Permacast Pty Ltd

Native Vegetation Clearing Permit Supporting Documentation

Lot 21 Norman Road, Cardup

3 July 2022

(Rev 0)

EDS Environmental

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1. Project Summary

1.1 Project Overview

Harley Dykstra, on behalf of Permacast Pty Ltd, is seeking to lodge a development application for the establishment of a gravel laydown area within Lot 21, Morman Road, Cardup (the Proposal area), located in the Shire of Shire of Serpentine-Jarrahdale. The Figure 1 and Figure 2 present the local and regional context of the Proposal.

The Proposal necessitates the removal of up to 1.5 ha of vegetation, within a Proposal area of 30 ha. The wider Proposal area will form the extent of the Permit Boundary to provide flexibility under a Purpose Permit.

1.2 Purpose and Scope of Assessment

This document has been prepared in support of a Native Vegetation Clearing Permit (NVCP) (Purpose Permit) application for the Proposal.

This assessment report involved a desktop analysis of environmental aspects and impacts, a site investigation, and an assessment of native vegetation clearing impacts. The study area is confined to a local area of a 10 km radius of the Proposal area.

1.3 Responsible Person

All compliance and regulatory requirements regarding this assessment should be forwarded by email, post or courier to the following address:

Postal PO Box 232 Mundijong, Western Australia 6123

Correspondence relating to this NVCP application should be addressed to:

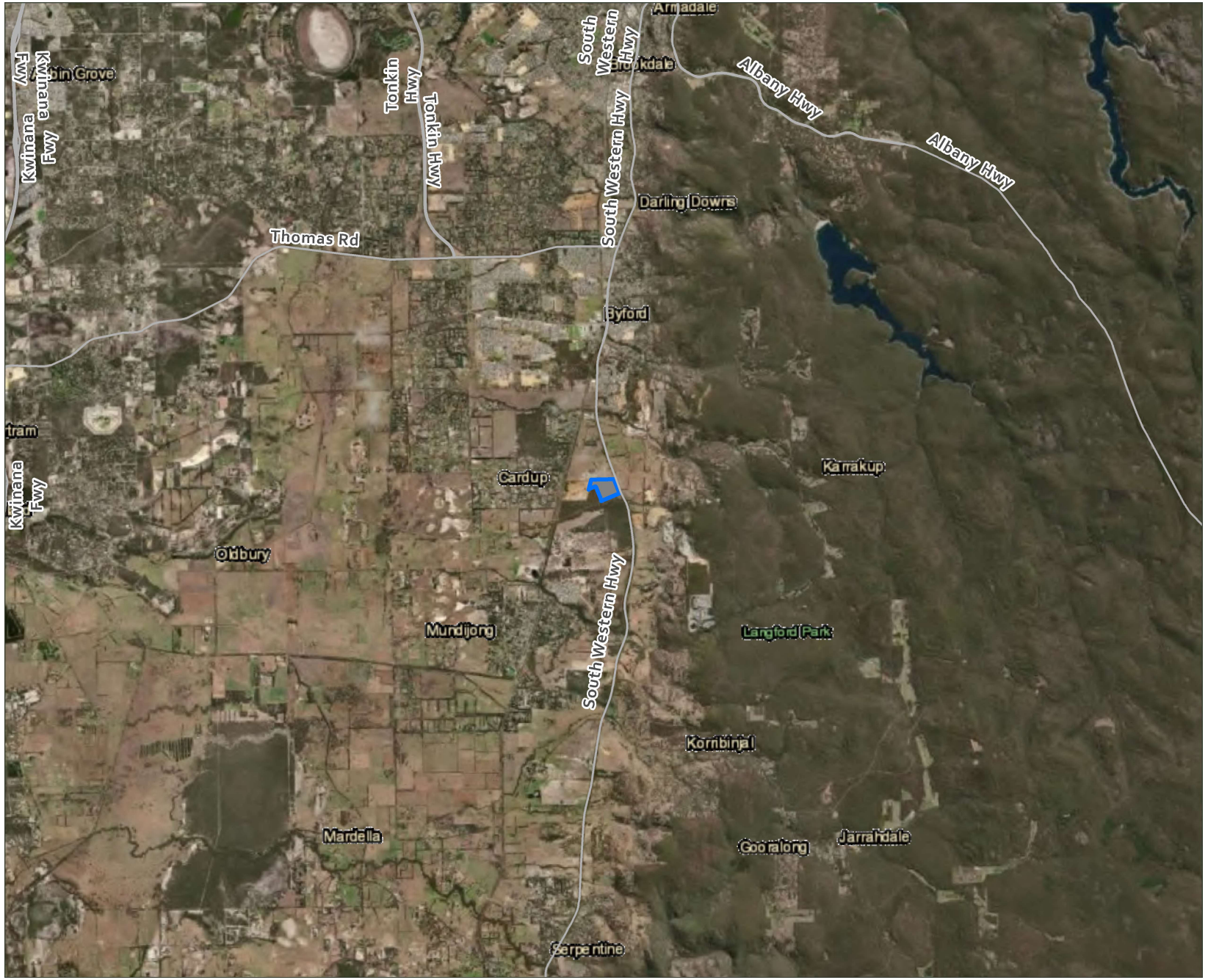
Proponent: PERMAcast Pty Ltd

Contact: [redacted]

Title: General Manager

Company Phone: 9550 6869

E-mail: [redacted]



Legend

- Permit Area
- Road Network

Author: ECM

Date: 12/06/2022

Scale: 1:135,000

0 1,500 3,000 m

Job No PMC0001

Coordinate System GDA2020 MGA Zone 50

Permacast NVCP Application - Cardup

Figure 1: Regional Area

Legend

- Permit Area
- Road Network

Author: ECM

Date: 16/06/2022

Scale: 1:5,000

0 0.05 0.1 km

Job No PMC0001

Coordinate System GDA2020 MGA Zone 50

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Figure 2: Permit Area

2. Legislative Context

2.1 Planning Framework

The Project area is zoned 'Industrial' under the current Metropolitan Region Scheme (MRS). The Project area was rezoned from 'Rural' to 'Industrial' in 2012, following the approval of MRS Amendment 1215/41 'Cardup Industrial Precinct'. The Proposal area is currently zoned 'Urban Development' under the Shire of Serpentine Jarrahdale Town Planning Scheme no. 2.

Following the approval of MRS Amendment 1215/41, the Cardup industrial Precinct has been subject to further planning approval through a Local Structure Plan in May 2018 (Harley Dykstra, 2018).

2.2 Environmental Protection Act 1986 Part IV Section 48A

The *Planning and Development Act 2005 and the Metropolitan Redevelopment Act 2011* require all proposed schemes and scheme amendments to be referred to the Environmental Protection Authority (EPA) by the authority responsible for the scheme. Under section 48A of the *Environmental Protection Act 1986* (EP Act), the EPA will decide whether the referred scheme or scheme amendment:

a) should not be assessed (advice and recommendations may be provided); or
b) should be assessed; or
c) is incapable of being made environmentally acceptable.

In some instances where the EPA determines not to formally assess a scheme, they can provide advice on environmental matters to the responsible authority. The expectation of the EPA is that this advice is considered in the planning assessment process and incorporated into approval conditions if required.

The WAPC referred MRS Amendment 1215/41 'Cardup Industrial Precinct' to the EPA for consideration under section 48A of the EP Act. Following consideration of the amendment, the EPA determined that the scheme amendment does not require formal assessment and issued advice on environmental matters. This advice is presented in Appendix D.

2.3 Environmental Protection Act 1986 Part V Division 2 - Native Vegetation Clearing

The clearing of native vegetation in Western Australia is regulated under Part V Division 2 of the EP Act and the *Environmental Protection (Clearing of Native Vegetation) Regulations 2004* (Clearing Regulations). In addition to the matters considered under the Clearing Principles, listed under Schedule 5 of the EP Act, this assessment has had regard to the objects and principles under section 4A of the EP Act, particularly:

1. the precautionary principle
2. the principle of intergenerational equity
3. 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:

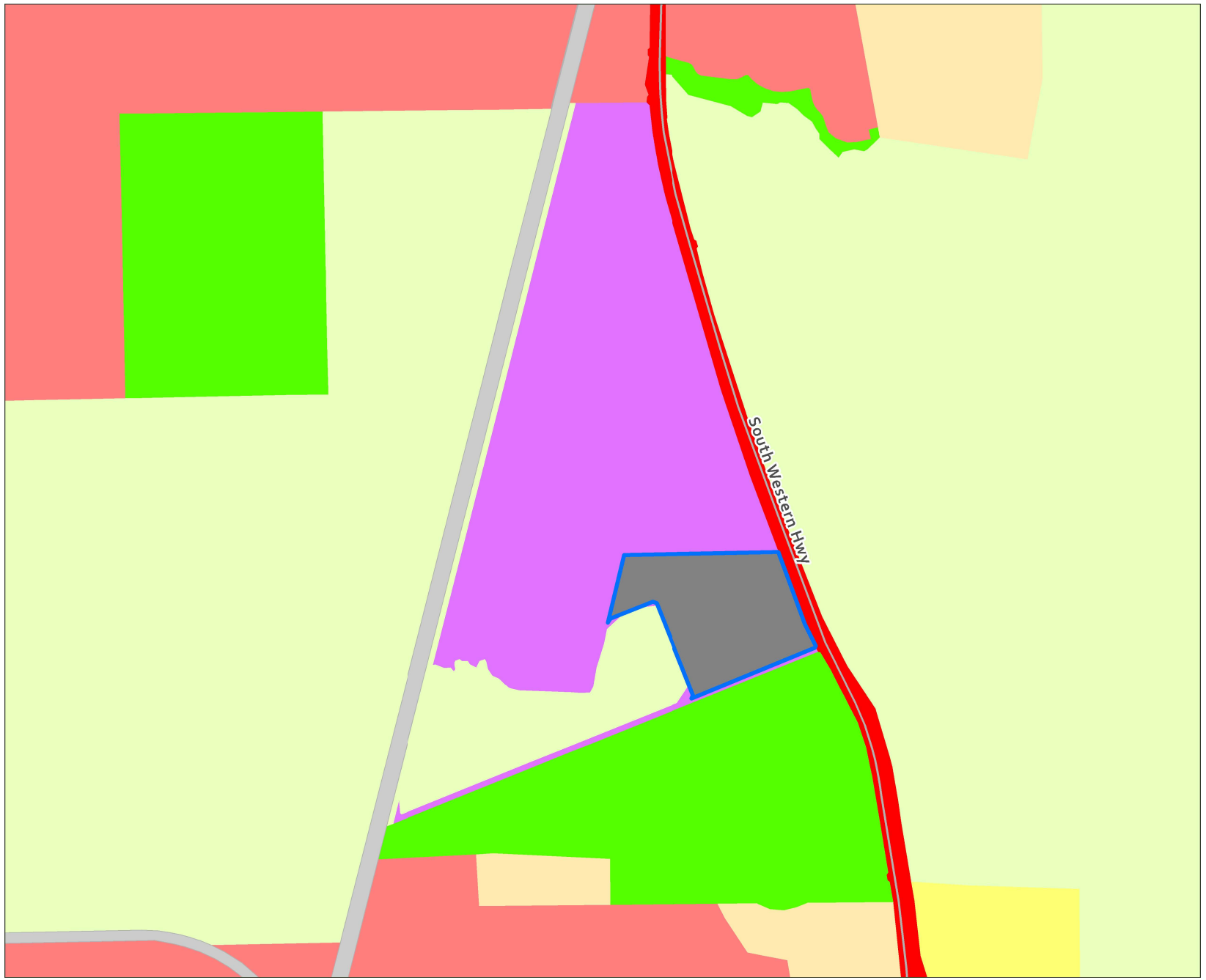
- A guide to the assessment of applications to clear native vegetation (December 2013)
- Procedure: Native vegetation clearing permits (DWER, October 2019)
- Environmental Offsets Guidelines (August 2014)

2.3.1 **Environmentally Sensitive Areas**

Environmentally Sensitive Areas (ESAs) are prescribed under the Clearing Regulations and have been identified to protect the native vegetation values of areas surrounding significant, threatened or scheduled ecosystems or communities.

Within an ESA, exemptions under the Environmental Protection (Clearing of Native Vegetation)) Regulations 2004 do not apply. However, exemptions under Schedule 6 of the Environmental Protection Act 1986 still apply, including clearing under a subdivision approval under the Planning and Development Act 2005 (a recognised exemption).

The Proposal area intersects a mapped ESA associated with the Threatened Ecological Community identified within Bush Forever Site 361, located adjacent to the Proposal area.



Legend

- Permit Area
- Road Network

MRS Zoning

- Industrial
- Primary regional roads
- Railways
- Urban
- Urban deferred
- Parks and recreation
- Public purposes - special uses
- Parks and recreation - restricted public access
- Regional open space
- Rural

Author: ECM

Date: 12/06/2022

Scale: 1:20,000

0 245 490 m

Job No PMC0001

Coordinate System GDA2020 MGA Zone 50

Permacast NVCP Application - Cardup

Figure 3: MRS Zoning

3. Assessment Methodology

3.1 Preliminary Desktop Study

A preliminary desktop study was undertaken to assess the proposed native vegetation clearing and potential constraints associated with the project. The desktop assessment included viewing GIS shapefiles, reviewing government agency managed databases (where necessary) and consulting with relevant stakeholders.

The methodology used when completing an assessment of the clearing principles is provided in Section 5.1. Mapping was completed using ArcMap or Main Roads Integrated Mapping System (IMS).

Where relevant, results from the databases area provided in **Appendix B and C.**

3.2 Site visit

Further environmental assessment of the impacts of native vegetation clearing was undertaken including a site visit to verify desktop information.

Site photos of the vegetation proposed to be cleared are provided in **Appendix A.**

3.3 Literature Review

A review of biological surveys undertaken within the Proposal area was undertaken. The purpose of this review was to identify which areas within and surrounding the Proposal area had been previously subject to survey, for what purpose (e.g. planning approvals), and what environmental values were recorded. The review identified that the following investigations and reports had been undertaken of the Proposal area and its surrounds:

- Spring Flora and Vegetation Assessment (Cardno, 2009)
- Fauna Assessment (Harewood, 2013)
- Integrated Landscape Management Strategy (Emerge, 2014)
- Local Water Management Strategy (Emerge, 2014)
- Preliminary Acid Sulfate Soils Study (Galt, 2014)
- Hydrological Modelling Report (Emerge, 2014)

4. Assessment Findings

4.1 Regional and Local Environmental Context

4.1.1 Bioregion

The Proposal area is located in the Southwest Botanical Province of WA (Beard 1990). The study area is located in the Swan Coastal Plain Bioregion and Perth (SWA2) subregion as described by the Interim Biogeographic Region of Australia (IBRA) (Department of the Environment 2012).

The Perth subregion is composed of colluvial and aeolian sands, alluvial river flats and coastal limestone. Heath and/or Tuart woodlands occur on limestone, Banksia and Jarrah-Banksia woodlands on Quaternary marine dunes of various ages and Marri on colluvial and alluvial soils. The subregion also includes a complex series of seasonal wetlands (Mitchell et al. 2002).

4.1.2 Regional Vegetation

4.1.2.1 Pre-European Vegetation Associations

Vegetation occurring within the region was initially mapped at a broad scale (1: 1 000 000) by Beard during the 1970s. This dataset formed the basis of several regional mapping systems, including the biogeographical region dataset (Interim Biogeographic Regionalisation for Australia) for Western Australia (DEE 2017a), physiographic regions defined by Beard (1981).

The Proposal area comprises of two Beard (1981) vegetation associations, as presented in Table 1.

Table 1: Pre-European Vegetation Associations

Vegetation Association	Current Extent (IBRA Region) (Ha)	Percent remaining in IBRA Region	Current Extent (LGA) (Ha)	Percent remaining in LGA
VA 3 - Medium forest; jarrah-marri	3,150.77	18.14	37,963.61	80.92
VA 968 - Medium woodland; jarrah, marri & wandoo	9,017.32	6.62	1,121.13	4.60

4.1.2.2 Vegetation Complexes

Vegetation Complexes within the Swan Coastal Plain have been defined by Heddle et al. (1980) and are based on vegetation in association with landforms and underlying geology. Native vegetation complexes as described by Heddle et al. (1980) within the Proposal area, include:

- **Forrestfield Complex –** Vegetation ranges from open forest of *Corymbia calophylla* (Marri) - *Eucalyptus wandoo* (Wandoo) - *Eucalyptus marginata* (Jarrah) to open forest of *Eucalyptus marginata* (Jarrah) - *Corymbia calophylla* (Marri) - *Allocasuarina fraseriana* (Sheoak) - *Banksia* species. Fringing woodland of *Eucalyptus* rudis (Flooded Gum) in the gullies that dissect this landform.

This complex is above the minimum threshold of 10% target for the retention of vegetation complexes in constrained areas on the Swan Coastal Plain (EPA, 2000). The current extent within the Local Government area is more restricted, with 9.10% remaining. The current remaining extent of this vegetation complex (Government of WA, 2019b) is detailed in Table 2.

Table 2: Vegetation Complexes (Heddle/Mattiske) within the Proposal Area

Heddle/Mattiske Veg Complex	Pre-European Extent (ha)	2019 Vegetation Extent	% Remaining
Karrakatta Complex - Central and South	22,812.92	2,803.36	12.29

4.1.3 Local Vegetation

Cardno (2009) mapped local vegetation within the Proposal area to be in a 'Degraded' condition with two vegetation units present:

- CcE1 - *Corymbia calophylla* and Eucalyptus lane-*poolei* open woodland with scattered *Banksia attenuata* and *Banksia menzeissii* over *Kingia australis* over *Hakea spathulata*, *Banksia armata var. armata* and *Lepidosperma pubisqaumeum* on sandy soils, and
- C2 - Cleared Paddocks with scattered native species *Corymbia calophylla* and *Eucalyptus marginata* over paddock grasses and broadleaf weeds.

It should be noted that vegetation unit CcE1 was predominately associated with Bush forever Site 361 and that vegetation within the Proposal area did not represent similar quality vegetation.

EDS Environmental undertook a site investigation in April 2022. The purpose of this visit was primarily to identify potentially suitable habitat trees for Black Cockatoo's; However, during this visit, it was observed that vegetation was predominately in a degraded condition, absent any vegetation structure, as can be seen in Appendix A.

Vegetation units and condition is presented in Figures 4 and 5.

4.1.4 Threatened and Priority Ecological Communities

The Threatened Ecological Community (TEC)

The PMST search identified that the following Threatened Ecological Communities (TEC) may occur within 10 km of the Project area:

- Clay pans of the Swan Coastal Plain
- Tuart (*Eucalyptus gomphocephala*) Woodlands and Forests of the Swan Coastal Plain ecological community
- *Corymbia calophylla* - *Xanthorrhoea preissii* woodlands and shrublands of the Swan Coastal Plain
- *Corymbia calophylla* - *Kingia australis* woodlands on heavy soils of the Swan Coastal Plain
- Banksia Woodlands of the Swan Coastal Plain ecological community

Following review of previous vegetation surveys undertaken to support the Local Structure Plan, vegetation present with the Project area lacks the vegetation structure, species diversity and abundance to be representative of the above listed TECs.

4.1.5 Bush Forever Sites

As discussed, the Proposal area occurs adjacent to Bush Forever Site 361, which is considered regionally significant as it contains the TEC FCT 3b – *Corymbia calophylla – Eucalyptus marginata* woodlands on sandy clay soils (Gibson et al. 1994).

Additionally, a number of Bush Forever sites are located in close proximity to the Proposal area and include Bush Forever Site 354 located south of Norman Road, Bush Forever Site 350 in the railway

reserve adjacent to the western boundary of the Cardup Industrial Park, and Bush Forever Site 352 further west of the site.

The locations of the Bush Forever Sites within and nearby to the site are shown in Figure 6.

4.1.6 Conservation Significant flora

Desktop searches recorded up to 20 species of threatened flora species occurring within the 10 km of the Project area. The majority of these taxa were recorded within nearby nature reserves including the Cardup Nature Reserve, Brickwood Nature Reserve and Watkins Road Nature Reserve. Mundijong Road reserve is also known to be locally significant in the local area due to the presence of threatened flora.

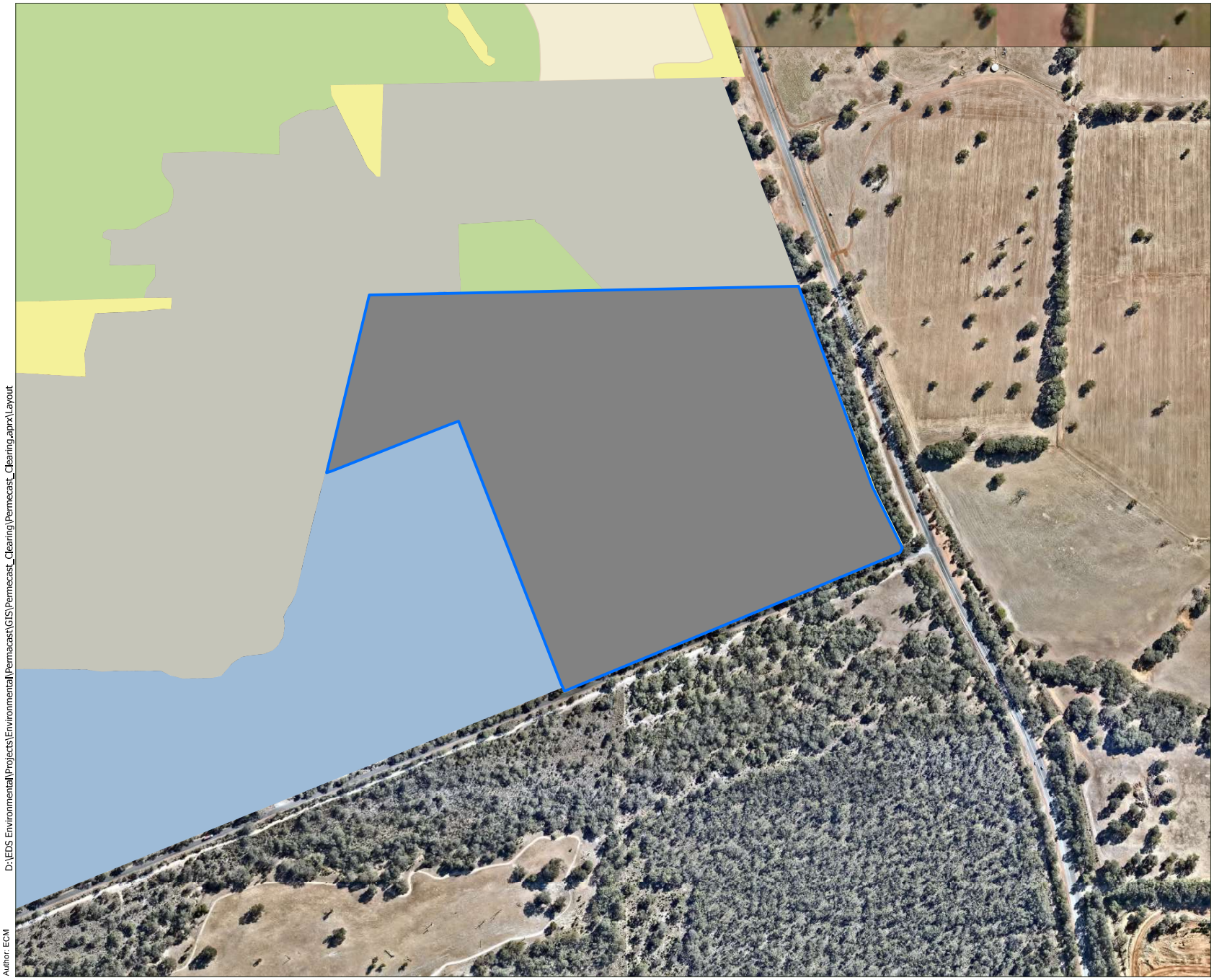
The flora and vegetation survey (Cardno 2009a) identified 49 flora species occurring within the Cardup Industrial Park. Of those species recorded, 29 (60%) were introduced (weed) species. No threatened or priority flora were identified within the site during the survey.

Threatened flora occurring within 10km are presented in Table 3.

Table 3: Threatened flora within 10 km of the Proposal area

Scientific Name	Common Name	2019 Vegetation Extent	
		BC Act	EPBC ACt
Synaphea sp. Serpentine (G.R. Brand 103)	null	T	Critically Endangered
Synaphea sp. Fairbridge Farm (D. Papenfus 696)	Selena's Synaphea	T	Critically Endangered
Eucalyptus x balanites	Cadda Road Mallee, Cadda Mallee	T	Endangered
Thelymitra stellata	Star Sun-orchid	T	Endangered
Diuris purdiei	Purdie's Donkey-orchid	T	Endangered
Drakaea elastica	Glossy-leafed Hammer Orchid, Glossy-leaved Hammer Orchid, Warty Hammer Orchid	T	Endangered
Diplolaena andrewsii	null	T	Endangered
Synaphea sp. Pinjarra Plain (A.S. George 17182)	null	T	Endangered
Caladenia huegelii	King Spider-orchid, Grand Spider-orchid, Rusty Spider-orchid	T	Endangered
Verticordia plumosa var. ananeotes	Tufted Plumed Featherflower	T	Endangered
Lepidosperma rostratum	Beaked Lepidosperma	T	Endangered
Andersonia gracilis	Slender Andersonia	T	Endangered
Lasiopetalum pterocarpum	Wing-fruited Lasiopetalum	T	Endangered
Grevillea curviloba subsp. incurva	Narrow curved-leaf Grevillea	T	Endangered
Anthocercis gracilis	Slender Tailflower	T	Vulnerable
Morelotia australiensis	Southern Tetraria	T	Vulnerable

Scientific Name	Common Name	2019 Vegetation Extent	
		BC Act	EPBC ACt
Drakaea micrantha	Dwarf Hammer-orchid	T	Vulnerable
Diuris micrantha	Dwarf Bee-orchid	T	Vulnerable
Diuris drummondii	Tall Donkey Orchid	T	Vulnerable
Eleocharis keigheryi	Keighery's Eleocharis	T	Vulnerable



Legend

- Permit area

Vegetation Units (Emerge, 2014)

- Building and Infrastructure
- C1 - Cleared dampland with scattered Casuarina obesa over scattered Juncus pallidus over *Pennisetum clandestinum.
- C2 - Cleared Paddocks with scattered native species Corymbia calophylla and Eucalyptus marginata over paddock grasses and broadleaf weeds.
- C3 - Cleared Paddocks with planted *Eucalyptus spp. along property boundaries and around residential dwellings.
- CcE1 - Corymbia calophylla and Eucalyptus lane-poolei open woodland with scattered Banksia attenuata and Banksia menzeissii over Kingia australis over Hakea spathulata, Banksia armata var. armata and Lepidosperma pubisqaumeum on sandy soils.

D:\EDS Environmental\Projects\Environmental\Permacast\GIS\Permecast_Clearing\Permecast_Clearing.aprx\Layout

Author: ECM

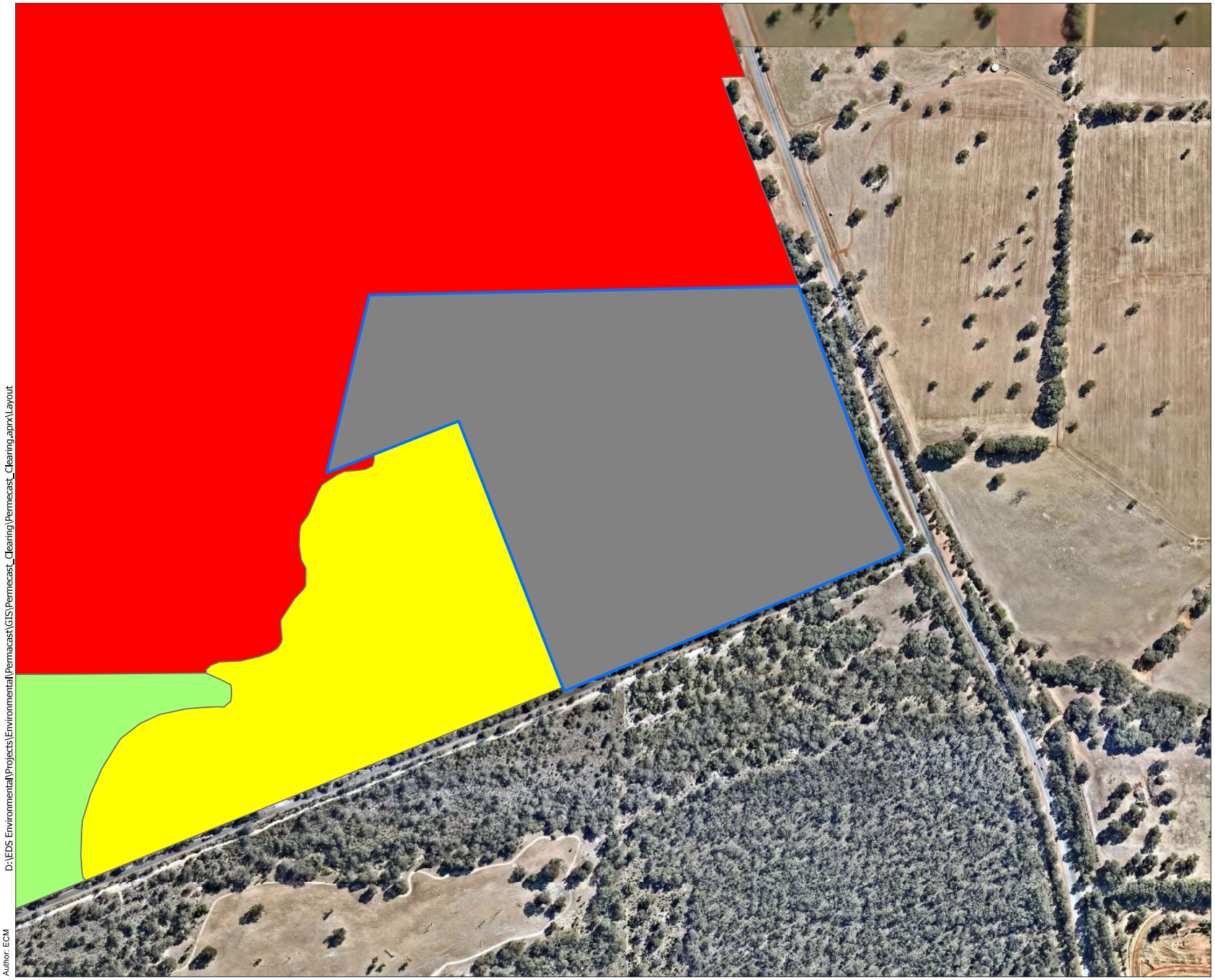
A3 scale: 1:5,000

0 115 230 Meters

Coordinate System: GDA2020 MGA Zone 50

Permacast NVCP Application - Cardup

Figure 4- Vegetation Units



Legend

- Permit area

Vegetation Condition (Emerge, 2014)

- Completely degraded
- Degraded
- Good - degraded

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Author: ECM

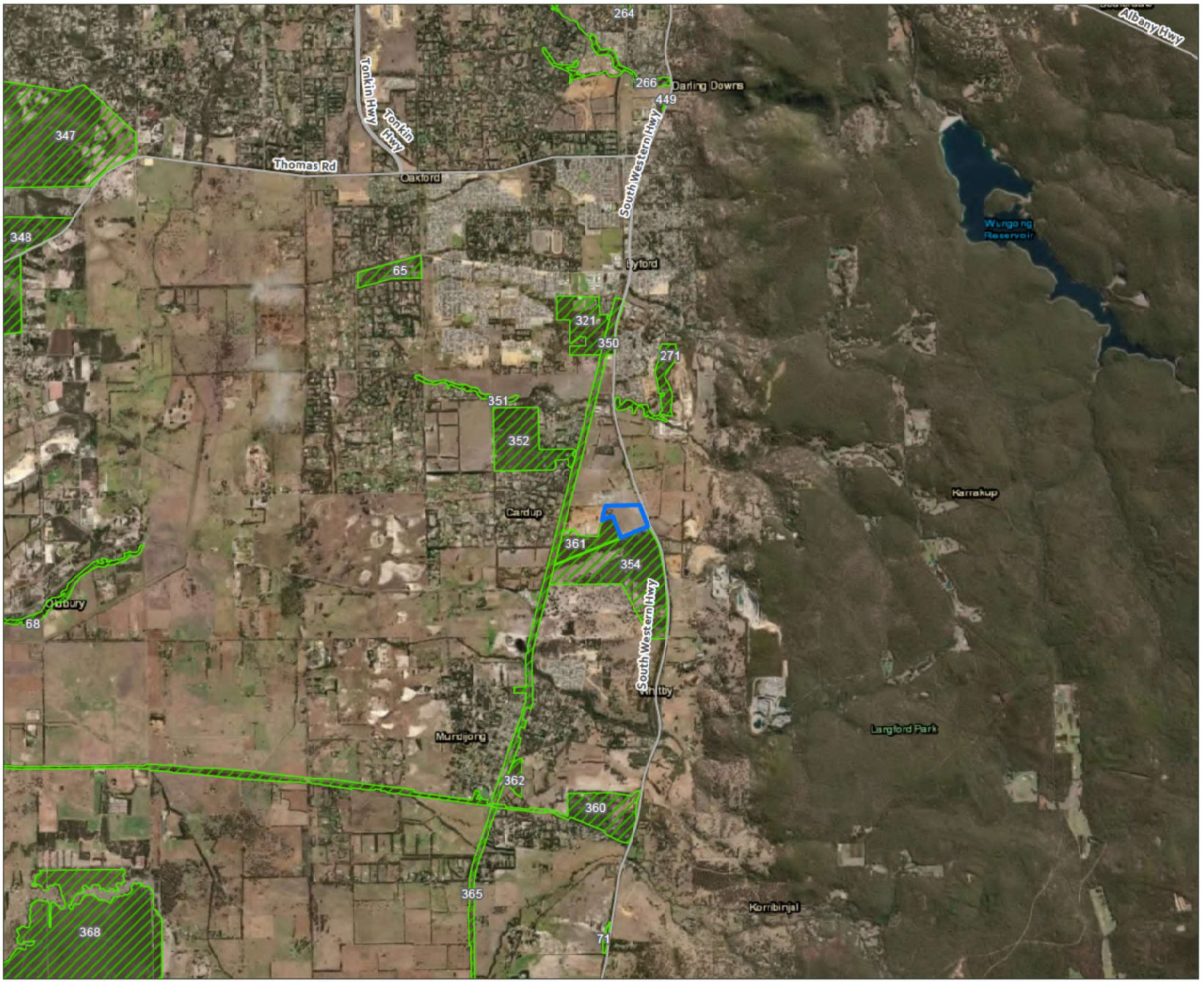
A3 scale: 1:5,000

0 115 230 Meters

Coordinate System: GDA2020 MGA Zone 50

Permacast NVCP Application - Cardup

Figure 5- Vegetation Condition



Legend

- Permit Area
- Road Network
- Bush Forever Areas

Author ECM

Date: 12/06/2022

Scale: 1:90,000

0 1.25 2.5 km

Job No PMC0001

Coordinate System GDA2020 MGA Zone 50

Permacast NVCP Application - Cardup

Figure 6: Bush Forever Areas

4.1.7 **Conservation Significant Fauna**

The Proposal area is within the mapped distribution of all three Black Cockatoo species (DSEWPaC, 2012). While no individuals of Black Cockatoo were observed during the site inspection, their presence within the Project area was confirmed via foraging evidence observed in the form of chewed marri nuts as presented in Plate 1.

Regarding breeding and roosting habitat, up to 20 potential Black Cockatoo breeding trees were identified with a DBH greater than 500 mm. However, no suitable hollows were observed from the ground during the site visit. One dead stage contained some visible hollows; however, these were considered unsuitable due to the orientation and size of the hollows and the presence of bees, as evident in Appendix A. In addition, following a review of publicly available DBCA databases, no known breeding or roosting sites occur within 5 km of the Proposal area.

Regional Black Cockatoo habitat surrounding the Proposal area is presented in Figure 7.

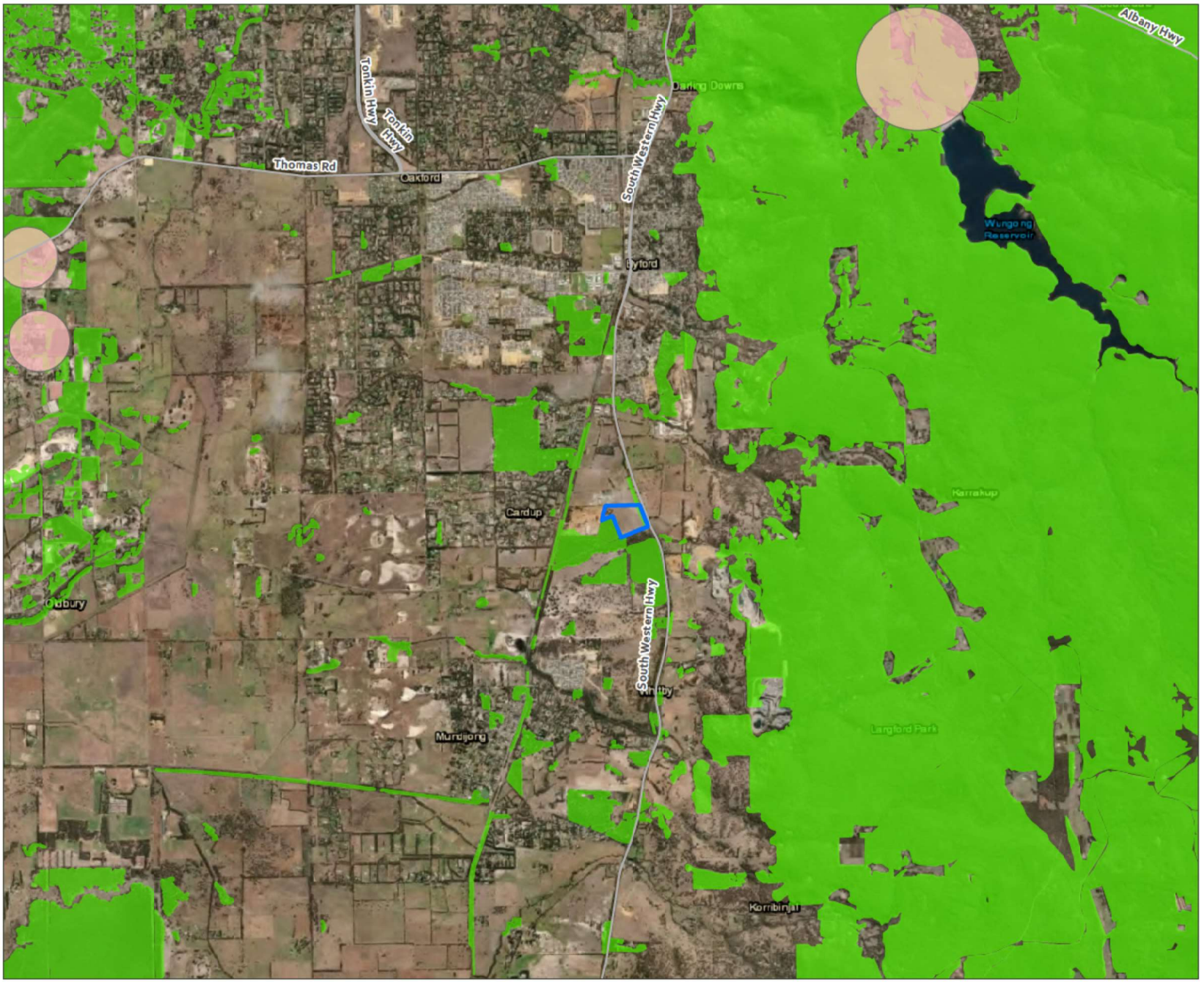
In addition, following review of the desktop assessment results the following mammals are considered likely to occur within the Proposal area:

- Chuditch (*Dasyurus geoffroii*) – Vu (BC Act/EPBC Act)
- Quenda (*Isoodon fusciventer*) – P4

However, given the lack on any vegetation structure present within the Proposal area and that these species prefer habitat that comprises of wet or dry sclerophyll forest through to open woodland and scrubby, dense vegetation on sandy soils, they are considered unlikely to be resident within the Proposal only traverse through when moving through the landscape.

All fauna records from the desktop assessment can be viewed in Appendix B and C.

Plate 1: Black Cockatoo Foraging Evidence



Legend

- Permit Area
- Black Cockatoo Roost Areas
- Black Cockatoo Potential Foraging area
- Road Network

Author ECM

Date: 12/06/2022

Scale: 1:90,000

0 1.25 2.5 km

Job No PMC0001

Coordinate System GDA2020 MGA Zone 50

Permacast NVCP Application - Cardup

Figure 7: Regional Black Cockatoo Habitat

4.1.8 Soils and Geology

The Perth Metropolitan Region 1: 50,000 Environmental Geology Series, Serpentine (Part Sheets 2033 I and 2133 IV) (Gozzard 1986) indicates that the majority of the site is comprised of 'Gravelly Sandy Clay' (Csg), with 'Sand' (S12) along the southern part of the eastern boundary.

Landform and soil mapping (Churchward and MacArthur 1980) indicates that two soils associations occur within the site, with the majority of the site found within the Guildford complex. The Guildford complex has been described as a flat plain with yellow duplex soils. The south eastern portion of the site is within the Forrestfield complex, which is described as the laterised foothills of the Darling Scarp and dominated by gravelly and sandy soils.

The Department of Primary Industries and Regional Development (DPIRD), provides a series of soil degradation risk mapping at the sub-system level. Table 4 summaries the soil degradation risk within the Proposal area.

Table 4: Land degradation risk

Aspect	Degradation risk
Wind Erosion	80% of high to extreme risk
Waterlogging	15% of moderate to very high risk
Water Erosion	0% of moderate to high risk
Salinity	0% of moderate to high risk
Flood Risk	0% of moderate to high risk

5. Native Vegetation Clearing Impact Assessment

5.1 Assessment against the Ten Clearing Principles

In assessing whether the project's proposed clearing is likely to have a significant impact on the environment, the project was assessed against the ten clearing principles (EP Act 1986, Schedule 5). This assessment is presented in Table 5.

Each principle has been assessed in accordance with DWER's 'A Guide to the Assessment of Applications to Clear Native Vegetation. The proposed clearing is unlikely to be at variance to clearing principles (a), (b), (c), (e), and (h) and not at variance to clearing principles (d), (f), (g), (i), and (j).

Table 5: Assessment against the Clearing Principles

Clearing Principle	Assessment
(a) Native vegetation should not be cleared if it comprises a high level of biological diversity.	**Flora** Cardno (2009) recorded a total of 49 flora species, across the entire Cardup Industrial Park area, from 44 genera and 19 families. Of this total, 29 species were identified as introduced (weed) species, which is 60% of the total taxa recorded within the study area. Dominant families of native species were *Cyperaceae* (5 taxa), *Myrtaceae* (4 taxa) and *Proteaceae* (3 taxa) and dominant families of introduced species were *Poaceae* (12 taxa), *Papilionaceae* (3 taxa) and *Asteraceae* (3 taxa). No threatened flora taxa listed under the *Biodiversity Conservation Act 2016* (BC Act) or *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) are considered likely to occur within the Proposal area (Cardno, 2009). The desktop assessment identified no Priority Flora occurring within the Proposal area; however, 70 Priority Flora taxa were identified in the Naturemap search results provided by DBCA (20 km radius). Noting the degraded nature of the Proposal area and the absence of any understorey or vegetation structure, it is considered unlikely that conservation significant flora occurs within the Proposal area. **Vegetation** The Proposal will require up to 1.5 ha of clearing of native vegetation. Vegetation within the Proposal area is considered to be in a predominantly 'Degraded' condition with vegetation absent any structure and dominated by marri over grass, with some individual occurrences of *Kingia australis* (Appendix A). While no occurrence of a TEC has been recorded within the Proposal area (Cardno, 2009), the Proposal area is immediately adjacent Bush Forever Site 316 which contains FCT 3b – *Corymbia calophylla and Eucalyptus marginata* mixed woodland, which is a known "Vulnerable" Threatened Ecological Community (TEC) (Cardno, 2009). Vegetation within Bush Forever is in much better condition than that contained within the Proposal area (Appendix A), and management actions including fencing and the establishment of hard boundary will reduce the risks of indirect impacts on the Bush Forever Site 361. **Fauna** The desktop assessment identified the following threatened, and priority species as likely to occur within the Proposal area or its surrounds: • Carnaby's black-cockatoo (*Calyptorhynchus latirostris*) (En)

Clearing Principle	Assessment
	• Forest Red-tailed Black Cockatoo (*Calyptorhynchus banksii naso*) (Vu) • Baudins Cockatoo (*Calyptorhynchus baudinii*) (En) • Chuditch (Dasyurus geoffroii) – (Vu) • Quenda (Isoodon fusciventer) – (P4) Harewood (2013) concluded that most areas, including the Proposal area, lack any natural attributes and are now only utilised by generally common and widespread fauna species with non-specific requirements that allow them to persist in highly disturbed habitats. Harewood (2013) further concluded that overall fauna habitat values had been significantly reduced through historic clearing and livestock grazing. Impacts to terrestrial fauna are considered in Principle B. In considering the above, it is considered unlikely that the vegetation comprises a high level of biological diversity. **Assessed Outcome:** **Clearing for this Proposal is unlikely to be at variance to this 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 indigenous to Western Australia.	The desktop assessment identified the following threatened, and priority species as likely to occur within the Proposal area or its surrounds: • Carnaby's black-cockatoo (*Calyptorhynchus latirostris*) (En) • Forest Red-tailed Black Cockatoo (*Calyptorhynchus banksii naso*) (Vu) • Baudins Cockatoo (*Calyptorhynchus baudinii*) (En) • Chuditch (Dasyurus geoffroii) – (Vu) • Quenda (Isoodon fusciventer) – (P4) Greg Harewood (2013) undertook a fauna assessment of the Cardup Industrial Park, which includes the Proposal area. This assessment delineated five fauna habitat comprised of: • Marri (*Corymbia calophylla*) and Salmon White Gum (*Eucalyptus lane-poolei*) open woodland with scattered *Banksia attenuata* and *Banksia menzeisii* over *Kingia australis* over *Hakea spathulata*, *Banksia armata* and *Lepidosperma pubisquameum* on sandy soils • Degraded dampland with scattered *Casuarina obesa* over scattered *Juncus pallidus* over **Pennisetum clandestinum* • Cleared paddocks with scattered native species Marri (*C. calophylla*) and Jarrah (*E. marginata*) over paddock grasses and broadleaf weeds • Cleared paddocks with planted non-endemic Eucalyptus species along property boundaries and around residential dwellings • Man-made dams Harewood (2013) concluded that most areas lack any natural attributes and are now only utilised by generally common and widespread fauna species with non-specific requirements that allow them to persist in highly disturbed habitats. Harewood (2013) further concluded that overall fauna habitat values had been significantly reduced through historic clearing and livestock grazing.

Clearing Principle	Assessment
	Harewood recorded evidence of occupancy by Forest Red-tailed Black Cockatoo and Baudin's Cockatoo within the Proposal area. Harewood (2013) recorded up to 88 potential habitat trees for Black Cockatoos within the wider area. EDS Environmental identified up to 20 potential habitat trees within the Proposal area, no suitable hollows were observed from ground inspection. No evidence of any conservation significant fauna was recorded during the assessment (Harewood, 2013). **Black Cockatoo** The Proposal area is within the modelled distribution and breeding range of the Carnaby's Cockatoo and Forest Red-tailed Black Cockatoo, and the distribution range of Baudins Cockatoo, but not within its Breeding range. Evidence of the presence of Black Cockatoos has been observed through foraging evidence (Plate 1). **Breeding and Roosting Habitat** No known breeding occurs within the Proposal area. Utilising DBCA data for confirmed breeding areas on the Swan Coastal Plain and Jarrah Forest, the nearest known confirmed breeding area is located over 7 km north-east. EDS Environmental undertook a site inspection to identify the number of potential nesting trees Within the Perth-Peel region, foraging and water resources within 6 km, as well as overlapping foraging within 12 km, are required to support roosting and breeding sites and maintain habitat connectivity so that movement can be facilitated through the landscape. EPA (2019) notes that the proximity of foraging habitat and water is critical to support roosting and breeding sites. For this reason, foraging habitat and available water within 6 km are critical to support roosting sites (Groom, 2015). Noting that the nearest recorded roosting and breeding sites are over 7 km from the Proposal area (distance measured to the edge of the buffered datasets), it is considered unlikely that isolated occurrences of foraging species within the Proposal area support breeding or roosting sites for the species. **Foraging Habitat** The Proposal will result in the removal of 1.5 ha of potentially suitable foraging habitat. It is noted that where foraging habitat is located near to potential breeding trees there is a high risk of significant impact. However, no breeding is known to occur within 6 km of the Proposal area. The Proposal area is surrounded by extensive areas of State Forest to the east, with three nature reserves consisting of the: • Cardup Nature Reserve (<1 km) • Brickwood Reserve (<1 km) and • Watkins Road Nature Reserve (<5 km) occurring within 5 km of the Proposal area, each containing relatively large areas of remnant vegetation of better-quality foraging habitat. In addition, Bush Forever Site 361, immediately adjacent to the Proposal area is comprised of higher quality habitat. Regional mapping indicates that a total of 6,014 ha and 23,190 ha of potential Black Cockatoo foraging habitat occurs within 6 km and 12 km of the proposed action area, respectively, with up 19,167 ha of this habitat (within 12 km) located within DBCA

Clearing Principle	Assessment
	managed lands as conservation estate (Figure 2). Much of this vegetation is contained within the Jarrah Forest of the Darling Scarp. Clearing associated with the Proposal represents <0.1% of suitable habitat available in regional area. Flocks of Black Cockatoos move through the landscape by following vegetated corridors whilst actively avoiding cleared or open areas including dense urban areas. Ecological linkages are therefore required to facilitate this movement between habitat nodes. Clearing associated with the Proposal will not create a gap in the vegetation that would impede the movement of flocks through the area. Currently ecological linkages between the Swan Costal Plain and the Darling Scarp will be maintained. **Other Conservation Significant Species** The Southern Brown Bandicoot (Quenda) and Chuditch occurs in wet or dry sclerophyll forest through to open woodland and scrubby, dense vegetation on sandy soils. No evidence of these species have been recorded within the Proposal area. It is considered unlikely that the small area of vegetation to be cleared as a result of the Project constitutes significant habitat for the species, which is more likely to be in larger pockets of native vegetation associated with the reserves listed above and Bush Forever Site 361. In considering the above, clearing associated with the Proposal is considered unlikely to be at variance to this principle, given the relatively small area of clearing, that management actions will be implemented to avoid clearing mature trees where possible (reducing clearing extent) and that the Bush Forever area (Site 361) which has significant value to specific fauna species such as all three species of black cockatoo, will be retained and managed by the Local Government. **Assessed Outcome:** **Clearing for this Proposal is unlikely to be at variance to this principle.**
(c) Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, rare flora.	Clearing associated with the Proposal is unlikely to be at variance to this Principle. Cardno (2009) did not record any threatened flora listed under the BC Act within the Proposal area. In addition, it is considered unlikely that the Proposal area provides suitable habitat for threatened flora taxa, noting the degraded nature of the vegetation and the lack of any understorey. These surveys, in particular Woodman (2016) did not record any flora species listed as threatened under the BC Act. Woodman (2016) concluded **Assessed Outcome:** **Noting the above, clearing is unlikely to be at variance to this 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.	No State listed threatened ecological communities are known to occur within the Proposal area, vegetation present in the Proposal area does not present the necessary vegetation structure or species diversity to be representative of a TEC. **Assessed Outcome:** **Noting the above, clearing is not at variance to this 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.	The Proposal area is mapped as intersecting Vegetation Associations 3 and 968, however, clearing will occur within the mapped extent of Vegetation Association 3. Up to 1.5 ha of native vegetation will be cleared for the Proposal, all of which is considered to be in a 'Degraded' condition (Cardno, 2009).

Clearing Principle	Assessment
	The national objectives and targets for biodiversity conservation in Australia have a target to prevent clearance of ecological communities with an extent below 30 per cent of that present pre-1750, below which species loss appears to accelerate exponentially at an ecosystem level (Commonwealth of Australia, 2001). The project area is within a constrained area of the Swan Coastal Plain and as such retention objectives of at least 10 per cent apply (EPA, 2016). As presented in Table 1, Vegetation Association 3 retains more than 10% of its pre-1750 extent at both the IBRA and LGA extents. Clearing associated with the Proposal will reduce the extent of Vegetation Association 3 remaining within the Shire of Serpentine Jarrahdale by <0.1%. This reduction is not considered to be significant. Considering the above, it is unlikely that the vegetation present within the Proposal area is significant as a remnant of native vegetation in an area that has been extensively cleared. **Assessed Outcome:** **Noting the above, clearing is unlikely to be at variance to this 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.	Interrogation of DBCA and DWER hydrological and wetland datasets determined that no wetlands or watercourses are mapped within the Proposal. The nearest mapped waterbody is the Philips River, located approximately 500 m north-east of the Proposal area. No vegetation present within the Proposal is considered to represent riparian vegetation. **Assessed Outcome:** **Noting the above, clearing is unlikely to be at variance to this principle**
(g) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.	The Department of Primary Industries and Regional Development (DPIRD), provides a series of soil degradation risk mapping at the sub-system level. In the context of the Proposal, the highest degradation risk is from wind erosion (Table 4). Noting that most of the Proposal area has been previously cleared, it is unlikely that the Proposal will cause appreciable land degradation given the relatively small amount of clearing and the implementation of appropriate measures to mitigate and manage potential wind-driven erosion during clearing activities. **Assessed Outcome:** **Noting the above, clearing for this project is not at variance to this 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.	Three conservation areas/reserves are present within 5 km of the Proposal area, which are: • Cardup Nature Reserve (<1 km) • Brickwood Reserve (<1 km) and • Watkins Road Nature Reserve (<5 km) In addition, Bush Forever Site 361 is located immediately adjacent the Proposal area. As part of the approved Local Structure Plan, Emerge Associates (2014) prepared an integrated Landscape Management Strategy, management measures for the Bush Forever Site interface have been guided by Bush Forever Site Implementation Guidelines Practice Note 5: Bushland-sensitive Design Criteria for Urban Development and include: • Provision of conservation fencing along the boundaries of Bush Forever Site 350 and Bush Forever Site 361.

Clearing Principle	Assessment

	• Where possible, incorporate a hard edge into the interface between bushland and development in the form of a road. This will assist in minimising invasion of weeds into the areas of bushland.
	• Where a hard road interface has not been provided, as with the interface with Bush Forever Site 350 in the northern portion of the site, a three metre wide trafficable access track should be installed. This track will be used as a means of:
	  ○ Accessing the Conservation Category Wetland buffer from the northern boundary of the site.
	  ○ Providing access to emergency services personnel in the case of a bushfire.
	• Minimise the boundary length and edge to area ratio of the Bush Forever Site through the provision of a compact boundary rather than an irregular shaped boundary.
	• Manage potential run off of pollutants and nutrients into both Bush Forever Sites through the implementation of the LWMS and subsequent UWMP.
	• Install access gates to Bush Forever Site 361 for bushland management and fire-fighting access.
	• Landscaping within the interface to consist of local native flora species, preferably dieback and fire resistant species. See local flora species list in Appendix C.
	
	Noting the above and considering the size and nature of the clearing, the Proposal is unlikely to result in impacts to an adjacent or nearby conservation area.
	
	Assessed Outcome:
	
	Noting the above, clearing for this project is not at variance to this 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.	Clearing for the Proposal will not be variance to this Principle. There are no major or minor watercourses mapped within the Proposal area. The Proposal will not change the hydrology of the area. Given the small scale of clearing and that no dewatering or drainage modifications are required; there will be no deterioration of underground water quality. **Assessed Outcome:** **Noting the above, clearing for this project is not at variance to this principle.**
(j) Native vegetation should not be cleared if clearing the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.	This project proposes to clear up to1. 5 ha of vegetation. NRM SLIP identifies that the area has 0% risk of flooding. Given the small amount of clearing, that vegetation will remain in the surrounding area and that the Proposal area will be sealed, it is unlikely that this project will cause or exacerbate the incidence or intensity of flooding. **Assessed Outcome:** **Noting the above, clearing for this project is not at variance to this principle.**

6. References

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Heddle, E. M., Loneragan, O. W., and Havel, J. J (1980). Atlas of Natural Resources Darling System, Western Australia. Department of Conservation and Environment.

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Appendix A Site Photos

Photo ID: 1b

Description	Dead stag with bees present in all observed hollos

Photo ID: 2a

Description / justification	Trees proposed for clearing looking west towards existing Permacast site

Photo ID: 3a

Photo ID: 3b

Description / justification	3a/b - Tre s o e clear d looki g ea t towar s current field/pasture.

Photo ID: 4a

Photo ID: 4b

Description / justification	Trees proposed for clearing looking west towards existing Permacast site

Photo ID: 5a

Photo ID: 5b

Description / justification	Vegetation within Bush Forever Site 361 (for comparison and context)

Photo ID: 6a

Photo ID: 6b

Description / justification	Vegetation within Bush Forever Site 361 (for comparison and context)

Appendix B Desktop Assessment Results (DBCA)

Appendix C Desktop Assessment Results (PMST)

Australian Government
Department of Agriculture, Water and the Environment

EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 04-Jul-2022

Summary

Matters of National Environment Significance

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

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance (Ramsar	2
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	5
Listed Threatened Species:	37
Listed Migratory Species:	10

Other Matters Protected by the EPBC Act

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

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

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

Commonwealth Lands:	10
Commonwealth Heritage Places:	None
Listed Marine Species:	15
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

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

State and Territory Reserves:	11
Regional Forest Agreements:	1
Nationally Important Wetlands:	1
EPBC Act Referrals:	4
Key Ecological Features (Marine):	None
Biologically Important Areas:	None
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Wetlands of International Importance (Ramsar Wetlands) [Resource Information]

Ramsar Site Name	Proximity	Buffer Status
Forrestdale and thomsons lakes	Within 10km of Ramsar site	In buffer area only
Peel-yalgorup system	20 - 30km upstream from Ramsar site	In feature area

Listed Threatened Ecological Communities [Resource Information]

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.
Status of Vulnerable, Disallowed and Ineligible are not MNES under the EPBC Act.

Community Name	Threatened Category	Presence Text	Buffer Status
Banksia Woodlands of the Swan Coastal Plain ecological community	Endangered	Community likely to occur within area	In feature area
Clay Pans of the Swan Coastal Plain	Critically Endangered	Community likely to occur within area	In buffer area only
Corymbia calophylla - Kingia australis woodlands on heavy soils of the Swan Coastal Plain	Endangered	Community known to occur within area	In buffer area only
Corymbia calophylla - Xanthorrhoea preissii woodlands and shrublands of the Swan Coastal Plain	Endangered	Community known to occur within area	In buffer area only
Tuart (Eucalyptus gomphocephala) Woodlands and Forests of the Swan Coastal Plain ecological community	Critically Endangered	Community may occur within area	In feature area

Listed Threatened Species [Resource Information]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.
Number is the current name ID.

Scientific Name	Threatened Category	Presence Text	Buffer Status
BIRD			
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
Calyptorhynchus banksii naso Forest Red-tailed Black-Cockatoo, Karrak [67034]	Vulnerable	Species or species habitat known to occur within area	In feature area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Leipoa ocellata Malleefowl [934]	Vulnerable	Species or species habitat known to occur within area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area	In feature area
Sternula nereis nereis Australian Fairy Tern [82950]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Zanda baudinii listed as Calyptorhynchus baudinii Baudin's Black-Cockatoo, Long-billed Black-cockatoo [87736]	Endangered	Roosting known to occur within area	In feature area
Zanda latirostris listed as Calyptorhynchus latirostris Carnaby's Black Cockatoo, Short-billed Black-cockatoo [87737]	Endangered	Breeding known to occur within area	In feature area
INSECT			
Leioproctus douglasiellus a short-tongued bee [66756]	Critically Endangered	Species or species habitat known to occur within area	In buffer area only
Neopasiphae simplicior A native bee [66821]	Critically Endangered	Species or species habitat likely to occur within area	In buffer area only
MAMMAL			

Scientific Name	Threatened Category	Presence Text	Buffer Status
Bettongia penicillata ogilbyi Woylie [66844]	Endangered	Species or species habitat known to occur within area	In feature area
Dasyurus geoffroii Chuditch, Western Quoll [330]	Vulnerable	Species or species habitat known to occur within area	In feature area
Pseudocheirus occidentalis Western Ringtail Possum, Ngwayir, Womp, Woder, Ngoor, Ngoolangit [25911]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
Setonix brachyurus Quokka [229]	Vulnerable	Species or species habitat known to occur within area	In feature area
OTHER			
Westralunio carteri Carter's Freshwater Mussel, Freshwater Mussel [86266]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
PLANT			
Andersonia gracilis Slender Andersonia [14470]	Endangered	Species or species habitat likely to occur within area	In feature area
Anthocercis gracilis Slender Tailflower [11103]	Vulnerable	Species or species habitat may occur within area	In feature area
Caladenia huegelii King Spider-orchid, Grand Spider-orchid, Rusty Spider-orchid [7309]	Endangered	Species or species habitat likely to occur within area	In buffer area only
Diplolaena andrewsii [6601]	Endangered	Species or species habitat may occur within area	In buffer area only
Diuris drummondii Tall Donkey Orchid [4365]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Diuris micrantha Dwarf Bee-orchid [55082]	Vulnerable	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Diuris purdiei Purdie's Donkey-orchid [12950]	Endangered	Species or species habitat known to occur within area	In feature area
Drakaea elastica Glossy-leafed Hammer Orchid, Glossy-leaved Hammer Orchid, Warty Hammer Orchid [16753]	Endangered	Species or species habitat known to occur within area	In feature area
Drakaea micrantha Dwarf Hammer-orchid [56755]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Eleocharis keigheryi Keighery's Eleocharis [64893]	Vulnerable	Species or species habitat may occur within area	In feature area
Eucalyptus x balanites Cadda Road Mallee, Cadda Mallee [87816]	Endangered	Species or species habitat known to occur within area	In buffer area only
Grevillea curviloba subsp. incurva Narrow curved-leaf Grevillea [64909]	Endangered	Species or species habitat may occur within area	In buffer area only
Lasiopetalum pterocarpum Wing-fruited Lasiopetalum [64922]	Endangered	Species or species habitat likely to occur within area	In feature area
Lepidosperma rostratum Beaked Lepidosperma [14152]	Endangered	Species or species habitat known to occur within area	In buffer area only
Synaphea sp. Fairbridge Farm (D. Papenfus 696) Selena's Synaphea [82881]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Synaphea sp. Pinjarra Plain (A.S. George 17182) [86878]	Endangered	Species or species habitat known to occur within area	In feature area
Synaphea sp. Serpentine (G.R. Brand 103) [86879]	Critically Endangered	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Tetraria australiensis Southern Tetraria [10137]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Thelymitra stellata Star Sun-orchid [7060]	Endangered	Species or species habitat known to occur within area	In feature area
Verticordia plumosa var. ananeotes Tufted Plumed Featherflower [23871]	Endangered	Species or species habitat may occur within area	In buffer area only

Listed Migratory Species [Resource Information]

Scientific Name	Threatened Category	Presence Text	Buffer Status
Migratory Marine Birds			
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area	In feature area
Migratory Terrestrial Species			
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area	In feature area
Migratory Wetlands Species			
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat likely to occur within area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat likely to occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat likely to occur within area	In feature area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area
Pandion haliaetus Osprey [952]		Species or species habitat likely to occur within area	In buffer area only
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat likely to occur within area	In buffer area only

Other Matters Protected by the EPBC Act

Commonwealth Lands [Resource Information]

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Commonwealth Land Name	State	Buffer Status
Unknown		
Commonwealth Land - [50882]	WA	In buffer area only
Commonwealth Land - [50883]	WA	In buffer area only
Commonwealth Land - [50881]	WA	In buffer area only
Commonwealth Land - [50876]	WA	In buffer area only
Commonwealth Land - [50272]	WA	In buffer area only
Commonwealth Land - [51976]	WA	In buffer area only
Commonwealth Land - [51517]	WA	In buffer area only
Commonwealth Land - [51380]	WA	In buffer area only
Commonwealth Land - [51382]	WA	In buffer area only
Commonwealth Land - [51524]	WA	In buffer area only

Listed Marine Species [Resource Information]

Scientific Name	Threatened Category	Presence Text	Buffer Status
Bird			

Scientific Name	Threatened Category	Presence Text	Buffer Status
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat likely to occur within area	In feature area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area	In feature area
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat likely to occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area overfly marine area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat likely to occur within area overfly marine area	In feature area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area	In feature area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area	In feature area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area
Pandion haliaetus Osprey [952]		Species or species habitat likely to occur within area	In buffer area only
Rostratula australis as Rostratula benghalensis (sensu lato) Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area
Thinornis cucullatus as Thinornis rubricollis Hooded Plover, Hooded Dotterel [87735]		Species or species habitat may occur within area overfly marine area	In buffer area only
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat likely to occur within area overfly marine area	In buffer area only

Extra Information

State and Territory Reserves			[Resource Information]
Protected Area Name	Reserve Type	State	Buffer Status
Cardup	Nature Reserve	WA	In buffer area only
Gooralong	Conservation Park	WA	In buffer area only
Modong	Nature Reserve	WA	In buffer area only
NTWA Bushland covenant (0011)	Conservation Covenant	WA	In buffer area only
Serpentine	National Park	WA	In buffer area only
Unnamed WA42044	Nature Reserve	WA	In buffer area only
Unnamed WA46587	Nature Reserve	WA	In buffer area only
Unnamed WA46818	Nature Reserve	WA	In buffer area only
Unnamed WA51784	Nature Reserve	WA	In buffer area only
Unnamed WA51963	Conservation Park	WA	In buffer area only
Watkins Road	Nature Reserve	WA	In buffer area only

Regional Forest Agreements [Resource Information]

Note that all areas with completed RFAs have been included.

RFA Name	State	Buffer Status
South West WA RFA	Western Australia	In buffer area only

Nationally Important Wetlands [Resource Information]

Wetland Name	State	Buffer Status
Gibbs Road Swamp System	WA	In buffer area only

EPBC Act Referrals [Resource Information]

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action				
'Looping 10' gas transmission pipeline from Kwinana to Hopelands	2005/2212	Not Controlled Action	Completed	In buffer area only
Bristile Holdings Pty Ltd, Cardup Brickworks, South of Byford	2020/8834	Not Controlled Action	Completed	In buffer area only
Construction of international rowing course and commercial/residential areas	2003/1034	Not Controlled Action	Completed	In buffer area only
Not controlled action (particular manner)				
INDIGO Marine Cable Route Survey (INDIGO)	2017/7996	Not Controlled Action (Particular Manner)	Post-Approval	In feature area

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data are available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance

3 DATA SOURCES

Threatened ecological communities

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

Threatened, migratory and marine species

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

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

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

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded
- seals which have only been mapped for breeding sites near the Australian continent

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

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

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

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

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

Please feel free to provide feedback via the Contact Us page.

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Appendix D Environmental Protection Authority – Public Advice

Chief Executive Officer
Shire of Serpentine-Jarrahdale
6 Paterson Street
MUNDIJONG WA 6123

Our Ref 13-324648
Enquiries [redacted]
Phone [redacted]

Attn: [redacted]

Dear Sir/Madam

DECISION UNDER SECTION 48A(1)(a)
Environmental Protection Act 1986

SCHEME AMENDMENT TITLE: **Shire of Serpentine-Jarahdale Town Planning Scheme 2 Amendment 183 - Cardup Business Park - Rezoning from Rural and Special Use to Urban Development and Development Area DA5**

RESPONSIBLE AUTHORITY: **Shire of Serpentine-Jarrahdale**

DECISION: **Scheme Amendment Not Assessed – Advice Given (no appeals)**

Thank you for referring the above scheme amendment to the Environmental Protection Authority (EPA).

After consideration of the information provided by you, the Environmental Protection Authority (EPA) considers that the proposed scheme amendment should not be assessed under Part IV Division 3 of the *Environmental Protection Act 1986* (EP Act) but nevertheless provides the following advice and recommendations.

1. Environmental Issues

- Flora and Vegetation
- Inland waters environmental quality
- Hydrological processes
- Terrestrial environmental quality
- Heritage

2. Advice and recommendations regarding Environmental Issues

The EPA previously provided advice in 2012 on Metropolitan Region Scheme Amendment 1215/41 to rezone the Cardup Business Park from the Rural Zone to the Industrial Zone (attached).

The EPA's previous advice (2012) concerning the above environmental issues is still valid.

3. General Advice

- For the purposes of Part IV of the EP Act, the scheme amendment is defined as an assessed scheme amendment. In relation to the implementation of the scheme amendment, please note the requirements of Part IV Division 4 of the EP Act.
- There is no appeal right in respect of the EPA's decision on the level of assessment of scheme amendments.
- A copy of this advice will be sent to relevant authorities and made available to the public on request.

Yours faithfully

[redacted]
Director
Assessment and Compliance Division

28 October 2013

GOVERNMENT OF WESTERN AUSTRALIA

Environmental Protection Authority

The Atrium,
Level 8, 168 St Georges Terrace,
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Website: www.epa.wa.gov.au

Western Australian Planning Commission
Locked Bag 2506
PERTH WA 6001

Our Ref A401918
Enquiries [redacted]
Phone

Attn: [redacted]

Dear Sir/Madam

DECISION UNDER SECTION 48A(1)(a)
Environmental Protection Act 1986

SCHEME AMENDMENT TITLE:	**Metropolitan Region Scheme Amendment 1215/41 - Cardup Industrial Precinct**
LOCALITY:	**Shire of Serpentine-Jarrahdale**
RESPONSIBLE AUTHORITY:	**Western Australian Planning Commission**
DECISION:	**Scheme Amendment Not Assessed – Advice Given (no appeals)**

Thank you for referring the above scheme amendment to the Environmental Protection Authority (EPA).

After consideration of the information provided by you, the Environmental Protection Authority (EPA) considers that the proposed scheme amendment should not be assessed under Part IV Division 3 of the *Environmental Protection Act 1986* (EP Act) but nevertheless provides the following advice and recommendations.

ADVICE AND RECOMMENDATIONS

1. Environmental Issues

- Remnant vegetation and fauna
- Wetlands
- Management of water quality and quantity
- Contamination
- Acid Sulphate Soils
- Impacts on Sensitive Landuse
- Aboriginal and European heritage

2. Advice and recommendations regarding Environmental Issues

Remnant vegetation and fauna

The Environmental Protection Authority (EPA) acknowledges that the amendment area has been significantly cleared through past land uses, and that the subject land remains in a "Degraded" to "Completely Degraded" condition and that a

Spring Flora and Vegetation Survey and Wetland Assessment discovered no declared Rare Flora or Priority Flora species.

The EPA acknowledges that the following Bush Forever (BF) sites are located within and adjacent to the subject site:

- BF 350, within the railway reserve and adjoining road reserves directly west of the subject land (portion included in the amendment site);
- BF 361, abutting but not included in the amendment site to the south west; and
- BF 354, immediately to the south of Norman Road (not included in the amendment site).

It is understood that Bush Forever (BF) site 361 in the south-west corner of the subject site which is in "Good" to "Degraded" condition and described as the Threatened Ecological Community (TEC) "Floristic Community Type 3b *Corymbia calophylla* and *Eucalyptus marginata* mixed woodland" is a state listed TEC described as "vulnerable".

The EPA supports the Responsible Authority's intention to fully retain BF 350 within the subject land and expects that management and protective measures for all the BF sites will be determined at the detailed local structure planning stage. These protective measures should include but not be limited to:

- Fencing;
- Hard surfaces between the BF site and development such as roads or dual-use paths; and
- Management of declared weeds.

The EPA recommends that the Responsible Authority undertakes a level 1 Fauna survey during the local planning process to determine the presence of significant fauna which may be utilising the subject site. If identified on site, these species are to be protected pursuant to the provisions of the *Wildlife Conservation Act 1950* (WC Act). In addition to the provisions of the WC Act, the subdivision may need to be redesigned in order to protect any identified fauna, to the satisfaction of the Department of Environment and Conservation (DEC).

Wetlands

Cardup Brook and an associated Resource Enhancement Wetland (REW) area are located to the north of the site and Conservation Category Wetland (CCW) is located to the west of the site. The REW and CCW are not located within the amendment area.

The EPA recommends that the Responsible Authority determine appropriate buffers at the detailed local planning stage. It is also recommended that the developer liaise with DEC as well as the Shire of Serpentine-Jarrahdale at this stage to determine whether a Wetland and Foreshore Management Plan will also be required.

Wetland buffers should be determined in accordance with Water and Rivers Position Statement: *Wetlands* (WRC 2001) and the Environmental Protection Authority's Draft Guidance Statement No. 33 *Environmental Guidance for Planning and Development* (EPA 2008). In addition, the information contained within the draft *Guideline for the Determination of Wetland Buffer Requirements*

Accordingly, the EPA recommends that the Responsible Authority conducts further investigations at the detailed Local Structure Planning stage.

The EPA expects that the extent and severity of the risk will be determined in accordance with the Western Australian Planning Commission's *Acid Sulfate Soils Planning Guidelines* (January 2009) and that required investigations and management plans will be prepared and implemented in accordance with the *Identification and Investigation of Acid Sulfate Soils and Acidic Guidelines* (DEC, 2009) and to the satisfaction of the DEC's Contaminated Sites Branch prior to any development or ground disturbing activities commencing.

Impacts on Sensitive Landuse

The EPA notes that the proposed rezoning will result in existing residences having non-conforming use rights. The proposed amendment will allow a number of land uses which are incompatible with residential dwellings. Proposed incompatible industrial land uses will need to be separated from the existing dwellings with an adequate buffer as described in the EPA's Guidance Statement No 3 *Separation Distances between Industrial and Sensitive Land Uses.*

The EPA recommends that generic separation distances are maintained unless adequate site-specific studies have been carried out that demonstrate that a lesser distance will not cause unacceptable impacts. Council should ensure that this Guidance is adequately considered during the implementation of the proposed zoning. A copy of the Guidance Statement can be found on the EPA website (www.epa.wa.gov.au).

Aboriginal and European heritage

It has been noted that a desktop investigation found one registered Aboriginal Heritage site contained in the subject land (Site Identification 16108), being Cardup Brook located to the north of the subject site.

The EPA recommends that the Responsible Authority undertake an ethnographic and archaeological survey as part of the future local planning and expects that future development of the subject land should comply with the requirements of the *Aboriginal Heritage Act 1972.*

3. General Advice

- For the purposes of Part IV of the EP Act, the scheme amendment is defined as an assessed scheme amendment. In relation to the implementation of the scheme amendment, please note the requirements of Part IV Division 4 of the EP Act.
- There is no appeal right in respect of the EPA's decision on the level of assessment of scheme amendments.

- A copy of this advice will be sent to relevant authorities and made available to the public on request.

Yours faithfully

[redacted]
Director
Assessment and Compliance Division

27 June 2011

Document Status

Rev No.	Purpose	Author	Reviewed and Approved for Issue	
			Name	Date
Rev A	Client Review	[redacted]	[redacted]	1 June 2022
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