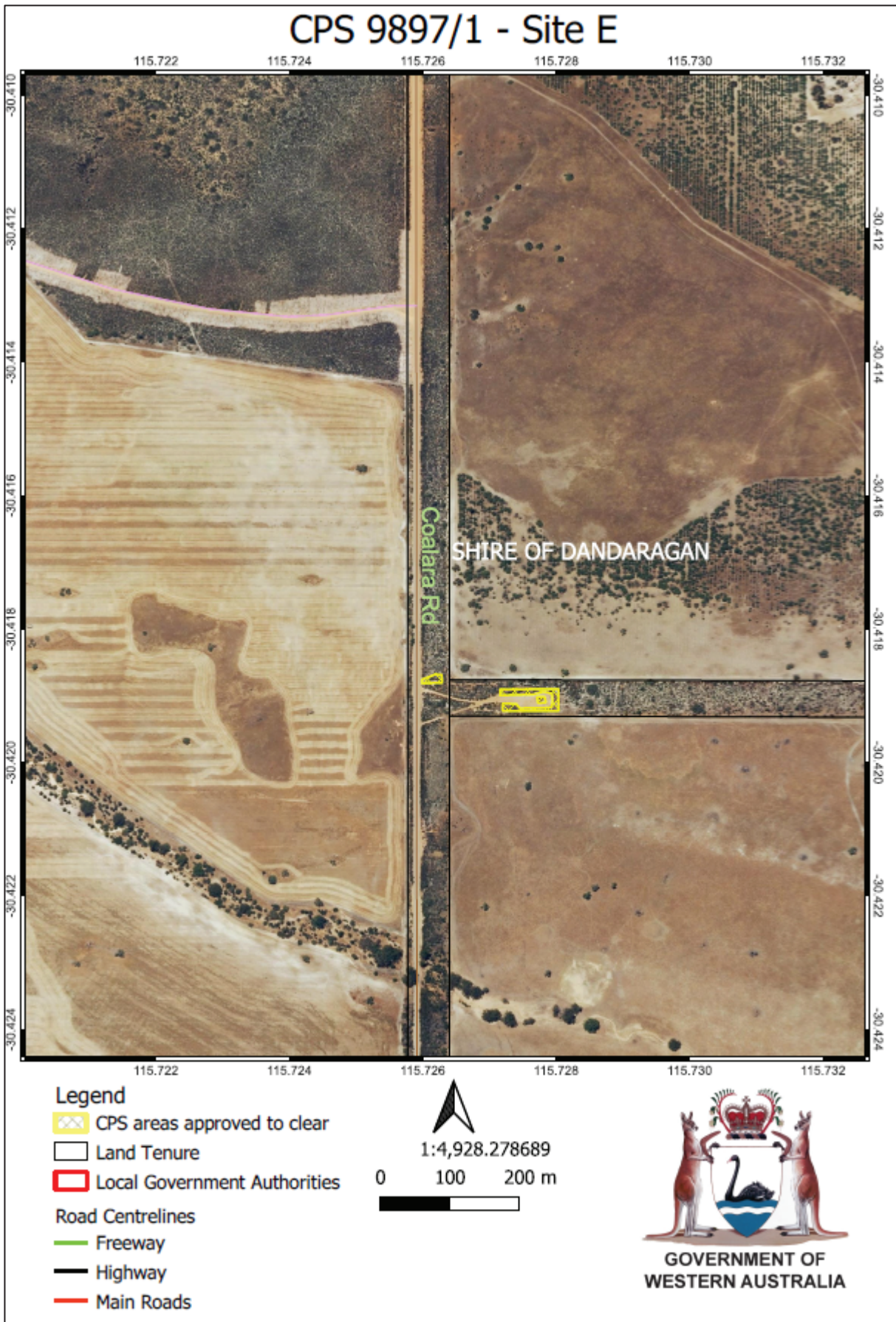


Figure 5. Map of the boundary of the area within which clearing may occur – Site E

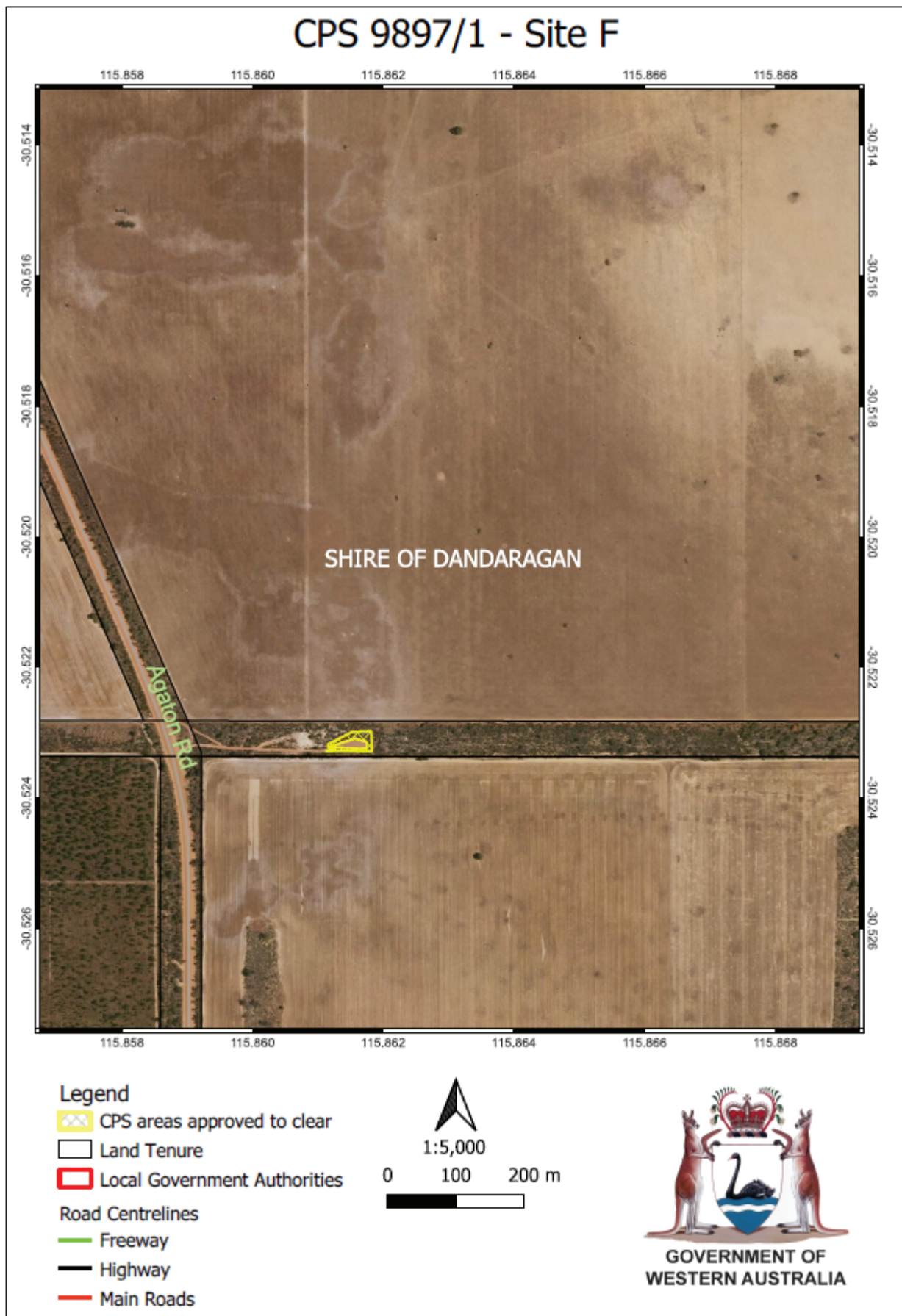


Figure 6. Map of the boundary of the area within which clearing may occur – Site E



Clearing Permit Decision Report

1 Application details and outcome

1.1. Permit application details

Permit number:	CPS 9897/1
Permit type:	Purpose permit
Applicant name:	Department of Water and Environmental Regulation (DWER)
Application received:	29 September 2022
Application area:	1.09 hectares of native vegetation
Purpose of clearing:	Accessing and replacing/installing groundwater monitoring infrastructure
Method of clearing:	Mechanical and manual
Property:	Lot 4023 on Deposited Plan 182746 (Crown reserve 35375) Lot 3 on Deposited Plan 408189 Lot 306 on Deposited Plan 54549 Brand Highway (PIN 11579146) Coalara Road (PIN 11675074) Dandaragan Road (PIN 11580449) Unnamed road (PIN 11675718) Unnamed road (PIN 11433242)
Location (LGA area/s):	Shire of Dandaragan and Shire of Moora
Localities (suburb/s):	Dandaragan, Badgingarra, Cooljarloo, Moora

1.2. Description of clearing activities

The vegetation proposed to be cleared is distributed across six separate sites, named from A to F (see Figure 1, Section 1.5). Part of site A, and sites B and C are in extensive patches of native vegetation; while another part of site A, and sites D, E and F are in road reserves. The application is to clear understorey vegetation (no large trees to be cleared) to have access to install the deep groundwater monitoring bores.

The size of the area and amount of clearing proposed was reduced during assessment. The changes include:

- Removal of site G from the proposed clearing area (this site location is not included in Figure 1).
- Reduction in the amount of clearing from 1.98 hectares to 1.09 hectares to avoid and minimise the clearing impacts.

	Initial area (hectare)	Adjusted area (hectare)
Site A	0.22	0.18
Site B	0.16	0.14
Site C	0.41	0.30
Site D	0.36	0.18
Site E	0.53	0.18
Site F	0.21	0.18
Site G	0.08	N/A
Total	1.98	1.09

1.3. Decision on application

Decision:	Granted
Decision date:	29 June 2023
Decision area:	1.09 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 (DWER) advertised the application for 21 days and no submissions were received.

In making this decision, the Delegated Officer had regard for the site characteristics (see Appendix B), relevant datasets (see Appendix F.1), the representative photographs of vegetation in the application area provided by the applicant (see Appendix E), the clearing principles set out in Schedule 5 of the EP Act (see Appendix C), relevant planning instruments and any other matters considered relevant to the assessment (see Section 3). The Delegated Officer also took into consideration the purpose of the clearing which is installing and improving the underground water monitoring system for Western Australia (WA).

The assessment identified that the proposed clearing will result in:

- short-term impacts on the fauna individuals if present during the clearing,
- the potential introduction and spread of dieback disease into adjacent vegetation, which could impact on the quality of the adjacent vegetation and its habitat values.

After consideration of the available information, as well as the applicant's minimisation and mitigation measures (see Section 3.1), the Delegated Officer determined the proposed clearing impacts can be minimised and managed to unlikely lead to an unacceptable risk to environmental values.

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 and dieback ,
- implement slow and directional clearing to allow terrestrial fauna to move into adjacent habitat ahead of the clearing activity,
- revegetate cleared areas that are no longer required for the purpose for which they were cleared.

Note that the Department of Mines, Industry Regulation and Safety's (DMIRS) 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. DMIRS supported the assessment and determination that this application be granted. This action was considered appropriate for the purposes of transparency given that DWER is the applicant proposing to undertake the clearing.

1.5. Site maps

Context Map CPS 9897/1

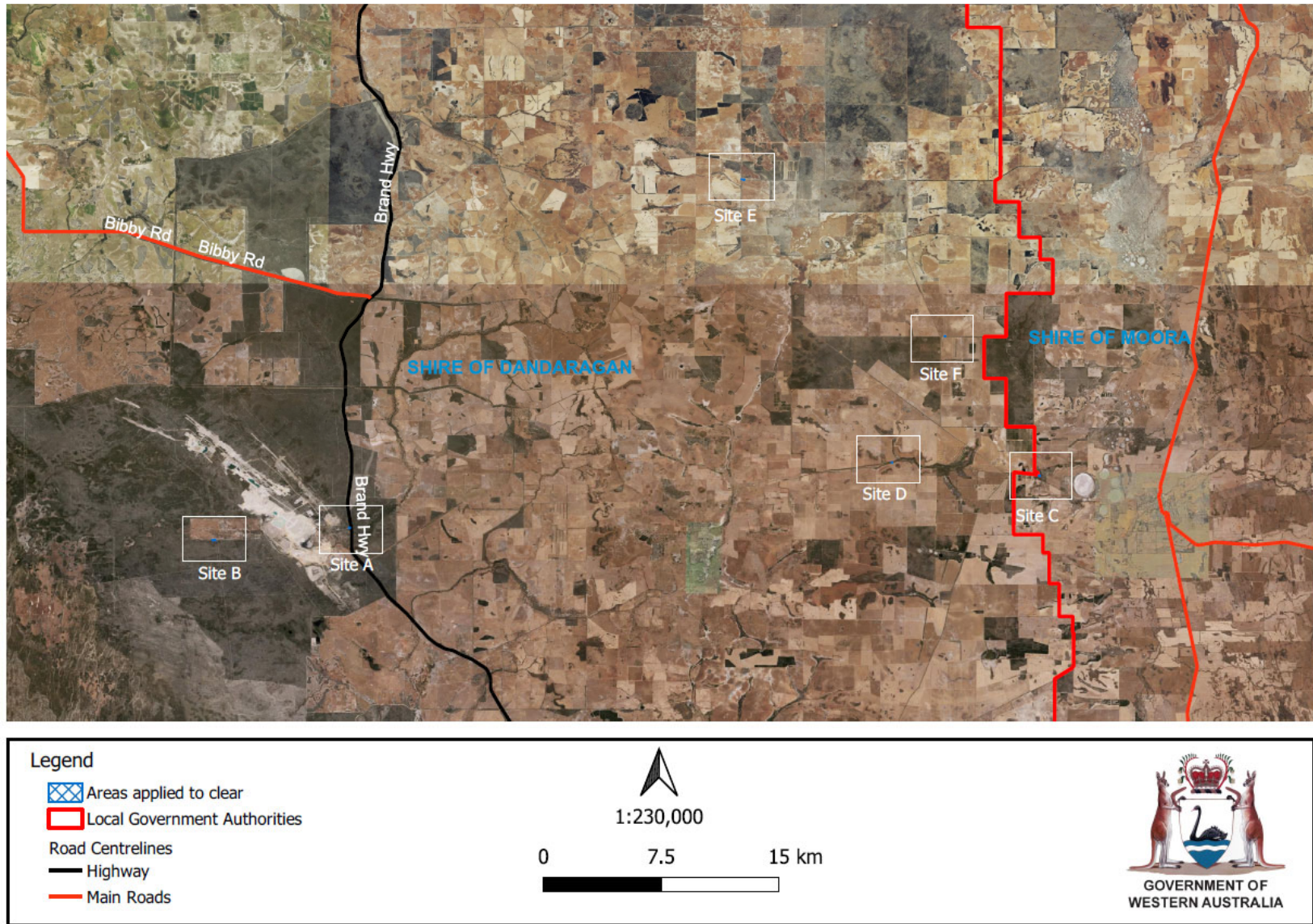


Figure 1. Context map of the application area (including six separate sites, named from A to F)

CPS 9897/1 - Site A

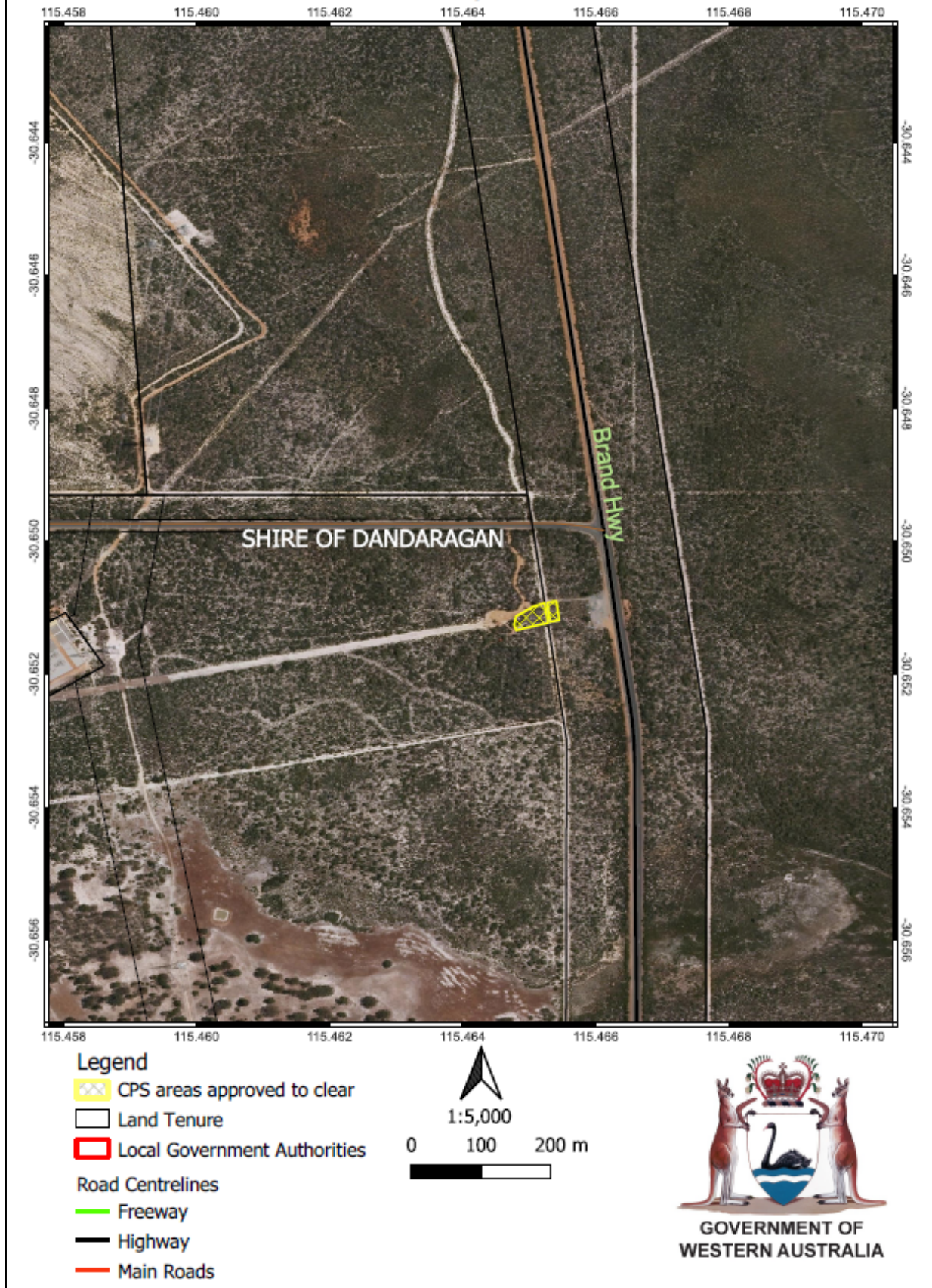


Figure 2. Map of site A.

The areas crosshatched yellow indicate the areas authorised to be cleared under the granted clearing permit.

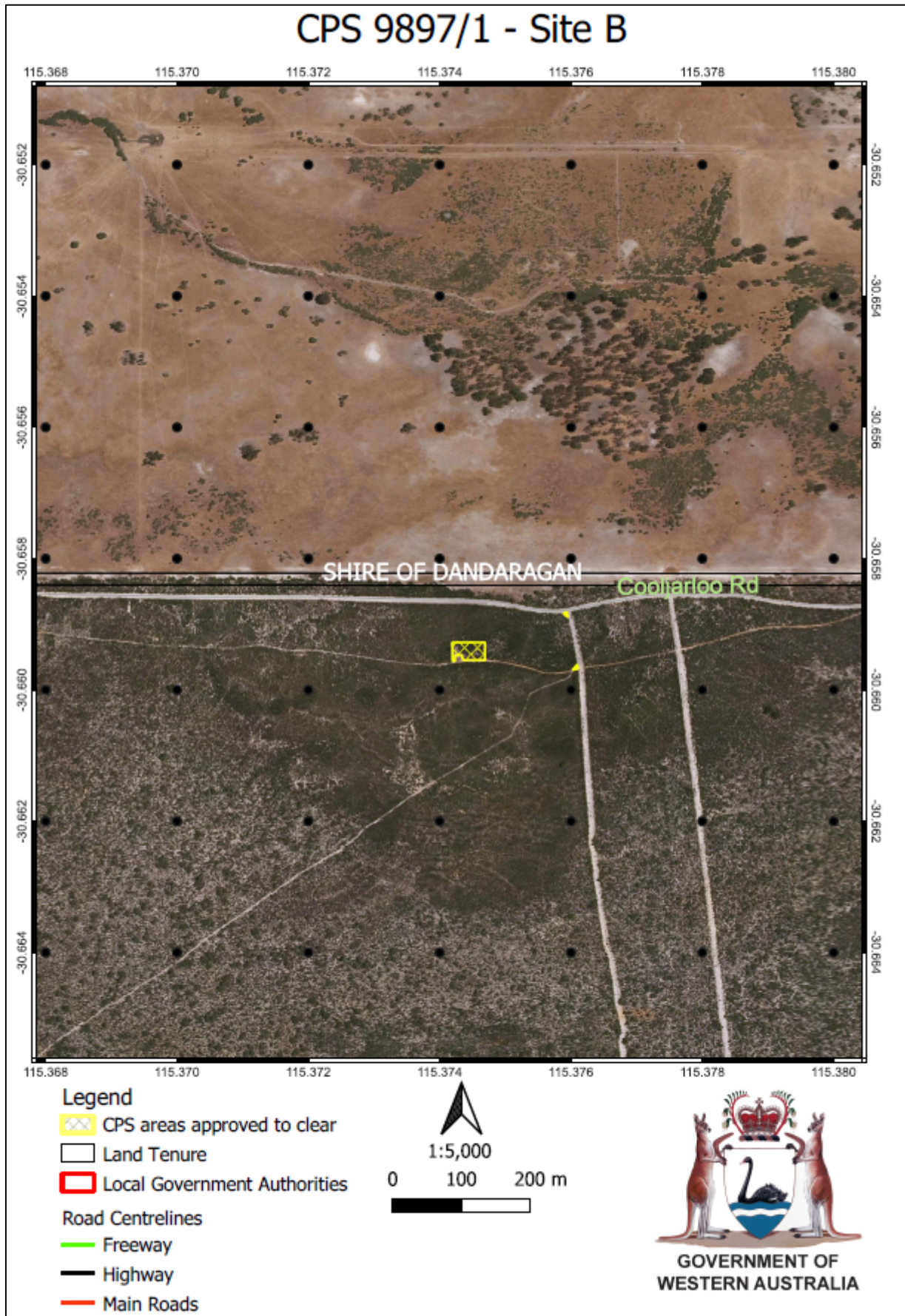


Figure 3. Map of site B.

The areas crosshatched yellow indicate the areas authorised to be cleared under the granted clearing permit.

CPS 9897/1 - Site C

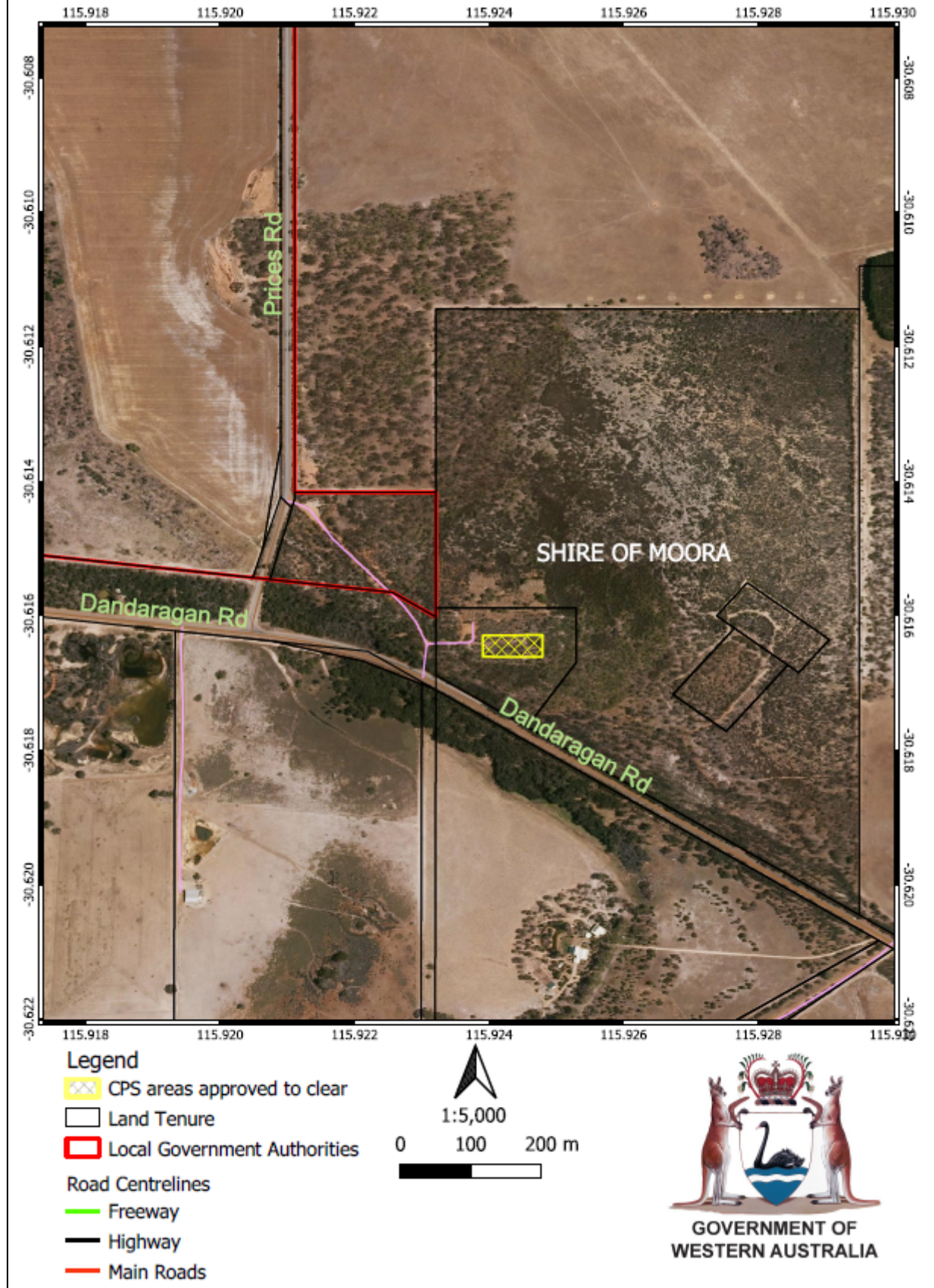


Figure 4. Map of site C.

The area crosshatched yellow indicates the area authorised to be cleared under the granted clearing permit.

CPS 9897/1 - Site D

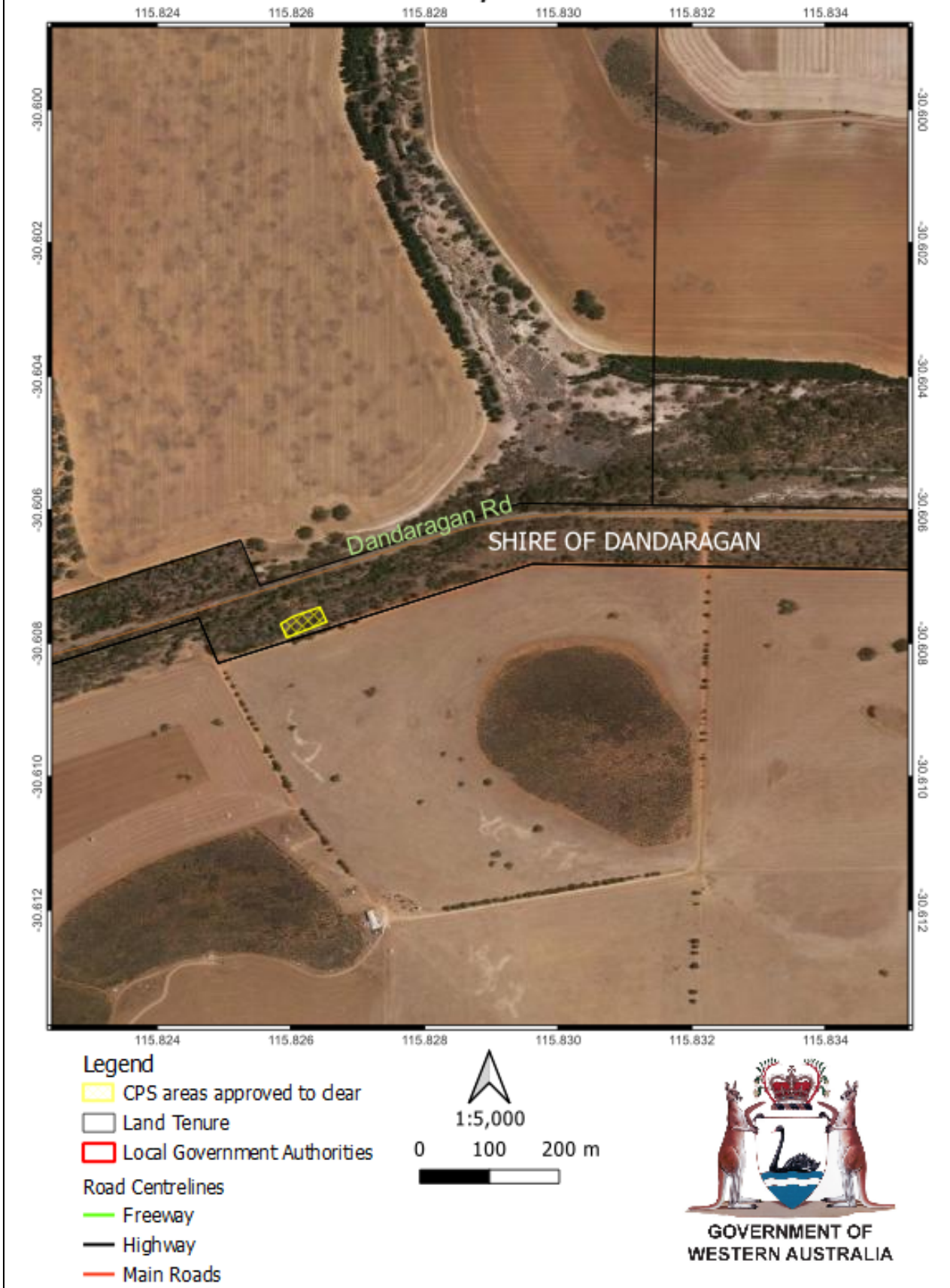


Figure 5. Map of site D.

The area crosshatched yellow indicates the area authorised to be cleared under the granted clearing permit.

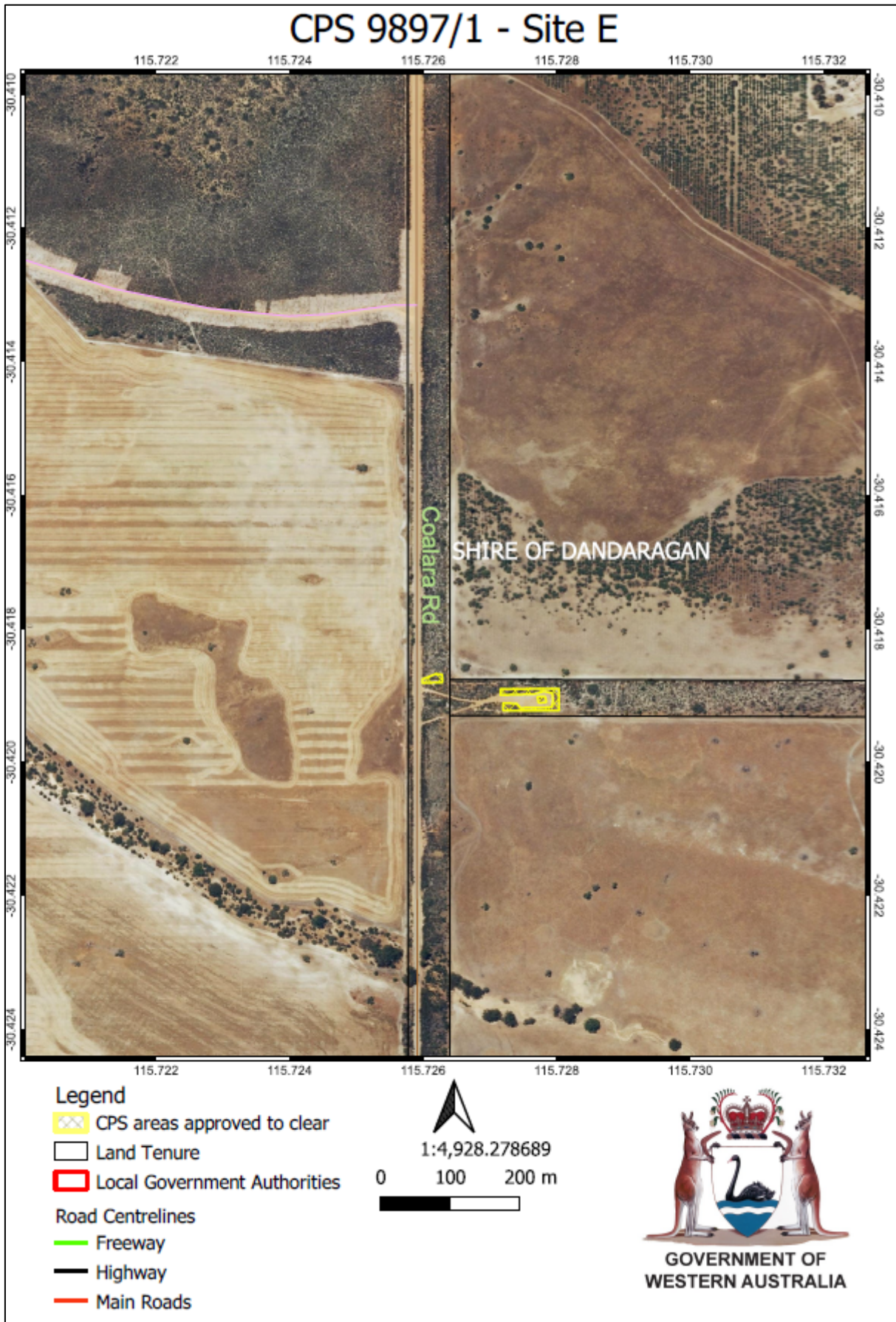


Figure 6. Map of site E.

The areas crosshatched yellow indicate the areas authorised to be cleared under the granted clearing permit.

CPS 9897/1 - Site F

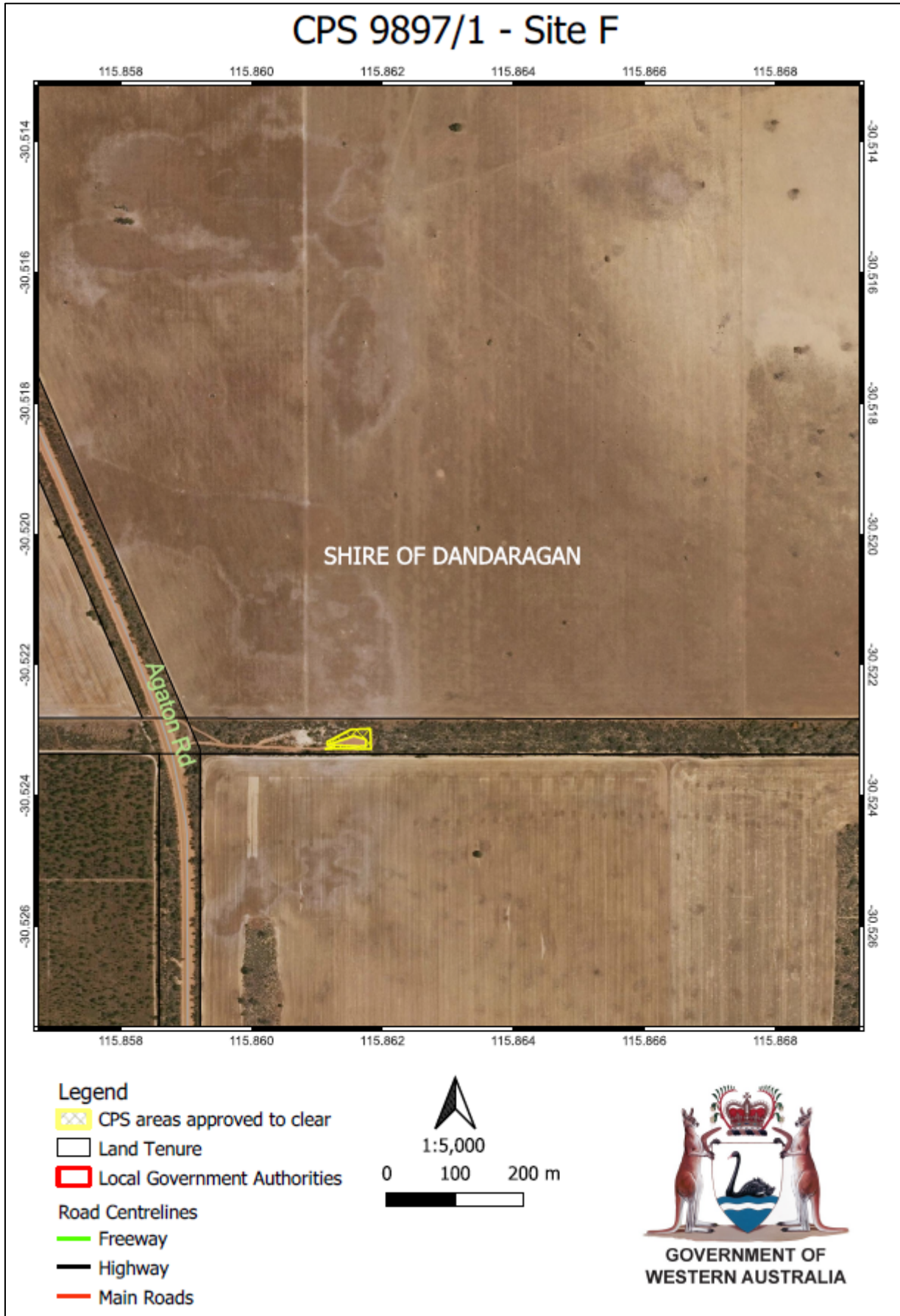


Figure 7. Map of site F.

The area crosshatched yellow indicates the area authorised to be cleared under the granted clearing permit.

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 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)

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)

3 Detailed assessment of application

3.1. Avoidance and mitigation measures

Supporting information was submitted by the applicant, explaining the reason for the proposed clearing and demonstrating that the proposed clearing footprint is required for the drilling operation for installation of deep underground water monitoring bores (200 to 800 metres in depth), including:

- drilling rigs,
- mud circulation tanks,
- cementing tanks,
- haulage and water carting trucks,
- an area for the laydown of the fibreglass bore casing (800 metres of casing in 9-metre length),
- storage of consumable materials, steel casing, cement, drilling fluids,
- temporary accommodation, caravans, and
- site office.

The applicant also proposed mitigation measures to minimize the impacts of clearing activity (DWER, 2023a), including:

- removal of one site from the application area and reduction of the area proposed to be cleared from 1.98 hectares to 1.09 hectares (refer section 1.2 above for further details).
- commitment to only clearing the understorey and avoiding large trees.
- revegetating the cleared areas (except an area around each bore and areas for access to the bores) that are no longer required for the purpose for which they were cleared.

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

3.2. Assessment of impacts on environmental values

In assessing the application, the Delegated Officer has had regard for the site characteristics (see Appendix B) 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 Appendix C) identified that the impacts of the proposed clearing present a risk to biological values (fauna, flora and threatened ecological community). 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 (fauna) - Clearing Principles (a and b)

Assessment

The desktop assessment identified that there are 32 conservation significant fauna species recorded in the 20-kilometre radius of all application sites (combined local area), including 21 bird species, three mammal species, four reptile species and four invertebrate species. Based on the analysis on suitability of habitat, distance of closest mapped records and number of known records in the local area, four fauna species have potential to occur in the application areas (See Appendix B.4), including:

- Carnaby's black cockatoo (Sites A to F)
 - Jewelled southwest Ctenotus (Swan Coastal Plain population)
 - Black-striped snake
 - Western brush wallaby
- } (Site A and B)

Carnaby's cockatoo

Based on known distribution and habitat preference recorded, habitat for the endangered *Zanda latirostris* (Carnaby's black cockatoo), is likely to occur over all sites. All sites are mapped within the Carnaby's distribution area. There are 290 breeding records of Carnaby in the combined local area of all sites, with the closest breeding record mapped at 8.5, 16.7, 7.6, 16.8, 11.7 and 16.2 kilometres for site A, B, C, D, E and F, respectively. Two black cockatoo (BC) roosting sites are recorded within the local area (20-kilometre radius) of site B, C, D and F, with the closest distances at 17.1, 7.9, 1.6 and 9.5 kilometres, respectively.

Carnaby's cockatoo was once abundant in Western Australia. Since the late 1940s, the species has suffered a 30 percent contraction in range, a 50 percent decline in population, and between 1968 and 1990 disappeared from more than a third of its breeding range (Saunders, 1990; Johnstone and Storr, 1998; Saunders and Ingram, 1998; Garnett et al. 2011). One of the major reasons of the declination of this species' population is the loss of nesting trees and foraging habitat (Commonwealth of Australia, 2012).

There are three key components of black cockatoo habitat: foraging habitat; roosting habitat; and breeding habitat. The quality of black cockatoo foraging habitat to support populations at breeding sites or night roosting sites varies depending upon how black cockatoos utilise the habitat in that particular location. Any tall trees, generally close to riparian environments, can be potential roosting habitat of black cockatoos (DSEWPC 2012). A tree suitable for a black cockatoo breeding is defined as a tree with a diameter of 50 centimetres or greater at a height of 1.5 metres above the ground. Carnaby's Cockatoo generally forages within six kilometres of a night roost site and, while nesting, within a 12 kilometres radius of their nest site (Commonwealth of Australia, 2012).

Carnaby's cockatoo forages on the seeds, nuts and flowers of a large variety of plants including *Proteaceous* species (*Banksia*, *Hakea* and *Grevillea*), as well as *Allocasuarina* and *Eucalyptus* species, *Corymbia calophylla* and a range of introduced species (Valentine and Stock, 2008). In the Swan Coastal Plain (SCP), the records of foraging activity for Carnaby's cockatoo show that *Banksia* species account for nearly 50 per cent of the diet for this species (Shah, 2006). Similarly, EPA technical advice for Carnaby's cockatoo notes that *Banksia* species (predominantly *B. attenuata*, *B. menziesii* and *B. sessilis*) provide the most important natural food resource on SCP (EPA, 2019).

Based on the distance from the Carnaby's roosting and breeding records and vegetation types of each application site, vegetation in site A, C, D and E can be considered as potential foraging habitat for this species. However, noting the small area proposed to be cleared (0.66 ha over three sites), the existing of better-quality adjacent remnant vegetation, and the commitment of the applicant to not removing trees (only removing the understory vegetation) and revegetating areas no longer required post clearing, the proposed clearing activity is unlikely to have a significant impact on foraging habitat for Carnaby's cockatoos in the local area.

Jewelled southwest Ctenotus (Swan Coastal Plain population)

The jewelled southwest ctenotus (Swan Coastal Plain population) (*Ctenotus gemmule* (Swan Coastal Plain population)) is a species of skinks and listed as a Priority 3 fauna species. This skink species is endemic to the Swan Coastal Plain (SCP), occurs in habitat that is typically associated with *Banksia* woodlands where they shelter under leaf litter (Bush et al. 2010). There are six records of the SCP population of this species in the local areas of site A and B, with the closest record is approximately 6.6 and 1.3 kilometres from A and B, respectively. Noting the small areas proposed to be cleared, impact to significant suitable habitat for this species is considered low.

Black-striped snake

The black-striped snake is a small fossorial venomous snake, restricted to the sandy coastal strip near Perth, between Mandurah and Cataby, with isolated populations further north near Eneabba and Dongara. Habitat for this species includes *Eucalyptus* and/or *Banksia* woodlands and dunes and sand plains vegetated with heaths (Wilson and Swan, 2017). There are four records of this species in the local areas of site A and B, with the closest record is approximately 6.0 and 6.2 kilometres from A and B, respectively. Habitat of the black-striped snake is present over the sites A and

B, however considering the small areas proposed to clear, the proposed clearing is unlikely to significantly impact habitat for this species.

Western brush wallaby

The optimal habitat for the western brush wallaby (*Notamacropus Irma* – Priority 4) is open forest or woodland, particularly favouring open seasonally-wet flats with low grasses and open scrubby thickets. It is also found to inhabit some areas of mallee and heathland (DEC, 2012). There are four records of this species in the local area of site A and B, with the closest record is mapped approximately 2.1 kilometres north and 8.9 kilometres northeast of site A and B, respectively. Given the small area proposed to be clear and the extent of retained native vegetation, the application areas are unlikely to represent significant habitat for this species.

Conclusion

Given the size of the clearing, the existing of better-quality adjacent native vegetation and the nature of clearing activity (only clear understorey vegetation), it is unlikely that the application areas represent important habitats to support fauna species, or the clearing activity significantly affects the fauna habitats within the local areas. However, the proposed clearing may result in impacts to fauna individuals if they present within the application areas during the clearing.

Conditions

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

- Implementation of directional clearing whereby slow, directional clearing of remnant vegetation will allow for the movement of fauna into adjacent vegetation.
- Revegetation of area that are no longer required for the purpose for which they were cleared.

3.2.2. Biological values (flora and threatened ecological community - TEC) - Clearing Principles (a, c and d)

Assessment

Flora

Results from the desktop assessment and an analysis of suitable soil type, vegetation type and habitat showed that there are 11 conservation significant flora species having potential to be present in sites A and B. This presumption is based on known records on similar landform types (to the application sites) within the local areas (20-kilometre radius). They consist of five threatened species and six priority species (See Appendix B.3 for flora analysis table), including:

- *Andersonia gracilis* (T) (Site B)
- *Anigozanthos viridis* subsp. *terraspectans* (T) (Site B)
- *Chordifex reseminans* (P2) (Site B)
- *Conospermum scaposum* (P3) (Site B)
- *Conostephium magnum* (P4) (Site A and B)
- *Desmocladus nodatus* (P3) (Site B)
- *Eremophila glabra* subsp. *chlorella* (T) (Site B)
- *Hypocalymma tetrapterum* (P4) (Site A)
- *Isopogon panduratus* subsp. *palustris* (P3) (Site B)
- *Macarthuria keigheryi* (T) (Site B)
- *Paracaleana dixonii* (T) (Site B)

Threatened species

Andersonia gracilis (T) known distribution is in Baldgingarra, Dandaragan and Kenwick areas, with habitat usually associated with seasonally damp, blank sandy clay flat near or on the margins of swamps (DEC, 2006). There are 44 records of *Andersonia gracilis* mapped within the local area of site B, with the closest record is approximately 3.2 kilometres from the site. Of the 36 records of this species on FloraBase, ten over 17 records with available frequency information have populations ranging from 14 to 190 plants.

Anigozanthos viridis subsp. *terraspectans* (T) is a small rhizomatous herb and is limited to the west of Cataby town (DEWHA, 2008a), where site B is located. It is found to grow on grey sandy clay loam or grey sand in low post-fire regenerating heath (DEWHA, 2008b). There are 21 records of *Andersonia gracilis* mapped within the local area of

site B, with the closest record is approximately 3.3 kilometres from the site. Of the 17 known recorded locations of this species, seven locations have populations ranging from 20 to 2000 plants.

Eremophila glabra subsp. *chlorella* (T) is a spreading or sprawling shrub and is known from widely separated populations at Cannington, Mogumber, Eneabba and Kenwick, with habitat associated with sandy-clay soils (DPaW, 2016). In the local area of site B, there are four records of *Eremophila glabra* subsp. *chlorella*, with the closest record at the distance of 2.8 kilometres from the site. Of the 31 recorded locations, multiple records have populations ranging from 50 to 3000 plants.

Macarthuria keigheryi (T) is a small erect shrub up to 40-centimetre tall with hairy, bright yellow to green stems. Its habitat is associated with low-lying winter-wet damp, grey/white sands and grows in open patches with low tree canopy cover among heathland, jarrah and Allocasuarina/Banksia/Eucalyptus woodland (DEC, 2009). In the local area of site B, 13 records of *Macarthuria keigheryi* are mapped with the closest record is approximately 2.3 kilometres away from the site. Noting that of the 30 recorded locations of this species, seven have populations ranging from 50 to thousands of plants.

Paracaleana dixonii (T) is a terrestrial orchid growing to 18-centimetre tall, also known as Sandplain Duck Orchid. It is known with distribution from Arrowsmith, Eneabba and south to the Jurien Bay area, with habitat associated with deep sand in open areas beneath dense tall shrubs with scattered banksias, or in heathland in shallow sand over laterite (DEWHA, 2008b). Two records of *Paracaleana dixonii* are mapped in the local area of site B with the distances to the site of 4.5 and 5.6 kilometres. Noting the small area proposed to clear, the possibility of this species occurring in site B is very low. Of the 20 records of this species on FloraBase, five over ten records with available frequency information have populations ranging from 10 to 3000 plants.

Noting that multiple records available on Flora Base having relatively high populations, the proposed clearing of 0.14 hectares of suitable habitat within Area B is not likely to have a significant impact on the conservation status of the above-mentioned threatened flora species.

Priority species

Chordifex reseminans (P2) is a rhizomatous, erect, tufted and is found to occur from Eneabba to Cataby and its habitat is associated with dry heath, shrubland and woodland on white sand (Briggs and Johnson, 2004). There are 15 records of *Chordifex reseminans* mapped within the local area of site B, with the closest record is approximately 2.3 kilometres from the site. Of the 28 records of this species in FloraBase, nine over ten records with available frequency information have population of over 20 to 1000 plants or identified as locally abundant.

Conospermum scaposum (P3), *Conostephium magnum* (P4), *Desmocladus nodatus* (P3), *Hypocalymma tetrapterum* (P4), *Isopogon panduratus* subsp. *palustris* (P3) are herb and small/medium shrub species. Their habitats are usually associated with sandy gravel/sandy clay/swampy areas which are similar to the considered sites (Site A or/and B). There are 13 to 21 records of each species mapped within the local areas of these two sites with the closest distance in the range of 0.1 to 3.6 kilometres from the considered site(s). Majority of these species' records on the FloraBase have high population (over 100 plants) or described as locally common or abundant.

Noting the species' abundant populations recorded in the FloraBase, the proposed clearing of 0.32 hectares (0.18 hectares at site A and 0.14 hectares at site B) of suitable habitat is not likely to have a significant impact on the conservation status of these priority flora species.

Threatened Ecological Communities

Part of site A and whole of site B and C are mapped within the ecological community of Banksia Dominated Woodlands of the Swan Coastal Plain IBRA Region (*EPBC Act*-listed *TEC/BC Act*-listed Priority Ecological Community (PEC-Priority 3)) (Banksia Woodlands TEC).

The Banksia Woodlands TEC is located in the southwest of WA and is largely restricted to the Perth and Dandaragan subregions of the SCP IBRA bioregion from around Jurien Bay in the north to Dunsborough in the south. It also extends into immediately adjacent areas on the Whicher and Darling escarpments (which lie within the Jarrah Forest IBRA bioregion), to the south and east, where pockets of banksia woodlands may also occur (Threatened Species Scientific Committee (TSSC), 2016).

The approved conservation advice for this community states that the canopy of the ecological community is most commonly dominated or co-dominated by *Banksia attenuata* and/or *B. menziesii*. Other banksia species that may dominate include *B. prionotes* or *B. ilicifolia*. The emergent tree layer often includes *Corymbia calophylla*, *Eucalyptus marginata*, or *E. gomphocephala*. Other trees that may be present include *E. todtiana*, *Nuytsia floribunda*,

Allocasuarina fraseriana, *Callitris arenaria*, *C. pyramidalis* and *Xylomelum occidentale*. The understorey of the community typically contains a high to very high diversity of shrub and herb species that often vary from patch to patch (TSSC, 2016).

To identify whether the Banksia Woodlands present within site A, B and C and the extent of impact of the proposed clearing at these sites on the TEC (if present), advice from the Department of Biodiversity, Conservation and Attractions (DBCA) was requested.

Based on the vegetation photographs of the sites provided by the applicants, DBCA advised that photographs of the vegetation within site A and B indicate that characteristic species of the TEC are present (DBCA, 2023).

However, given the small area proposed to clear (total of 0.32 hectares over two separate sites) and the existence of extensive area of this ecological community in the combined local area (more than 11,000 hectares), the proposed clearing is not considered having significant impact on the maintenance of this TEC in the local context.

Revegetation of areas that are no longer required for the purpose for which they were cleared, will be undertaken by the applicant to minimise the impact to this TEC.

Dieback

According to the DBCA data (DBCA, 2023), site A is known to be infested with *Phytophthora cinnamomic*, a common fungus causing dieback plant disease in natural ecosystems, with four positive samples collected from this site. *Phytophthora cinnamomi* disease fungus is more commonly found in deeper soils where they can alter the root system to provide refugia for persistence. Many common plant families in Banksia Woodlands are susceptible to *P. cinnamomi*, including Proteaceae, Fabaceae, Ericaceae, Xanthorrhoeaceae and Zamiaceae, causing mortality by hydraulic failure, leading to changes in plant species abundance and community structure (Commonwealth of Australia, 2014; DBCA, 2023; Ritchie et al., 2021).

The vegetation clearing and subsequent activities for installing an underground water monitoring bore at site B can increase the risk of spreading the dieback disease, especially to the adjacent remnant Banksia Woodlands TEC.

Conclusion

The clearing and subsequent activities at site A can create and increase the risk of spreading dieback disease to the remnant vegetation.

Conditions

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

- Weed and dieback management

3.3. Relevant planning instruments and other matters

The Shire of Dandaragan and the Shire of Moora, where the six sites are located, were invited to provide comments on the application. The Shire of Dandaragan (2023) advised that the Shire did not have any objections to the proposed clearing. The Shire of Moora did not provide comments.

DWER Mid-West Gascoyne advised that the proposed clearing is unlikely to have significant impact on watercourses, and no permit to interfere with bed and banks is required, given that no watercourses intersect the application sites.

However, the DWER Mid-West Gascoyne recommended the applicant to consider if it is required to apply for a 26D licence for the construction or alteration of wells and a 5C licence to 'take' water from a water resource or seek alternate water supply (DWER, 2023c). Replied to this recommendation, the applicant confirmed that they are aware of the obligations under the RIWI Act and will be sourcing water from one of their existing superficial bores, for which a license is not required (DWER, 2023a).

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.

End

Appendix A. Additional information provided by applicant

During the assessment, the applicant responded to requests for information on the following (see below).

Request for information	Further information provided
Photographs of the vegetation to support the identification of vegetation type	The applicant provided the photographs on 22 February 2023. The representative photographs are presented in Appendix E of this Decision Report.
Detailed information on the specific cleared area and land use purpose after clearing	The applicant provided further clarification on the extent of the bores' installation, explaining for the relatively large footprint required. The applicant also confirmed that the clearing areas (except an area around each bore and areas for access to the bores) will be revegetated. This information is presented in Section 3.1 of the Decision Report.
Confirmation on the use of underground water	The applicant confirmed that they are aware of the obligations under the <i>R/WI Act</i> and will be sourcing water from one of their existing superficial bores, for which a license is not required. This information is presented in Section 3.3 of the Decision Report.

Appendix B. Site characteristics

B.1. Site characteristics

Characteristic	Details
Local context	<p>The areas proposed to be cleared are parts of expansive tracts of native vegetation in the intensive land use zone of Western Australia. The application area includes six separate sites, located approximately 190 km north of Perth. Five sites are located within the Shire of Dandaragan, and one site is within the Shire of Moora.</p> <p>Spatial data indicates the local area (20-kilometre radius from the centre of the areas proposed to be cleared) retains approximately 34.2 per cent of the original native vegetation cover.</p>
Ecological linkage	The application area is not part of any mapped ecological linkage and is not considered likely to form part of any informal linkage due to the relatively small extent of the proposed clearing areas compared to the remaining intact vegetation.
Conservation areas	Distances of the nearest conservation area to site A (a conservation park), site B (a Nature Reserve area), site C (Karamarra Nature Reserve), site D (Jam Hill Nature Reserve), site E (a DPIRD Agreement to Reserve area) and site F (Karamarra Nature Reserve) are 0.2, 6.2, 0.03, 8.5, 3.4 and 11.5 kilometres, respectively.
Vegetation description	<p>Photographs provided by applicant show vegetation types at the application area consist of:</p> <ul style="list-style-type: none"> • Site A and B: Open shrubland with scattered <i>Banksia sp.</i>, <i>Eucalyptus sp.</i>, <i>Acacia sp.</i> • Site C: Small trees of <i>Banksia sp.</i>, <i>Allocasuarina sp.</i>, <i>Acacia sp.</i> • Site D: Trees of <i>Eucalyptus sp.</i>, <i>Acacia sp.</i> • Site E: Disturbed shrubland with some <i>Banksia sp.</i>, <i>Acacia sp.</i> • Site F: Disturbed shrubland with some <i>Acacia sp.</i> <p>This is partly consistent with the mapped vegetation type(s) (Shepherd et al, 2001), specifically:</p> <ul style="list-style-type: none"> • Beard 999, which is described as Woodland southwest with Jarrah, marri and wandoo <i>Eucalyptus marginata</i>, <i>Corymbia calophylla</i>, <i>E. wandoo</i> (site D) • Beard 1030, which is described as Low woodland or open low woodland with other acacia, banksia, peppermint, cypress pine, casuarina, York gum, <i>Acacia spp.</i>, <i>Banksia spp.</i>, <i>Agonis flexuosa</i>, <i>Callitris spp.</i>, <i>Allocasuarina spp.</i>, <i>Eucalyptus loxophleba</i> (part of site A, site B) • Beard 1031, which is described as Scrub-heath/Heath (part of site A, site E)

Characteristic	Details															
	<ul style="list-style-type: none"> Beard 1036, which is described as Low woodland; Banksia prionotes with other acacia, banksia, peppermint, cypress pine, casuarina, York gum, <i>Acacia</i> spp., <i>Banksia</i> spp., <i>Agonis flexuosa</i>, <i>Callitris</i> spp., <i>Allocasuarina</i> spp., <i>Eucalyptus loxophleba</i> (site C and F) <p>The mapped vegetation types retain approximately 21.1 to 64.1 per cent of the original extent (Government of Western Australia, 2019).</p>															
Vegetation condition	<p>Photographs supplied by the applicant indicate the vegetation within the proposed clearing area is very good to completely degraded conditions depending on the sites (Keighery, 1994), described as:</p> <ul style="list-style-type: none"> 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 (site A and B). 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 (site A and B). 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 (site C, D, E and F). 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 (Site F). <p>The full Keighery (1994) condition rating scale is provided in Appendix D. Representative photos are available in Appendix E.</p>															
Climate and landform	<p>Climate: Annual mean maximum temperature is 25.9 degrees Celsius. Annual mean minimum annual temperature is 11.8 degrees Celsius.</p> <p>Rainfall: Mean annual rainfall is 537.6 millimetres.</p> <p>Six sites proposed to be cleared lie within seven types of landform:</p> <table border="1" data-bbox="373 1350 1441 1776"> <thead> <tr> <th data-bbox="373 1350 485 1395">Site</th> <th data-bbox="485 1350 1441 1395">Landform</th> </tr> </thead> <tbody> <tr> <td data-bbox="373 1395 485 1440">A</td> <td data-bbox="485 1395 1441 1440">Plateau residuals, complex of small patches of Ye2 in Ye3</td> </tr> <tr> <td data-bbox="373 1440 485 1518">B</td> <td data-bbox="485 1440 1441 1518">Complex pattern of dunes or low sandy rises, poorly drained plains, saline depressions and swamps</td> </tr> <tr> <td data-bbox="373 1518 485 1597">C</td> <td data-bbox="485 1518 1441 1597">Very gently to gently inclined hillslopes, sandplain and minor valleys, associated with Cp1a</td> </tr> <tr> <td data-bbox="373 1597 485 1630">D</td> <td data-bbox="485 1597 1441 1630">Colluvial slopes, very gently to gently inclined hillslopes</td> </tr> <tr> <td data-bbox="373 1630 485 1720" rowspan="2">E</td> <td data-bbox="485 1630 1441 1664">Plateau residuals, hillcrests and very gently to gently inclined hillslopes</td> </tr> <tr> <td data-bbox="485 1664 1441 1720">Plain, hillcrests and very gently inclined hillslopes</td> </tr> <tr> <td data-bbox="373 1720 485 1776">F</td> <td data-bbox="485 1720 1441 1776">Plateau residue and hillslopes and some small breakaways</td> </tr> </tbody> </table>	Site	Landform	A	Plateau residuals, complex of small patches of Ye2 in Ye3	B	Complex pattern of dunes or low sandy rises, poorly drained plains, saline depressions and swamps	C	Very gently to gently inclined hillslopes, sandplain and minor valleys, associated with Cp1a	D	Colluvial slopes, very gently to gently inclined hillslopes	E	Plateau residuals, hillcrests and very gently to gently inclined hillslopes	Plain, hillcrests and very gently inclined hillslopes	F	Plateau residue and hillslopes and some small breakaways
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Characteristic	Details																															
Soil description	The soil is mapped as:																															
	<table border="1"> <thead> <tr> <th>Site</th> <th>Code</th> <th>Name</th> <th>Soil type</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>224Ye_4</td> <td>Yerramullah 4 Subsystem</td> <td>Pale sandy gravels, gravelly pale deep sand, shallow gravel over duricrust, pale deep sand, some sandy duplexes, yellow deep sand</td> </tr> <tr> <td>B</td> <td>212Bs_5</td> <td>Bassendean 5 Subsystem</td> <td>Pale deep sands on rises, semi-wet to wet soils and grey sandy duplexes on flats</td> </tr> <tr> <td>C</td> <td>222Cp_2a</td> <td>Capitella 2 yellow Phase</td> <td>Yellow and pale deep sands, gravelly pale deep sand, some sandy earths</td> </tr> <tr> <td>D</td> <td>222Da_3</td> <td>Dandaragan 3 Subsystem</td> <td>Red to brown and yellow deep sands, some sandy gravels and sandy earths</td> </tr> <tr> <td rowspan="2">E</td> <td>222Co_5a</td> <td>Coalara 5 plain Phase</td> <td>Pale sandy gravels, gravelly pale deep sand, pale and yellow deep sands</td> </tr> <tr> <td>222Co_3a</td> <td>Coalara 3 crests Phase</td> <td>Sandy gravels, gravelly pale deep sand</td> </tr> <tr> <td>F</td> <td>222Rw_2</td> <td>Rowes 2 Subsystem</td> <td>Sandy gravels, gravelly pale deep sand, some duricrust</td> </tr> </tbody> </table>	Site	Code	Name	Soil type	A	224Ye_4	Yerramullah 4 Subsystem	Pale sandy gravels, gravelly pale deep sand, shallow gravel over duricrust, pale deep sand, some sandy duplexes, yellow deep sand	B	212Bs_5	Bassendean 5 Subsystem	Pale deep sands on rises, semi-wet to wet soils and grey sandy duplexes on flats	C	222Cp_2a	Capitella 2 yellow Phase	Yellow and pale deep sands, gravelly pale deep sand, some sandy earths	D	222Da_3	Dandaragan 3 Subsystem	Red to brown and yellow deep sands, some sandy gravels and sandy earths	E	222Co_5a	Coalara 5 plain Phase	Pale sandy gravels, gravelly pale deep sand, pale and yellow deep sands	222Co_3a	Coalara 3 crests Phase	Sandy gravels, gravelly pale deep sand	F	222Rw_2	Rowes 2 Subsystem	Sandy gravels, gravelly pale deep sand, some duricrust
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Land degradation risk	All sites proposed to clear has low land degradation risk due to salinity, flooding, water erosion, water logging and phosphorus export (except for site A with medium risk of phosphorus export and site B with high risk of water logging and medium risk of phosphorus export). Wind erosion and subsurface acidification are the common land degradation risks of all sites (DPIRD, 2021).																															
Waterbodies	The desktop assessment and aerial imagery indicated that no watercourses transect the sites proposed to be cleared. The distance of the closest waterbody of each site from 20 to 800 metres. Site B is mapped within the floodplain of the Mullering Brook.																															
Hydrogeography	Sites A and B are within the Gingin Groundwater Area, while sites C to F are within the Jurien Groundwater Area proclaimed under the Rights in Water and Irrigation Act 1914. Groundwater salinity varies among sites. Sites A and B are mapped with salinity of 500-1000 milligrams per litre total dissolved solids; while these values are 1000-3000 for sites D, E, and F, and 14000-35000 for site C.																															
Flora	There are records of 198 threatened and priority flora species in the combined local area (combined 20-kilometre radius buffers of six sites), including 27 species listed as threatened. There are six threatened species mapped in the same soil type(s) and vegetation type(s) as different sites of the application area.																															
Ecological communities	<p>There are three types of ecological communities mapped in the local area, including:</p> <ul style="list-style-type: none"> • Banksia Dominated Woodlands of the Swan Coastal Plain IBRA Region (Endangered - TEC) • Eucalypt woodlands of the Western Australian Wheatbelt (Critically endangered - TEC) • Vegetation alliances on ridges and slopes of the chert hills of the Coomberdale Floristic Region (Endangered - TEC) <p>Sites A, B, C and G are mapped as the Banksia Dominated Woodlands TEC, while sites D, E and F are 0.7 – 2.0 kilometres from mapped occurrences of the TEC.</p>																															
Fauna	The desktop assessment identified that a total of 32 threatened or priority fauna species have been recorded within the combined local area, including eight threatened fauna species, 12 priority fauna species, and 12 specially protected fauna species. Roosting records are identified in the local area (20-kilometre radius) of site B, C, D and F with the closest roost of approximately 17.2, 7.9, 1.5 and 10.0 kilometres from the sites, respectively.																															

Characteristic	Details

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*					
Geraldton Sandplains (Site A)	3,136,037.83	1,404,424.32	44.8	568,255.10	18.12
Swan Coastal Plain (Site B to F)	1,501,221.93	579,813.47	38.6	222,916.97	14.85
Vegetation complex*					
Beard vegetation association 999 (Site D)	762.54	160.63	21.1		
Beard vegetation association 1030 (part of site A, site B)	138,637.09	88,804.49	64.1		
Beard vegetation association 1031 (part of site A, site D, site E)	269,079.94	88,569.91	32.9		
Beard vegetation association 1036 (Site C and F)	85,526.48	31,697.72	37.1		
Local area (calculation - delete if not required)					
20 km radius	412,565.74	141,234.81	34.2	-	-

*Government of Western Australia (2019)

B.3. Flora analysis table

Species name	Conservation status	Suitable habitat features? [Y/N]	Suitable vegetation type? [Y/N]	Suitable soil type? [Y/N]	Distance of closest record to application area (km)	Number of known records (total)
Site A						
<i>Conostephium magnum</i>	P4	Y	Y	Y	0.7	17
<i>Hypocalymma tetrapterum</i>	P3	Y	Y	Y	3.6	21
Site B						
<i>Andersonia gracilis</i>	T	Y	Y	Y	3.2	44
<i>Anigozanthos viridis subsp. terraspectans</i>	T		Y	Y	3.3	21
<i>Chordifex reseminans</i>	P2	Y	Y	Y	2.3	15
<i>Conospermum scaposum</i>	P3	Y	Y	Y	1.0	13
<i>Conostephium magnum</i>	P4	Y	Y	Y	0.7	14
<i>Desmocladus nodatus</i>	P3		Y	Y	0.1	17

Species name	Conservation status	Suitable habitat features? [Y/N]	Suitable vegetation type? [Y/N]	Suitable soil type? [Y/N]	Distance of closest record to application area (km)	Number of known records (total)
<i>Eremophila glabra subsp. chlorella</i>	T	Y	Y	Y	2.8	4
<i>Isopogon panduratus subsp. palustris</i>	P3		Y	Y	1.6	17
<i>Macarthuria keigheryi</i>	T	Y	Y	Y	2.1	15
<i>Paracaleana dixonii</i>	T	Y	Y	Y	4.6	2

B.4. Fauna analysis table

Species name	Conservation status	Suitable habitat features? [Y/N]	Suitable vegetation type? [Y/N]	Distance of closest record to application area (km)	Number of known records (total)
Site A					
<i>Zanda latirostris</i> (Carnaby's cockatoo)	EN	Y- foraging habitat only	Y	8.5	73
<i>Ctenotus gemmula</i> (Swan Coastal Plain population) (jewelled southwest Ctenotus (Swan Coastal Plain population))	P3	Y	Y	6.6	6
<i>Neelaps calonotos</i> (Black-striped snake)	P3	Y	Y	6.6	4
<i>Notamacropus Irma</i> (Western brush wallaby)	P4	Y	Y	2.1	4
Site B					
<i>Zanda latirostris</i> (Carnaby's cockatoo)	EN	Y- foraging habitat only	Y	16.7	18
<i>Ctenotus gemmula</i> (Swan Coastal Plain population) (jewelled southwest Ctenotus (Swan Coastal Plain population))	P3	Y	Y	1.3	6
<i>Neelaps calonotos</i> (Black-striped snake)	P3	Y	Y	6.2	4
<i>Notamacropus Irma</i> (Western brush wallaby)	P4	Y	Y	8.9	4
Site C					
<i>Zanda latirostris</i> (Carnaby's cockatoo)	EN	N	Y	7.6	174
Site D					
<i>Zanda latirostris</i> (Carnaby's cockatoo)	EN	N	Y	1.6	120
Site E					
<i>Zanda latirostris</i> (Carnaby's cockatoo)	EN	Y	Y	11.7	29
Site F					
<i>Zanda latirostris</i> (Carnaby's cockatoo)	EN	Y	Y	9.5	121

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

B.5. Land degradation risk table

Risk categories	Site A	Site B	Site C	Site D	Site E	Site F
Wind erosion	H2	H2	H2	H2	H2	H2
Water erosion	L1	L1	L2	L1	L1	L1
Salinity	L1	L2	L2	L1	L1	L1
Subsurface Acidification	H2	H2	H2	H2	H2	H2
Flood risk	L1	L1	L2	L1	L1	L1
Water logging	L1	H1	L2	L1	L1	L1
Phosphorus export risk	M2	M2	L2	L2	L2	L1

Note:

L1 <3% of map unit has a moderate/high to high/extreme (or is presently acid/saline for the risk of subsurface acidification/salinity)

- L2 3-10% of map unit has a moderate/high to high/extreme (or is presently acid/saline for the risk of subsurface acidification/salinity)
- M1 10-30% of map unit has a moderate/high to high/extreme (or is presently acid/saline for the risk of subsurface acidification/salinity)
- M2 30-50% of map unit has a moderate/high to high/extreme (or is presently acid/saline for the risk of subsurface acidification/salinity)
- H1 50-70% of map unit has a moderate/high to high/extreme (or is presently acid/saline for the risk of subsurface acidification/salinity)
- H2 >70% of map unit has a moderate/high to high/extreme (or is presently acid/saline for the risk of subsurface acidification/salinity)

Appendix C. Assessment against the clearing principles

Assessment against the clearing principles	Variance level	Is further consideration required?
Environmental value: biological values		
<p><u>Principle (a):</u> <i>“Native vegetation should not be cleared if it comprises a high level of biodiversity.”</i></p> <p><u>Assessment:</u></p> <p>The area proposed to be cleared contain six separate sites, naming from A to F. Vegetation at site C, D, E and F is in degraded to completely degraded conditions with disturbed storeys. Meanwhile a part of site A and site B are mapped within the “Banksia Dominated Woodlands of the Swan Coastal Plain IBRA Region” (Endangered – Threatened ecological community (TEC)) with very good vegetation condition. However, considering the small areas proposed to be cleared (0.18 and 0.14 hectares at site A and B, respectively), it is unlikely that the native vegetation at site A and B comprises a high level of biodiversity.</p> <p>Therefore, the proposed clearing areas can be considered as not likely to be at variance to this principle.</p>	Not likely to be at variance	Yes <i>Refer to Section 3.2.1 and 3.2.2, above.</i>
<p><u>Principle (b):</u> <i>“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.”</i></p> <p><u>Assessment:</u></p> <p>All sites of the application are mapped within the distribution of Carnaby’s black cockatoos. The closest records of black cockatoos to each site vary from 1.0 to 9.5 kilometres. Provided photos show that the vegetation in some sites (A, B, D and E) contain suitable habitat for this species. However, given the confirmation of the applicant that only bushes, and understory vegetation will be removed and no large trees to be cleared, the proposed clearing may be considered as not likely significantly impact this fauna species.</p>	At variance	Yes <i>Refer to Section 3.2.1, above.</i>
<p><u>Principle (c):</u> <i>“Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora.”</i></p> <p><u>Assessment:</u></p> <p>The desktop assessment shows that site B may contain suitable habitat for threatened flora species including <i>Andersonia gracilis</i>, <i>Anigozanthos viridis</i> subsp. <i>terraspectans</i>, <i>Macarthuria keigheryi</i>, and <i>Paracaleana dixonii</i>. The potential impacts on these threatened flora species are not considered significant and the area under application is not considered necessary for the continued existence of threatened flora, given the small extent of clearing.</p>	Not likely to be at variance	Yes <i>Refer to Section 3.2.2, above.</i>

Assessment against the clearing principles	Variance level	Is further consideration required?
<p><u>Principle (d):</u> <i>“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.”</i></p> <p><u>Assessment:</u></p> <p>Part of site A, whole of site B are considered to contain the ecological community Banksia Dominated Woodlands of the Swan Coastal Plain IBRA Region (EPBC Act-listed TEC/ BC Act-listed PEC-Priority 3).</p> <p>Given the small area proposed to clear and the existence of extensive area of this TEC in the combined local area (more than 11,000 hectares), the proposed clearing is not considered in having significant impact on the maintenance of this TEC in the local context.</p>	May be at variance	Yes <i>Refer to Section 3.2.2, above.</i>
Environmental value: significant remnant vegetation and conservation areas		
<p><u>Principle (e):</u> <i>“Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.”</i></p> <p><u>Assessment:</u></p> <p>The proposed clearing involves only understory vegetation. Considering the ratio of remnant vegetation in the local area (34 percent), the extent of clearing, the small clearing area and applicant’s requirement to revegetate, the proposed clearing is not likely to be at variance to this clearing principle.</p>	Not likely to be at variance	No
<p><u>Principle (h):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.”</i></p> <p><u>Assessment:</u></p> <p>Given that the application sites do not lie within any conservation areas, the small area proposed to be cleared and the extent of clearing activity (not clear large trees), the proposed clearing is not likely to have significant impacts on the environmental values of nearby conservation areas.</p>	Not likely to be at variance	No
Environmental value: land and water resources		
<p><u>Principle (f):</u> <i>“Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.”</i></p> <p><u>Assessment:</u></p> <p>Site B is located in the floodplain area of the minor non-perennial watercourse of Mullering Brook, which is approximately 500 metres north of the site. However, noting the small area proposed to clear at site B (0.14ha) the proposed clearing is unlikely to cause significant impacts.</p>	At variance	No
<p><u>Principle (g):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.”</i></p> <p><u>Assessment:</u></p> <p>The soils at all sites are mapped susceptible to wind erosion and subsurface acidification. However, noting the small application area at each site and the applicant’s intention to revegetate after completing the clearing purpose activity, the proposed clearing is not likely to have an appreciable impact on land degradation.</p>	Not likely to be at variance	No

Assessment against the clearing principles	Variance level	Is further consideration required?
<p><u>Principle (i)</u>: “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.”</p> <p><u>Assessment</u>:</p> <p>Given no watercourses are recorded within the application sites, the proposed clearing is unlikely to impact surface or ground water quality.</p>	Not likely to be at variance	No
<p><u>Principle (j)</u>: “Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.”</p> <p><u>Assessment</u>:</p> <p>Available database shows that all proposed clearing sites have low risk of flood risk. Furthermore, considering the small extent of the clearing, the proposed clearing is not likely to contribute to increased incidence or intensity of flooding.</p>	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. Photographs of the vegetation

Representative photographs of vegetation at six sites of the application area are presented below.

Site A



Site B



Site C



Site D



Site E



Site F



Appendix F. Sources of information

F.1. GIS databases

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

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

Restricted GIS Databases used:

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

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