GOVERNMENT OF
WESTERN AUSTRALIA

CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

Purpose Permit number:	CPS 9785/1
Permit Holder:	Permacast Pty Ltd
Duration of Permit:	From 25 July 2023 to 25 July 2038

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

PART I – CLEARING AUTHORISED

1. Clearing authorised (purpose)

The permit holder is authorised to clear *native vegetation* for the purpose of establishing gravel laydown area and construction material storage.

2. Land on which clearing is to be done

Lot 21 on Deposited Plan 226115, Cardup

3. Clearing authorised

The permit holder must not clear more 0.45 hectares of *native vegetation* within a 1.1 hectare footprint within the area cross-hatched yellow in Figure 1 of Schedule 1.

4. Period during which clearing is authorised

The permit holder must not clear any *native vegetation* after 25 July 2028.

PART II – MANAGEMENT CONDITIONS

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

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

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

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

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

6. Weed and dieback management

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

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

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

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

7. Revegetation and rehabilitation (Black cockatoo foraging)

The permit holder must within 24 months of undertaking clearing authorised under this permit:

(a) Undertake deliberate *planting* of at least of 29 *Corymbia calophylla* (marri) seedlings within the areas cross-hatched red in Figure 1 of Schedule 2, within Bush Forever Site 361 on Lot 21 on Deposited Plan 226115, Cardup;

(b) ensure only *local provenance* species are used;

(c) ensure planting is undertaken at the *optimal time*;

(d) undertake *weed* control and water of plants for at least three years post *planting*;

(e) the permit holder must within 24 months of *planting* a minimum of at least 29 *Corymbia calophylla* (marri) seedlings, in accordance with condition 7(a) of this permit;

  (i) engage an *environmental specialist* to make a determination that at least 29 *Corymbia calophylla* (marri) seedlings will survive;

  (ii) if the determination made by the *environmental specialist* under condition 7(e)(i) that at least 29 *Corymbia calophylla* (marri) will not survive, the permit holder must *plant* additional native seedlings that will result in at least 29 *Corymbia calophylla* (marri) seedlings persisting within Bush Forever Site 361 on Lot 21 on Deposited Plan 226115, Cardup.

  (iii) undertake weed control activities on an 'as needs' basis to ensure success of *revegetation;*

  (iv) the *revegetation* is to commence before 30 July 2025.

(e) where additional *planting* of native seedlings is undertaken in accordance with condition 9(e)(ii), the permit holder must repeat the activities required by condition 9(b), 9(c), 9(d) and 9(e) of this permit.

8. Directional clearing

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

9. Fencing (pre-clearing)

The permit holder must:

(a) Prior to commencing clearing, construct a fence along the perimeters of the Bush Forever Site 361 located within Lot 21 on Deposited Plan 226115, Cardup.

(i) Fences should allow for the movement of wildlife by being raised 15 centimetres from the ground.

(ii) Within one month of installing the above fence/s, the permit holder must notify the *CEO* in writing that the fencing has been completed.

(iii) The permit holder must inspect the fence constructed in accordance with condition 9(a) of this permit every 12 months for the duration of this permit to ensure the fence is protecting adjacent *native vegetation* by excluding pedestrian users and vehicles.

(iv) Where the permit holder identifies that the fence constructed in accordance with condition 9(a) of this permit is not protecting adjacent *native vegetation* by excluding pedestrian users and vehicles, the permit holder must repair the fence.

PART III - RECORD KEEPING AND REPORTING

10. 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; (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; (c) the date that the area was cleared; (d) the direction of clearing; (e) the size of the area cleared (in hectares); (f) actions taken to avoid, minimise, and reduce the impacts and extent of clearing in accordance with *condition* 5; (g) actions taken to minimise the risk of the introduction and spread of *weeds* and *dieback* in accordance with *condition* 6; and (h) actions taken in accordance with fencing requirement under *condition* 9 of this permit.

No.	Relevant matter	Specifications
2.	In relation to the required *revegetation* activities pursuant to *condition* 7	(a) the species composition, structure, and density of the *revegetation* area; (b) the location where the *revegetation* occurred, recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 2020 (GDA2020), expressing the geographical coordinates in Eastings and Northings; (c) a copy of the *environmental specialist's* report; (d) a description of the *revegetation* activities undertaken; and (e) any remedial actions required to be undertaken.

11. Reporting

The permit holder must provide to the *CEO* the records required under condition 10 of this permit when requested by the *CEO*.

DEFINITIONS

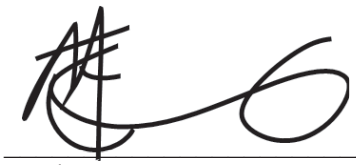
In this permit, the terms in Table have the meanings defined.

Table 2: Definitions

Term	Definition
CEO	Chief Executive Officer of the department responsible for the administration of the clearing provisions under the *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.
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 10 and 50 kilometres and the same Interim Biogeographic Regionalisation for Australia (IBRA) subregion of the area cleared.
dieback	means the effect of *Phytophthora* species on native vegetation.
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.
EP Act	*Environmental Protection Act 1986* (WA)
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 period from May to June to undertake planting of seedlings of the desired species.

Term	Definition
planting	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.
revegetate / revegetation	means the re-establishment of a cover of local provenance native vegetation in an area using methods such as natural regeneration, direct seeding and/or planting, so that the species composition, structure and density is similar to pre-clearing vegetation types in that area.
weeds	means any plant – (a) that is a declared pest under section 22 of the *Biosecurity and Agriculture Management Act 2007*; or (b) published in a Department of Biodiversity, Conservation and Attractions species-led ecological impact and invasiveness ranking summary, regardless of ranking; or (c) not indigenous to the area concerned.

END OF CONDITIONS



Mathew Gannaway
A/SENIOR MANAGER
NATIVE VEGETATION REGULATION

Officer delegated under Section 20
of the Environmental Protection Act 1986

30 June 2023

Schedule 1

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

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

Schedule 2

The boundary of the area revegetation and rehabilitation is to take place is shown in the map below (Figure 1).

Figure 1: Map of the boundary of the area within which revegetation and rehabilitation must occur (crosshatched in red)

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 9785/1
Permit type:	Purpose permit
Applicant name:	Permacast Pty Ltd
Application received:	24 June 2022
Application area:	0.45 hectares of native vegetation within a 1.1 hectare footprint (revised)
Purpose of clearing:	Establishing gravel laydown area and construction material storage
Method of clearing:	Mechanical
Property:	Lot 21 on Deposited Plan 226115, Cardup
Location (LGA area/s):	Shire of Serpentine-Jarrahdale
Localities (suburb/s):	Cardup

1.2. Description of clearing activities

Permacast Pty Ltd (Permacast) propsoed to undertake the clearing of 1.5 hectares of native vegetation within an approximately 23.7 hectare clearing footprint, on Lot 21 on Deposited Plan 226115, Cardup (Section 1.5: Figure 1). The proposed clearing will provide additional land for a gravel laydown area and construction material storage, including the storage of precast concrete finished goods (Permacast, 2022b).

During the assessment, the clearing area was reduced to 0.45 hectares of native vegetation within a 1.1 hectare footprint (Permacast, 2022c).

1.3. Decision on application

Decision:	Granted
Decision date:	30 June 2023
Decision area:	0.45 hectares of native vegetation within a 1.1 hectare footprint, as depicted in Section 1.5, below.

1.4. Reasons for decision

This clearing permit application was submitted, accepted, assessed and determined in accordance with sections 51E and 51O of the *Environmental Protection Act 1986* (EP Act). The Department of Water and Environmental Regulation (the department) advertised the application for 21 days and one submission was received (Appendix A).

In making this decision, the Delegated Officer had regard for the site characteristics (Appendix B), relevant datasets (Appendix F.1.), the clearing principles set out in Schedule 5 of the EP Act (Appendix C), relevant planning instruments and any other matters considered relevant to the assessment (Section 3) and a flora, vegetation and habitat assessment (Mattiske, 2023).

In addition, the Delegated Officer has considered that the purpose of the clearing is to support the construction of several significant infrastructure projects, including the Thornlie-Cockburn Link, which is a critical requirement to support the Byford Rail Extension Project (Permacast, 2022b).

The assessment identified that the proposed clearing may result in;

- The loss of suitable habitat for conservation significant fauna including:
    - *Zanda latirostris* (Carnaby's black cockatoo), *Zanda baudinii* (Baudin's black cockatoo) and *Calyptorhynchus banksii naso* (forest red-tailed black cockatoo) (collectively known as black cockatoos)
- A Degraded to Completely Degraded remnant of the FCT3b, '*Corymbia calophylla - Eucalyptus marginata* woodlands on sandy clay soils of the southern Swan Coastal Plain' Threatened Ecological Community (TEC)
- The introduction and spread of weeds and dieback into adjacent vegetation, which could impact on the quality of the adjacent vegetation and its habitat values.

The Delegated Officer considered the *Corymbia calophylla* (marri), *Eucalyptus marginata* (jarrah) and *Nutysia floribunda* (Christmas tree) proposed to be cleared, are critical foraging habitat for black cockatoos. To minimise impacts to fauna, progressive one directional clearing is required to allow individuals present at the time of clearing to move to adjacent vegetation, as well as the planting of black cockatoo foraging habitat to minimise the long term impact of clearing black cockatoo foraging habitat. The likelihood of impact from weeds and dieback can be minimised and mitigated by applying weed and dieback management measures. The small area of clearing of a Degraded remnant of the SCP3b TEC is not considered to be significant.

After consideration of the available information, as well as the applicant's avoidance and mitigation measures (Section 3.1), the Delegated Officer determined the proposed clearing is unlikely to have long-term adverse impacts on conservation significant fauna or flora species and can be minimised and managed to unlikely lead to an unacceptable risk to environmental values.

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

- 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.
- plant a minimum of 29 native tree seedlings of *Corymbia calophylla* (marri) within the adjacent Bush Forever Site 361 within Lot 21 on Deposited Plan 226115, Cardup, as mitigation measures for the clearing of the 19 trees that provide foraging value.
- fencing be installed along the boundary of Bush Forever Site 361 and the industrial land to mitigate any adverse impacts from the abutting land-use.
- undertake slow, progressive one directional clearing to allow terrestrial and avian fauna to move into adjacent habitat ahead of the clearing activity.

1.5. Site maps

Figure 1: Map of the application area CPS 9785/1. The areas crosshatched yellow indicate the area authorised to be cleared under the granted clearing permit.

2 Legislative context

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

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

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

Other legislation of relevance for this assessment include:

- *Biodiversity Conservation Act 2016* (WA) (BC Act)
- *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act)
- *Planning and Development Act 2005* (WA) (P&D Act)
- *Rights in Water and Irrigation Act 1914* (RIWI Act)

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)
- Technical guidance – Flora and Vegetation Surveys for Environmental Impact Assessment (EPA, 2016)

3 Detailed assessment of application

3.1. Avoidance and mitigation measures

Permacast have implemented several avoidance and mitigation measures to reduce the significant residual impact the proposed clearing may have on the environment.

Avoidance
Permacast have avoided clearing native vegetation within the Bush Forever Site 361. They have retained scattered native trees for heritage value where possible.

Permacast responded to the department's request for avoidance and minimisation of the proposed clearing by reducing the clearing from 1.5 hectares of native vegetation within an approximately 23.7 hectare clearing footprint to 0.45 hectares within a 1.1 hectare footprint, representing a 70% decrease in proposed clearing (Permacast, 2022c) (Figure 2).

Mitigation
As a result of the proposed clearing leaving a significant residual impact on black cockatoo foraging habitat, Permacast have committed to revegetating 29 native trees of species known to be foraging habitat within the adjacent Bush Forever Site 361 located within Lot 21 (Permacast, 2023) (Figure 3).

Revegetation Mitigation

The revegetation mitigation commitment from Permacast has been calculated in accordance with the Government of Western Australia's *Environmental Offsets Policy* and *Environmental Offsets Guidelines*, using the *WA Environmental Offsets Calculator*, to ensure no significant residual impact remains from the proposed clearing.

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.

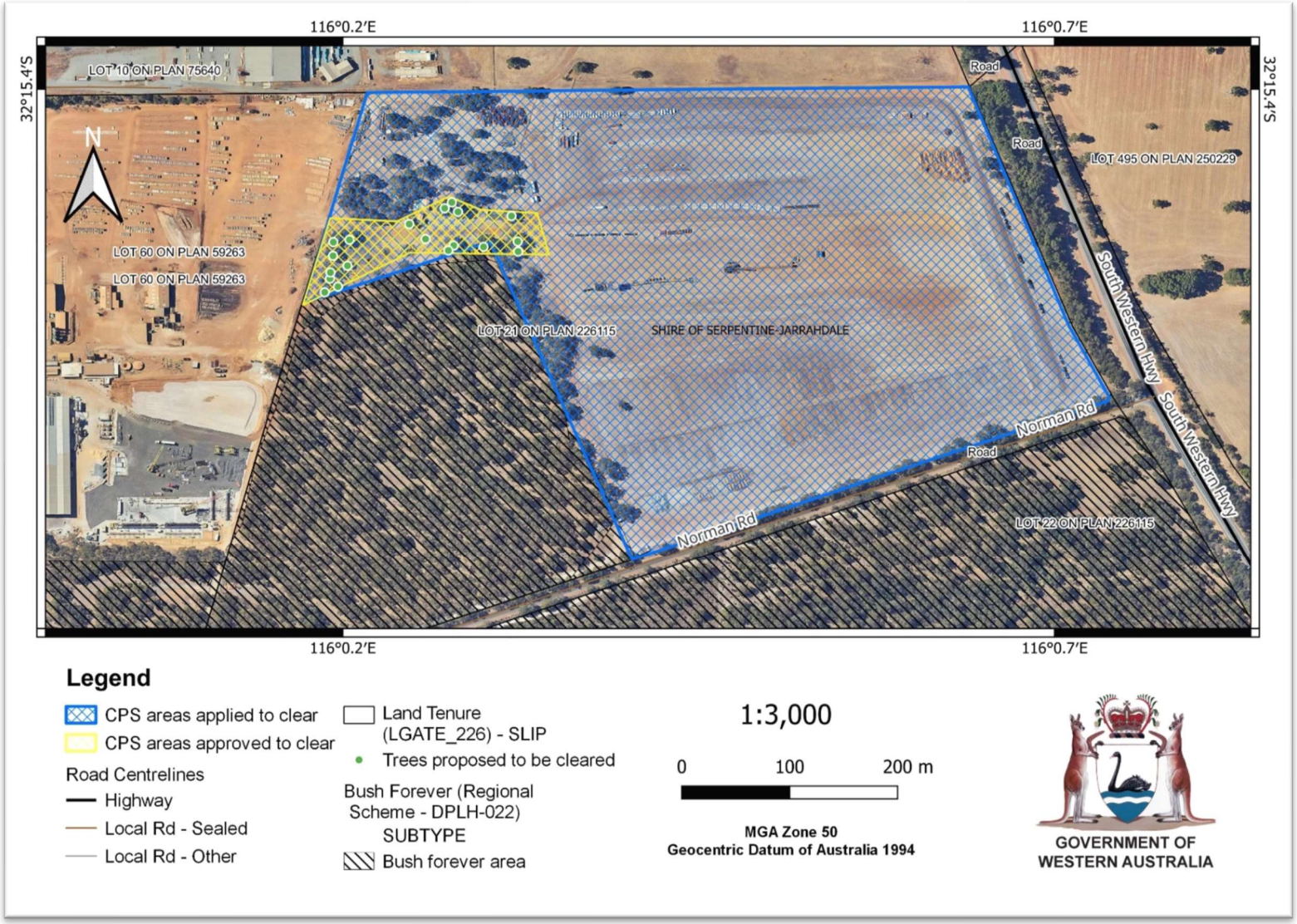


Figure 2: Reduction of clearing area from 1.5 hectares of native vegetation within an approximate 23.7 hectare clearing footprint to 0.45 hectares within an approximate 1.1 hectare footprint, through avoidance and minimisation measures (Permacast, 2022c).

Figure 3: Location in which mitigation planting will take place.

3.2. Assessment of impacts on environmental values

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

The assessment against the clearing principles (Appendix C) identified that the impacts of the proposed clearing present a risk to biological values, flora, fauna, and conservation areas. The consideration of these impacts, and the extent to which they can be managed through conditions applied in line with sections 51H and 51I of the EP Act, is set out below.

3.2.1. Biological values (flora) - Clearing Principles (a) and (c)

Assessment:
The application area is located within the Swan Coastal Plain IBRA region. According to the supporting information with the application, the vegetation proposed to be cleared appears to be in Degraded condition (Keighery, 1994) (Mattiske, 2023).

According to available datasets, 23 priority flora and eight threatened flora have been recorded in the local area. None of these records are mapped within the application area.

During the flora survey (Mattiske, 2023) along the east-west access route where the application area is located, the area was dominated by *Corymbia calophylla* (marri) trees, with an occasional *Eucalyptus marginat*a (jarrah), *Nutysia floribunda* (Christmas tree) and *Kingia australis* plants over mixed introduced grass species and an occasional native plant of *Banksia armata* in the understorey (Mattiske, 2023). It was also identified that the range of flora within the area was very limited due to clearing activities associated with the previous access and also storage activities that had been undertaken in the survey area. A total of 12 flora species were recorded in the survey area. Of these 12 flora species, seven were introduced species including one declared plant species (*Gomphocarpus fruticosus*) under the *Biosecurity and Agriculture Management Act 2007* (WA) (Mattiske, 2023). None of the plant species found are listed as conservation significant (Appendix E: Figure 6a-f)

Conclusion:
Due to the limited understorey and Degraded condition (Keighery, 1994) of the application area, the proposed clearing is unlikely to have a significant impact on conservation significant flora.

Conditions:
No conditions required.

3.2.2. Biological values (fauna) - Clearing Principle (b)

Assessment:
According to available databases, 30 conservation significant fauna species have been recorded within the local area (10 kilometre radius). Noting the habitat requirements of these recorded species, proximity to the application area and the condition of the vegetation within the application area, it is likely to comprise suitable habitat for the following species:

- *Calyptorhynchus banksii naso* (forest red-tailed black cockatoo)
- *Zanda baudinii* (Baudin's black cockatoo)
- *Zanda latirostris* (Carnaby's black cockatoo)
- *Notamacropus Irma* (western brush wallaby)

Black Cockatoos (EN – VU)

According to available mapping, the application area is located within the known breeding area for Carnaby's cockatoos, and within the known distribution for Carnaby's, Baudin's and forest red-tailed black cockatoos. While habitat requirements for the three species of black cockatoos differ, the requirements in general can be categorised as breeding habitat, foraging habitat and night roosting habitat.

Breeding habitat

Suitable breeding habitat for black cockatoos includes trees which either have a suitable nest hollow or are of a suitable diameter at breast height (DBH) to develop a nest hollow (DCCEEW, 2022). The application area is located within an area with known breeding habitat for Carnaby's cockatoo. This species generally occurs in woodland or forest and nests in hollows in live or dead trees of *Eucalyptus salmonophloia* (salmon gum), *Eucalyptus wandoo* (wandoo), *Eucalyptus gomphocephala* (tuart), *Eucalyptus marginata* (jarrah), *Eucalyptus rudis* (flooded gum),

Eucalyptus loxophleba subsp*. loxophleba* (York gum), *Eucalyptus accedens* (powderbark), *Eucalyptus diversicolor* (karri) and *Corymbia calophylla* (marri) (DCCEEW, 2022). Habitat trees considered potentially suitable for black cockatoo breeding have a DBH greater than 500 millimetres (for salmon gum and wandoo, suitable DBH is 300 millimetres) (DCCEEW, 2022).

The black cockatoo assessment undertaken within the application area, found that although the trees measured above 500 millimetres DBH, they have not formed hollows (Mattiske, 2023).

Foraging habitat

Foraging habitat differs between the three species of black cockatoos:

- Baudin's cockatoo - Mostly marri (seeds, flowers, nectar and grubs) and proteaceous trees and shrubs. Also other native seeds and introduced fruits; insects and insect larvae; pith of *Anigozanthos flavidus* (kangaroo paw); juice of ripe persimmons; tips of *Pinus spp*. and seeds of apples and pears.
- Carnaby's cockatoo - Seeds, flowers and nectar of native proteaceous plant species (for example, *Banksia spp., Hakea spp., and Grevillea spp*.), eucalypts and Callistemon. Also seeds of introduced species including *Pinus spp., Erodium spp*., wild radish, canola, almonds and pecan nuts; insects and insect larvae; occasionally flesh and juice of apples and persimmons.
- Forest red-tailed black cockatoo - Mostly seeds of marri and jarrah, also *Eucalyptus caesia, Eucalyptus erythrocorys* and some introduced eucalypts such as *Eucalyptus camaldulensis* (river red gum) and *Eucalyptus grandis* (flooded gum), *Allocasuarina* cones, fruits of *Persoonia longifolia* (snottygobble) and *Corymbia haematoxylon* (mountain marri).

Permacast have noted the species proposed to be cleared include marri, jarrah, *Banksia* sp. and *Nuytsia floribunda* (Appendix E: Figure 7) (Mattiske, 2023). Noting the above listed foraging preferences of black cockatoo species, the application area is likely to provide foraging habitat for Carnaby's, Baudin's and forest red-tailed black cockatoos.

The black cockatoo assessment of the application area highlighted foraging activity on the marri trees and trees with a potential to form hollows suitable for cockatoos (however no hollows were currently present). Kirkby found feeding residues were plentiful from both forest red-tailed black and Baudin's cockatoos (Mattiske, 2023).

Night roosting sites

Black cockatoo night roosts are usually located in the tallest trees of an area, and in close proximity to both a food supply and surface water (DCCEEW, 2022). The jarrah and marri tree species proposed to be cleared are known night roosting species for one or more black cockatoo species (DCCEEW, 2022). Black cockatoo flocks will utilise different roosts, often for weeks or until the local food supply is exhausted. Black cockatoo flocks show some consistency in roost site preference, with sites used in most years to access high-quality feeding sites. Twenty-two black cockatoo roosts have been recorded within the local area. Spatial data indicates that the nearest roost is recorded 2.81 kilometres from the application area. The black cockatoo assessment found no evidence of a roosting site within the application area (Mattiske, 2023).

Summary of impacts to black cockatoos

Noting the presence of black cockatoo roosts within the local area and evidence of foraging within the application area, the proposed clearing comprises significant foraging habitat for black cockatoos.

Permacast have agreed to the planting of a minimum of 29 native tree seedlings of *Corymbia calophylla* (marri) within the adjacent Bush Forever Site 361 within Lot 21 to mitigate impacts to black cockatoo foraging habitat. The mitigation planting proposed was input into the WA Environmental Offsets Metric Calculator to determine the ratio required to mitigate the loss of the 19 trees that provide foraging value. From this, 29 trees are required to be planted to mitigate the loss. Permacast will be required to ensure the survival of at least 29 marri trees within Bush Forever Site 361. The proposed planting was determined to be a suitable mitigation measure. A significant residual impact does not remain following the mitigation planting. The department considers the mitigation planting aligns with the WA Environmental Offsets Policy (2011) and WA Environmental Offsets Guideline (2014).

Western brush wallaby (P4)

The western bush wallaby's optimum habitat is open forests/woodlands, particularly favouring seasonally wet flats with low grasses and open scrubby thickets. It is also found in some areas of mallee and heathland and is uncommon in karri forests (DEC, 2012). The three most common dietary flora are **Carpobrotus edulis*, **Cynodon dactylon*, and *Nuytsia floribunda.*

The closest individual of western bush wallaby was recorded approximately 4.83 kilometres from the application area. The application area contains open forests/woodlands, low grasses and *Nuytsia floribunda* (Mattiske, 2023). However, noting the sparseness of the surrounding vegetation, the lack of scrubby thickets, the minimal availability of their preferred food, and surrounding grasslands, it is unlikely that the western brush wallaby utilises the application area.

Conclusion

Based on the above assessment, the application area is likely to provide significant foraging habitat for black cockatoos. According to the *WA Environmental Offsets Calculator* and consistent with the WA Environmental Offsets Policy (2011), to mitigate the loss of 19 native trees suitable for black cockatoo foraging, 29 native seedlings suitable for black cockatoo foraging are required to be planted. A significant residual impact no longer remains following the mitigation planting.

Conditions

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

- Avoidance and minimisations measures.
- Planting of 29 *Corymbia calophylla* (marri) seedlings within the adjacent Bush Forever Site 361, to balance the significant residual impacts from the loss of 19 native trees suitable for black cockatoo foraging.
- Undertake slow, progressive one directional clearing to allow terrestrial and avian fauna to move into adjacent habitat ahead of the clearing activity.

3.2.3. Environmental value (TEC and bush forever) – Clearing Principles (d) and (h)

Assessment:

The vegetation survey (Mattiske, 2023) noted that the east-west access route proposed to be cleared, abuts the northern boundary of the Bush Forever Site 361 (Norman Road Bushland, Whitby/Cardup) (Mattiske, 2023), which is also mapped as the TEC 'Banksia Dominated Woodlands of the Swan Coastal Plain IBRA Region'. According to the vegetation assessment (Mattiske, 2023), the vegetation on the east-west access route is dominated by a Degraded version (Keighery, 1994) of the TEC SCP3a consisting of 'Woodlands of *Corymbia calophylla* over *Kingia australis* on the heavy soils on the eastern side of the Swan Coastal Plain' (Mattiske, 2023). This community is listed as Critically Endangered under the BC Act and as Endangered under the EPBC Act (DBCA, 2023; DCCEEW, 2022). However, a Bush Forever quadrat approximately 500m to the south indicates the vegetation likely aligns with FCT3b, '*Corymbia calophylla* - *Eucalyptus marginata* woodlands on sandy clay soils of the southern Swan Coastal Plain', which is listed as Endangered under the BC Act and not listed under the EPBC Act (DBCA, 2023). Given the degraded to completely degraded condition of the application area, and the low number of native species present, the proposed clearing would not be considered a significant impact to the SCP3b community (DBCA, 2023) that may be present within the application area. DBCA recommended mitigation measures are taken to not clear within the boundary of Bush Forever Site 361 where better representation of the community remains.

As indicated in the photographs in Appendix E, the application area has been degraded and disturbed by extensive clearing and previous usages in the east-west access route (Mattiske, 2023).

Advice was received from the Department of Planning, Lands and Heritage (DPLH) and the Shire of Serpentine Jarrahdale, recommending measures be taken to ensure the clearing and land use does not compromise the integrity of Bush Forever Site 361. Appropriate distance and fencing should be constructed between the access route and the Bush Forever Site to mitigate any impacts to the Bush Forever Site (DPLH, 2022; Shire of Serpentine Jarrahdale, 2023).

Conclusion:

Based on the above assessment, the proposed clearing of 0.45 hectares of native vegetation within 1.1 hectares, including the removal of 19 native trees within a Degraded site (Keighery, 1994), outside the boundary of the Bush Forever Site 361, will not directly result in a significant impact to the presence of a TEC or Bush Forever Site.

To mitigate any potential secondary impacts to the conservation area, installation of a boundary fence will be conditioned on the permit, to ensure no impacts will occur from the clearing and future land use.

Condition:

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

- Fencing be installed along the boundary of Bush Forever Site 361 and the industrial land to mitigate any adverse impacts from the abutting land-use.

- take hygiene steps to minimise the risk of the introduction and spread of weeds and dieback

3.3. Relevant planning instruments and other matters

The application area is presently zoned Industrial and Rural in the Metropolitan Region Scheme (MRS), and has the implementation category in State Planning Policy 2.8 – Bushland Policy for the Perth Metropolitan Region (SPP 2.8) as Rural Lands (DPLH, 2022).

A Planning Approval (Application No. PA22/592) was granted on 9 June 2023, to approve the commencement of development on Lot 21, South Western Highway, Cardup (Shire of Serpentine Jarrahdale, 2023).

The application area is located within the boundaries of the registered Gnaala Karla Booja Indigenous Land Use Agreement (WI2015/005).

Spatial data indicates that no Aboriginal Heritage sites occur within the application area. Several lodged, registered and other Aboriginal Heritage sites occur within the local 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. Details of public submissions

Summary of comments	Consideration of comment
Concerns for loss of foraging, breeding and roosting habitat for black cockatoos	The Departments assessment identified that the proposed clearing represents a significant impact for black cockatoos foraging habitat. The Department took into consideration a revegetation commitment by Permacast (Section 3.1.: Figure 3) which includes planting of 29 foraging habitat species within the adjacent conservation area to balance the significant residual impact from the loss of 19 native trees suitable for black cockatoo foraging.
Concerns for cumulative effect of clearing on black cockatoos	The assessment of cumulative impact for the application was considered under the Department's *A guide to the assessment of applications to clear native vegetation – Under Part V Division 2 of the EP Act (2014)*. Page 18 of the guidance states that it is under principle (e) that 'the cumulative impacts of clearing within a particular area should be considered'. That is, in regard to significant remnant vegetation and native vegetation extent. The authorised clearing area is located within the Swan Coastal Plain bioregion. The bioregion retains approximately 38.62 per cent of its original extent (579,813.47 hectares). Approximately 32.56 per cent native vegetation cover (10,910.39 hectares) has been retained within 10 kilometres of the authorised clearing area (Appendix B.2). The extent of native vegetation cover in the local area and the vegetation extent within the Swan Coastal Plain bioregion are greater than 30 per cent and, therefore, consistent with the national objectives and targets for biodiversity conservation in Australia. To mitigate against the potential impact to black cockatoo foraging habitat, Permacast will be planting 29 foraging habitat species.
Concerns regarding increased incidence of controlled burns and the impact it is having on canopy density	While the Department acknowledges that activities such as prescribed burning may initially push fauna into pockets of refugia, the purpose of the proposed clearing does not involve loss of canopy density through controlled burns.
Concerns of the impact clearing has on Climate Change	It is considered that the proposed clearing is unlikely to significantly worsen climate change (through the loss of carbon storage, temperature reduction, water reduction or otherwise) to the extent that impacts of the clearing on climate change are a relevant matter to factor into this clearing permit decision making process. In addition, Permacast will be planting 29 foraging habitat species which will assist in future carbon storage.

Appendix B. 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 C.

B.1. Site characteristics

Characteristic	Details
Local context	The area proposed to be cleared is 0.45 hectares of native vegetation within a 1.1 hectare footprint, which lies on either side of an east-west access route to the property. The application area is located within an area surrounded by an Intensive Land Use Zone. The surrounding properties consist of extensively cleared land for the purpose of residual development and industry, as well as patches of remaining remnant vegetation and conservation areas. Spatial data indicates that the local area (10 Kilometre buffer from the centre of the proposed application area), retains 32.56 per cent of the original native vegetation cover (Government of Western Australia, 2019).
Ecological linkage	A Perth Regional Ecological Linkage is mapped on the southern edge of the property, however, does not intersect with the application area. Regional Ecological Linkages are mapped to broadly represent a link between patches of remnant vegetation judged to be of regional significance in the Perth Metropolitan Region (PMR) Scheme Area. The proposed clearing is not likely to sever or impact any linkage functions.
Conservation areas	The closest conservation area is directly adjacent to the application area to the south, which is Bush Forever Site No. 361, located within Lot 21.
Vegetation description	Available databases indicated that the application area is located within the Swan Coastal Plain IBRA region, has a vegetation association of Pinjarra - 968 and a vegetation complex of Forrestfield Complex - 29, described as a 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. According to DBCA (2023), the east-west access route where the application area lies, is dominated by a Degraded version (Keighery, 1994) of the TEC SCP3b consisting of '*Corymbia calophylla* - *Eucalyptus marginata* woodlands on sandy clay soils of the southern Swan Coastal Plain'. The Forrestfield Complex - 29, retains approximately 12.29 per cent of the original extent (Government of Western Australia, 2019a).
Vegetation condition	According to an assessment undertaken within the application area in February 2023, the east-west access route where the application area lies, is in a Degraded (Keighery, 1994) condition. The full Keighery (1994) condition rating scale is provided in Appendix D. Representative photos are available in E.
Climate and landform	The climate experienced in the area is warm Mediterranean, with dry, hot summers and cool, wet winters. The average rainfall is 816 millimetres per annum, with the majority falling between June and August (BOM, 2023). The mean maximum temperature, calculated from data collected between 1994 to 2008, shows a temperature of 31.2 degrees celsius in February and 18.4 degrees celsius in July and a mean minimum temperature of 7.9 degrees celsius in July (BOM, 2023).
Soil description	The soil is mapped as: Forrestfield F2a Phase - 213Fo__F2a which is described as low slopes and foot slopes up to 5 – 10 percent with well drained shallow to moderately deep, very gravelly acidic yellow duplex soils and common laterite.
Land degradation risk	**Forrestfield F2a Phase - 213Fo__F2a** **Wind Erosion**: H2: >70% of map unit has a high to extreme risk

<table>
<tr><th>Characteristic</th><th>Details</th></tr>
<tr><td></td><td>
<table>
<tr><td>Water erosion</td><td>L1: <3% of map unit has a high to extreme risk</td></tr>
<tr><td>Waterlogging Risk</td><td>L1: <3% of map unit has a moderate to very high risk</td></tr>
<tr><td>Water Repellence</td><td>M1: 10-30% of map unit has a high risk</td></tr>
<tr><td>Sub-surface Acidification</td><td>H2: >70% of map unit has a high subsurface acidification risk or is presently acid</td></tr>
<tr><td>Phosphorous export</td><td>L1: <3% of map unit has a high to extreme risk</td></tr>
<tr><td>Salinity</td><td>L1: <3% of map unit has a moderate to high salinity risk or is presently saline</td></tr>
<tr><td>Flooding</td><td>L1: <3% of the map unit has a moderate to high risk</td></tr>
</table>
</td></tr>
<tr><td>Waterbodies</td><td>No waterbodies or wetlands are mapped within the application area. There is a Geomorphic Wetland – Swan Coastal Plain - Multiple Use – Palusplain located approximately 150 metres north and Dampland approximately 320 metres north-northeast of the application area. There is a natural, minor, non-perennial watercourse located approximately 550 metres south of the application area, flowing in a westerly direction as a tributary of the Serpentine River.</td></tr>
<tr><td>Hydrogeography</td><td>The application area is in the Coastal Plain Hydrological Zone - Coastal and fixed sand dunes and calcarenite. Non-calcareous sands, podsolised soils with low-lying wet areas. Further inland, alluvial deposits, colluvial deposits adjacent to the Darling Scarp. Clayey to sandy alluvial soils with wet areas. Major aquifers: Leederville, Yarragadee and Cockleshell Gully Fms. The eastern Yoganup Fm, is a major recharge area; discharge to the Indian Ocean.
The application area also lies within the in the South West Catchment Division (Division No. 6) in the Peel Estuary - Serpentine River Catchment (UFI – 135), within the Murray River Basin (Basin No. 614). The area proposed to be clearing is mapped within the Serpentine Groundwater Water Area (UFI – 7), proclaimed under the RIWI Act.

The groundwater salinity is 500-1000 total dissolved solids milligrams per litre.</td></tr>
<tr><td>Flora</td><td>According to the flora assessment conducted by Mattiske (2023) the range of flora within the application area is very limited due to previous clearing activities associated with the construction of the access and also storage activities that have been undertaken on the property. A total of 12 plant species were recorded during the assessment. Of these 12 plant species, seven were introduced species including one declared plant species (Gomphocarpus fructicosus) under the Biosecurity and Agriculture Management Act 2007 (WA).</td></tr>
<tr><td>Ecological communities</td><td>According to available databases, nine conservation significant ecological communities have been mapped within the local area. None of these records are mapped within the application area. The closest is TEC ‘Banksia Dominated Woodlands of the Swan Coastal Plain IBRA Region’, located directly adjacent to the south of the application area.</td></tr>
<tr><td>Fauna</td><td>According to available databases, 30 conservation fauna species have been recorded within the local area (10-kilometre buffer). Comprising of the following conservation status, five priority 3, seven priority 4, four specially protected migratory species, five vulnerable, five endangered, one specially protected species, two critically endangered, and one specially protected species (conservation dependent: CD). Of these, 26 fauna are associated with marine, estuarine and freshwater habitats, are migratory species, or have alternative vegetation and habitat requirement and are not likely to occur within the application area (Appendix B.3.).

All three species of black cockatoo Calyptorhynchus banksii naso (forest red-tailed black cockatoo), Zanda baudinii (Baudin's cockatoo), and Zanda latirostris (Carnaby's cockatoo) have been located 0.47 kilometres, 0.69 kilometres and 1.04 kilometres respectively from the application area. There are 22 black cockatoo roosting sights within a 10 kilometre buffer of the application area. The nearest confirmed black cockatoo roost is located approximately 2.81 kilometres from the application site.</td></tr>
</table>

Characteristic	Details
	Noting the habitat requirements, the distribution of the recorded species and the mapped vegetation types, the application area is likely to comprise suitable habitat for the following fauna species; • Forest red-tailed black cockatoo • Baudin's black cockatoo • Carnaby's black cockatoo • Western brush wallaby Foraging activity by black cockatoos was observed within the application area (Mattiske, 2023)

B.2. Vegetation extent

	Pre-European extent (ha)	Current extent (ha)	Extent remaining (%)	Current extent in all DBCA managed land (ha)	Current proportion (%) of pre-European extent in all DBCA managed land
IBRA bioregion**					
Swan Coastal Plain	1,501,221.93	579,813.47	38.62	222,916.97	14.85
Vegetation association**					
Swan Coastal Plain - Pinjarra_968	136,188.20	9,017.32	6.62	1,948.40	1.43
Vegetation complex*					
Forrestfield Complex - 29	22,812.92	2,803.36	12.29	381.57	1.67
Local area					
10km radius	33,508.71	10,910.39	32.56	-	-

*Government of Western Australia (2019a)

**Government of Western Australia (2019b)

B.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]
Birds						
Calidris ferruginea (curlew sandpiper)	CR	N	N	5.82	1	N/A
Calidris ruficollis (red-necked stint)	MI	N	N	4.27	2	N/A
Calyptorhynchus banksii naso (forest red-tailed black cockatoo)	VU	Y	Y	0.47	197	Y
Calyptorhynchus baudinii (Baudin's cockatoo)	EN	Y	Y	0.69	172	Y
Calyptorhynchus latirostris (Carnaby's cockatoo)	EN	Y	Y	1.04	662	Y
Calyptorhynchus sp. 'white-tailed black cockatoo'	EN	Y	Y	2.70	41	Y

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]
Falco peregrinus (Peregrine falcon)	OS	N	N	2.85	14	N/A
Hydroprogne caspia (Caspian tern)	MI	N	N	2.78	1	N/A
Leipoa ocellata (malleefowl)	VU	N	N	4.34	2	N/A
Oxyura australis (blue-billed duck)	P4	N	N	8.12	4	N/A
Plegadis falcinellus (glossy ibis)	MI	N	N	8.12	3	N/A
Tringa nebularia (common greenshank, greenshank)	MI	N	N	5.82	3	N/A
Mammals						
Dasyurus geoffroii (chuditch, western quoll)	VU	N	Y	0.06	23	N/A
Falsistrellus mackenziei (western false pipistrelle, western falsistrelle)	P4	N	Y	9.33	1	N/A
Hydromys chrysogaster (water-rat, rakali)	P4	N	N	6.83	2	N/A
Isoodon fusciventer (quenda, southwestern brown bandicoot)	P4	N	Y	0.13	119	N/A
Myrmecobius fasciatus (numbat, walpurti)	EN	N	N	4.38	4	N/A
Notamacropus eugenii derbianus (tammar wallaby)	P4	N	N	8.36	1	N/A
Notamacropus irma (western brush wallaby)	P4	Y	Y	4.38	5	N/A
Phascogale tapoatafa wambenger (south-western brush-tailed phascogale, wambenger)	CD	N	Y	4.89	5	N/A
Pseudocheirus occidentalis (western ringtail possum, ngwayir)	CR	N	N	8.93	1	N/A
Setonix brachyurus (quokka)	VU	N	Y	0.91	21	N/A
Reptiles						
Acanthophis antarcticus (southern death adder)	P3	N	N	2.55	25	N/A
Ctenotus delli (Dell's skink, Darling Range southwest Ctenotus)	P4	Poorly known		6.23	2	N/A
Lerista lineata (Perth slider, lined skink)	P3	Poorly known		9.97	1	N/A
Invertebrates						
Euoplos inornatus (inornate trapdoor spider (northern Jarrah Forest))	P3	N	N	1.28	1	N/A
Glacidorbis occidentalis (jarrah forest freshwater snail)	P3	N	N	8.50	1	N/A
Idiosoma sigillatum (Swan Coastal Plain shield-backed trapdoor spider)	P3	Y	Y	4.89	1	N/A
Idiosoma sp. (an Idiosoma trapdoor spider)	EN	Y	Y	1.97	2	N/A

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]
Westralunio carteri (Carter's freshwater mussel)	VU	N	N	3.28	7	N/A

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

B.4. Ecological community analysis table

Community name	Conservation status	Suitable vegetation type? [Y/N]	Suitable soil type? [Y/N]	Distance of closest record to application area (km)	Number of known records in local area (total)	Are surveys adequate to identify? [Y, N, N/A]
Banksia Dominated Woodlands of the Swan Coastal Plain IBRA Region	PEC/TEC	Y	Y	0.00	269	Y
Corymbia calophylla - Eucalyptus marginata woodlands on sandy clay soils of the southern Swan Coastal Plain (floristic community type 3b as originally described in Gibson et al. (1994))	TEC	Y	Y	0.00	9	Y
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))	TEC	N	N	25.98	12	N/A
Corymbia calophylla - Kingia australis woodlands on heavy soils, Swan Coastal Plain (floristic community type 3a as originally described in Gibson et al. (1994))	TEC	N	N	187.83	11	N/A
Communities of Tumulus Springs (Organic Mound Springs, Swan Coastal Plain)	TEC	N	N	1678.33	1	N/A
Dense shrublands on clay flats (floristic community type 9 as originally described in Gibson et al. (1994))	TEC	N	N	1865.74	1	N/A
Corymbia calophylla - Xanthorrhoea preissii woodlands and shrublands, Swan Coastal Plain (floristic community type 3c as originally described in in Gibson et al. (1994))	TEC	N	N	2779.41	3	N/A
Southern wet shrublands, Swan Coastal Plain (floristic community type 2 as originally described in Gibson et al. (1994))	TEC	N	N	2864.14	1	N/A
Herb rich shrublands in clay pans (floristic community type 8 as originally described in Gibson et al. (1994))	TEC	N	N	4228.93	3	N/A

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

Appendix C. Assessment against the clearing principles

Assessment against the clearing principles	Variance level	Is further consideration required?
Environmental value: biological values		
Principle (a): *"Native vegetation should not be cleared if it comprises a high level of biodiversity."* Assessment: The proposed application area does not contain local or regional significant flora or assemblages of plants. However the application area contains suitable foraging habitat for black cockatoos and a degraded representation of FCT3b TEC.	May be at variance	Yes *Refer to Section 3.2.2; 3.2.3, above.*
Principle (b): *"Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna."* Assessment: The application area contains habitat for conservation fauna species. The native vegetation being cleared is known to provide foraging habitat for black cockatoo species.	At variance	Yes *Refer to Section 3.2.2, above.*
Principle (c): *"Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora."* Assessment: The application area does not contain any threatened flora and is not necessary for the continued existence of threatened flora.	Not likely to be at variance	Yes *Refer to Section 3.2.1, above.*
Principle (d): *"Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a threatened ecological community."* Assessment: The application area contains a degraded representation of FCT3b TEC. The vegetation within the application area is not likely to comprise the whole or a part of or be necessary for the maintenance of a TEC.	May be at variance	Yes *Refer to Section 3.2.3, above.*
Environmental value: significant remnant vegetation and conservation areas		
Principle (e): *"Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared."* Assessment: The mapped remnant vegetation in the local area is consistent with the national objectives and targets for biodiversity conservation in Australia, however, both the vegetation complex and association are not consistent with the national objectives and targets for biodiversity conservation in Australia. As the vegetation assessed within the application area is of a Degraded condition, no longer representing the vegetation type, the clearing is not likely to be signficant.	Not likely to be at variance	No
Principle (h): *"Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area."* Assessment: Given the distance to the nearest conservation area, the proposed clearing may impact the environmental values of any conservation areas.	May be at variance	Yes *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."* Assessment: Given no water courses or wetlands are recorded within the application area, the proposed clearing is not within 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."* Assessment: The mapped soils are highly succeptable to wind erosion and subsurface acidification. Noting the location of the application area, the low number of trees being cleared, and the condition of the vegetation, the proposed clearing is not likely to have appreciable impacts 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."* Assessment: Given no water courses, 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 likely to be 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."* Assessment: The mapped soils and topographic contours are mapped as having a low risk of flooding. The proposed clearing and current condition of the application area, is not likely to exacerbate the risk of flooding.	Not likely to be at variance	No

Appendix D. Vegetation condition rating scale

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

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

Measuring vegetation condition for the Southwest and Interzone Botanical Province (Keighery, 1994)

Condition	Description
Pristine	Pristine or nearly so, no obvious signs of disturbance.
Excellent	Vegetation structure intact, with disturbance affecting individual species; weeds are non-aggressive species.
Very good	Vegetation structure altered, with obvious signs of disturbance. For example, disturbance to vegetation structure caused by repeated fires, the presence of some more aggressive weeds, dieback, logging and/or grazing.
Good	Vegetation structure significantly altered by very obvious signs of multiple disturbances. Retains basic vegetation structure or ability to regenerate it. For example, disturbance to vegetation structure caused by very frequent fires, the presence of some very aggressive weeds at high density, partial clearing, dieback and/or grazing.
Degraded	Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management. For example, disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds, partial clearing, dieback and/or grazing.
Completely degraded	The structure of the vegetation is no longer intact and the area is completely or almost completely without native species. These areas are often described as 'parkland cleared' with the flora comprising weed or crop species with isolated native trees or shrubs.

Appendix E. Biological survey information excerpts / photographs of the vegetation

Figure 4: Vegetation units mapped as provided as supporting documentation with clearing application CPS 9785/1 (EDS Environmental, 2022)

Figure 5: Vegetation condition mapped as provided as supporting documentation with clearing application CPS 9785/1 (EDS Environmental, 2022)

Note: * denotes introduced species; T denotes threatened species; P1-P4 denotes priority species (DBCA 2023b); SCC = State Conservation Code; FCC = Federal Conservation Code; CE = Critically Endangered, E = Endangered, V = Vulnerable. Data sources: Dandjoo (DBCA 2022); EPBC; MCPL=Mattiske Consulting (2023).

Family	Species	SCC	FCC	Data source		
				EPBC	Dandjoo	MCPL 2023
ANARTHRIACEAE	*Lyginia barbata*				X	
APIACEAE	*Actinotus leucocephalus*				X	
	Homalosciadium homalocarpum				X	
	Pentapeltis peltigera				X	
	Xanthosia huegelii				X	
APOCYNACEAE	* *Gomphocarpus fructicosus*					X
ARALIACEAE	*Trachymene pilosa*				X	
ASPARAGACEAE	*Chamaescilla corymbosa*				X	
	Laxmannia sessiliflora subsp. australis				X	
	Laxmannia squarrosa				X	
	Lomandra brittanii				X	
	Lomandra caespitosa				X	
	Lomandra hermaphrodita				X	
	Lomandra nigricans				X	
	Lomandra preissii				X	
	Lomandra sericea				X	
	Sowerbaea laxiflora				X	
	Thysanotus manglesianus				X	
	Thysanotus patersonii				X	
	Thysanotus sparteus				X	
	Thysanotus tenellus				X	
	Thysanotus thyrsoideus				X	
	Thysanotus triandrus				X	
ASTERACEAE	*Hyalosperma cotula*				X	
	* *Hypochaeris glabra*				X	X
	Lagenifera huegelii				X	
	* *Logfia gallica*				X	
	Pithocarpa sp.				X	
	Podolepis gracilis				X	
	Pseudognaphalium luteoalbum				X	
	Quinetia urvillei				X	
	Siloxerus humifusus				X	
	* *Ursinia anthemoides*				X	
	* *Vellereophyton dealbatum*				X	
BORYACEAE	*Borya sphaerocephala*				X	
CALOSTOMATACEAE	*Calostoma sp.*				X	
CARYOPHYLLACEAE	* *Silene gallica*				X	
CASUARINACEAE	*Allocasuarina humilis*				X	
	Allocasuarina thuyoides				X	
CELASTRACEAE	*Stackhousia monogyna*				X	
	Tripterococcus brunonis				X	

Figure 6a: Potential and recorded vascular plants species (Mattiske, 2023)

Note: * denotes introduced species; T denotes threatened species; P1-P4 denotes priority species (DBCA 2023b); SCC = State Conservation Code; FCC = Federal Conservation Code; CE = Critically Endangered, E = Endangered, V = Vulnerable. Data sources: Dandjoo (DBCA 2022); EPBC; MCPL=Mattiske Consulting (2023).

Family	Species	SCC	FCC	Data source		
				EPBC	Dandjoo	MCPL 2023
CENTROLEPIDACEAE	*Centrolepis aristata*				X	
	Centrolepis drummondiana				X	
COLCHICACEAE	*Burchardia congesta*				X	
	Wurmbea dioica subsp. alba				X	
CRASSULACEAE	*Crassula colorata*				X	
	Crassula decumbens				X	
CYPERACEAE	*Cyathochaeta avenacea*				X	
	Eleocharis keigheryi	T	V	X		
	Isolepis cernua				X	
	Isolepis oldfieldiana				X	
	Lepidosperma angustatum				X	
	Lepidosperma costale				X	
	Lepidosperma rostratum	T	E	X		
	Lepidosperma scabrum				X	
	Mesomelaena pseudostygia				X	
	Mesomelaena tetragona				X	
	Morelotia australiensis	T	V	X		
	Morelotia octandra				X	
	Schoenus brevisetis				X	
	Schoenus caespititius				X	
	Schoenus clandestinus				X	
	Schoenus subflavus				X	
DASYPOGONACEAE	*Dasypogon bromeliifolius*				X	
	Dasypogon obliquifolius				X	
	Kingia australis				X	X
DILLENIACEAE	*Hibbertia acerosa*				X	
	Hibbertia huegelii				X	
	Hibbertia hypericoides				X	
	Hibbertia vaginata				X	
DROSERACEAE	*Drosera erythrorhiza*				X	
	Drosera gigantea				X	
	Drosera glanduligera				X	
	Drosera macrantha				X	
	Drosera menziesii				X	
	Drosera stolonifera				X	
ELAEOCARPACEAE	*Tetratheca hirsuta*				X	
	Tetratheca hirsuta subsp. viminea				X	
ERICACEAE	*Andersonia gracilis*	T	E	X		
	Andersonia lehmanniana				X	
	Anthocercis gracilis	T	V	X		
	Astroloma stomarrhena				X	
	Conostephium pendulum				X	
	Conostephium preissii				X	
	Lysinema ciliatum				X	

Figure 6b: Potential and recorded vascular plants species, provided in Mattiske's assessment report (Mattiske, 2023)

Note: * denotes introduced species; T denotes threatened species; P1-P4 denotes priority species (DBCA 2023b); SCC = State Conservation Code; FCC = Federal Conservation Code; CE = Critically Endangered, E = Endangered, V = Vulnerable. Data sources: Dandjoo (DBCA 2022); EPBC; MCPL=Mattiske Consulting (2023).

Family	Species	SCC	FCC	Data source		
				EPBC	Dandjoo	MCPL 2023
ERICACEAE (CONTINUED)	*Styphelia pallida*				X	
	Styphelia tenuiflora				X	
EUPHORBIACEAE	*Monotaxis grandiflora*				X	
	Monotaxis occidentalis				X	
	Stachystemon vermicularis				X	
FABACEAE	*Acacia huegelii*				X	
	Acacia sessilis				X	
	Acacia stenoptera				X	
	Acacia willdenowiana				X	
	Aotus procumbens				X	
	Bossiaea eriocarpa				X	
	Bossiaea ornata				X	
	Chorizema rhombeum				X	
	Cristonia biloba				X	
	Daviesia decurrens				X	
	Daviesia physodes				X	
	Daviesia triflora				X	
	Gastrolobium nervosum				X	
	Gompholobium confertum				X	
	Gompholobium knightianum				X	
	Gompholobium marginatum				X	
	Gompholobium preissii				X	
	Gompholobium tomentosum				X	
	Hovea trisperma var. *trisperma*				X	
	Jacksonia lehmannii				X	
	Jacksonia sternbergiana				X	
	Kennedia prostrata				X	
	Labichea punctata				X	
	* *Lotus angustissimus*				X	
	* *Ornithopus compressus*				X	
	Sphaerolobium medium				X	
	Sphaerolobium vimineum				X	
	* *Trifolium arvense*				X	
GERANIACEAE	* *Erodium botrys*				X	
	Erodium cygnorum				X	
GOODENIACEAE	*Dampiera linearis*				X	
	Lechenaultia biloba				X	
	Scaevola repens var. *repens*				X	
HAEMODORACEAE	*Anigozanthos humilis*				X	
	Anigozanthos manglesii				X	
	Conostylis aculeata				X	
	Conostylis aculeata subsp. *preissii*				X	
	Conostylis aurea				X	
	Conostylis juncea				X	
	Conostylis setigera				X	
	Conostylis setosa				X	
	Haemodorum laxum				X	
	Haemodorum sparsiflorum				X	

Figure 6c: Potential and recorded vascular plants species, provided in Mattiske's assessment report (Mattiske, 2023)

Note: * denotes introduced species; T denotes threatened species; P1-P4 denotes priority species (DBCA 2023b); SCC = State Conservation Code; FCC = Federal Conservation Code; CE = Critically Endangered, E = Endangered, V = Vulnerable. Data sources: Dandjoo (DBCA 2022); EPBC; MCPL=Mattiske Consulting (2023).

Family	Species	SCC	FCC	Data source		
				EPBC	Dandjoo	MCPL 2023
HAEMODORACEAE (CONTINUED)	*Haemodorum spicatum*				X	
	Phlebocarya ciliata				X	
	Phlebocarya filifolia				X	
HEMEROCALLIDACEAE	*Agrostocrinum scabrum*				X	
	Arnocrinum preissii				X	
	Caesia micrantha				X	
	Caesia occidentalis				X	
	Johnsonia pubescens				X	
	Johnsonia sp.				X	
	Tricoryne elatior				X	
IRIDACEAE	*Patersonia juncea*				X	
	Patersonia occidentalis				X	
	* *Romulea rosea*				X	
JUNCACEAE	*Juncus pallidus*				X	
JUNCAGINACEAE	*Triglochin nana*				X	
LAURACEAE	*Cassytha glabella*				X	
LOGANIACEAE	*Orianthera serpyllifolia*				X	
LORANTHACEAE	*Nuytsia floribunda*				X	X
MALVACEAE	*Lasiopetalum pterocarpum*	T	E	X		
MYRTACEAE	*Babingtonia camphorosmae*				X	
	Calytrix angulata				X	
	Calytrix flavescens				X	
	Corymbia calophylla				X	X
	Eremaea pauciflora var. pauciflora				X	
	Eucalyptus x balanites	T	E	X		
	Eucalyptus calophylla				X	
	Eucalyptus lane-poolei				X	
	Eucalyptus marginata				X	X
	Hypocalymma robustum				X	
	Melaleuca preissiana				X	
	Melaleuca systena				X	
	Melaleuca thymoides				X	
	Scholtzia involucrata				X	
ORCHIDACEAE	*Caladenia discoidea*				X	
	Caladenia flava				X	
	Caladenia marginata				X	
	Caladenia reptans				X	
	Diuris longifolia				X	
	Diuris magnifica				X	
	Diuris micrantha	T	V	X		
	Diuris purdiei	T	E	X		
	Drakaea elastica	T	E	X		
	Drakaea micrantha	T	V	X		

Figure 6d: Potential and recorded vascular plants species, provided in Mattiske's assessment report (Mattiske, 2023)

Note: * denotes introduced species; T denotes threatened species; P1-P4 denotes priority species (DBCA 2023b); SCC = State Conservation Code; FCC = Federal Conservation Code; CE = Critically Endangered, E = Endangered, V = Vulnerable. Data sources: Dandjoo (DBCA 2022); EPBC; MCPL=Mattiske Consulting (2023).

Family	Species	SCC	FCC	Data source		
				EPBC	Dandjoo	MCPL 2023
ORCHIDACEAE (continued)	*Eriochilus dilatatus*				X	
	Leporella fimbriata				X	
	* *Monadenia bracteata*				X	
	Prasophyllum parvifolium				X	
	Pterostylis recurva				X	
	Pyrorchis nigricans				X	
	Thelymitra crinita				X	
	Thelymitra stellata	T	E	X		
	Thelymitra sp.				X	
PHYLLANTHACEAE	*Poranthera microphylla*				X	
PITTOSPORACEAE	*Billardiera fraseri*				X	
POACEAE	*Austrostipa campylachne*				X	
	Austrostipa compressa				X	
	Austrostipa variabilis				X	
	* *Briza maxima*				X	X
	* *Briza minor*				X	
	* *Ehrharta calycina*				X	X
	* *Ehrharta longiflora*				X	X
	* *Eragrostis curvula*				X	X
	* *Eragrostis elongata*				X	
	Neurachne alopecuroidea				X	
	Rytidosperma occidentale				X	
	* *Vulpia myuros*				X	X
POLYGALACEAE	*Comesperma virgatum*				X	
PRIMULACEAE	* *Anagallis arvensis*				X	
PROTEACEAE	*Adenanthos meisneri*				X	
	Banksia armata					X
	Banksia attenuata				X	
	Banksia grandis				X	
	Banksia kippistiana				X	
	Banksia menziesii				X	
	Banksia mimica	T	E	X		
	Banksia nivea				X	
	Banksia undata				X	
	Conospermum stoechadis				X	
	Grevillea bipinnatifida				X	
	Grevillea curviloba subsp. *incurva*	T	E	X		
	Grevillea pilulifera				X	
	Grevillea quercifolia				X	
	Grevillea wilsonii				X	
	Hakea lissocarpha				X	
	Hakea ruscifolia				X	
	Hakea stenocarpa				X	
	Lambertia multiflora var. *darlingensis*				X	
	Petrophile linearis				X	
	Petrophile macrostachya				X	
	Petrophile striata				X	

Figure 6e: Potential and recorded vascular plants species, provided in Mattiske's assessment report (Mattiske, 2023)

Note: * denotes introduced species; T denotes threatened species; P1-P4 denotes priority species (DBCA 2023b); SCC = State Conservation Code; FCC = Federal Conservation Code; CE = Critically Endangered, E = Endangered, V = Vulnerable. Data sources: Dandjoo (DBCA 2022); EPBC; MCPL=Mattiske Consulting (2023).

Family	Species	SCC	FCC	Data source		
				EPBC	Dandjoo	MCPL 2023
PROTEACEAE (continued)	*Stirlingia latifolia*				X	
	Synaphea acutiloba				X	
	Synaphea gracillima				X	
	Synaphea sp. Fairbridge Farm (D. Papenfus 696)	T	CE	X		
	Synaphea sp. Pinjarra Plain (A.S. George 17182)	T	E	X		
	Synaphea sp. Serpentine (G.R. Brand 103)	T	CE	X		
	Xylomelum occidentale				X	
RESTIONACEAE	*Cytogonidium leptocarpoides*				X	
	Chordifex sinuosus				X	
	Desmocladus fasciculatus				X	
	Desmocladus flexuosus				X	
	Hypolaena exsulca				X	
	Hypolaena fastigiata				X	
	Lepidobolus preissianus				X	
	Lepyrodia muirii				X	
RUTACEAE	*Philotheca spicata*				X	
SCROPHULARIACEAE	* *Dischisma capitatum*				X	
STYLIDIACEAE	*Stylidium brunonianum*				X	
	Stylidium neurophyllum				X	
	Stylidium piliferum				X	
	Stylidium repens				X	
	Stylidium schoenoides				X	
	Stylidium tenue subsp. *majusculum*				X	
THYMELAEACEAE	*Pimelea imbricata* var. *piligera*				X	
	Pimelea suaveolens				X	
XANTHORRHOEACEAE	*Xanthorrhoea preissii*				X	

Figure 6f: Potential and recorded vascular plants species, provided in Mattiske's assessment report (Mattiske, 2023)

EASTING	NORTHING	Conf_speci	DBH	CONDITION	FORAGED	COMMENTS
406184	6430530	Nuytsia floribunda	64.2	SS	No	
406175	6430532	Eucalyptus marginata	57.5	SS	No	
406185	6430537	Nuytsia floribunda	55.7	SS	No	
406190	6430552	Corymbia calophylla	50.0	DO	No	
406187	6430556	Nuytsia floribunda	51.6	H	No	
406313	6430558	Corymbia calophylla	61.0	SS	Yes	
406334	6430561	Corymbia calophylla	86.0	S	Yes	Bark gone/Burnt
406304	6430566	Corymbia calophylla	57.8	SS	Yes	
406179	6430571	Corymbia calophylla	56.3	S	Yes	
406289	6430572	Corymbia calophylla	69.8	VSE	Yes	
406348	6430574	Corymbia calophylla	69.8	SS	Yes	
406323	6430576	Corymbia calophylla	####	SS	Yes	
406177	6430579	Corymbia calophylla	68.5	VS	No	Below Node
406290	6430580	Corymbia calophylla	65.0	SS	Yes	
406347	6430586	Corymbia calophylla	65.9	S	No	+ Cockatoos
406350	6430586	Corymbia calophylla	78.8	SS	No	
406192	6430587	Corymbia calophylla	68.3	SS	Yes	Below Node
406193	6430590	Corymbia calophylla	66.6	S	Yes	
406243	6430604	Corymbia calophylla	52.8	VSE	Yes	
406214	6430612	Corymbia calophylla	66.1	SS	Yes	
406201	6430616	Corymbia calophylla	65.8	S	Yes	
406232	6430616	Corymbia calophylla	59.3	S	No	
406339	6430617	Corymbia calophylla	77.3	SS	No	
406293	6430622	Corymbia calophylla	77.1	H	Yes	
406233	6430626	Corymbia calophylla	51.7	SS/S	No	
406281	6430628	Corymbia calophylla	66.0	H	Yes	
406281	6430628	Corymbia calophylla	50.2	SS	Yes	
406309	6430630	Corymbia calophylla	57.2	SS	Yes	
406295	6430635	Corymbia calophylla	52.8	SS	Yes	
406249	6430639	Corymbia calophylla	66.1	S	Yes	
406257	6430643	Corymbia calophylla	52.1	H	No	

Figure 7: Summary of trees recorded by Mattiske, located in the east-west access route and 20 metre buffer of the access route (Mattiske, 2023)

Facing south across the east west track

Facing south west across the east west track

Figure 8: Photographs of the application area (Mattiske, 2023)

Facing north west from the east west track

Facing north east from the east west track

Figure 9: Photographs of the application area (Mattiske, 2023)

Facing south across the east west track

Facing south west across the east west track

Figure 10: Photographs of the application area (Mattiske, 2023)

Facing west north west from the east west track

Facing east south east over the Bush Forever site

Figure 11: Photographs of the application area (Mattiske, 2023)

Facing south east across the Bush Forever Area

Figure 12: Photographs of the application area (Mattiske, 2023)

Appendix F. Sources of information

F.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)
- 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

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)

F.2. References

Bureau of Meterology (BOM) (2023) Climate Data Online. Available at http://www.bom.gov.au/

Commonwealth of Australia (2019) *National Objectives and Targets for Biodiversity Conservation 2019-2030*, Canberra.

Department of Agriculture, Fisheries and Forestry and Department of Climate Change, Energy, the Environment and Water (DCCEEW) (2022) *Referral guideline for 3 WA threatened black cockatoo species: Carnaby's Cockatoo, Baudin's Cockatoo and the Forest Red-tailed Black- cockatoo.* Department of Agriculture, Water and the Environment, Canberra, February. Available from: Referral guideline for 3 WA threatened black cockatoo species - DCCEEW (Accessed 1 June 2023).

Department of Biodiversity, Conservation and Attractions (2021). *Fauna profile - Numbat Myrmecobius fasciatus*. Available at: https://www.dpaw.wa.gov.au/images/documents/plants-animals/animals/animal_profiles/Numbat_Fauna%20Profile_2021.pdf (Accessed 1 June 2023).

Department of Biodiversity, Conservation and Attractions (DBCA) (2023) *List of Threatened Ecological Communities (TEC's) endorsed by the Minister for the Environment*, 21st December 2022. https://www.dpaw.wa.gov.au/images/plants-animals/threatened-species/threatened_ecological_communities_endorsed_by_the_minister_for_the_environment_December2022.pdf

Department of Biodiversity, Conservation and Attractions (DBCA) (2022) *Species and Communities Branch TEC advice for clearing permit application CPS 9785/1*, received 14 October 2022. Department of Biodiversity, Conservation and Attractions, Western Australia (DWER Ref: DWERDT675231).

Department of Biodiversity, Conservation and Attractions (DBCA) (2023) *Species and Communities Branch TEC advice for clearing permit application CPS 9785/1*, received 14 April 2023. Department of Biodiversity, Conservation and Attractions, Western Australia (DWER Ref: DWERDT768559).

Department of Climate Change, Energy, the Environment and Water (DCCEEW) (2023) *Environment Protection and Biodiversity Conservation Act 1999 List of Threatened Ecological Communities* http://www.environment.gov.au/

Department of Environment and Conservation (DEC) (2012) *Fauna Profiles, Western Bush Wallaby Macropus Irma (Jourdan 1837).* Available at: https://library.dbca.wa.gov.au/static/FullTextFiles/925291.pdf (Accessed 21 June 2023).

Department of Environment Regulation (DER) (2013) *A guide to the assessment of applications to clear native vegetation*. Perth. Available at: https://www.der.wa.gov.au/images/documents/your-environment/native-vegetation/Guidelines/Guide2_assessment_native_veg.pdf (Accessed 1 June 2023).

Department of Planning, Lands and Heritage (DPLH) (2022) *Advice on Bush Forever for CPS 9785/1 from Department of Planning, Lands and Heritage*, received 30 August 2022 (DWER Ref: DWERDT651463).

Department of Water and Environmental Regulation (DWER) (2019) *Procedure: Native vegetation clearing permits*. Joondalup. Available at: https://dwer.wa.gov.au/sites/default/files/Procedure_Native_vegetation_clearing_permits_v1.PDF (Accessed 1 June 2023).

EDS Environmental (2022) *CPS 9785-1 - EDS Environmental report - Supporting Information - Native Vegetation Clearing Permit Supporting Documentation*, received 4 July 2022 (DWER Ref: DWERDT792597).

Environmental Protection Authority (EPA) (2016) *Technical Guidance - Flora and Vegetation Surveys for Environmental Impact Assessment*. Available at: http://www.epa.wa.gov.au/sites/default/files/Policies_and_Guidance/EPA%20Technical%20Guidance%20-%20Flora%20and%20Vegetation%20survey_Dec13.pdf (Accessed 1 June 2023).

Environmental Protection Authority (EPA) (2016) *Technical Guidance – Terrestrial Fauna Surveys.* Available at: https://www.epa.wa.gov.au/sites/default/files/Policies_and_Guidance/Tech%20guidance-%20Terrestrial%20Fauna%20Surveys-Dec-2016.pdf (Accessed 1 June 2023).

Government of Western Australia (2019a) *2018 South West Vegetation Complex Statistics. Current as of March 2019*. WA Department of Biodiversity, Conservation and Attractions, Perth. Available at: https://catalogue.data.wa.gov.au/dataset/dbca (Accessed 1 June 2023).

Government of Western Australia (2019b) *2018 Statewide Vegetation Statistics incorporating the CAR Reserve Analysis (Full Report). Current as of March 2019.* WA Department of Biodiversity, Conservation and Attractions. Available at: https://catalogue.data.wa.gov.au/dataset/dbca-statewide-vegetation-statistics (Accessed 1 June 2023).

Grains Research and Development Corporation (2020) *Assessment and treatment of subsurface acidity*. Available at: https://grdc.com.au/resources-and-publications/grdc-update-papers/tab-content/grdc-update-papers/2020/08/assessment-and-treatment-of-subsurface-acidity (Accessed 1 June 2023).

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

Keighery, B.J. (1994) *Bushland Plant Survey: A Guide to Plant Community Survey for the Community*. Wildflower Society of WA (Inc). Nedlands, Western Australia.

Mattiske, E.M. and Havel, J.J. (1998) *Vegetation Complexes of the South-west Forest Region of Western Australia.* Maps and report prepared as part of the Regional Forest Agreement, Western Australia for the Department of Conservation and Land Management and Environment Australia.

Mattiske Consulting Pty Ltd (2023) *Assessment of flora and vegetation values and assessment of black cockatoos usage on the proposed expansion area for Permacast operations, Byford*, prepared for Permacast, February 2023 (DWER Ref: DWERDT746161).

Molloy, S., Wood, J., Hall, S., Wallrodt, S. and Whisson, G. (2009) *South West Regional Ecological Linkages Technical Report*, Western Australian Local Government Association and Department of Environment and Conservation, Perth.

Northcote, K. H. with Beckmann G G, Bettenay E., Churchward H. M., van Dijk D. C., Dimmock G. M., Hubble G. D., Isbell R. F., McArthur W. M., Murtha G. G., Nicolls K. D., Paton T. R., Thompson C. H., Webb A. A. and Wright M. J. (1960-68) *Atlas of Australian Soils*, Sheets 1 to 10, with explanatory data. CSIRO and Melbourne University Press: Melbourne.

Permacast Pty Ltd (2022a) *Clearing permit application CPS 9785/1*, received 24 June 2022 (DWER Ref: DWERDT638861).

Permacast Pty Ltd (2022b) *CPS 9785-1 - Native Vegetation Clearing Permit Application - Supporting information*, received 23 June 2022 (DWER Ref: DWERDT622101).

Permacast Pty Ltd (2022c) C*PS 9785-1 - DWER correspondence – RFI Response*, received 2 November 2022 (DWER Ref: DWERDT786536).

Schoknecht, N., Tille, P. and Purdie, B. (2004) *Soil-landscape mapping in South-Western Australia – Overview of Methodology and output*s Resource Management Technical Report No. 280. Department of Agriculture.

Shah, B. (2006) *Conservation of Carnaby's Black-Cockatoo on the Swan Coastal Plain, Western Australia*. December 2006. Carnaby's Black-Cockatoo Recovery Project. Birds Australia, Western Australia.

Shepherd, D.P., Beeston, G.R. and Hopkins, A.J.M. (2001) *Native Vegetation in Western Australia, Extent, Type and Status*. Resource Management Technical Report 249. Department of Agriculture, Western Australia.

Shire of Serpentine Jarrahdale (2022) *Comment on application to clear - CPS 9785/1- Shire of Serpentine Jarrahdale,* received 30 August 2022 (DWER Ref: DWERDT651336).

Shire of Serpentine Jarrahdale (2023) *Further comments on application to clear - CPS 9785-1- RE: Comment on Application to clear - CPS 9785/1- Shire of Serpentine Jarrahdale,* received 21 June 2023 (DWER Ref: DWERDT795572).

Threatened Species Scientific Committee (TSSC) (2008) *Threatened Species Scientific Committee listing advice for Neopasiphae simplicior (a short tongued bee)*. Available at: https://www.environment.gov.au/biodiversity/threatened/species/pubs/66821-conservation-advice.pdf (Accessed 1 June 2023).

Threatened Species Scientific Committee (TSSC) (2008) *Threatened Species Scientific Committee listing advice for Leioproctus douglasiellus (a short tongued bee)*. Available at: https://www.environment.gov.au/biodiversity/threatened/species/pubs/66756-conservation-advice.pdf (Accessed 1 June 2023).

Trudgen, M.E. (1991) *Vegetation condition scale* in National Trust (WA) 1993 Urban Bushland Policy. National Trust of Australia (WA), Wildflower Society of WA (Inc.), and the Tree Society (Inc.), Perth.

Valentine, L.E. and Stock, W. (2008) *Food Resources of Carnaby's Black Cockatoo (Calyptorhynchus latirostris) in the Gnangara Sustainability Strategy Study Area*. Edith Cowan University and Department of Environment and Conservation. December 2008.

Western Australian Herbarium (1998-) *FloraBase - the Western Australian Flora*. Department of Biodiversity, Conservation and Attractions, Western Australia. Available at: https://florabase.dpaw.wa.gov.au/ (Accessed 1 June 2023).