



## 1. Application details

### 1.1. Permit application details

Permit application No.: 8168/1  
Permit type: Area Permit

### 1.2. Applicant details

Applicant's name: Ms Joanne Mantach  
Iron Horse Hill Pty Ltd  
Application received date: 17 August 2018

### 1.3. Property details

Property: Lot 1692 on Deposited Plan 208474, West River  
Local Government Authority: Shire of Ravensthorpe  
Localities: West River

### 1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	Purpose category:
100.1 ha (revised)		Mechanical Removal	Cropping

### 1.5. Decision on application

Decision on Permit Application: Refused

Decision Date: 22 December 2020

Reasons for Decision: The clearing permit application has been assessed against the clearing principles, planning instruments and other matters in accordance with section 51O of the *Environmental Protection Act 1986* (EP Act). The Delegated Officer has concluded that the proposed clearing is seriously at variance with principle (b), at variance with principles (a), (e), (g), (h), (i) and is not likely to be at variance with the remaining principles.

**Principle (a)** - The application area contains a high level of biodiversity in an extensively cleared landscape. Recorded fauna species within the application area include the state and Commonwealth-listed Malleefowl (*Leipoa ocellata*) and the conservation significant Western brush wallaby (*Notamacropus irma*) and Western whip bird (mallee) (*Psophodes nigrogularis oregon*).

The application area is significant as a remnant in an extensively cleared landscape and forms part of a macro-linkage facilitating the movement of fauna through the wider area.

Three significant populations of Priority flora were recorded within the application area. These are either outliers or range extents and include *Pimelea halophila* (P2), *Hakea lasiocarpa* (P3) and *Spyridium oligocephalum* (P3). Additionally, 1.8 hectares (ha) of vegetation characteristic of Eucalypt Woodlands of the Western Australian Wheatbelt (Eucalypt Woodlands) Threatened Ecological Community (TEC) was mapped within the application area. Whilst the applicant removed the areas mapped as the Eucalypt Woodlands TEC from the application, the small islands that would remain are not likely to be sustainable due to impacts by edge effects. The Delegated Officer determined that impacts to the TEC as a result of the clearing would still remain.

**Principle (b)** - The application area contains suitable habitat for four conservation significant fauna species. This includes:

- Carnaby's cockatoo – Threatened (state and Commonwealth);
- Malleefowl – Threatened (state and Commonwealth);
- Western brush wallaby – Priority 4 (DBCA); and
- Western whipbird (mallee) – Priority 4 (DBCA).

**Principle (e)** - The application area is a significant remnant in an extensively cleared landscape. It is significance due to its size (100.1ha), shape and vegetation condition. Furthermore, the remnant is biologically diverse, it is part of a significant ecological linkage and is required to maintain ecosystem services (e.g. hydrological processes), abate existing off-site salinisation, and provide connectivity in an area of high degree local and landscape-level fragmentation. Furthermore, the application area is the part of a larger intact remnant.

**Principle (g)** - Clearing the application area would lead to further land degradation from on-site and off-site salinity.

**Principle (h)** - Clearing would impact adjacent and nearby conservation areas through being part of a regionally significant linkage (South Coast Macro Corridor Network). The application area links to four A class reserves including Fitzgerald River National Park, three Nature Reserves and a Timber Reserve with confirmed Carnaby's cockatoo nesting habitat.

**Principle (i)** - In association with principle (g) clearing would further contribute to the deterioration in the quality of ground water through salinisation.

On 16 September 2020, the Department of Water and Environmental Regulation (DWER) notified the applicant of an option for granting a smaller area (22.7 ha) which would avoid the majority of environmental values identified from the assessment of the application area. As clearing of the smaller areas would still result in impacts to one population of Priority 3 flora species, *Acacia newbeyi*, Carnaby's cockatoo foraging habitat, malleefowl habitat and Western brush wallaby habitat the Department noted in its correspondence the need for an offset to counterbalance these impacts.

The applicant responded on 12 October 2020, stating that the proposed part-grant of 22.7 ha with an offset was not acceptable. The applicant offered to provide a Conservation Covenant over 507 hectares of land to the west of the application area as an offset to the clearing of 100.1 ha.

Noting that the clearing of the 100.1 ha area will result in the loss of a highly biodiverse remnant in an extensively cleared landscape and contribute to land degradation through salinity, the Delegated Officer determined that the impacts of the clearing are unacceptable and unable to be effectively offset. The Delegated Officer therefore determined to refuse the application.

## 2. Site Information

### Clearing Description

The application is for the proposed clearing of 100.1 hectares of native vegetation within Lot 1692 on Deposited Plan 208474, West River, for the purpose of cropping (Figure 1).

### Vegetation Description

#### *Beard vegetation mapping*

The application area is mapped as vegetation association 519, which is described as mallee Eucalypt shrubland with *Eucalyptus eremophila*, *E. redunca* and other *Eucalypt species* (Beard et al., 2013).

#### *Conservation listing*

Parts of the application area (Figure 4) have been identified to be representative of the Eucalypt woodlands of the Western Australian Wheatbelt Priority Ecological Community (PEC) (Bio Diverse Solutions, 2019). This is synonymous with the Commonwealth-listed Eucalypt Woodlands of the Western Australian Wheatbelt (Wheatbelt woodlands) Threatened Ecological Community (TEC), listed as Critically Endangered under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The applicant proposed to excise the TEC/PEC patches (1.8 ha) from the area to be cleared.

#### *Vegetation survey*

Five vegetation associations were identified in the application area (Bio Diverse Solutions, 2019). These include:

- Scrub, Open Low Scrub A, Open Dwarf Scrub C, Over Open Tall Sedges, Very Open Low Sedges. (M+ *Acacia fragilis*, *Hakea lissocarpa*, ^*Leptospermum maxwellii*^shrub\4c; G ^*Phebalium tuberculosum*, *Lepidosperma* sp. EJM1916, *Lepidosperma* sp. EJM 917^shrub, sedge\2r)
- Scrub, Heath A, Open Dwarf Scrub D. (M+ ^*Cyathostemon heteranthera*, *Nematolepis phebaloides*, *Styphelia intertexta*^shrub\4c; G *Acacia pinguiculosa* subsp. *teretifolia*, *Boronia inconspicua*, *Rinzia crassifolia*^shrub\2r.)
- Open Scrub, Low Scrub A, Dwarf Scrub C, Dwarf Scrub D. (M+ ^*Cyathostemon heteranthera*, *Dodonaea viscosa* subsp. *spathulata*, *Exocarpos aphyllus*^shrub\3i; G ^*Boronia inconspicua*, *Grevillea patentiloba*, *Styphelia intertexta*^shrub\2i.)
- Open Low Woodland A, Heath A, Open Dwarf Scrub C, Open Dwarf Scrub D. (U *Allocasuarina huegeliana*^tree\6r; M+ ^*Cyathostemon heteranthera*, *Kunzea affinis*, *Lissanthe rubicunda*^shrub\3c; G ^*Boronia inconspicua*, *Grevillea patentiloba*, *Westringia rigida*^1r.)
- Very Open Shrub Mallee, Open Low Scrub B, Dwarf Scrub C, Dwarf Scrub D. (U ^*Eucalyptus pleurocarpa*^mallee shrub\6r; M ^*Tetrapora verrucosa*^shrub\3r; G+ ^*Acacia octonervia*, *Lissanthe rubicunda*, *Styphelia intertexta*^shrub\2i.)

The vegetation mapping has condensed the five vegetation associations from the survey into four broader mapping units (Figure 4). Vegetation mapping was based upon quadrat data, field traverse, changes in soil colour and aerial photography. Four vegetation units

were mapped and labelled with the dominant tree/mallee species that were present or likely present prior to clearing. .

Vegetation mapping units include:

- *Allocasuarina heugeliana*;
- *Eucalyptus astringens/Eucalyptus platypus* (TEC/PEC);
- *Eucalyptus flocktoniae*;
- *Eucalyptus sporadica*

### Vegetation Condition

Vegetation condition within the application area was mapped by Bio Diverse Solutions (2019) as Excellent to Excellent/Good condition using the Keighery (1994) condition scale (Figure 4). It was noted that, "As a result of past clearing the vast majority of overstorey re-sprouting species (*Eucalypts* etc.) have been removed. These have re-sprouted in areas where they were pushed up into windrows however the majority of the subject site contains little to no overstorey. Although the vegetation has been significantly altered the majority of regenerated vegetation is in "Excellent" condition, with only one non-aggressive weed species observed within the subject site. The sparse and bare area within the western block have seen the least amount of regeneration with large bare areas, however the vegetation present is still in good condition. There is no evidence of recent clearing nor fires, floods etc (Bio Diverse Solutions, 2019).

### Landform/soil

The application area is mapped as Upper Fitzgerald 5 subsystem (map unit 243 Uf\_5) characterised by head water rises, with long moderately inclined converging slopes on colluvium and minor alluvium on granitic, granodioritic and dolerite bedrock, with soils a mix of deep and shallow gravelly and sandy duplex soils and hard setting, non-cracking grey clays (Schoknecht et al., 2004).

### Local area

The local area considered in the assessment of this application is defined as a 10 kilometre radius measured from the perimeter of the application area.

The local area retains approximately 26 per cent native vegetation cover (10,375 hectares).



Figure 1: Application area under assessment - CPS 8168/1 (blue hatched = 100.1ha)



(a) Original application area CPS 8168/1 (319 ha)

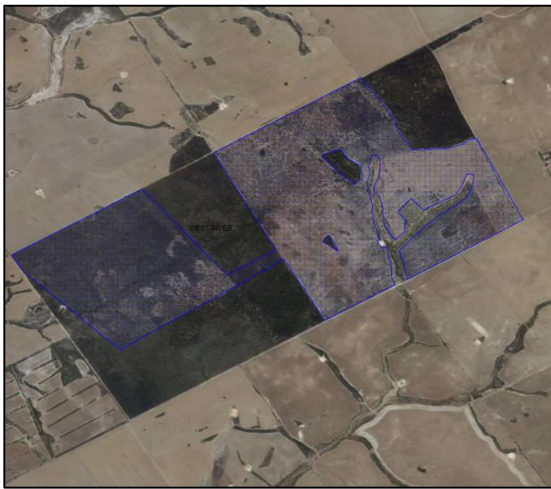


(b) Reduction 1 - Application area CPS 8168/1 (175.4 ha)



(c) Reduction 2 - Application area CPS 8168/1 (120.1 ha)

**Figure 2: Original and reductions of application areas CPS 8168/1**

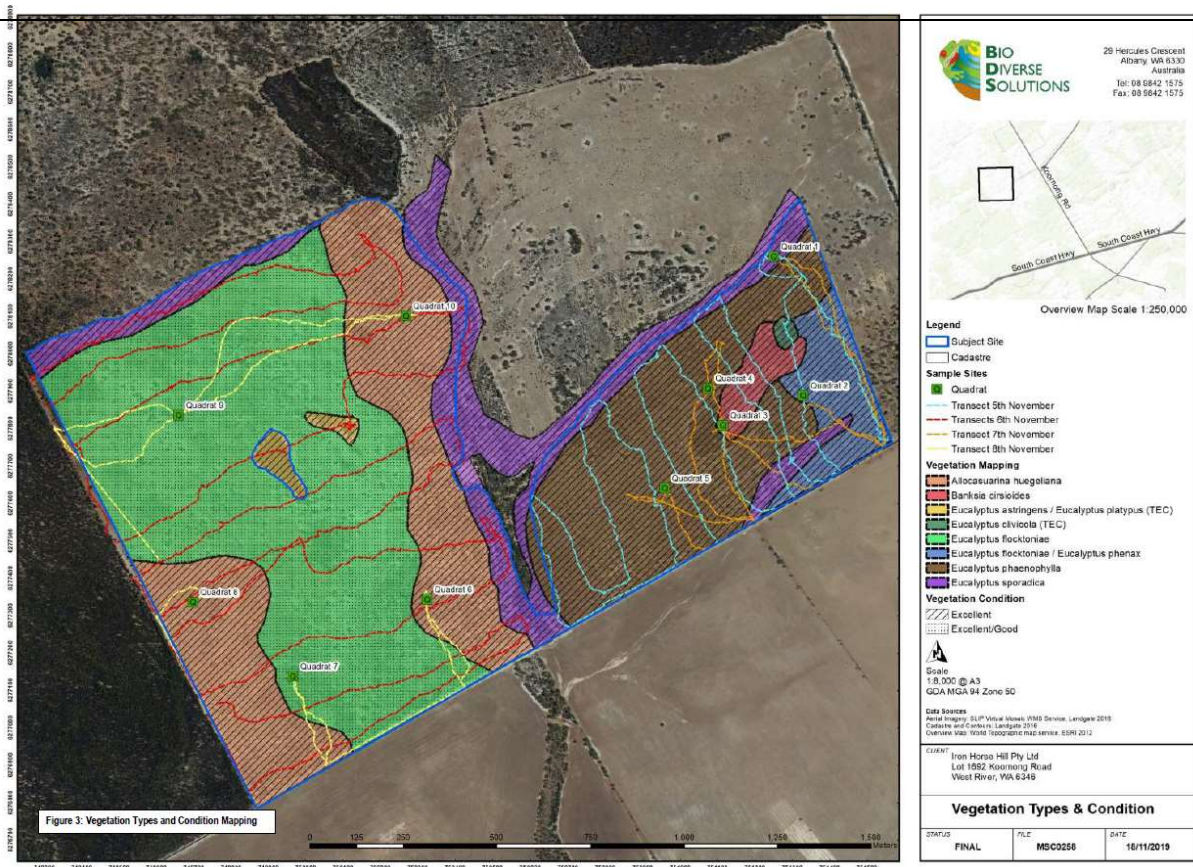


(b) Previous application CPS 6765/1 (630 ha) refused 2015



(a) Previous application CPS 7090/1 (325 ha) refused 2016

**Figure 3: Previous related applications – refused in 2015 and 2016 primarily due to land degradation issues**



**Figure 4: Vegetation and condition mapping (Bio Diverse Solutions, 2019) – note that mapping goes beyond CPS 8168/1 application area**

### 3. Mitigation hierarchy

#### Avoid and minimise

The applicant submitted two similar applications in 2015 and 2016 to clear 630 hectares and 325 hectares respectively, on Lot 1692 for the purpose of cropping and pasture (CPS 6765/1 and CPS 7090/1) (Figure 3). These applications were refused on the basis that the proposed clearing was seriously at variance to clearing principle (g) due to the potential to cause off-site salinity.

The original application area for this assessment (CPS 8168/1) was 319 ha and broadly the same area as applied for through CPS 7090/1. Based on advice from CPS 7090/1 regarding land degradation, the applicant revised the application area down to 175.4 ha and then again down to 120.7 ha during the assessment process (Figure 1).

Following a flora, vegetation and fauna survey undertaken in November 2019 (Bio Diverse Solutions, 2019) the applicant advised that vegetation consistent with the Wheatbelt woodlands TEC could be excised. Based on a review of the surveys by the Department of Biodiversity, Conservation and Attractions (DBCA), this would result in excision of 1.8 hectares of the TEC (DBCA, 2020).

Two watercourses, previously included within the application area, have been excluded from the revised application area. A 20-metre buffer has been provided to these watercourses (DWER, 2019).

A further submission was received from the applicant reducing the application area from 120.7ha to 100.1ha, including excising the mapped TEC/PEC patches.

The following assessment has been conducted in relation to the application area of 100.1 hectares.

## 4. Assessment of application against clearing principles

### (a) Native vegetation should not be cleared if it comprises a high level of biodiversity.

#### Proposed clearing is at variance with this Principle

The application area contains a high level of biodiversity at both a local and regional scale. This includes:

- providing significant habitat for four species of conservation significant fauna (state and Commonwealth-listed);
- confirmed presence of three priority flora species that are outliers or at the extent of their range (DBCA, 2020);
- is part of a regionally significant ecological linkage in an extensively cleared landscape.

The application area surrounds two patches of vegetation confirmed to represent the Wheatbelt woodlands state-listed Priority Ecological Community (PEC) and Commonwealth-listed Threatened Ecological Community (TEC) (1.8 ha). These patches of PEC/TEC require the vegetation within the surrounding application area for long-term persistence in the landscape.

Such levels of diversity are not unexpected, given the application area lies within the transitional zone between the Mallee and Esperance Plains IBRA bioregions. The application area is at the northern boundary of the mapped Proteaceae Dominated Kwongkan Shrublands of the Southeast Coastal Floristic Province of Western Australia (Kwongkan shrublands) and at the southernmost occurrences of the Wheatbelt woodlands.

#### Fauna

As assessed under Principle (b), the application area contains suitable habitat for four conservation significant fauna including:

- Malleefowl (*Leipoa ocellata*) listed as Threatened (Vulnerable) under the *Biodiversity Conservation Act 2016* (BC Act) and the EPBC Act;
- Carnaby's cockatoo (*Calyptorhynchus latirostris*) listed as Threatened (Endangered) under the BC Act and the EPBC Act;
- Western brush wallaby (*Notamacropus irma*) Priority 4 listed by DBCA; and
- Western whipbird (mallee) (*Psophodes nigrogularis oberon*) Priority 4 listed by DBCA.

Surveys undertaken by Bio Diverse Solutions (2019) confirmed the presence of Malleefowl, Western brush wallaby and Western whipbird in the application area. Additionally, three inactive malleefowl mounds were located within the application area. The malleefowl record and malleefowl mounds have been mapped in Figure 5. DWER notes that a range of flora species known to be utilised by Carnaby's cockatoo for foraging were recorded in the application area. However, this was not noted in the Bio Diverse Solutions (2019) report.

#### Flora

Based on available databases, one Threatened flora and 13 priority flora species have been recorded in the local area (Western Australian Herbarium (1998-)). A flora and vegetation survey recorded six priority flora species within the application area including (Bio Diverse Solutions, 2019):

- *Pimelea halophila* (Priority 2);
- *Pultenaea indira* subsp. *pudoides* (Priority 2);
- *Spyridium oligocephalum* (Priority 3);
- *Acacia newbeyi* (Priority 3);
- *Hakea lasiocarpa* (Priority 3); and
- *Pultenaea indira* subsp. *monstrosita* (Priority 3).

Locations of Priority flora have been mapped in Figure 5.

Of the priority flora observed within the application area, DBCA (2020) notes that three are significant due to being outliers or at the extent of their range. This includes:

- *Hakea lasiocarpa* – significant outlier, north eastern limit of range;
- *Pimelea halophila* – most southerly population known; and
- *Spyridium oligocephalum* – the most northern confirmed population of only 10 in total (DBCA, 2020).

No threatened flora were recorded during the flora survey (Bio Diverse Solutions, 2019).

#### Ecological communities

As discussed in Section 2, the application area contains vegetation that maintains 1.8 hectares of state-listed Wheatbelt Woodlands Priority 3 PEC. This is synonymous with the Commonwealth-listed Wheatbelt Woodlands TEC listed as Critically Endangered (Department of Environment, 2020). This community is composed of eucalypt woodlands that formerly were the most common type of vegetation across the wheatbelt landscape of south-western Western Australia. Notably, the ecological community occurs in the most heavily cleared and modified landscapes of Western Australia (Department of Environment, 2015).

The applicant agreed to excise these PEC patches with the intention of avoiding immediate impacts. However due to the small size of the PEC patches totalling 1.8ha, excision would expose them to a range of edge effects which would undermine patch integrity and long-term survival. Therefore, the excision of the patches will still result in impacts to the ecological community. Although the patches are unlikely to be significant at a landscape level, DBCA (2020) advises that they are likely to be significant at the local level due to:

- the *Eucalyptus astringens* vegetation association has a restricted distribution due to extensive levels of decline and is regarded as priority for protection (Department of Environment, 2015);
- being located at the south eastern extent of the range of the Western Mallee sub-region;
- performing an important structural and habitat function; and

- being located in an extensively cleared landscape.

### Ecological linkage

The application area is mapped within 'Strategic Zone B' of a macro habitat corridor defined in the Western Australian South Coast Macro Corridor Network (SCMCN) (Wilkins et al., 2006). Vegetation within Strategic Zone B provide potentially good nodes of habitat which are within 1 km of vegetation within Strategic Zone A (Wilkins et al., 2006). The quality of habitat within the application is confirmed by the high diversity of flora and fauna species, in addition to a PEC/TEC recorded during field surveys. The linkage is particularly important as the local area retains 26% remnant vegetation and is extensively cleared.

Advice from DBCA South West Regions states that:

*"Landscape connectivity is considered a high priority for retention in the south coast region and such a large area of clearing will significantly impact on landscape functionality."* (DBCA, 2019).

Furthermore, the Bio Diverse Solutions report (2019) notes that *"The South Coast Macro Corridor Network is a bioregional and landscape-scale approach to habitat connectivity that acknowledges that remnant vegetation can play a very important role in developing corridors between protected areas to help achieve long-term biodiversity management outcomes (Wilkins et al. 2006). The subject site lies within one of the major potential vegetation corridors known as the "Lake Magenta-King Lakes Corridor" which connects remnant vegetation to existing "Protected Area" corridors (Lake Magenta, Dunn Rock Nature Reserve, and Fitzgerald River National Park) to the north west and south and the "Phillips River Corridor" to the east. At a local level the remnant vegetation within the survey area provides a corridor from surrounding native vegetation (to the west and north) to the south through the creek line vegetation (that is not proposed to be cleared) that extends into the adjacent agricultural properties. These sections of adjacent creek line vegetation ultimately connect through to larger areas of remnant bushland to the south west of the subject site"* (Bio Diverse Solutions, 2019).

Given the above, the proposed clearing is at variance with this Principle.

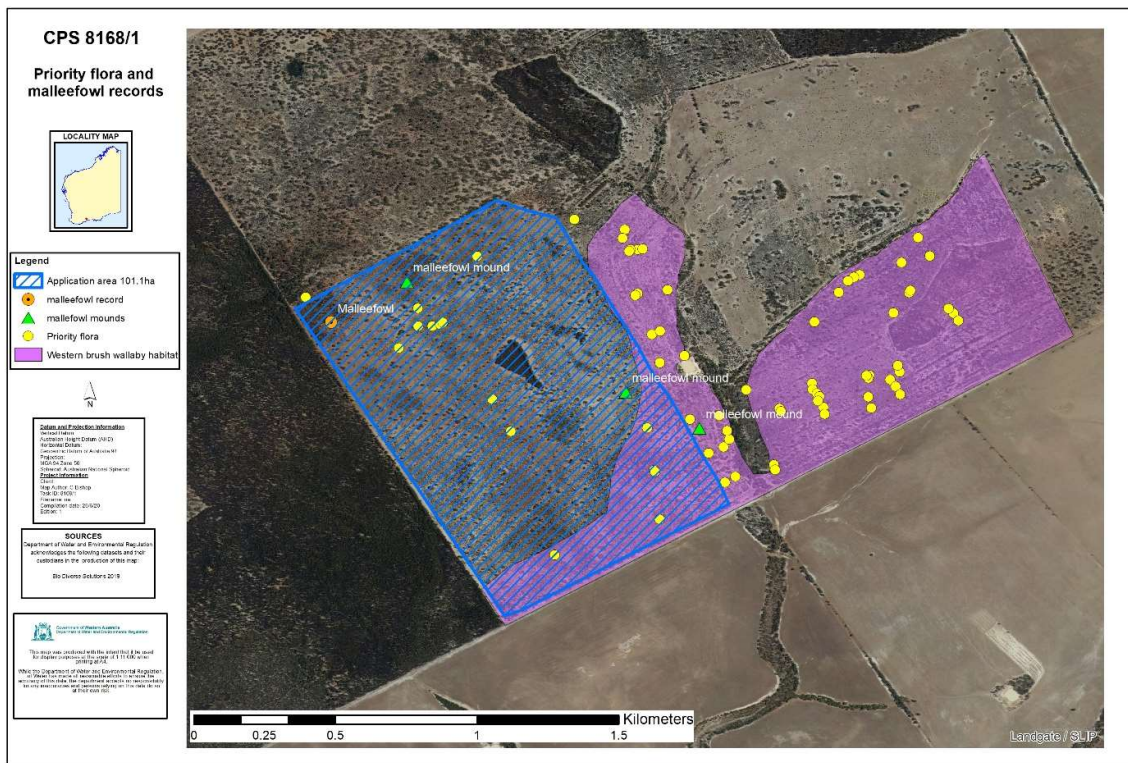


Figure 5: Location of Priority flora, malleefowl record and mounds; and western brush wallaby habitat.

**(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.**

**Proposed clearing is seriously at variance with this Principle**

### DBCA database records

According to available datasets, there are two Threatened fauna species, one Priority fauna species and one other specially protected fauna recorded within the local area (Table 1).

Table 1: Fauna species recorded in the local area (10km)

Species	Common name	State conservation status
<i>Calyptorhynchus latirostris</i>	Carnaby's cockatoo	Threatened (Endangered)

<i>Leipoa ocellata</i>	Malleefowl	Threatened (Vulnerable)
<i>Psophodes nigrogularis oberon</i>	Western whipbird (mallee)	Priority 4
<i>Falco peregrinus</i>	Peregrine falcon	Other specially protected

### Survey findings

The surveys recorded 37 native fauna species in total, with three of these having conservation significance (Bio Diverse Solutions, 2019). This is significant given the high number of species recorded in a relatively short period of time (12 hours of survey). This indicates the importance of the area for fauna species and even though the majority of species recorded (34) are not listed as threatened or priority species, the high diversity within the area suggest a higher significance of the application area for fauna in the landscape (DBCA, 2020).

The application area contains suitable habitat for four species of conservation significance. This includes:

- Carnaby's cockatoo – Threatened (state and Commonwealth);
- Malleefowl – Threatened (state and Commonwealth);
- Western brush wallaby – Priority 4 (DBCA); and
- Western whipbird (mallee) – Priority 4 (DBCA).

### Carnaby's cockatoo

Carnaby's cockatoo have been recorded within the local area and are known to forage on the seeds, nuts and flowers of a large variety of plants including Proteaceous species (Banksia, Hakea, Grevillea), Eucalypts, Corymbia species and a range of introduced species (Department of the Environment, 2020). Noting the presence of numerous Proteaceous species and Myrtaceous species identified in the Bio Diverse Solutions (2019) report, DWER considers the application area to contain substantial foraging habitat for Carnaby's cockatoo although it was not noted by Bio Diverse Solutions. The surveys found no suitable roosting or nesting habitat for Carnaby's cockatoo, however, the value of the application area in regard to foraging habitat is substantial due to its large size and proximity to a confirmed breeding area approximately six kilometres to the east in Reserve 30795.

Carnaby's cockatoo has been significantly impacted by historical clearing of its habitat and as a result it is estimated that this species has disappeared from more than one-third of its historical breeding range (EPA, 2019). Broad-scale clearing of native vegetation has resulted in fragmentation of breeding and foraging habitat, loss of breeding hollows, changes in the species distribution, and genetic partitioning (EPA, 2019). The EPA's technical guidance notes that "this species is reliant on the maintenance of resources over multiple bioregions, which adds an extra complexity to its conservation. To address this, mitigation must be applied across the species range" (EPA, 2019). Noting this, it is considered that the remaining suitable habitat for this species within its current range is likely to be significant. Specifically, it is considered that the foraging habitat within the application area is highly significant for Carnaby's cockatoo due to the following reasons:

- the large extent of foraging habitat within the application area;
- the presence of Proteaceous and Myrtaceous plant species which are a preferred foraging species;
- the Excellent to Excellent/Good condition (Keighery, 1994) of the vegetation;
- the proximity to a confirmed breeding area;
- the local area surrounding the application area has been extensively cleared and retains approximately 26 per cent native vegetation, of which approximately only six per cent is considered to be potential foraging habitat.

### Malleefowl

Malleefowl occur in shrublands and low woodlands that are dominated by mallee vegetation (DotE, 2015). The significant decline in malleefowl numbers has resulted from several threats, including loss of vegetation due to clearing for agricultural purposes, fox predation, and the degradation of habitat by fire (DotE, 2015). Malleefowl require a sandy substrate and abundance of leaf litter to build mounds for roosting purposes (DotE, 2015). The presence of suitable breeding and foraging habitat for this species within the application area is significant at a local and regional scale.

One malleefowl was sighted and three malleefowl mounds were located within the application area (Figure 5). The individual was observed within an area of dense shrub vegetation in the north west of the application area. One mound was observed with recent scrape/digging activity. However, the surveys were unable to confirm if this was evidence of Malleefowl activity or of another species such as *Varanus rosenbergi* (heath monitor). Neither of the other mounds had evidence of recent (fresh) activity. However, there were old shell fragments nearby, and a high accumulation of litter indicating the mound has been active in recent years. All three mounds were observed at the interface of dense scrub/shrub vegetation and open mallee (Bio Diverse Solutions, 2019).

The individual observed in the north western corner was observed in vegetation that connects to surrounding vegetation, whilst two mounds were in vegetation connecting through to the creek line. Creek line vegetation provides a vegetated corridor for malleefowl movement in this extensively cleared region. Vegetation to the north of the application area appears to be similar in composition (purely observational) so it is reasonable to expect malleefowls to be using surrounding vegetation as well as that present within the application area (Bio Diverse Solutions, 2019).

### Western brush wallaby

Surveys found widespread evidence of western brush wallaby with scats, runnels and pads noted across the application area. More evidence of western brush wallabies was noted in areas of dense vegetation which generally is found in association with the creek line on the eastern boundary of the application area. This vegetation provides a corridor of connectivity that facilitates movement of western brush wallabies through the landscape. **Error! Reference source not found.** illustrates habitat utilisation based upon western brush wallaby evidence (Bio Diverse Solutions, 2019).



### **Western whipbird (mallee)**

Western whipbird (mallee) were heard from the mallee vegetation along the creekline. They were also heard outside of the application area in mallees to the east of the application area (Bio Diverse Solutions, 2019).

In relation to the species of conservation significance, DBCA (2020) advised that, *“the observation of a malleefowl during the survey also adds significantly to the value of the area, as being part of a currently occupied core home range area rather than an area of transitory or periodic use. A reduction in currently occupied and available habitat will also be the result for the two priority listed fauna species, western whipbird (mallee subspecies) and western brush wallaby, that were recorded during the survey at multiple sites within the proposed clearing area. The wallaby and whipbird species are both likely using the area for foraging and possibly breeding, based on the wallaby and extent of wallaby evidence seen, and the whipbird calls heard at multiple sites within the area during the survey.”*

### **Peregrine falcon**

The Peregrine falcon may occasionally utilise the application area as part of a larger home range but was not detected during surveys (Bio Diverse Solutions, 2019). The proposed clearing is not likely to significantly impact this species.

### **Ecological linkages and habitat connectivity**

The application area acts as an ecological linkage and provides habitat connectivity for fauna species at both the local and regional scale. In an extensively cleared landscape, remnant vegetation acts as either corridors or stepping-stones that facilitate the movement of fauna, allowing species to access disparate resources. Ecological linkages can vary in size and value depending on the ecological functions under investigation. Large, compact remnants (such as the application area and surrounding remnant) have continued to persist and function in an extensively cleared landscape and represent significant habitat resources.

At both the local and landscape level this remnant continues to provide essential ecosystem functions for a range of fauna species in a highly fragmented landscape (Bradby et al., 2016). As discussed under Principle (a), the application area is within ‘Strategic Zone B’ of the Western Australian South Coast Macro Corridor Network (Wilkins et al., 2006). Vegetation within Strategic Zone B “potentially provide good nodes of habitat which are within 1 km of vegetation within Strategic Zone A” (Wilkins et al., 2006). Due to the persistence of a range of environmental values and functions within an extensively cleared region, its value as habitat is considerable. This is consistent with advice from the DBCA (2019) that *“Landscape connectivity is considered a high priority for retention in the south coast region and such a large area of clearing will significantly impact on landscape functionality.”*

This is further supported by DBCA (2020), *“Vegetation on the subject land currently contributes to landscape connectivity even in its regenerating state and removal would be a significant reduction in connectivity.”*

Additionally, *“The subject site lies within one of the major potential vegetation corridors known as the “Lake Magenta-King Lakes Corridor” which connects remnant vegetation to existing “Protected Area” corridors (Lake Magenta, Dunn Rock Nature Reserve, and Fitzgerald River National Park) to the north west and south and the “Phillips River Corridor” to the east”* (Bio Diverse Solutions, 2019).

Given the above, the proposed clearing is seriously at variance with this Principle.

### **(c) Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora.**

#### **Proposed clearing is not likely to be at variance with this Principle**

There are no records of Threatened flora within either the local area or the application area. No threatened flora was recorded during the November 2019 flora survey (Bio Diverse Solutions, 2019).

Given the above, the proposed clearing is not likely to be at variance with 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.**

#### **Proposed clearing is not likely to be at variance with this Principle**

There are no state-listed TECs mapped within the application area or known from the local area.

Noting the results of the flora and vegetation survey and DWER site inspection, the application area is not representative of any state-listed TECs (Bio Diverse Solutions, 2019; DWER, 2019).

Given the above, the proposed clearing is not likely to be at variance with 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.**

#### **Proposed clearing is at variance with this Principle**

The national objectives and targets for biodiversity conservation in Australia has a target to prevent clearance of ecological communities with an extent below 30 per cent of that present pre-1750, below which species loss appears to accelerate exponentially at an ecosystem level (Commonwealth of Australia, 2001).

The application area is located in the Mallee IBRA bioregion and is mapped as Beard Vegetation Association 519 (Table 2). This vegetation association retains approximately 59.5 per cent of pre-European clearing extent (Government of Western Australia, 2018). The local area retains approximately 26 per cent native vegetation cover, most of which is highly fragmented.

The proposed clearing would directly contribute to the cumulative impacts of fragmentation and loss of vegetation across an already extensively cleared landscape. This recognises that indiscriminate impacts accumulate over a range of spatial scales and multiple species (Whitehead et al., 2016). The loss of such a 'large' remnant of vegetation will contribute to the cumulative impacts, fragmentation and loss of vegetation across the region.

Larger areas of native vegetation generally support a greater number and diversity of species than smaller areas (e.g. Kitchener et al., 1980a; Kitchener et al., 1980b; Kitchener et al., 1982), and that smaller areas are more vulnerable to edge effects and other disturbances. Habitat fragmentation acts to reduce the area of available habitat.

Due to the above, the application and surrounding remnant have been identified as being locally and regionally significant and form part of the South Coast Macro Corridor Network (SCMCN) as discussed previously. The SCMCN is a bioregional and landscape-scale approach to habitat connectivity that acknowledges that remnant vegetation can play a very important role in developing corridors between protected areas to help achieve long-term biodiversity management outcomes (Wilkins et al., 2006) The subject site lies within one of the major potential vegetation corridors known as the "Lake Magenta-King Lakes Corridor" which connects remnant vegetation to existing "Protected Area" corridors (Lake Magenta, Dunn Rock Nature Reserve, and Fitzgerald River National Park) to the north west and south and the "Phillips River Corridor" to the east. At a local level the remnant vegetation within the survey area provides a corridor from surrounding native vegetation (to the west and north) to the south through the creek line vegetation (that is not proposed to be cleared) that extends into the adjacent agricultural properties. These sections of adjacent creek line vegetation ultimately connect through to larger areas of remnant bushland to the south west of the subject site (Bio Diverse Solutions, 2019).

The application area is significant in a local context as it includes significant habitat for conservation significant flora and fauna and is part of a locally and regionally significant ecological corridor (DBCA, 2020). The diversity of flora and fauna identified in the surveys, demonstrates the application areas role as a refugia and stepping-stone in an extensively cleared landscape.

In addition to the direct loss of vegetation, indirect impacts and edge effects are likely to occur leading to further degradation of the remaining regionally significant remnant, which is predominantly mapped as Excellent to Excellent/Good condition (Keighery, 1994). The proposed clearing will indirectly impact the surrounding vegetation and likely undermine the ecological integrity of the remnant due to the introduction of edge effects, including on and offsite salinity. The loss of 101.1 hectares of vegetation from the surrounding remnant will increase the susceptibility of the surrounding remnant to edge effects and impacts to vegetation condition and function. The cumulative and cross-scale effects from removing the core of an intact larger remnant is likely to undermine the ecological integrity of the Reserve and its role in the landscape regarding connectivity and as an ecological refugia for conservation significant flora and fauna species (Whitehead et al., 2016).

Anticipated edge effects include weed invasion, incursion by vehicles and microclimate shifts.

**Table 2:** Vegetation statistics (Government of Western Australia, 2018)

	Pre-European extent (ha)	Current extent (ha)	Extent remaining (%)	Current extent in all DBCA managed lands (ha)	Extent remaining in all DBCA managed lands (proportion of Pre-European extent) (%)
<b>IBRA Bioregion</b>					
Mallee	7,395,894	4,180,977	56.5	1 289 384	17.4
<b>Beard vegetation association</b>					
519	2,100,314	1,248,661	59.5	225,928.43	10.8

To summarise, the proposed clearing is at variance with this principle because:

- it is a biologically diverse remnant within an extensively cleared landscape;
- is 'large' at 100.1 hectares, high volume to edge ratio (square in size) and in Excellent to Excellent/Good condition (Keighery, 1994);
- it is part of a significant ecological linkage;
- the application area forms part of a larger remnant; and
- it is required to maintain ecosystem services (e.g. hydrological processes), abate existing off-site salinisation, and to compensate for a high degree of local and landscape-level fragmentation.

Given the above, the proposed clearing is at variance with 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.**

**Proposed clearing is not likely to be at variance with this Principle**

Two watercourses were observed near the application area. A 20-metre buffer has been provided to these watercourses (DWER, 2019) as part of the revised application area. Despite the provision of a vegetation buffer, impacts to these watercourses is still likely given the strong association between vegetation removal and altered hydrology in extensively cleared landscapes (Hatton et al. 2003; Hobbs, 1993). This primarily relates to reduced drawdown potential and subsequent rising of salts through the soil

profile through increasingly saline ground water. Therefore, potential indirect impacts to riparian vegetation, which are significant as refuges and food sources in extensively cleared landscapes, are likely to result.

Given the above, the proposed clearing is not likely to be at variance with this Principle.

**(g) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.**

**Proposed clearing is at variance with this Principle**

The proposed clearing of native vegetation within the application area is likely to cause appreciable land degradation through on-site and off-site salinity.

The removal of native vegetation and subsequent fragmentation reduces evapotranspiration and alters soil water flows, leading to increased peak run-offs, rising water tables and salinity (Hobbs, 1993; Fischer, 2007 and Bradby et al., 2016).

Advice from the Commissioner of Soil and Land Conservation (CSLC) (2020) noted that “..... any clearing of vegetation in the catchment would likely increase the potential for on-site or off-site salinity. Any decrease in the leaf area index may increase the rate of recharge in a catchment (West River) which currently has rising ground water levels. When the aquifer storage capacity in this catchment has been exceeded, the area of groundwater discharge or the current groundwater discharge rates will increase causing either an expansion of salt affected land or additional volumes of saline groundwater discharging at the surface”.

The CSLC (2020) provided the following regarding salinity specific to the application area:

- **Groundwater flow systems:** Semi-confined and unconfined aquifers are present in the sediments and weathered basement rocks and generally are connected. Commonly groundwater close to the surface (>2m) is unconfined and semi-confined at depth. The groundwater flow systems are local to intermediate and discharge into low-lying areas, such as waterways. Dolerite dykes and basement highs are common in the area and can force groundwater close to the surface producing hillside seeps and saline scalds.
- **Groundwater levels:** Groundwater level monitoring measurements taken from AgBore JER45D89 illustrates a groundwater level rise since installation in 1989. This rate is quoted from a previous report as being in the order of approximately 0.1m per year and that more recent analysis of the groundwater monitoring indicates that the average annual rate of rise since installation has been 0.08m per year.
- **Bore monitoring:** Three groundwater monitoring sites are near the application area. In May 2019 it was noted that two of these monitoring sites (WR16 and 17) had been destroyed and the remaining site (WR11) had not been remeasured since 2007. The most recent bores information (March 2007) noted groundwater levels between 0.66m and 3.48m below ground level (Figure 6).
- **Groundwater quality:** Groundwater quality (electrical conductivity) at these monitoring sites is saline and ranged from 2,900 to 5,800mS/m and groundwater acidity ranged from 3.3 to 6.2. Ground water levels at these sites between 1997 and 2007 were rising at rates between 0.04 to 0.12m/year.
- **Land Monitoring:** recent (2008-2018) vegetation condition monitoring shows the extent of vegetation decline has increased upstream along the tributary flowing south of the application area.

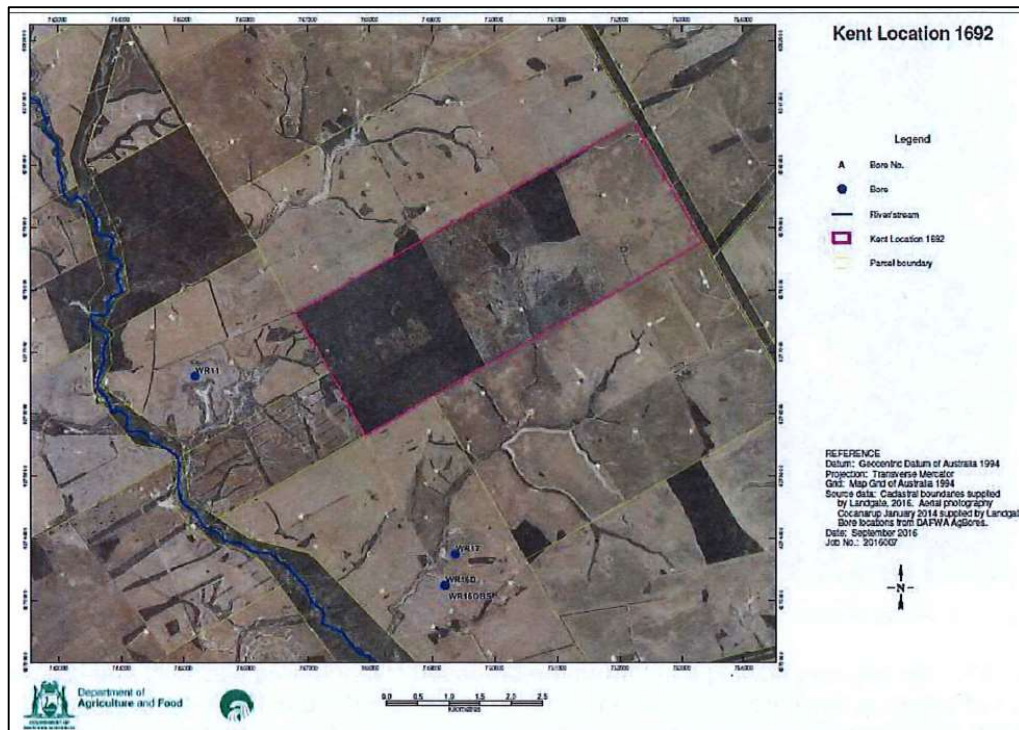


Figure 6: Location of monitoring bores (CSLC, 2019)

Given the above, the proposed clearing is at variance with 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.**

**Proposed clearing is at variance with this Principle**

The vegetation within the application area is mapped as a locally and regionally significant ecological linkage, the local area has been extensively cleared (26 per cent remaining within the local area) and the linkage connects DBCA lands managed for conservation, therefore the proposed clearing is likely to indirectly impact ecological functions within these conservation areas and therefore is at variance with this Principle.

Fitzgerald River National Park is located approximately 10 kilometres south of the application area. Three nature reserves and a timber reserve are located within 10 kilometres of the application area. As discussed in Principle (b), the application area contains Carnaby's cockatoo foraging habitat and is within six kilometres of confirmed breeding habitat.

The application area is positioned approximately midway between an unnamed nature reserve and Fitzgerald River National Park and is connected to these areas by continuous (but narrow) corridors of vegetation. The application area is likely to facilitate fauna movement between these and other remnants of native vegetation at a local and landscape scale.

As discussed under Principles (a) and (b), the application area is within the Western Australian South Coast Macro Corridor Network (Wilkins et al., 2006). The former Department of Parks and Wildlife advised that the extent of the proposed clearing will impact on landscape connectivity functionality (Parks and Wildlife, 2016). This advice was confirmed by DBCA (DBCA, 2019).

Furthermore, "*Vegetation on the subject land currently contributes to landscape connectivity even in its regenerating state and removal would be a significant reduction in connectivity.*" (Bio Diverse Solutions, 2019; DBCA, 2020).

The applicant amended the application area to avoid vegetation of highest value to this ecological corridor located in the northern section of the property. However, the revised application area remains large (100.1 hectares) in a local context and removal of the vegetation within the application area, located in a highly cleared landscape will contribute towards further landscape fragmentation and degradation. Subsequently, the effectiveness of the remaining ecological linkage is likely to be reduced with implications for nearby conservation areas.

Given the above, the proposed clearing is at variance with 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.**

**Proposed clearing is at variance with this Principle**

As assessed under Principle (g), land degradation from the proposed clearing (in the form of on-site and off-site salinity) is likely to result from the proposed clearing (CSLC, 2019). As a result, the proposed clearing is likely to further exacerbate a deterioration in the quality of underground water through salinisation.

The proposed clearing is at variance with 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.**

**Proposed clearing is not likely to be at variance with this Principle**

According to available databases, the average annual rainfall of the local area is 400 millimetres.

Several minor non-perennial watercourses are mapped nearby the application area. No major watercourses occur within or near the application area. Available aerial imagery indicates that the application area is within 100 metres of a defined waterway, and the applicant has provided a 20m buffer to all minor waterways.

The proposed clearing is unlikely to significantly increase surface runoff which would contribute to stream flows, and the risk of flooding causing land degradation (which may affect the volume of surface water runoff) is low (CSLC, 2016).

Given the above, the proposed clearing is not likely to be at variance with this Principle.

**5. Planning instruments and other relevant matters**

**History of clearing permit applications on Lot 1692**

The applicant previously submitted two separate applications in 2016 to clear 630 hectares and 325 hectares of native vegetation on Lot 1692 on Deposited Plan 208474, West River, for the purpose of cropping and pasture (CPS 6765/1 and CPS 7090/1 respectively; see figures 4 and 5 respectively). Assessment of these two applications determined that the proposed clearing;

- will cause appreciable land degradation in the form of salinity,
- will cause a deterioration in the quality of surface water and groundwater,
- will impact on native vegetation that comprises a high level of biodiversity,

- will impact habitat for conservation significant fauna,
- will impact native vegetation that is significant as a remnant in an extensively cleared landscape, and
- may impact on threatened and priority flora.

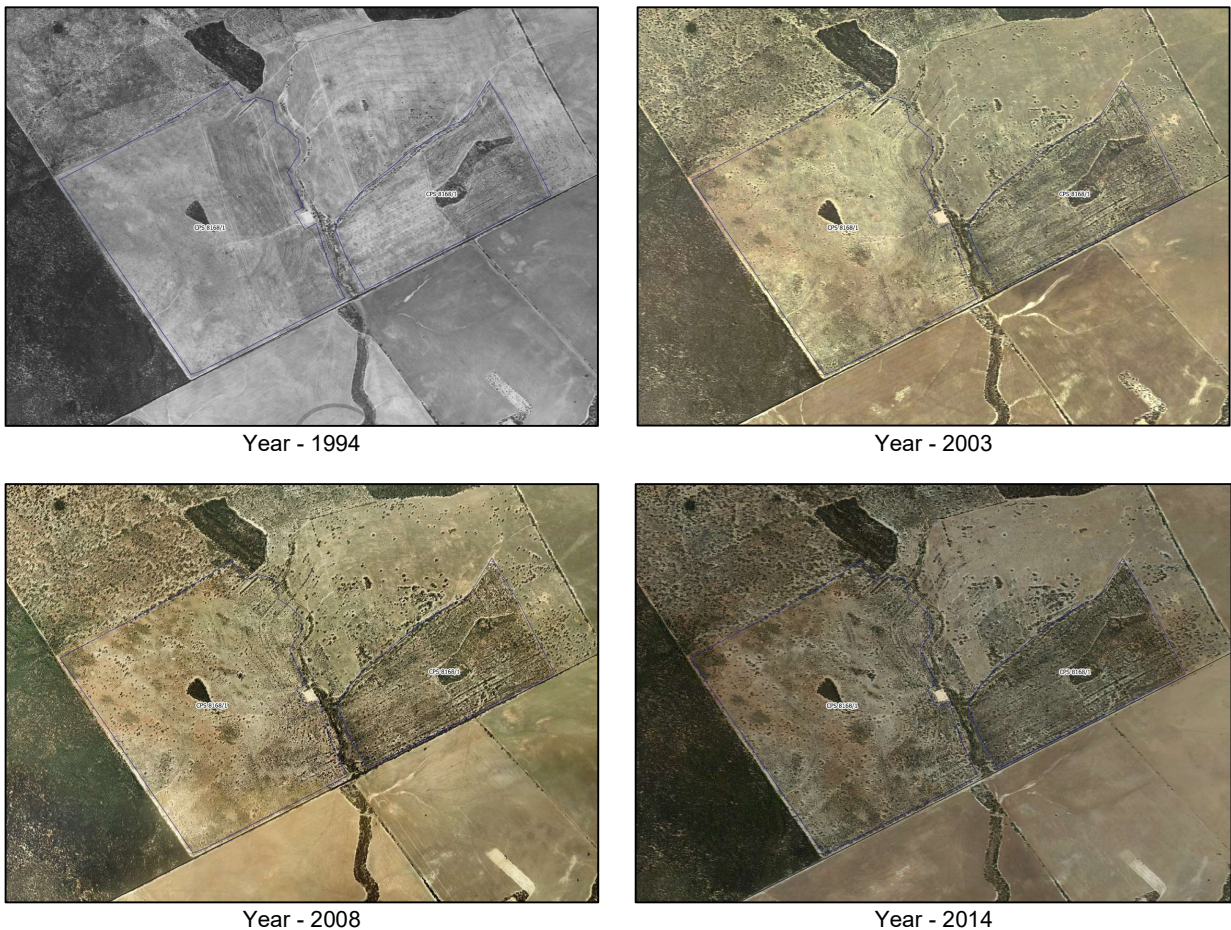
A Delegated Officer of the former Department of Environment Regulation (DER) refused application CPS 6765/1 on 18 April 2016 and CPS 7090/1 on 7 November 2016 primarily based on advice from the CSLC that the proposed clearing was seriously at variance with clearing principle (g).

On 17 August 2018, the applicant applied to clear 319 hectares within the same property (CPS 8168/1) however based on similar advice from the CSLC that the proposed clearing would be seriously at variance with clearing principle (g), revised the application area for CPS 8168/1 to 175.4 hectares. Further advice was sought from the Commissioner and the potential impacts were downgraded from seriously at variance to at variance with clearing principle (g) (CSLC, 2019).

The applicant has modified the application area to avoid vegetation consistent with a known TEC (1.8 hectares). However, the impacts to the TEC from the proposed clearing would still remain as the small islands are not likely to be sustainable due to impacts by edge effects.

The applicant has raised with the Department the application of the exemption within the *Environmental Protection (Clearing of Native Vegetation) Regulations 2004*, specifically Regulation 5, Item 14. This regulation provides an exemption from the requirement for a clearing permit for clearing to maintain existing cleared areas for pasture, cultivation or forestry, which must be done by or with the prior authority of the owner or occupier of the land on which the clearing is to take place. For this exemption to apply the land must have been used as pasture or for cultivation or forestry within the preceding 20 years and the clearing is only to the extent necessary to enable the land to be used to the maximum extent to which it was used in those 20 years. Any decision to utilise an exemption is the responsibility of the person, group, organisation or business proposing to undertake the clearing.

The applicant has advised that they are relying on aerial imagery to demonstrate that the application area has been used for pasture within the last 20 years and suggest that this exemption applies. Aerial imagery, available to the Department, over the property has been unable to definitely prove whether the application area was used for pasture, cultivation or forestry within the last 20 years (i.e. since 2000) and therefore there is insufficient evidence from the aerial imagery, for the Department to have confidence that the exemption applied to the application area. Historical imagery available to DWER is below in Figure 7.



**Figure 7: Aerial imagery of the application area over the past 20 years (1994 to 2014).**

The application area is zoned 'General Agriculture' under the Shire of Ravensthorpe Town Planning Scheme No. 5. The Shire has advised that no planning approval is required (Shire of Ravensthorpe, 2018).

No Aboriginal sites of significance have been mapped within the application area.

The clearing permit application (319 hectares) was advertised on the Department of Water and Environmental Regulation website on 4 September 2018 with a 21 day submission period. Two public submissions were received in relation to this application that objects to the proposed clearing.

The revised application area (175.4 hectares) was readvertised on 6 August 2019 with a seven day submission period. No submissions have been received in relation to this application. The application area was further reduced to 100.1 hectares as confirmed by the applicant on 14 May 2020.

### Submissions

Submission (2018):

- the Ravensthorpe area is a well-known breeding area for Carnaby's cockatoo;
- the area to be cleared is relatively large and has remnant vegetation on it and nearby;
- this application should be reviewed for its impact on the EPBC listed Carnaby's Black-Cockatoo;
- potentially there will be nesting hollows in trees in the area, this should be checked by a qualified fauna expert; and
- the land to be cleared may also contain foraging habitat within 12km of nesting hollows, which qualifies it as critical habitat.

Submission (2019):

- No biological information from which to understand the conservation values of the remnant vegetation.
- The proponent states that the area have previously been cleared and farmed, however it is extremely difficult to ascertain this based on the limited information provided. The aerial imagery does look different to the adjacent land but at the very least there are several patches that appear not to have been modified by farming practices, particularly in the north east of the clearing instruments area.
- A review within a 10 km radius of the proposed clearing area in NatureMap indicates that any remnant vegetation in this area is likely to be very species rich. It may potentially support Threatened flora species such as *Anigozanthos bicolor* subsp. *minor* and Priority flora species such as *Acacia bifaria* (P3), *Acacia newbeyi* (P3), *Acacia nitidula* (P3), *Calytrix nematoclada* (P3), *Eucalyptus sinuosa* (P2) *Hemigenia platyphylla* (P4), *Lechenaultia acutiloba* (P3), *Melaleuca penicula* (P4), *Notisia intonsa* (P3), *Pultenaea brachyphylla* (P2), and *Sphaerolobium validum* (P3).
- The area may also provide foraging habitat or habitat for Malleefowl (Threatened) and Peregrine Falcon (Specially protected), which have been recorded within 10 km of the clearing instruments area.

Flora, fauna and vegetation surveys have since been undertaken by Bio Diverse Solutions (2019) which address some of the points raised in the submissions. Concerns regarding impacts to fauna, flora and being located within an extensively cleared landscape have been addressed within the corresponding clearing principles. The history of the use of the site for agricultural purposes is discussed above.

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## 7. GIS databases

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

- Aboriginal Heritage Places (DPLH-001)
- Cadastre Address (LGATE-002)
- Contours (DPIRD-073)
- DBCA – Lands of Interest (DBCA-012)
- DBCA Legislated Lands and Waters (DBCA-011)
- Directory of Important Wetlands in Australia – Western Australia (DBCA-045)
- Environmentally Sensitive Areas (DWER-046)
- Flood Risk (DPIRD-007)
- Groundwater Salinity Statewide (DWER-026)
- Local Planning Scheme – Zones and Reserves (DPLH-071)
- Pre-European Vegetation (DPIRD-006)
- Regional Parks (DBCA-026)
- Soil and Landscape Mapping – Best Available (DPIRD-027)

Restricted GIS Databases used:

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