GOVERNMENT OF
WESTERN AUSTRALIA

# CLEARING PERMIT

*Granted under section 51E of the Environmental Protection Act 1986*

## PERMIT DETAILS

Area Permit Number: CPS 10597/1

File Number: DWERVT15043

Duration of Permit: From 19 September 2024 to 19 September 2031

## PERMIT HOLDER

Shire of Serpentine Jarrahdale

## LAND ON WHICH CLEARING IS TO BE DONE

Lot 4395 on Deposited Plan 219889 (Crown Reserve 7125), Mundijong

## AUTHORISED ACTIVITY

The permit holder must not clear more than 0.47 hectares of *native vegetation* within the area cross-hatched yellow in Figure 1 of Schedule 1.

## CONDITIONS

### 1. Period during which clearing is authorised

The permit holder must not clear any *native vegetation* after 19 September 2026.

### 2. Avoid, minimise, and reduce impacts and extent of clearing

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

(a) avoid the clearing of *native vegetation*;

(b) minimise the amount of *native vegetation* to be cleared; and

(c) reduce the impact of clearing on any environmental value.

### 3. Weed and dieback management

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

(a) clean earth-moving machinery of soil and vegetation prior to entering and leaving the area to be cleared;

(b) ensure that no known *dieback* or *weed*-affected soil, *mulch*, *fill*, or other material is brought into the area to be cleared; and

(c) restrict the movement of machines and other vehicles to the limits of the areas to be cleared.

## 4. Directional clearing

The permit holder must:

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

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

## 5. Mitigation – Rehabilitation

(a) The permit holder must *rehabilitate* 1.074 hectares of *native vegetation* within the area cross-hatched red in Figure 2 of Schedule 2 (Lot 4395 on Deposited Plan 219889) of this permit, of which provides significant *native vegetation* in an extensively cleared area and suitable foraging habitat for all three *black cockatoo species*.

(b) The *rehabilitation* required under condition 5(a) of this permit, must be undertaken to achieve the completion criteria as per Table 3 of Schedule 2 (completion criteria) has been met, including but not limited to the following:

(i) undertake direct seeding and tubestock planting at an *optimal time*, using species within *Marri and Jarrah open woodland*;

(ii) ensure only *local provenance* seeds and propagating material are used to *rehabilitate*;

(iii) implement hygiene protocols by cleaning earth-moving machinery of soil and vegetation prior to entering and leaving the *rehabilitation* area;

(iv) establish at least five 10 x 10 meter quadrat monitoring sites within *rehabilitated* area;

(v) undertake *weed* control activities bi-annually until the completion criteria as per Table 3 of Schedule 2 (completion criteria) has been met;

(vi) achieve the completion criteria specified in Table 3 of Schedule 2 (completion criteria) has been met and maintained for a minimum of three years;

(vii) monitor quadrats specified in condition 5(b)(iv) annually until the completion criteria as per Table 3 of Schedule 2 (completion criteria) has been met and maintained for a minimum of three years;

(viii) undertake remedial actions for the *rehabilitation* area where monitoring indicates the completion criteria, outlined in Table 3 of Schedule 2 (completion criteria), has not been met, including:

i. deliberately *planting* and/or *direct seeding native vegetation* that will result in the minimum targets specified in Table 3 of Schedule 2 (completion criteria);

ii. undertake further *weed* control activities; and

iii. continue monitoring of the *rehabilitated* area by an *environmental specialist*, until the completion criteria, outlined in Table 3 Schedule 2 (completion criteria) has been met.

(ix) where an *environmental specialist* has determined that the completion criteria, outlined in Table 3 Schedule 2 (completion criteria) has been met, that report is to be provided to the *CEO* within three months of the determination being made by the *environmental specialist;* and

(x) where the *CEO* does not agree with the determination made under condition 5(ix), the *CEO* may require the permit holder to undertake remedial actions in accordance with the requirements under condition 5(viii) and repeat action under condition 5(ix).

## 6. Vegetation management – Fencing

(a) Within 12 months of the commencement of *rehabilitation*, the permit holder must construct a fence enclosing the area cross-hatched black in Figure 3 of Schedule 2 (Lot 4395 on Deposited Plan 219889) of this permit.

(b) Install skirting along the fence line to reduce herbivory of tube stock within the *rehabilitation* area.

(c) Once the *rehabilitated* vegetation has been established, remove the fence line skirting to allow the movement of wildlife into the *rehabilitation* area.

(d) The permit holder must notify the *CEO* within three months of the completion of the fence constructed under 6(a)

(e) The permit holder must notify the CEO within three months of the removal of the fence line skirting condition under 6(c).

## 7. Records that must be kept

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

**Table 1: Records that must be kept**

| No. | Relevant matter | Specifications |
|---|---|---|
| 1. | In relation to the authorised clearing activities generally | (a) the species composition, structure, and density of the cleared area;<br>(b) the location where the clearing occurred, recorded using a Global Positioning System (GPS) unit set to GDA2020, expressing the geographical coordinates in Eastings and Northings; |

| No. | Relevant matter | Specifications |
|---|---|---|
| | | (c) the date that the area was cleared;<br>(d) direction of clearing;<br>(e) the size of the area cleared (in hectares);<br>(f) actions taken to avoid, minimise, and reduce the impacts and extent of clearing in accordance with condition 2;<br>(g) actions taken to minimise the risk of the introduction and spread of *weeds* and *dieback* in accordance with condition 3; and<br>(h) evidence of fencing undertaken in accordance with condition 6. |
| 2. | In relation to *rehabilitation* pursuant to condition 5 | (a) a description of the *rehabilitation* activities undertaken;<br>(b) the size of the area *rehabilitated* (in hectares);<br>(c) the date the *rehabilitation* works began;<br>(d) the boundaries of the area *rehabilitated*, recorded using a Global Positioning System (GPS) unit set to GDA2020, expressing the geographical coordinates in Eastings and Northings;<br>(e) any remediation works undertaken;<br>(f) determination made by an *environmental specialist*;<br>(g) the date the completion criteria are considered to be met; and<br>(h) other actions taken in accordance with condition 5. |

## 8. Reporting

The permit holder must provide to the *CEO* the records required under condition 7 of this permit when requested by the *CEO*.

## DEFINITIONS

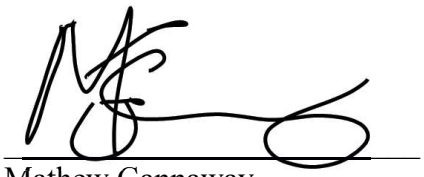
In this permit, the terms in Table 2 have the meanings defined.

**Table 2: Definitions**

| Term | Definition |
|---|---|
| black cockatoo species | means one or more of the following species:<br>(a) *Zanda latirostris* (Carnaby's cockatoo);<br>(b) *Zanda baudinii* (Baudin's cockatoo); and/or<br>(c) *Calyptorhynchus banksii naso* (forest red-tailed black cockatoo). |
| CEO | Chief Executive Officer of the department responsible for the administration of the clearing provisions under the *Environmental Protection Act 1986*. |
| clearing | has the meaning given under section 3(1) of the EP Act. |
| condition | a condition to which this clearing permit is subject under section 51H of the EP Act. |
| dieback | means the effect of *Phytophthora* species on native vegetation. |
| direct seeding | means a method of re-establishing vegetation through establishment of a seed bed and the introduction of seeds of the desired plan species. |
| department | means the department established under section 35 of the *Public Sector Management Act 1994* (WA) and designated as responsible for the administration of the EP Act, which includes Part V Division 3. |
| environmental specialist | means a person who holds a tertiary qualification in environmental science or equivalent and has experience relevant to the type of environmental advice that an environmental specialist is required to provide under this permit, or who is approved by the *CEO* as a suitable environmental specialist. |
| EP Act | *Environmental Protection Act 1986* (WA) |
| fill | means material used to increase the ground level, or to fill a depression. |
| local provenance | means native vegetation seeds and propagating material from natural sources within 50 kilometres and the same IBRA subregion of the area cleared. |
| Marri and jarrah open woodland | open forest of Marri (*Corymbia calophylla*) and Jarrah (*Eucalyptus marginata*) over mixed shrubland. Species composition to resemble those *native* species identified within Quadrat 1 and Quadrat 2 of the *Detailed and Targeted Flora Vegetation Assessment - Lot 4395 Keirnan Street, Mundijong - December 2021* (DWER Ref: DWERDT946619) |
| mulch | means the use of organic matter, wood chips or rocks to slow the movement of water across the soil surface and to reduce evaporation. |
| native vegetation | has the meaning given under section 3(1) and section 51A of the EP Act. |
| optimal time | means the optimal time for undertaking direct seeding and planting for that region. |
| planting(s)/plant | means the re-establishment of vegetation by creating favourable soil conditions and planting seedlings of the desired species. |
| rehabilitate/rehabilitated/ rehabilitation | means actively managing an area containing native vegetation in order to improve the ecological function of that area using methods such as natural regeneration, direct seeding and/or planting, so that the species |

| Term | Definition |
|---|---|
| | composition, structure and density is similar to pre-clearing vegetation types in that area. |
| weeds | means any plant –<br>(a) that is a declared pest under section 22 of the *Biosecurity and Agriculture Management Act 2007*; or<br>(b) published in a Department of Biodiversity, Conservation and Attractions species-led ecological impact and invasiveness ranking summary, regardless of ranking; or<br>(c) not indigenous to the area concerned. |

**END OF CONDITIONS**



Mathew Gannaway
MANAGER
NATIVE VEGETATION REGULATION

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

26 August 2024

# SCHEDULE 1

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

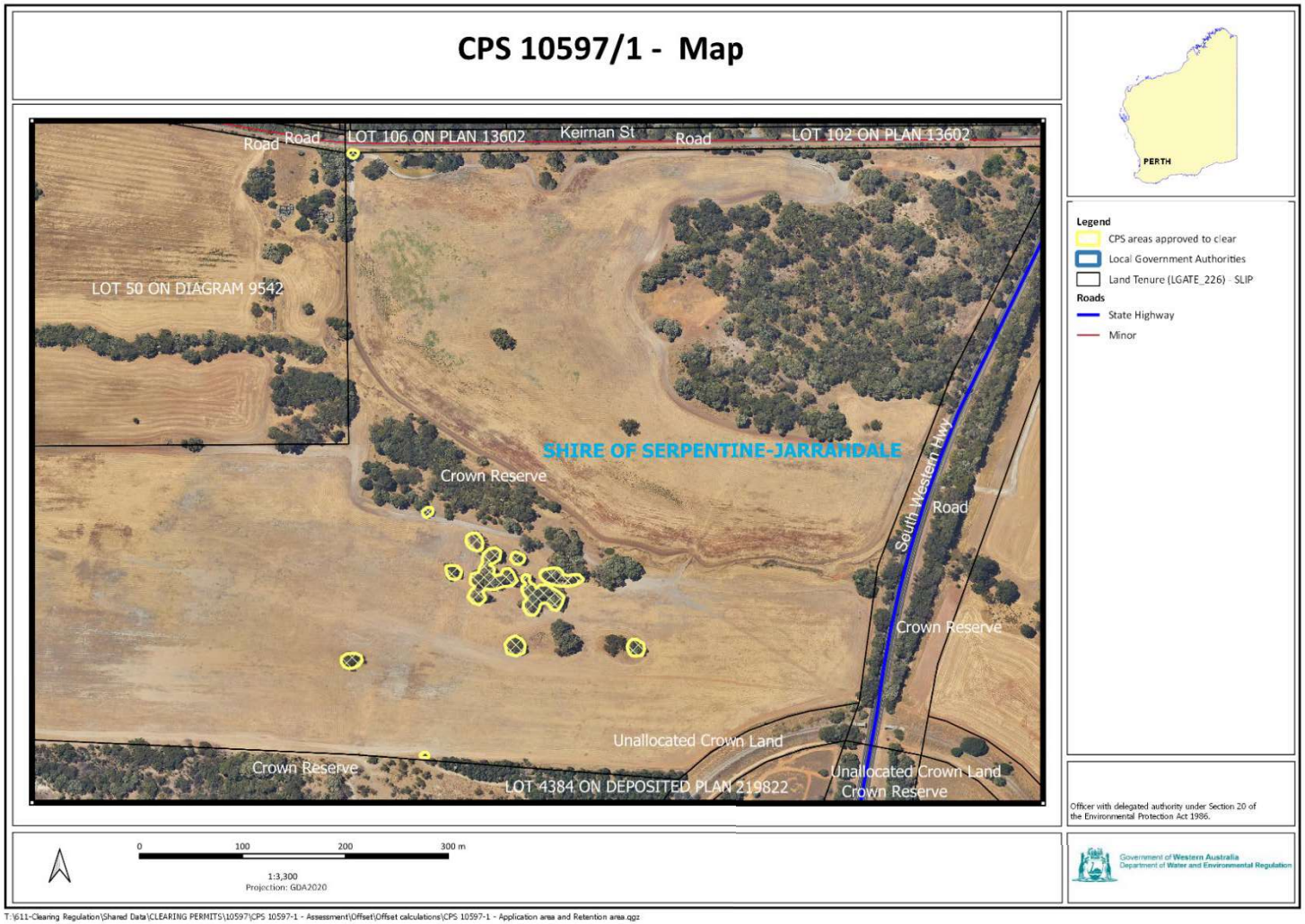



Figure 1: Map of the boundary area within which clearing may occur.

# SCHEDULE 2

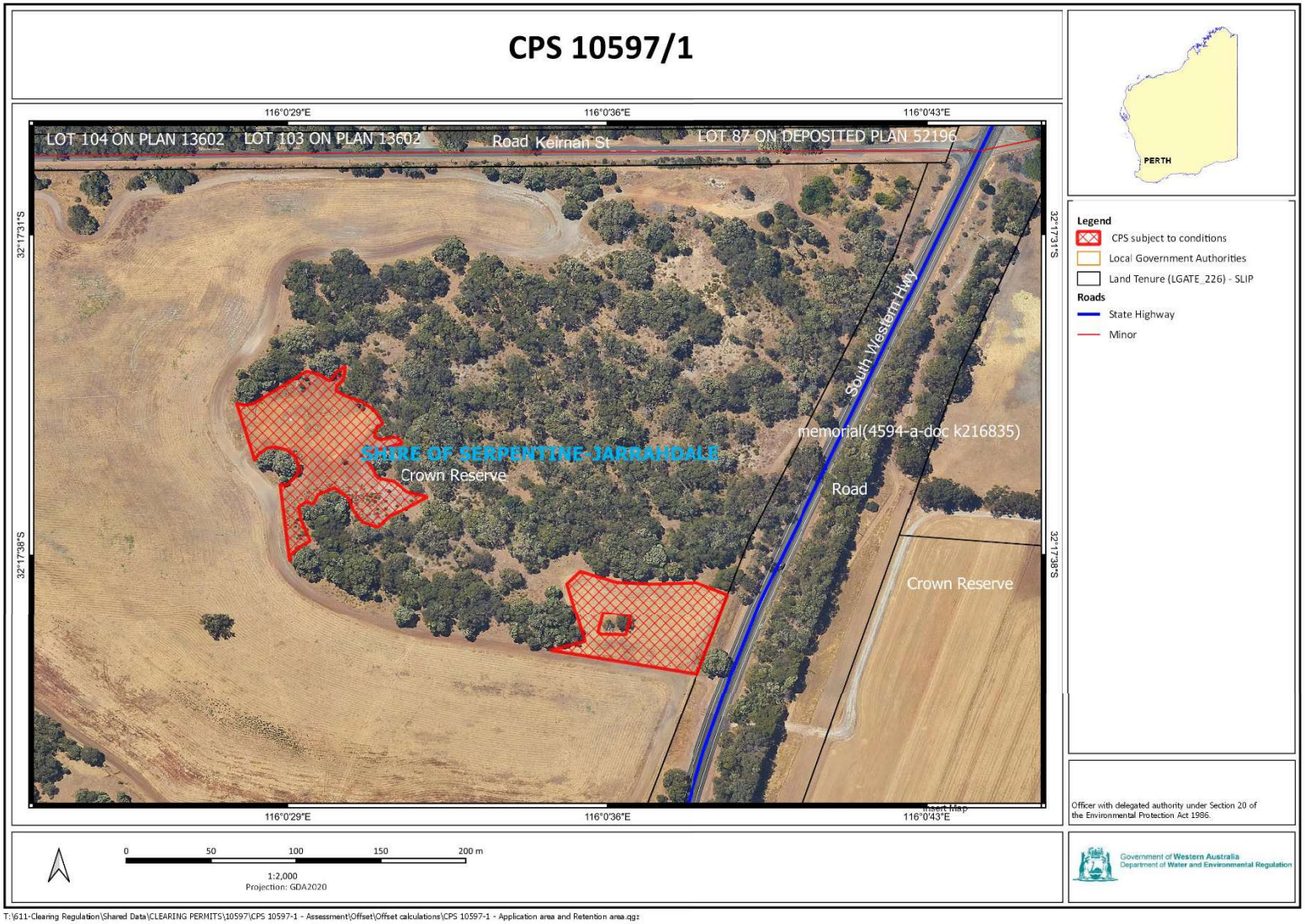



Figure 2: Map of the boundary area within which conditions apply.

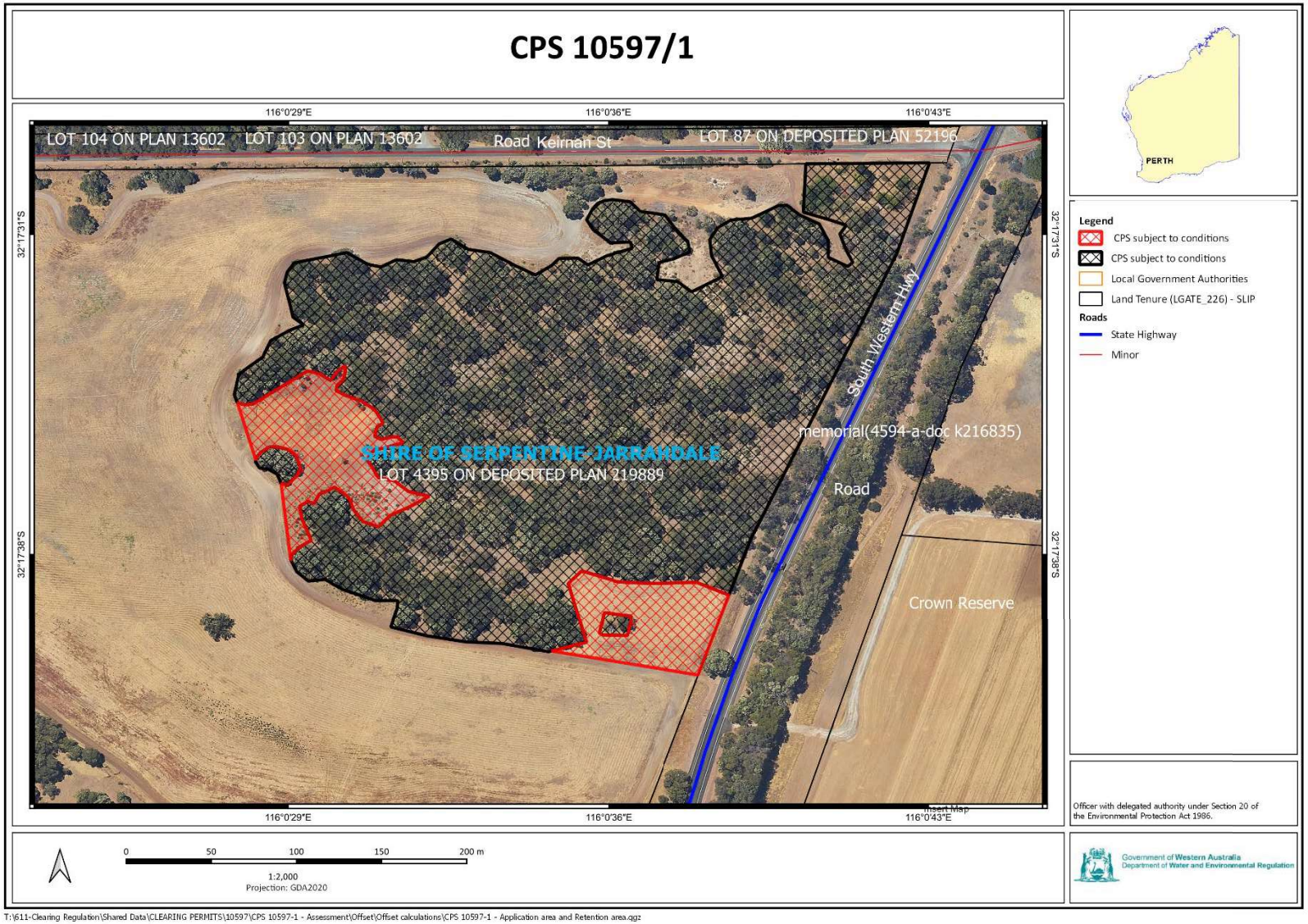



Figure 3: Map of the boundary area within which conditions apply.

# Completion Criteria

Table 3: Completing criteria for the rehabilitation within the area cross-hatched red in figure 2 and 3 of Schedule 2.

| Aspect | Completion Criteria | Monitoring |
|---|---|---|
| Survival rate to be achieved | The *revegetation* site needs to ensure a survival rate of at least 70 per cent of the seedlings initially planted to be established. | The stems of species in the *revegetation* area, within the monitoring quadrants to be counted annually by an *environmental specialist* in spring for a minimum of three years after the last year plants were established. |
| Vegetation Structure | Vegetation in the *revegetation* site to be broadly representative of *Marri and Jarrah open woodland* by establishing overstory and midstory species and providing conditions suitable for expanding remnant understory species across the site. | The structure is to be assessed annually by an *environmental specialist* in spring for a minimum of three years after the last year plants were established. |
| Black cockatoo | Vegetation in the *revegetation* site contains foraging species suitable for *black cockatoo species.* | Assessed annually by an *environmental specialist* in spring for a minimum of three years after the last year plants were established. |
| Plant coverage | Native plant coverage will be estimated with a normal target range of 40 per cent. | The number of surviving plants in the *revegetation* site will be monitored annually by an *environmental specialist* in spring of three years after the last year plants were established. |
| Percentage of *weeds* present | Weed coverage within the *revegetation* site to have no more than 15 per cent *weed* coverage. No Weeds of National Significance (WoNS) within the *revegetation* site. | Monitor the *revegetation* site for *weeds* by quadrates annually in spring for a minimum of three years after the last year plants were established. |
| Patch size of bare ground | The *revegetation* area has no more than five (5) per cent of bare ground. | The patch size of bare ground is to be assessed annually by an *environmental specialist* in spring for a minimum of three years after the last year plants were established. |
| Declared weeds | No Declared Weeds under the *Biosecurity and Agricultural Management Act 2007* present | Monitor the *revegetation* site for Declared weeds by quadrates bi annually in autumn and spring for a minimum of three years after the last year plants were established. |

Government of Western Australia
Department of Water and Environmental Regulation

# Clearing Permit Decision Report

## 1 Application details and outcome

### 1.1. Permit application details

| | |
|---|---|
| **Permit number:** | CPS 10597/1 |
| **Permit type:** | Area permit |
| **Applicant name:** | Shire of Serpentine Jarrahdale |
| **Application received:** | 22 April 2024 |
| **Application area:** | 0.47-hectare of native vegetation |
| **Purpose of clearing:** | Developing Kiernan Park Recreational Precinct |
| **Method of clearing:** | Mechanical |
| **Property:** | Lot 4395 on Deposited Plan 219889 (Crown Reserve 7125) |
| **Location (LGA area/s):** | Shire of Serpentine Jarrahdale |
| **Localities (suburb/s):** | Mundijong |

### 1.2. Description of clearing activities

The vegetation proposed to be cleared is 0.47 hectares of native vegetation distributed across multiple areas within Lot 4395 on Deposited Plan 219889 (Crown Reserve 7125), Mundijong. (see Figure 1, Section 1.5). The proposed clearing is to facilitate the construction of the Kiernan Park Recreation Precinct (Shire of Serpentine Jarrahdale, 2024).

### 1.3. Decision on application

| | |
|---|---|
| **Decision:** | Granted |
| **Decision date:** | 26 August 2024 |
| **Decision area:** | 0.47-hectare of native vegetation, as depicted in Section 1.5, below. |

### 1.4. Reasons for decision

This clearing permit application was submitted, accepted, assessed and determined in accordance with sections 51E and 51O of the *Environmental Protection Act 1986* (EP Act). The Department of Water and Environmental Regulation (DWER) advertised the application for 21 days and no submissions were received.

In making this decision, the Delegated Officer had regard for the site characteristics (see Appendix A), relevant datasets (see Appendix E.1), the findings of a fauna report (Natural Area, 2022), targeted flora and vegetation assessment (Emerge, 2021a), a targeted black cockatoo assessment (Emerge, 2021b), and the clearing principles set out in Schedule 5 of the EP Act (see Appendix D), relevant planning instruments and any other matters considered relevant to the assessment (see Section 3). The Delegated Officer also took into consideration the purpose of the proposed clearing is to construct the Keirnan Park recreation precinct.

The assessment identified that the proposed clearing will result in:

- the loss of native vegetation that is suitable habitat for *Zanda latirostris* (Carnaby's cockatoo), *Zanda baudinii* (Baudin's cockatoo) and *Calyptorhynchus banksia naso* (forest red-tailed black cockatoo) (collectively referred to as black cockatoos),
- the loss of native vegetation that is representative of the extensively cleared Swan Coastal Plain ridge hill shelf (29) complex.

After consideration of the available information, as well as the applicant's minimisation and mitigation measures (see section 3.1), the Delegated Officer determined the proposed clearing will result in the following significant residual impacts.

- 0.47 hectares of a significant remnant of vegetation in an extensively cleared landscape; and
- 0.47 hectares of high-quality foraging habitat for black cockatoos within an extensively cleared landscape;

After consideration of the available information, the Delegated Officer determined that the impacts of the proposed clearing, including impacts to fauna present at the time of clearing and the potential to facilitate the introduction of weeds and dieback, can be minimised and managed to be unlikely to lead to an unacceptable risk to environmental values through permit conditioning. The Delegated Officer determined that the revegetation of 1.074 hectares of native vegetation within Lot 4395 was sufficient to counterbalance the significant residual impact to black cockatoo species foraging habitat and clearing vegetation within an extensively cleared landscape (see Section 3.1).

The Delegated Officer decided to grant a clearing permit subject to conditions to:

- avoid, minimise to reduce the impacts and extent of clearing,
- take hygiene steps to minimise the risk of the introduction and spread of weeds and dieback,
- undertake slow, progressive one-direction clearing to allow terrestrial fauna to move into adjacent habitats ahead of the clearing activity;
- undertake revegetation within Lot 4395 (see Section 3.1); and
- fence the revegetation activities within Lot 4395.

## 1.5. Site maps

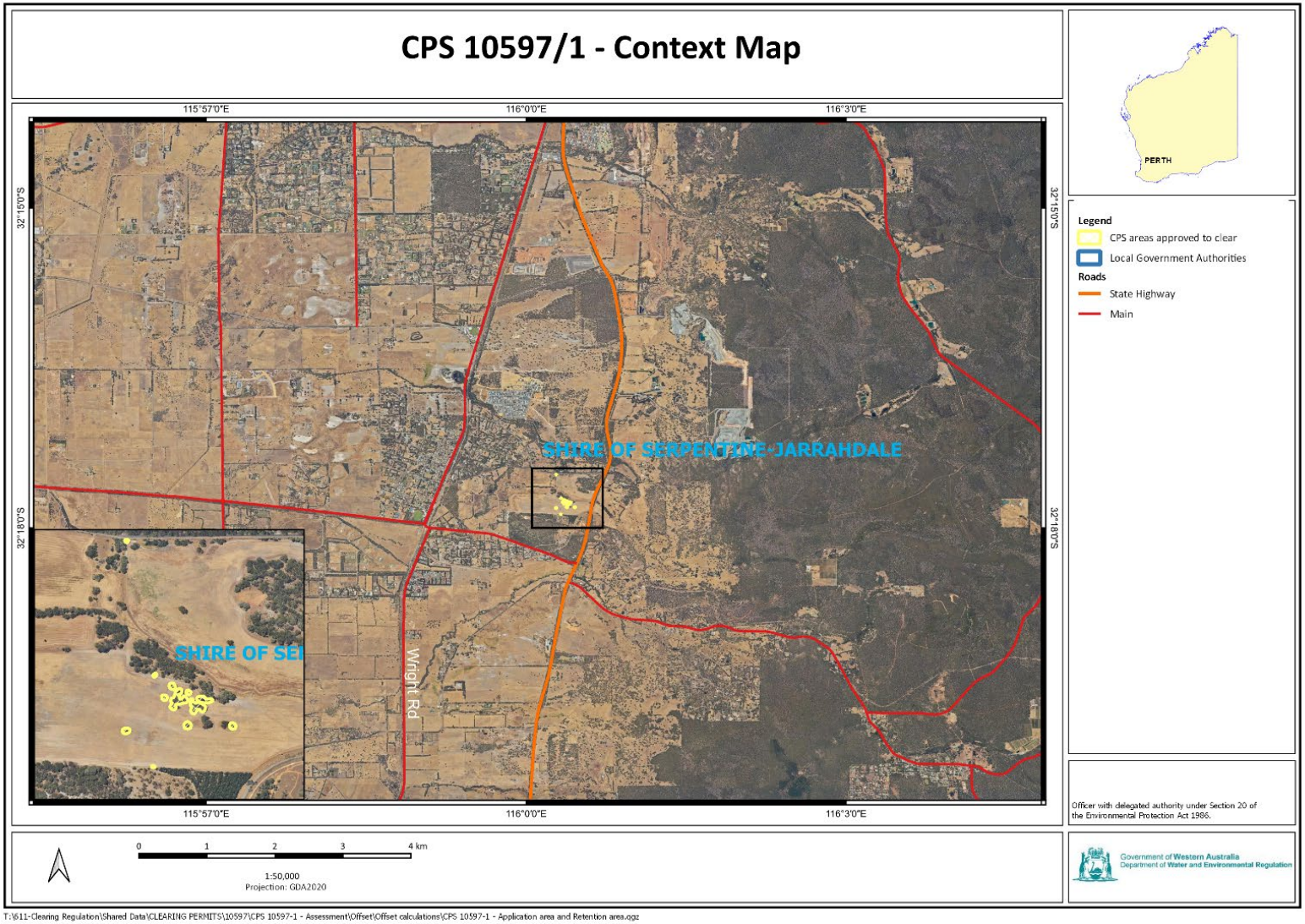



Figure 1: Context map of the application area the area crosshatched yellow indicates the area authorised to be cleared under the granted clearing permit.

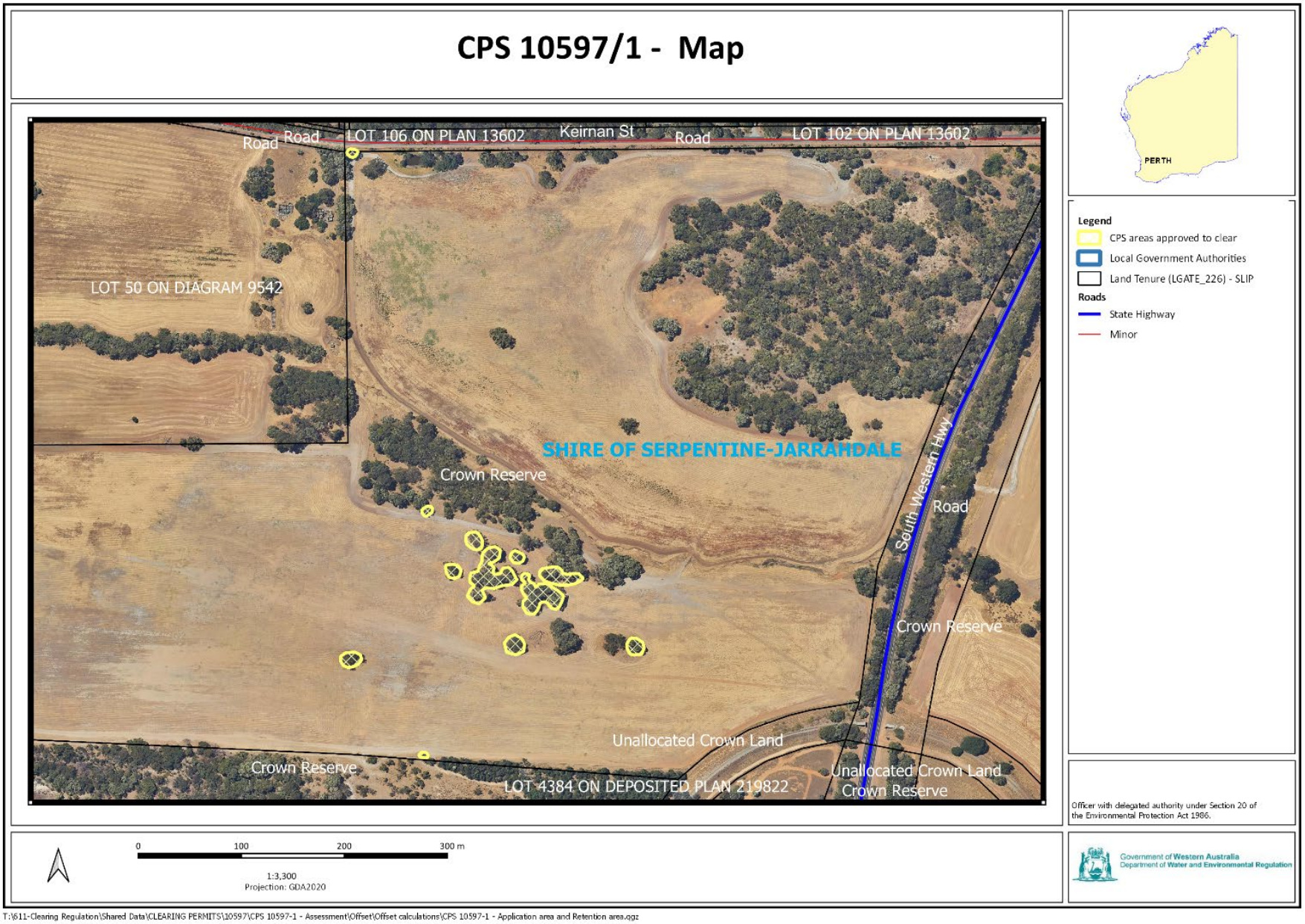



Figure 2: Map of the application area the area crosshatched yellow indicates the area authorised to be cleared under the granted clearing permit.

## 2 Legislative context

The clearing of native vegetation in Western Australia is regulated under the EP Act and the *Environmental Protection (Clearing of Native Vegetation) Regulations 2004* (Clearing Regulations).

In addition to the matters considered in accordance with section 51O of the EP Act (see Section 1.4), the Delegated Officer has also had regard to the objects and principles under section 4A of the EP Act, particularly:

- the precautionary principle
- the principle of intergenerational equity
- the polluter pays principle
- the principle of the conservation of biological diversity and ecological integrity.

Other legislation of relevance for this assessment include:

- *Biodiversity Conservation Act 2016* (WA) (BC Act)
- *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act)
- *Planning and Development Act 2005* (WA) (P&D Act)
- *Soil and Land Conservation Act 1945* (WA)

Relevant policies considered during the assessment include:

- *Environmental Offsets Policy* (2011)

The key guidance documents which inform this assessment are:

- *A guide to the assessment of applications to clear native vegetation* (DER, December 2013)
- *Procedure: Native vegetation clearing permits* (DWER, October 2019)
- *Environmental Offsets Guidelines* (August 2014)
- Technical guidance – *Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA, 2016)
- Technical guidance – *Terrestrial Fauna Surveys for Environmental Impact Assessment* (EPA, 2016)

## 3 Detailed assessment of application

### 3.1. Avoidance and mitigation measures

The Shire of Serpentine Jarrahdale (the Shire) has amendment the project design multiple times to reduce the potential impact of the proposed action on native vegetation and Black Cockatoo habitat trees. The structural root zone and Tree Protection Zone (TPZ) were determined for each tree within and in close proximity to the proposed Disturbance Footprint. The project design used this information and has been re-designed to minimise the number of trees required to be removed or potentially impacted by the proposed action (Shire of Serpentine Jarrahdale, 2024). Further actions the Shire has done to reduce the clearing are as follows:

- the disturbance footprint sits largely within the completely degraded areas of the site to avoid the *Corymbia calophylla - Eucalyptus marginata* woodlands on sandy clay soils TEC, remnant bushland patches located centrally and in the north-east corner of the Project Area, and the Black Cockatoo roosting trees.
- the BMX site's main carpark entry was redesigned to enable trees to be retained where they were originally planned to be cleared.
- a TPZ has been established so that each tree can be retained within the Disturbance Footprint. The project was redesigned multiple times to ensure this could be achieved and retain as many trees as possible.
- any trees within proximity to drainage swales or areas to be earth worked will be subject to AS 4970-2009 'Protection of trees on development sites'.
- where soil excavation is required within the TPZ of a tree, hand excavation will be considered as an alternative to mechanical excavation to increase the chances of tree survival in the long term.
- batter slopes to drainage swales vary to protect existing trees. Bouldering/rockwork is proposed to mitigate scouring adjacent trees.
- the project has been designed to ensure the known areas of Dieback infestation are outside of the project design and disturbance footprint. Hygiene measures will be followed in accordance with the recommendations provided in the Dieback Assessment Report (Att 11 Dieback Assessment (Shire of Serpentine Jarrahdale, 2022), Section 5, pp 13).
- a Dieback Management Plan is currently being developed to control the human-vectored spread of Phytophthora Dieback within the protectable remnant vegetation within the precinct.
- a Construction Environmental Management Plan will be developed by the proponent prior to construction activities to address potential impacts relating to dust, noise, light, heritage, tree protection, acid sulphate soils, flora and fauna.

- a Black Cockatoo Roost Mitigation Plan is currently being developed to identify actions that ensure the trees within the roost site are protected and to avoid and mitigate impact to black cockatoos utilising the roost.

**Revegetation action**

After consideration of the avoidance and mitigation measures provided by the Shire, it was determined that further avoidance and/or mitigation measures were required to counterbalance the significant residual impacts (SRI) to black cockatoo habitats and clearing within an extensively cleared landscape. To reduce the significant residual impacts, the Shire has committed to the revegetation of 1.074 hectares of native vegetation within Lot 4395 on Deposited Plan 219889 (See Figure 3). The revegetation is greater than the required hectare amount being 0.76 hectares, but has been agreed to by the Shire.

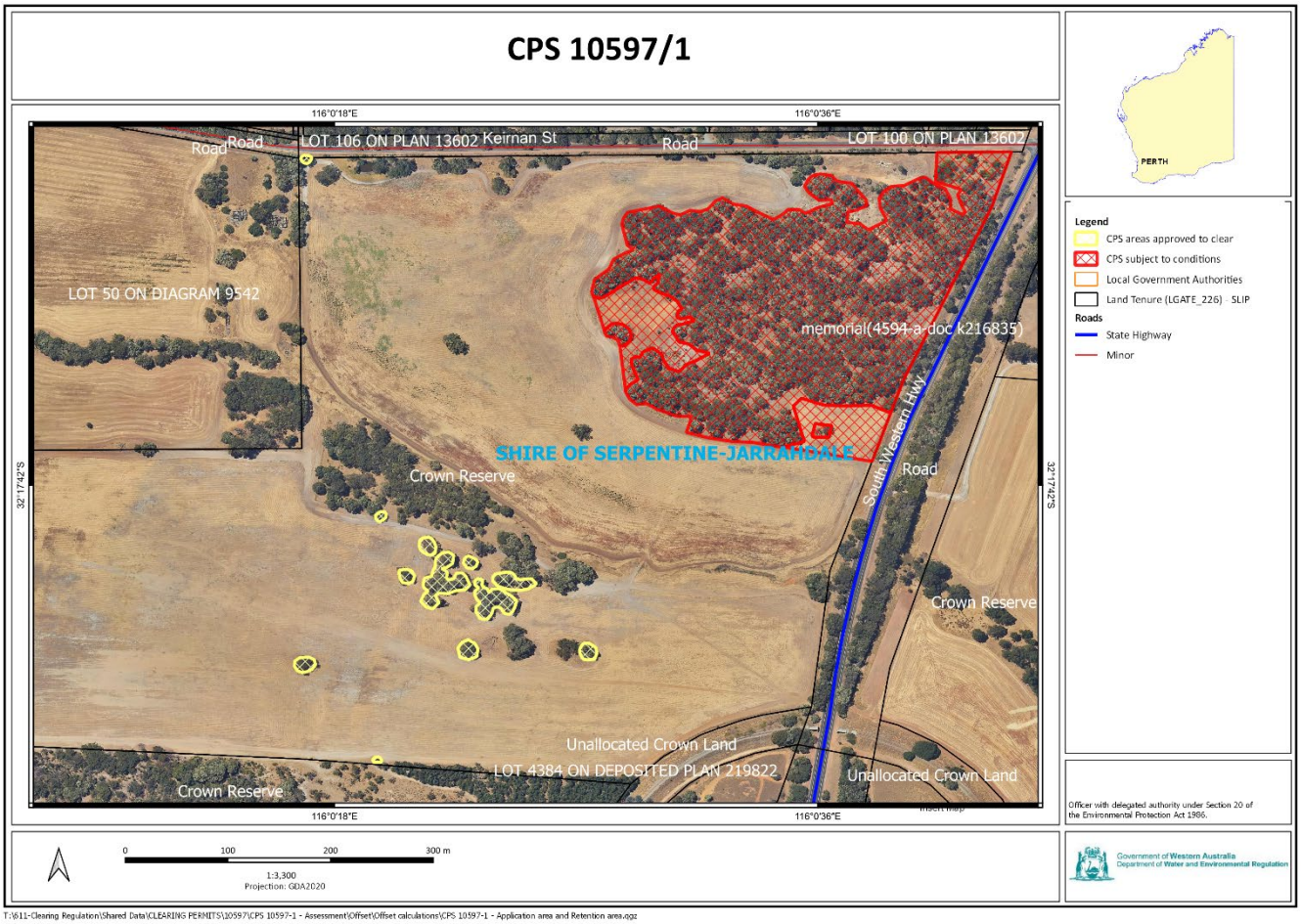



Figure 3: Map of the application area, the area crosshatched yellow indicates the area authorised to be cleared under the granted clearing permit, the area crosshatched red indicates the area subject to conditions.

Completion criteria developed by DWER and a draft revegetation plan (Natural area, 2024) detailed the following methods for the revegetation of 1.074 hectares:

- infill planting of *Corymbia calophylla* (Marri) and *Eucalyptus marginata* (Jarrah) open woodland that is in a completely degraded (Keighery, 1994) condition,
- implement fencing around the revegetation site and the vegetation retention area,
- implement weed management strategies in the revegetation area and be monitored in spring for a minimum of three years, and
- vegetation monitoring and performance criteria for the three-year management period.

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

## 3.2. Assessment of impacts on environmental values

In assessing the application, the Delegated Officer has had regard for the site characteristics (see Appendix A) and the extent to which the impacts of the proposed clearing present a risk to biological, conservation, or land and water resource values in addition to the avoidance and mitigation measures (see section 3.1).

The assessment against the clearing principles (see Appendix B) identified the impacts of the proposed clearing present a risk to fauna habitat, significant remnant vegetation and conservation areas. The consideration of these impacts, and the extent to which they can be managed through conditions applied in line with section 51H and 51I of the EP Act, is set out below.

### *3.2.1. Biological values (biodiversity and fauna) - Clearing Principles (a) and (b)*

Assessment

The application is located within the Shire of Serpentine Jarrahdale region within the Swan Coastal Plain. A flora and fauna survey (Emerge, 2021a) identified that the vegetation within the intended clearing area consists of vegetation in a completely degraded to good (Keighery, 1994) condition.

According to available databases, 28 conservation significant fauna species have been recorded within the local area comprising five Priority 3, six Priority 4, three Endangered, five Vulnerable, two critically endangered, four migratory, and one specially protected species (OS), and two conservations dependent fauna taxa. Given the habitat requirements, distribution of recorded species, mapped vegetation types, and vegetation condition within the clearing area, the clearing area may contain suitable habitat for the following species:

- *Cacatua pastinator pastinator* (Western corella)
- *Calyptorhynchus banksii naso* (forest red tail black cockatoo)
- *Dasyurus geoffroii* (chuditch, western quoll)
- *Isoodon fusciventer* (quenda)
- *Zanda baudinii* (Baudins cockatoo)
- *Zanda latirostris* (Carnaby's cockatoo)

**Black Cockatoo species**

The habitat of Black Cockatoos can be categorized into three distinct groups: foraging, breeding, and roosting. Black Cockatoos typically forage within a 12-kilometre radius of their active breeding site (Commonwealth of Australia, 2022). Following breeding, they will flock in search of food sources within six kilometres of their night roost (Commonwealth of Australia, 2022). However, they may travel up to 20 kilometres or more (Commonwealth of Australia, 2022). To maintain their populations, having an abundance of food resources within the range of breeding and roosting sites is crucial.

Consequently, foraging resources are evaluated based on known breeding and night roosting sites, primarily within 12 kilometres of a breeding or roosting site (Commonwealth of Australia, 2022). The application area is located within the modelled breeding range of Carnaby's Cockatoo. The range of the species has contracted west and south from its historical range.

Breeding Habitat

Black cockatoo species are known to nest in hollows of live and dead trees, including *Corymbia calophylla* (marri), *Eucalyptus marginata* (jarrah), *Eucalyptus diversicolor* (karri), *Eucalyptus wandoo* (wandoo), Euc*alyptus gomphocephala* (tuart), *Eucalyptus rudis* (flooded gum), and other *Eucalyptus spp*. (Commonwealth of Australia, 2022). 'Breeding habitat' for black cockatoos includes trees of these species that either have a suitable nest hollow or are of a suitable diameter at breast height (DBH) to develop a nest hollow, where suitable DBH for nest hollows is ≥ 50 centimetres for most tree species (Commonwealth of Australia, 2022). A targeted black cockatoo survey and updated black cockatoo survey (Emerge, 2021b and Emerge, 2022) found 16 trees within Lot 4395 that contained potential hollows for breeding by black cockatoos. Of the 16 trees inspected, no trees contained confirmed suitable hollows and none of the 16 trees were found within the proposed clearing area. According to spatial data, there are four forest red tail cockatoos and six whitetail black cockatoo breeding hollows within 12 kilometres of the application area, the closest being approximately 4.01 kilometres southeast of the application area.

Roosts

Black cockatoo species will utilise a wide range of native and non-native trees situated within a variety of land-use types to roost. Black cockatoos will usually roost in tall (average of >25 metres) tree species that have a relatively thick trunk (DBH of 1 metre) and medium foliage density (average of 50%) (Le Roux, 2017). According to available

databases, there are 32 roost sites within the local area (12-kilometre radius). The closest known roost site for black cockatoo species is approximately 215 meters north of the application area. Roosting typically occurs within suitable trees that are in close proximity to an important water source and within an area of quality foraging habitat (Commonwealth of Australia, 2022).

According to the targeted black cockatoo assessment (Emerge, 2021b), 50 forest red-tailed cockatoos were recorded roosting in a group of trees north of the application area approximately five meters north of the clearing area (Appendix D, Figure 7). The Delegated Officer considered it likely that the proposed clearing would result in the loss of significant foraging habitat supporting a roosting population for black cockatoo species.

Foraging habitat

Black cockatoo species forage on a variety of seeds, nuts, flowers, and plants, including Proteaceous species (*Banksia* spp., *Hakea* spp., and *Grevillea* spp.), as well as *Allocasuarina* and *Eucalyptus* species, marri, and a range of introduced species (Valentine and Stock, 2008). According to the targeted black cockatoo survey (Emerge, 2021b), Lot 4395 contains 384 foraging habitat trees. The proposed tree species to be cleared are *Corymbia calophylla* and *Eucalyptus marginata*, totalling 34 trees. The delegated officer determined that the proposed clearing of 0.47 hectares of suitable foraging habitat within known breeding and roosting locations in an extensively cleared landscape is significant.

**Other fauna**

Other fauna (Quenda, Chuditch, and the Western Corella) may be transient visitors to the application area are listed in Appendix A.3. Given the lack of dense understorey within the proposed clearing area, the size and condition of the vegetation, and the distance to known records, the application area is not considered to provide significant habitat for these species. If present, the proposed clearing is considered unlikely to impact the conservation status of these species, given the size and extent of the proposed clearing.

**Rehabilitation action**

Based on the above assessment, the proposed clearing will result in the loss of 0.47 hectares of native vegetation that comprises significant foraging habitat for black cockatoos. The Shire has agreed to undertake revegetation within Lot 4395 with suitable black cockatoo foraging species to reduce impacts to fauna. The proposed revegetation was input into the WA Environmental offsets metric calculator to determine the area required to mitigate the loss of 0.47 hectares of native vegetation that is a significant foraging habitat for black cockatoos. From this, 0.76 hectares was required to be revegetated. The Shire has proposed to revegetate 1.074 hectares, which exceeds the minimum required. The proposed revegetation was determined to be a suitable measure, with no significant residual impacts remaining following the revegetation. DWER considers the revegetation aligns with the WA Environmental Offsets Policy (2011) and WA Environmental Offsets Guideline (2014).

Conclusion

Based on the above assessment, the proposed clearing will result in the loss of 0.47 hectares of native vegetation which holds significant foraging habitat value. Given the applicants avoidance, minimisation and revegetation action, the Delegated Officer has determined that the potential impacts of the proposed clearing can be addressed by the revegetation of 1.074 hectares of native vegetation, as well as fauna management and avoid and minimise conditions on the permit. The revegetation area will be required to be fenced to minimise impacts from fauna and unauthorised entry from the public.

Conditions

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

- undertake slow, progressive one-directional clearing to allow terrestrial fauna to move into adjacent habitat ahead of the clearing activity;
- avoidance and minimisation to reduce the impacts and extent of clearing; and
- revegetation within Lot 4395 on Deposited Plan 219889 (Crown Reserve 7125), Mundijong (as described in Section 3.1); and
- fencing of the revegetation area within Lot 4395 on Deposited Plan 219889 (Crown Reserve 7125), Mundijong (as described in Section 3.1).

### *3.2.2. Conservation area (significant remnant vegetation and conservation areas) - Clearing Principles (e) and (h)*

Assessment

**Remnant Vegetation**

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 (i.e., pre-European settlement), below which species loss appears to accelerate exponentially at an ecosystem level (Commonwealth of Australia, 2001).

The application area is located within the Swan Coastal Plain IBRA Bioregion, which retains approximately 38.62 percent of its pre-European vegetation area (Government of Western Australia, 2019). The local area retains approximately 39.11 per cent of pre-European vegetation. The application area is mapped within the Swan Coastal Plain ridge hill shelf (29) complex vegetation community, which retains approximately 12.29 per cent of its pre-European vegetation extent (see Appendix A.2). The vegetation in the application area is considered representative of this community.

**Conservation areas**

The application area is adjacent to a conservation area, Watkins Road nature reserve, a bush forever site (site no 360), approximately 2 meters south of the application area. The applicant intends to mark the location of each tree proposed for removal clearly and has designated a retention area to avoid clearing vegetation that will not be required (see Figures 5 and 6). As a result, it is unlikely that the proposed clearing will have a negative impact on the Watkins Road nature reserve or any other reserves.

Conclusion

Based on the above assessment, the impact of the proposed clearing on an extensively cleared vegetation complex (Swan Coastal Plain Ridge Hill Shelf (29) complex) constitutes a significant residual impact. There are no negative impacts towards conservation areas. The 1.074 hectares required to be revegetated for impacts to black cockatoos was determined to also be a suitable action in relation to this environmental value. A significant residual impact does not remain following the revegetation (see Section 3.2.1).

Conditions

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

- avoidance and minimisation to reduce the impacts and extent of clearing,
- take hygiene steps to minimise the risk of the introduction and spread of weeds and dieback to adjacent vegetation,
- revegetation within Lot 4395 on Deposited Plan 219889 (Crown Reserve 7125), Mundijong (as described in Section 3.1); and fencing of the revegetation area

## 3.3. Relevant planning instruments and other matters

In addition to CPS 10597/1, the Shire has five concurrent clearing permit applications with the department: CPS 9019/1, CPS 10192/1, CPS 10264/1, CPS 10545/1, and CPS 10600/1. The cumulative impact of the clearing proposed under these applications has been accounted for during the assessment of CPS 10597/1 and was considered in requiring rehabilitation for this application.

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

**End**

# Appendix A. Site characteristics

## A.1. Site characteristics

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

| Characteristic | Details |
|---|---|
| Local context | The area proposed to be cleared is 0.47 hectares, with multiple patches of native vegetation in the intensive land use zone of Western Australia.<br><br>Spatial data indicates that the local area (a 10-kilometre radius from the centre of the area proposed to be cleared) retains approximately 39.11 percent of the original native vegetation cover. |
| Ecological linkage | The application area is not attached to any formal ecological linkages; the closest ecological linkage is the Perth Regional ecological linkage (70), approximately 300 meters from the application area.<br><br>The proposed clearing is unlikely to sever any formal or unformal ecological linkages. |
| Conservation areas | Five conservation areas are mapped within a 2-kilometre radius of the application area. The closest are Watkins Road nature reserve and a bush forever site (site no 360), which are approximately 2 meters south of the application area, respectively. |
| Vegetation description | The vegetation survey supplied by the applicant (Emerge, 2021a) indicates that the vegetation within the proposed clearing area consists of four different vegetation types across the application area. Representative photos and maps are available in Appendix D.<br><br>The vegetation types from the survey are:<br>• **CcEmX**: Open Forest of *Corymbia calophylla* with occasional *Eucalyptus marginata* over shrubland of *Xanthorrhoea spp*. and *Lechenaultia biloba* over sedgeland to closed sedgeland of *Morelotia octandra*, *Netrostylis capillaris*, *Mesomelaena tetragona* and *Lepidosperma spp*., forbland of *Dasypogon bromeliifolius*, *Microtis media*, *Conostylis spp*., *Burchardia congesta* and *Lomandra spp*. and sparse to closed grassland of **Ehrharta calycina* and **Briza maxima*.<br>• **CcXp**: Open Forest of *Corymbia calophylla* over open shrubland to shrubland of *Xanthorrhoea preissii* and *Xanthorrhoea gracilis* over open sedgeland of *Morelotia octandra* and *Lepidosperma spp*. and grassland of weeds.<br>• **JaJkLs**: Rushland of **Juncus articulatus* and *Juncus kraussii* over forbland of *Lotus spp., *Lupinus luteus, **Cotula coronopifolia*, **Echium plantagineum* and other weed species.<br><br>This is broadly consistent with the mapped vegetation type:<br>• **Swan coastal plain – Ridge hill shelf**: 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.<br><br>The mapped vegetation type retains approximately 12.29 per cent of the original extent (Government of Western Australia, 2019). |
| Vegetation condition | The vegetation survey provided (Emerge, 2021a), indicates the native vegetation within the proposed clearing area is in a degraded to Good (Keighery, 1994) condition (Appendix D Figure 3). The full Keighery condition rating scale is provided in Appendix C. Representative photos and mapping are available in Appendix D. |
| Climate and landform | The climate experienced in the application area is Mediterranean, characterized by hot and dry summers and cool and wet winters. According to the Bureau of Meteorology (2021), an average of 913.4 millimetres of rainfall is recorded annually from the Serpentine – BOM rainfall station (no. 009039), which is the closest weather station in operation, located approximately 6.17 kilometers from the application area. The majority of this rainfall is received between the months of May and September (BoM 2022). |

<table>
<tr><th>Characteristic</th><th>Details</th></tr>
<tr><td></td><td>The elevation of the application area on the 75 meters Isohyet and gently slopes down towards the west to 60 meters Isohyet.</td></tr>
<tr><td>Soil description</td><td>The soil type across the application area is mapped as the following:
<table>
<tr><th>Name</th><th>Code</th><th>Ha</th><th>Description</th></tr>
<tr><td>Forrestfield F2b Phase</td><td>213Fo__F2b</td><td>0.463</td><td>Low slopes and foot slopes up to 5-10% with well drained moderately deep to deep, gravelly acidic yellow duplex soils and rare laterite.</td></tr>
<tr><td>Pinjarra P1e Phase</td><td>213Pj__P1e</td><td>0.007</td><td>Flat to very gently undulating plain with deep acidic mottled yellow duplex (or ineffective duplexl) soils. Shallow pale sand to sandy loam over very gravelly clay; moderately well drained.</td></tr>
</table></td></tr>
<tr><td>Land degradation risk</td><td>The degradation risk factors mapped over the application area are detailed below:
<table>
<tr><th></th><th>213Fo__F2b</th><th>213Pj__P1e</th></tr>
<tr><td>Wind erosion</td><td>H2</td><td>H1</td></tr>
<tr><td>Water erosion</td><td>L1</td><td>L1</td></tr>
<tr><td>Salinity risk</td><td>L1</td><td>L1</td></tr>
<tr><td>Phosphorous export</td><td>H2</td><td>H2</td></tr>
<tr><td>Waterlogging</td><td>L1</td><td>M2</td></tr>
<tr><td>Subsurface acidification</td><td>H2</td><td>H2</td></tr>
<tr><td>Acid sulphate soils</td><td>L1</td><td>L1</td></tr>
<tr><td>Flooding</td><td>L1</td><td>L1</td></tr>
<tr><td>Floodplains</td><td>No</td><td>No</td></tr>
</table>
Key
<table>
<tr><td>L1</td><td>Low</td><td><3%</td><td>of the map has a high to extreme risk</td></tr>
<tr><td>L2</td><td>Low</td><td>3-10%</td><td>of the map has a high to extreme risk</td></tr>
<tr><td>M1</td><td>Medium</td><td>10-30%</td><td>of the map has a high to extreme risk</td></tr>
<tr><td>M2</td><td>Medium</td><td>30-50%</td><td>of the map has a high to extreme risk</td></tr>
<tr><td>H1</td><td>High</td><td>50-70%</td><td>of the map has a high to extreme risk</td></tr>
<tr><td>H2</td><td>High</td><td>>70%</td><td>of the map has a high to extreme risk</td></tr>
</table></td></tr>
<tr><td>Waterbodies</td><td>The desktop assessment and aerial imagery indicated a small polygon at the top of the application area overlaps with a palusplain wetland. The closest river to the application area is approximately 30 meters from a tributary river that feeds into the serpentine river system (minor river), The main Serpentine river body is located approximately 7.22 kilometres from the application area. The clearing is unlikely to affect the Tributary River running adjacent to the application area due to the small size of clearing proposes and the location of the river and palusplain wetland.</td></tr>
<tr><td>Hydrogeography</td><td>
<table>
<tr><td>Hydrological Zone</td><td>Coastal Plain</td></tr>
<tr><td>Basin</td><td>Murray River (614)</td></tr>
<tr><td>Hydrographic Catchment</td><td>Peel Estuary Serpentine River</td></tr>
</table>
<table>
<tr><td>RIWI Act Surface Water and Irrigation District</td><td>No</td><td></td></tr>
<tr><td>RIWI Act Rivers</td><td>No</td><td></td></tr>
<tr><td>RIWI Act Groundwater Areas</td><td>Yes</td><td>Serpentine Groundwater area</td></tr>
<tr><td>CAWS Act Clearing Control Catchment</td><td>No</td><td></td></tr>
<tr><td>Public Drinking Water Source Areas</td><td>No</td><td></td></tr>
</table></td></tr>
</table>

| Characteristic | Details |
|---|---|
| | Wellhead Protection Zone: No<br>Reservoir Protection Zone: No<br>The salinity of the application area is mapped at 500-1000 total dissolved solids milligrams per litre. |
| Flora | According to available databases, 42 conservation significant flora species have been recorded within the local area (10-kilometre buffer). Comprising two Priority 1, five Priority 2, 18 Priority 3, six Priority 4, and 11 threatened flora taxa.<br><br>Based on the detailed and targeted flora and vegetation assessment (Emerge, 2021a), there are no threatened or priority flora within the application area. The timing of the surveys coincided with the main flowering period of the majority of the conservation significant flora identified in the desktop assessment and therefore they should have been visible, if present. |
| Ecological communities | According to available databases, ten conservation-significant ecological communities have been mapped within the local area (10-kilometre buffer). None of these records occur over the application area. Banksia Woodlands of the Swan Coastal Plain (Banksia Woodlands) Threatened Ecological Community (TEC) is mapped adjacent to the application area. A survey of Lot 4395 (Emerge, 2021a), confirmed the absence of this TEC. Emerge (2021a) identified that that the vegetation adjacent to the application area to actually represent the *Corymbia calophylla* and *Eucalyptus marginata* woodlands on sandy clay soil TEC, located approximately 0.08 kilometres east of the application area.<br><br>The proposed clearing is not likely to directly impact any TECs or Priority Ecological Communities. However the proposed may indirectly impact the occurrence of a TEC located adjacent to the clearing area. Weed and dieback management actions will reduce the impacts to this TEC. |
| Fauna | According to available databases, 28 conservation significant fauna species have been recorded within the local area comprising of five Priority 3, six Priority 4, three Endangered, five Vulnerable, two critically endangered, four migratory, one specially protected species (OS), and two conservations dependent. fauna taxa.<br><br>Based on the distance from the application area, the habitat requirements and vegetation type, the following species may be affected by the proposed clearing:<br><br>• *Cacatua pastinator pastinator* (Western corella)<br>• *Calyptorhynchus banksii naso* (forest red tail black cockatoo)<br>• *Dasyurus geoffroii* (chuditch, western quoll)<br>• *Isoodon fusciventer* (quenda)<br>• *Zanda baudinii* (Baudins cockatoo)<br>• *Zanda latirostris* (Carnaby's cockatoo) |

## A.2. Vegetation extent

| | Pre-European extent (ha) | Current extent (ha) | Extent remaining (%) | Current extent in all DBCA managed land (ha) | Current proportion (%) of pre-European extent in all DBCA managed land |
|---|---|---|---|---|---|
| **IBRA bioregion*** | | | | | |
| Swan Coastal Plain | 1,501,221.93 | 579,813.47 | 38.62 | 222,6.97 | 14.85 |
| **Vegetation complex** | | | | | |
| Swan coastal Plain Ridge Hill Shelf - 29 | 22,812.92 | 2,803.36 | 12.29 | 381.57 | 10.98 |
| **Local area** | | | | | |
| 10km radius | 33,056.85 | 12,930.10 | 39.11 | - | - |

| | Pre-European extent (ha) | Current extent (ha) | Extent remaining (%) | Current extent in all DBCA managed land (ha) | Current proportion (%) of pre-European extent in all DBCA managed land |
|---|---|---|---|---|---|

*Government of Western Australia (2019a)

**Government of Western Australia (2019b)

## A.3. Fauna analysis table

| Species name | Conservation status | Suitable habitat features? [Y/N] | Suitable vegetation type? [Y/N] | Distance of closest record to application area (km) | Number of known records (total) | Are surveys adequate to identify? [Y, N, N/A] |
|---|---|---|---|---|---|---|
| **Aves** | | | | | | |
| *Zanda baudinii* (Baudins cockatoo) | EN | Y | Y | 8.19 | 2 | Y |
| *Oxyura australis* (Blue-billed duck) | P4 | N | N | 8.89 | 1 | N |
| *Zanda latirostris* (Carnaby's cockatoo) | EN | Y | Y | 3.59 | 2 | Y |
| *Hydroprogne caspia* (Caspian tern) | MI | N | N | 0.55 | 221 | N |
| *Tringa nebularia* (Common greenshank) | MI | N | N | 0.68 | 6 | N |
| *Calidris ferruginea* (Curlew sandpiper) | CR | N | N | 6.71 | 1 | N |
| *Calyptorhynchus banksii naso* (forest red tail black cockatoo) | VU | Y | Y | 7.36 | 2 | N |
| *Plegadis falcinellus* (glossy ibis) | MI | N | N | 9.43 | 4 | N |
| *Leipoa ocellata* (Malleefowl) | VU | Y | Y | 9.43 | 3 | N |
| *Cacatua pastinator pastinator* (Western corella) | CD | Y | Y | 8.89 | 3 | N |
| *Falco peregrinus* (Peregrine falcon) | OS | Y | N | 0.08 | 152 | N |
| *Calidris ruficollis* (red-necked stint) | MI | N | N | 0.63 | 548 | N |
| **Mammalia** | | | | | | |
| *Dasyurus geoffroii* (chuditch, western quoll) | VU | Y | Y | 3.10 | 22 | N |
| *Falsistrellus mackenziei* (western false pipistrelle) | P4 | N | Y | 9.42 | 6 | N |
| *Hydromys chrysogaster* (water-rat, rakali) | P4 | N | N | 5.59 | 23 | N |
| *Isoodon fusciventer* (quenda) | P4 | Y | Y | 2.19 | 309 | N |
| *Myrmecobius fasciatus* (numbat, walpurti) | EN | N | Y | 3.96 | 7 | N |
| *Notamacropus eugenii derbianus* (tammar wallaby) | P4 | N | N | 7.47 | 1 | N |
| *Notamacropus irma* (western brush wallaby) | P4 | N | N | 6.01 | 3 | N |
| *Phascogale tapoatafa wambenger* (south-western brush-tailed phascogale) | CD | N | N | 4.85 | 6 | N |
| *Pseudocheirus occidentalis* (western ringtail possum) | CR | N | N | 5.68 | 1 | N |
| *Setonix brachyurus* (quokka) | VU | Y | N | 4.93 | 8 | N |
| **Reptilia** | | | | | | |
| *Acanthophis antarcticus* (southern death adder) | P3 | N | N | 6.47 | 6 | N |
| **Invertebrates** | | | | | | |

| Species name | Conservation status | Suitable habitat features? [Y/N] | Suitable vegetation type? [Y/N] | Distance of closest record to application area (km) | Number of known records (total) | Are surveys adequate to identify? [Y, N, N/A] |
|---|---|---|---|---|---|---|
| *Euoplos inornatus* (nornate trapdoor spider (northern Jarrah Forest)) | P3 | N | N | 2.31 | 1 | N |
| *Glacidorbis occidentalis* (Jarrah Forrest freshwater snail) | P3 | N | N | 9.48 | 1 | N |
| *Idiosoma sigillatum* (Swan Coastal Plain shield-backed trapdoor spider) | P3 | N | N | 2.02 | 1 | N |
| *Westralunio carteri* (Carter's freshwater mussel) | VU | N | N | 0.79 | 14 | N |
| *Geotria australis* (pouched lamprey) | P3 | N | N | 7.77 | 1 | N |

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

## A.4. Ecological community analysis table

| Community name | Conservation status | Suitable habitat features? [Y/N] | Suitable vegetation type? [Y/N] | Suitable soil type? [Y/N] | Distance of closest record to application area (km) | Number of known records (total) | Are surveys adequate to identify? [Y, N, N/A] |
|---|---|---|---|---|---|---|---|
| *Banksia attenuata* and/or *Eucalyptus marginata* woodlands of the eastern side of the Swan Coastal Plain (floristic community type 20b as originally described in Gibson et al. 1994) | CR | N | Y | Y | 0.18 | 18 | Y |
| Banksia Woodlands of the Swan Coastal Plain ecological community | P3 | Y | Y | Y | 0.007 | 235 | Y |
| Communities of Tumulus Springs (Organic Mound Springs, Swan Coastal Plain) | CR | N | Y | Y | 5.81 | 1 | Y |
| *Corymbia calophylla, Eucalyptus marginata* woodlands on sandy clay soils of the southern Swan Coastal Plain (floristic community type 3b) | EN | N | N | Y | 1.44 | 11 | Y |
| *Corymbia calophylla, Kingia australis* woodlands on heavy soils (floristic community type 3a) | CR | Y | Y | Y | 0.31 | 12 | Y |
| *Corymbia calophylla, Xanthorrhoea preissii* woodlands and shrublands, Swan Coastal Plain (floristic community type 3c) | EN | Y | Y | Y | 1.43 | 4 | Y |
| Dense shrublands on clay flats (floristic community type 9) | EN | N | N | N | 6.71 | 1 | Y |
| Herb rich saline shrublands in clay pans (floristic community type 7) | EN | N | N | N | 7.87 | 3 | Y |
| Herb rich shrublands in clay pans (floristic community type 8) | EN | N | N | N | 4.03 | 4 | Y |

| Community name | Conservation status | Suitable habitat features ? [Y/N] | Suitable vegetation type? [Y/N] | Suitable soil type? [Y/N] | Distance of closest record to application area (km) | Number of known records (total) | Are surveys adequate to identify? [Y, N, N/A] |
|---|---|---|---|---|---|---|---|
| Low lying *Banksia attenuata* woodlands or shrublands | P3 | Y | Y | N | 8.18 | 5 | Y |
| Shrublands on dry clay flats (floristic community type 10a) | EN | N | N | N | 7.21 | 4 | Y |
| Southern wet shrublands, Swan Coastal Plain (floristic community type 2) | CR | Y | Y | Y | 0.48 | 1 | Y |

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

## Appendix D. Assessment against the clearing principles

| Assessment against the clearing principles | Variance level | Is further consideration required? |
|---|---|---|
| **Environmental value: biological values** | | |
| Principle (a): *"Native vegetation should not be cleared if it comprises a high level of biodiversity."*<br>Assessment: The area proposed to be cleared does not contain locally or regionally significant flora habitats or assemblages of plants. The application area does contain significant habitat for fauna species and is located adjacent to an area mapped as a TEC. | May be at variance | Yes<br>*Refer to Section 3.2.1, above.* |
| Principle (b): *"Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna."*<br>Assessment: The area proposed to be cleared contains significant foraging habitat for Black cockatoo species. | At variance | Yes<br>*Refer to Section 3.2.1, above.* |
| Principle (c): *"Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora."*<br>Assessment: The area proposed to be cleared is unlikely to contain habitat for threatened flora species. | Not at variance | No |
| Principle (d): *"Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a threatened ecological community."*<br>Assessment: The area proposed to be cleared does not contain species that can indicate a TEC, however a TEC is mapped adjacent. Weed and dieback management will reduce impacts to this occurrence. | May be at variance | No |
| **Environmental value: significant remnant vegetation and conservation areas** | | |
| Principle (e): *"Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared."*<br>Assessment: The extent of the mapped vegetation type is inconsistent with the national objectives and targets for biodiversity conservation in Australia. The vegetation proposed to be cleared is not considered to be part of a significant ecological linkage in the local area. | At variance | Yes<br>Refer to Section 3.2.2, above. |
| Principle (h): *"Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area."*<br>Assessment: Given the distance to the nearest conservation area, the proposed clearing is may have an impact on the environmental values of adjacent or nearby conservation areas. | May be at variance | Yes<br>Refer to Section 3.2.3, above. |
| **Environmental value: land and water resources** | | |
| Principle (f): *"Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland."*<br>Assessment: Given no water courses or wetlands are recorded within the application area and the small number of native trees being cleared, the proposed clearing is not in an environment associated with a watercourse or wetland. | Not at variance | No. |

| Assessment against the clearing principles | Variance level | Is further consideration required? |
|---|---|---|
| Principle (g): *"Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation."*<br><br>Assessment: The mapped soils are moderate to highly susceptible to subsurface acidification and wind erosion. Noting the extent of clearing proposed, 0.47 hectares and the context of the cleared area surrounding the application area, the proposed clearing is not likely to have an appreciable impact on land degradation. | Not likely to be at variance | No |
| Principle (i): *"Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water."*<br><br>Assessment: Given no wetlands or Public Drinking Water Sources Areas are recorded within the application area, the proposed clearing is unlikely to impact surface or ground water quality. | Not at variance | No |
| Principle (j): *"Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding."*<br><br>Assessment: The mapped soils and topographic contours in the surrounding area do not indicate the proposed clearing is likely to contribute to increased incidence or intensity of flooding. | Not at variance | No |

## Appendix D. Vegetation condition rating scale

Vegetation condition is a rating given to a defined area of vegetation to categorise and rank disturbance related to human activities. The rating refers to the degree of change in the vegetation structure, density and species present in relation to undisturbed vegetation of the same type. The degree of disturbance impacts upon the vegetation's ability to regenerate. Disturbance at a site can be a cumulative effect from a number of interacting disturbance types.

Considering its location, the scale below was used to measure the condition of the vegetation proposed to be cleared. This scale has been extracted from:
Keighery, B.J. (1994) *Bushland Plant Survey: A Guide to Plant Community Survey for the Community*. Wildflower Society of WA (Inc). Nedlands, Western Australia.

**Measuring vegetation condition for the South West and Interzone Botanical Province (Keighery, 1994)**

| Condition | Description |
|---|---|
| Pristine | Pristine or nearly so, no obvious signs of disturbance. |
| Excellent | Vegetation structure intact, with disturbance affecting individual species; weeds are non-aggressive species. |
| Very good | Vegetation structure altered, with obvious signs of disturbance. For example, disturbance to vegetation structure caused by repeated fires, the presence of some more aggressive weeds, dieback, logging and/or grazing. |
| Good | Vegetation structure significantly altered by very obvious signs of multiple disturbances. Retains basic vegetation structure or ability to regenerate it. For example, disturbance to vegetation structure caused by very frequent fires, the presence of some very aggressive weeds at high density, partial clearing, dieback and/or grazing. |
| Degraded | Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management. For example, disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds, partial clearing, dieback and/or grazing. |

| Condition | Description |
|---|---|
| Completely degraded | The structure of the vegetation is no longer intact and the area is completely or almost completely without native species. These areas are often described as ‘parkland cleared’ with the flora comprising weed or crop species with isolated native trees or shrubs. |

## Appendix D. Biological survey information excerpts and photographs of the vegetation


Figure 4: Context Map of the application area with the vegetation to be removed and retained (Natural areas, 2022).

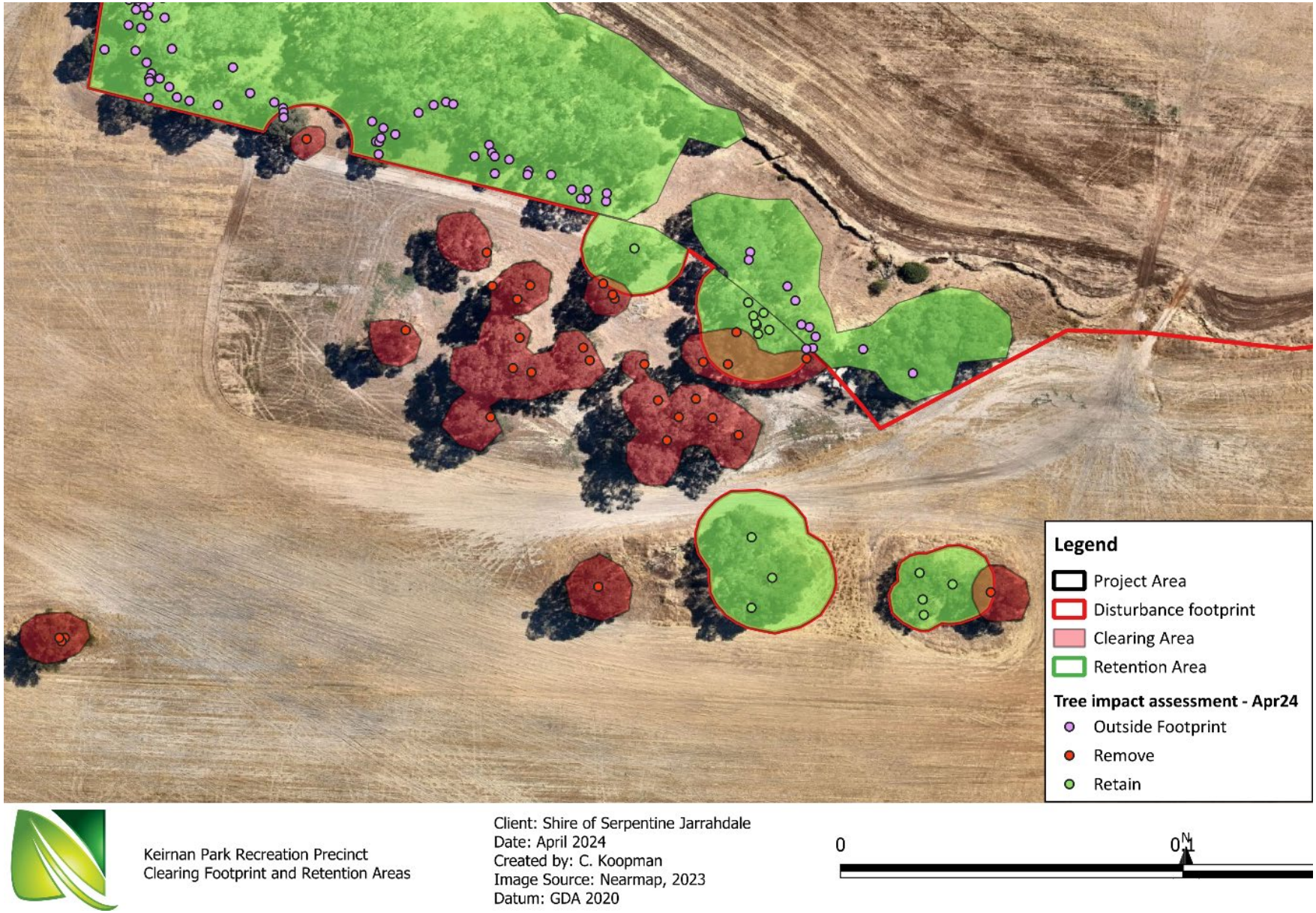



Figure 5: Map of the application area with the vegetation to be removed and retained (Natural areas, 2022).

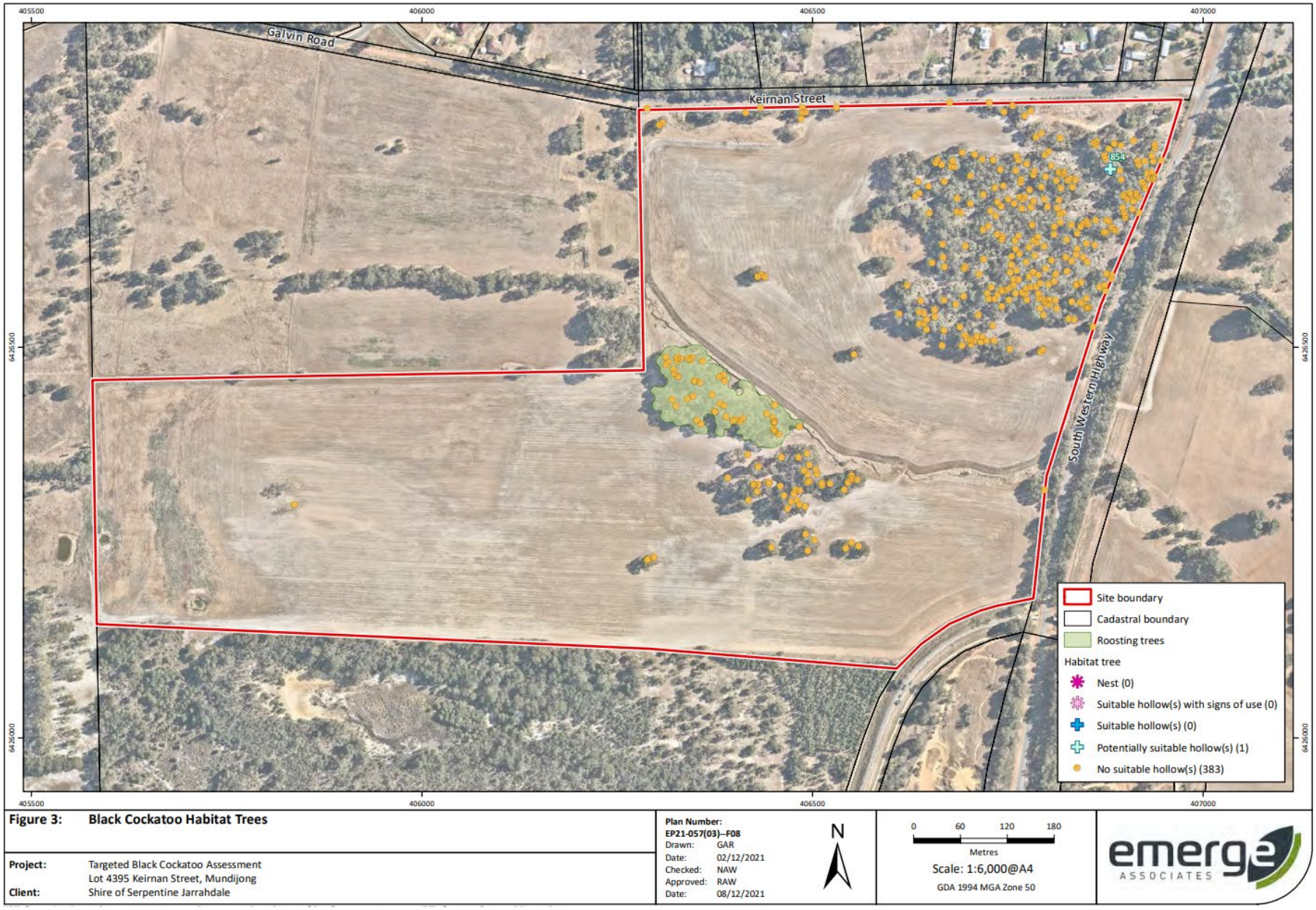



Figure 6: Map of the application area with the vegetation to be removed and retained (Natural areas, 2022).

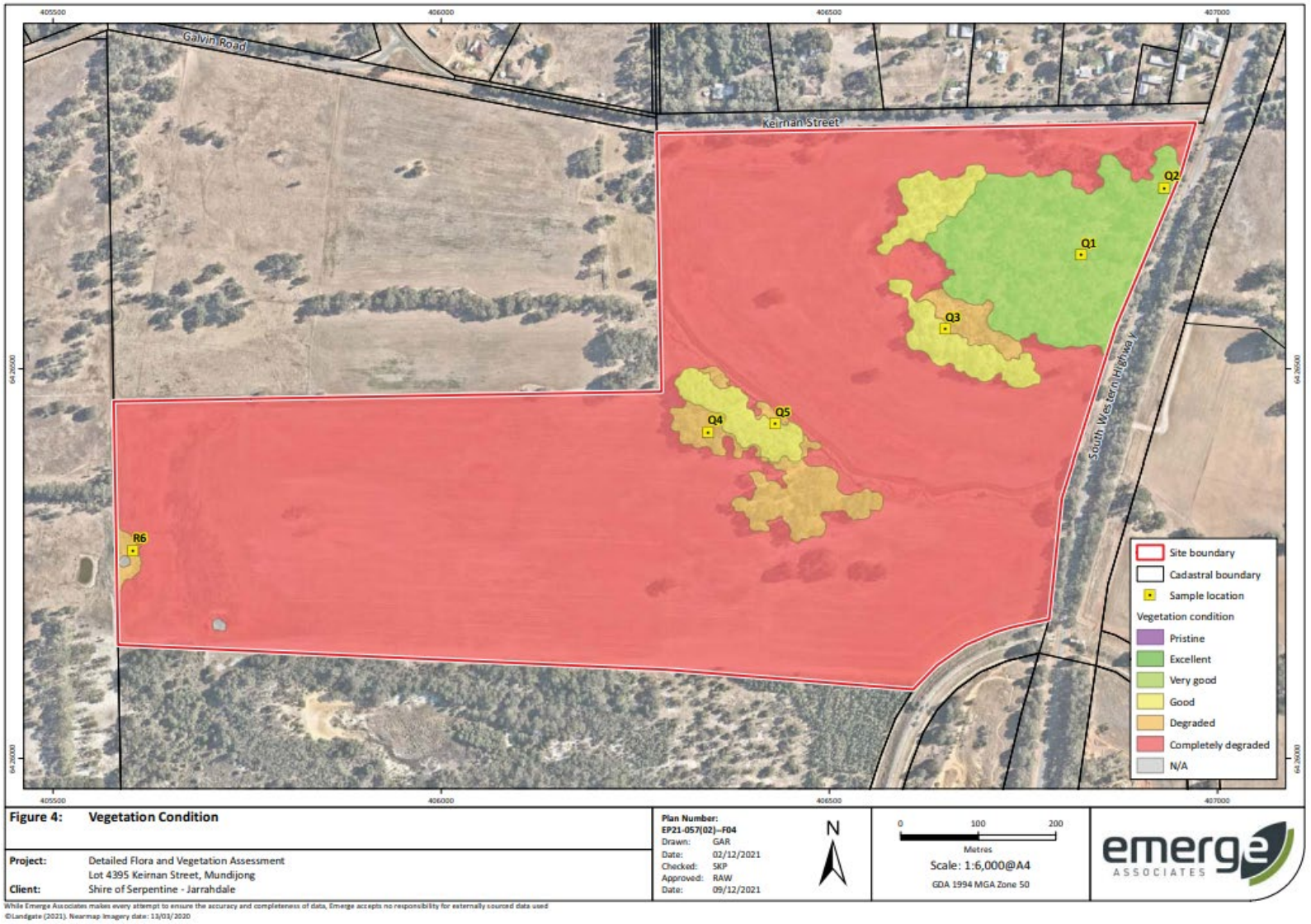



Figure 7: Map of the application area with the condition rating scale, and location of quadrant photos (Emerge, 2021a).

Figure 8: Quadrant photo (Q5) Representative of vegetation adjacent to the application area north of the clearing area (Natural areas, 2022).

Figure 9: Quadrant photo (Q4) Representative of vegetation adjacent to the application area north of the clearing area (Natural areas, 2022).

# Appendix E. Sources of information

## E.1. GIS databases

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

- 10 Metre Contours (DPIRD-073)
- Aboriginal Heritage Places (DPLH-001)
- Aboriginal Heritage Places (DPLH-001)
- Cadastre (LGATE-218)
- 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)
- Hydrography – Inland Waters – Waterlines
- Hydrological Zones of Western Australia (DPIRD-069)
- IBRA Vegetation Statistics
- Imagery
- Local Planning Scheme – Zones and Reserves (DPLH-071)
- Native Title (ILUA) (LGATE-067)
- Offsets Register – Offsets (DWER-078)
- Pre-European Vegetation Statistics
- Public Drinking Water Source Areas (DWER-033)
- Ramsar Sites (DBCA-010)
- Regional Parks (DBCA-026)
- Remnant Vegetation, All Areas
- RIWI Act, Groundwater Areas (DWER-034)
- RIWI Act, Surface Water Areas and Irrigation Districts (DWER-037)
- Soil Landscape Land Quality – Flood Risk (DPIRD-007)
- Soil Landscape Land Quality – Phosphorus Export Risk (DPIRD-010)
- Soil Landscape Land Quality – Subsurface Acidification Risk (DPIRD-011)
- Soil Landscape Land Quality – Water Erosion Risk (DPIRD-013)
- Soil Landscape Land Quality – Water Repellence Risk (DPIRD-014)
- Soil Landscape Land Quality – Waterlogging Risk (DPIRD-015)
- Soil Landscape Land Quality – Wind Erosion Risk (DPIRD-016)
- Soil Landscape Mapping – Best Available
- Soil Landscape Mapping – Systems
- Wheatbelt Wetlands Stage 1 (DBCA-021)

Restricted GIS Databases used:

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

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