GOVERNMENT OF
WESTERN AUSTRALIA

CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

PERMIT DETAILS

Area Permit Number: CPS 9710/1

File Number: DWERVT10054

Duration of Permit: From 1 September 2023 to 1 September 2035

ADVICE NOTE

The funds referred to in condition 5 of this permit are intended for contributing towards the purchase of 0.26 hectares of native vegetation within the Shire of Waroona that is representative wetland dependent native vegetation in very good to excellent condition.

PERMIT HOLDER

Hamersley 1 WA Pty Ltd

LAND ON WHICH CLEARING IS TO BE DONE

Lot 12 on Deposited Plan 23754, East Rockingham

Lot 13 on Deposited Plan 23754, East Rockingham

AUTHORISED ACTIVITY

The permit holder must not clear more than 3.961 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 1 September 2028.

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 conduct clearing activities in a slow, progressive manner from east to west and towards adjacent *native vegetation,* to allow fauna to move into adjacent *native vegetation* ahead of the clearing activity.

5. Offset – monetary contributions to the Offsets Fund

Prior to undertaking any clearing authorised under this permit, the permit holder must provide documentary evidence to the CEO that funding of $3,193 has been transferred to the Department of Water and Environmental Regulation for the purpose of establishing or maintaining native vegetation as an environmental offset for the clearing activities authorised under this permit.

6. Offset – Revegetation and Revegetation

(a) The permit holder must within 24 months of the commencement of *clearing* authorised under this permit, and no later than 1 September 2025, *revegetate* and *rehabilitate*, 3.5 hectares of native vegetation within the area cross-hatched red on Figure 2 of Schedule 1 with:

  (i) flora species which provide suitable foraging and breeding habitat for Carnaby's cockatoo (*Zanda lateriosis)*; and

  (ii) flora species of the Tuart (*Eucalyptus gomphocephala*) woodlands and forests of the Swan Coastal Plain Threatened Ecological Community (TEC) as described in the *Approved Conservation Advice* for this TEC.

(b) The permit holder must, *revegetate* and *rehabilitate* the area cross-hatched red on Figure 2 of Schedule 1 by implementing and adhering to the '*Lot 333 Mandurah Road Warnbro Tuart TEC Revegetation Management Plan'* dated 16 May 2023 (by PGV Environmental), and including but not limited to the following actions:

  (i) ripping the soil prior to planting
  (ii) deliberately *planting* tube stock;
  (iii) ensuring only *local provenance* propagating material are used to *revegetate* and *rehabilitate* the area;
  (iv) establish a minimum of five 10 x 10 metre quadrat monitoring sites;
  (v) water planted vegetation between November and March for the first two years post planting, as required;

(vi) undertake *weed* control activities prior to *planting*, and bi-annually thereafter for ten years until the completion criteria, as listed in Table 1, have been met;
(vii) fencing of the offset site prior to *rehabilitation* and *revegetation* commencing and undertake regular monitoring of the fence for the entire duration of this permit; and
(viii) achieve the following *completion criteria* listed in Table 1 after the ten-year monitoring period for areas *revegetated* and *rehabilitated* under condition 6 of this permit:

Table 1: completion criteria

Aspect	Completion criteria	Monitoring
1) Survival Rate	Survival on average of at least 1.6 Tuart trees per $100m^{2.}$	The number of surviving plants in quadrats to be monitored annually.
2) Species Diversity	At least 12 understory species per $100m^{2,}$ across the revegetation area.	The species and number of plants/m2 in quadrats to be monitored annually.
3) Native vegetation coverage	Native vegetation coverage of 80% of the overall vegetation cover or maturing to a cover of 80%.	Measurement of cover in quadrats to be monitored annually
4) Weeds	Maintain grassy weed cover to less than 20% of the overall vegetation cover per $100m^2$ across the revegetation area. No declared pests or Weeds of National Significance (WoNS) to be present within revegetation area. No woody weed species to be present within revegetation area, including: - Cottonbush (*Gomphocarpus fruticosus*), - Castor Oil Plant (*Ricinus communis*), and - Pampas Grass (*Cortaderia selloana*)	Measurement of cover in quadrats to be monitored bi-annually.
5)Floristic communities	Vegetation across the whole revegetation area to be identifiable as Tuart woodland of the Swan Coastal Plain Threatened Ecological Community (TEC) in very high condition according to the *Approved Conservation Advice* for this TEC.	Statistical analysis of quadrat species data meets the key diagnostic characteristics of relevant ecological/floristic communities (except for the requirement on minimum diameter at breast height of the *established* Tuart trees)

(c) The permit holder must undertake remedial actions for areas *revegetated* and *rehabilitated* where monitoring indicates that revegetation has not met the completion criteria, outlined in Table 1 of condition 6(b)(viii), including:

(i) *revegetate* the area by deliberately *planting* native vegetation that will result in the minimum target in Table 1 of condition 6(b)(viii) and ensuring only *local provenance* propagating material are used; and

(ii) undertake further weed control activities.

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 2.

Table 2: Records that must be kept

No.	Relevant matter	Specifications
1.	In relation to the authorised clearing activities generally	(a) 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; (b) the date that the area was cleared; (c) the size of the area cleared (in hectares); and (d) actions taken to avoid, minimise, and reduce the impacts and extent of clearing in accordance with condition 2; and (e) actions taken to minimise the risk of the introduction and spread of *weeds* and *dieback* in accordance with condition 3; and (f) action taken to undertake slow directional clearing in accordance with condition 4. (g) action taken in accordance with condition 5.
2.	In relation to *revegetation* and *rehabilitation* pursuant to condition 6	(a) description of the revegetation and rehabilitation activities undertaken; (b) the size of the areas revegetated and rehabilitated (in hectares); (c) the date that revegetation and rehabilitation works began; (d) any remediation works undertaken; (e) a copy of environmental specialist monitoring reports; and (f) the date that completion criteria are considered to be met

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
approved conservation advice	means Approved Conservation Advices for the 'Tuart (*Eucalyptus gomphocephala*) woodlands and forests of the Swan Coastal Plain Threatened Ecological Community available at: http://www.environment.gov.au/biodiversity/threatened/communities/pubs/153-conservation-advice.pdf
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.
completion criteria	means a measurable outcome based on suitable reference sites, used to determine *revegetation/rehabilitation* success.
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 the establishment of a seed bed and the introduction of seeds of the desired plant 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 a minimum of two (2) years work experience relevant to the type of environmental advice that an environmental specialist is required to provide under this permit, or who is approved by the CEO as a suitable environmental specialist.
EP Act	*Environmental Protection Act 1986* (WA)
fill	means material used to increase the ground level, or to fill a depression.
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.
planting	means the re-establishment of vegetation by creating favourable soil conditions and *planting* seedlings of the desired species.
native vegetation	has the meaning given under section 3(1) and section 51A of the EP Act.
rehabilitation/ed/ing	means actively managing an area containing native vegetation in order to improve the ecological function of that area.
revegetation/ed/ing	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

Term	Definition
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

J Burton

Jessica Burton
A/MANAGER
NATIVE VEGETATION REGULATION

Officer delegated under Section 20
of the Environmental Protection Act 1986

10 AUGUST 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

Figure 2: Map of the boundary of the area within *revegetation* and *rehabilitation* is to occur

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 9710/1
Permit type:	Area permit
Applicant name:	Hamersley 1 WA Pty Ltd
Application received:	20 April 2022
Application area:	3.961 hectares of native vegetation
Purpose of clearing:	Tyre recycling facility
Method of clearing:	Mechanical clearing
Property:	Lot 12 and 13 on Deposited Plan 23754
Location (LGA area/s):	City of Rockingham
Localities (suburb/s):	East Rockingham

1.2. Description of clearing activities

The application is to clear native vegetation for the purpose of constructing a tyre recycling facility. The application area is bound to the north and east by cleared land in the Clipper Precinct of the Rockingham Industry Zone (RIZ), to the south by cleared rural land and to the west by native vegetation in the RIZ Conservation Area.

Lot 12 and 13 have been impacted by previous industrial infrastructure comprising a large shed and some disused infrastructure associated with a wool scouring plant that was built between 1995 and 2000. The shed and yards are now used for a different purpose.

The re-development of the proposal site occurs within the Rockingham Industrial Zone which occurs within the Greater Kwinana Industrial Area. This area produces outputs of 4.3 billion pern annum and exports 1.6 billion a year. It generates total economic activity worth 15 billion and provides 3600 jobs mainly of local residence of Kwinana region.

The proposed facility is to receive and process up to 45,000 tonnes per annum (tpa) of ‘end of life’ tyres and medium quality conveyor belts and will recycles the waste into a range of products used in civil projects. The facility will also supply recycled mesh rubber in the manufacture of rubber modified bitumen spray seals for roads and is an accredited supply to MRWA. The end product is also used for flooring in the dairy industry and playground surfaces.

1.3. Decision on application

Decision:	Granted
Decision date:	10 August 2023
Decision area:	3.91 hectares of native vegetation, as depicted in Section 1.5, below.

1.4. Reasons for decision

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

In making this decision, the Delegated Officer had regard for the site characteristics (see Appendix B), relevant datasets (see Appendix G.1), the findings of a flora and vegetation survey, threatened ecological community and black cockatoo habitat assessment and wetland evaluation, advice received from DBCA, the clearing principles set out in Schedule 5 of the EP Act (see Appendix C), relevant planning instruments and any other matters considered relevant to the assessment (see Section 3). The Delegated Officer also took into consideration that the purpose of the clearing is for a tyre recycling facility that proposes to recycle up to 45,000 tonnes per annum (tpa) of 'end of life' tyres and conveyor belts into products used in civil projects and for mesh rubber in the manufacture of rubber modified bitumen spray seals for roads for Main Roads Western Australia (MRWA).

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:

- the loss of 1.4 hectares of moderate quality black cockatoo foraging habitat
- the loss of 58 future potential black cockatoo breeding trees
- the loss of 3.566 hectares of native vegetation that is representative of the Tuart Woodland TEC in poor to moderate condition, in accordance with the Conservation Advice for this TEC.
- the loss of 0.06 hectares of native vegetation that is mapped as Conservation Category Wetland (CCW).

In accordance with the Government of Western Australia's (WA) Environmental Offsets Policy and Environmental Offsets Guidelines, the Delegated Officer determined that the following offsets are required to address the above significant residual impacts:

- Revegetaiton of 3.5 hectares of the Tuart Woodland TEC to very high condition, in accodance wth the Coservation Advice for this TEC, and will comprise foraging and breeding habitat flora species (including *Banksia* and *Hakea* species) for the Carnaby's cockatoo. The revegetation is to be undertaken within Rockingham Lakes Regional Park which is also a Bush Forever site and will be protected in perpenturity.

- Provision of a monetary contribution to the WA Offset Fund which will be used for the purchase of 0.26 hectares of native vegetation within the Shire of Waroona that consists of wetland dependent vegetation in very good to excellent condition, to be protected in perpetuity and ceded to Department of Biodiversity, Conservation and Attractions (DBCA).

The Delegated Officer is satisfied that the environmental impacts associated with this project have been appropriately avoided, minimised and mitigated and the significant residual impacts have been offset. It is considered that the clearing is unlikely to lead to an unacceptable risk to the environment. Further information on the suitability of the offsets provided are summarised in Section 4.

The Delegated Officer decided to grant this clearing permit subject to the following conditions which have been imposed on the clearing permit, to manage and address the impacts of clearing:

- avoid, minimise to reduce the impact and extent of clearing;
- weed and dieback management to minimise the risk of introduction and spread of weeds and dieback;
- fauna management to provide fauna an opportunity to move into adjacent native vegetation ahead of the clearing activity; and
- offsetting to counterbalance the significant residual impacts of the proposed clearing.

1.5. Site map

Figure 1 Map of the application area

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

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)

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)

2 Detailed assessment of application

2.1. Avoidance and mitigation measures

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.

The applicant has advised that:

- The native vegetation proposed to be cleared has a history of disturbance with a large proportion of the application area having been previously cleared;
- A flora and vegetation survey, tuart woodland TEC assessment and black cockatoo habitat assessment and wetland evaluation has been undertaken;
- An Urban Water Management Plan will guide the development and will address any surface and groundwater risks associated with redeveloping the site. All stormwater will be retained and infiltrated on site and no overflow of water will be allowed into adjoining bushland.
- A Flora and Fauna Management Plan will be developed which will include monitoring of adjacent bushland to ensure impacts are minimised to adjacent areas,
- Area proposed to be cleared will be demarcated prior to clearing;
- Weed and dieback measures will be put in place to control spread of weeds and dieback into adjacent areas;
- The landscaping post development on site will include the use Banksia spp. as an alternative to the exotic species.
- There is an existing fence around the application area and is 1.8m high chain mesh fence. Dust curtains will be installed along the western side of the Lots to minimise any airborne dust during construction. Fencing will be maintained, and any breaches noted during visual inspections will be repaired in a timely fashion to ensure that the barrier remains in place. At the conclusion of development, the dust curtains will be taken down. The existing fence meets the design requirements from the City of Rockingham.
- A 20 km per hr speed limit during constriction and 50 km per hr limit in the industrial areas will be implemented to prevent vehicle bird strike (PGV, 2023a).

After consideration of avoidance and mitigation measures, it was determined that significant residual impacts to the Tuart woodland TEC, foraging and future breeding habitat for Carnaby's cockatoo and a small area mapped as conservation category wetland remain and that an appropriate offset is required.

In accordance with the Government of Western Australia's *Environmental Offsets Policy* and *Environmental Offsets Guidelines*, these significant residual impacts have been addressed through the conditioning of environmental offset requirements on the permit. The nature and suitability of the offset provided are summarised in Section 4.

2.2. Assessment of impacts on environmental values

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

The assessment against the clearing principles (see **Error! Reference source not found.** C) identified that the impacts of the proposed clearing present a risk to biological values (fauna, flora and vegetation) and water resources. 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.

2.2.1. Biological values (biodiversity, fauna) - Clearing Principles (a) and (b)

Assessment:

Fauna
According to available databases, a total of 50 conservation significant fauna species have been recorded within the local area. Noting the habitat requirements, distribution of the recorded species, the mapped vegetation types and the condition of the vegetation within the application area, as well as the findings of the black cockatoo habitat assessment (PGV Environmental, 2022), it is considered that the application area is likely to comprise suitable habitat for the following species:

- Carnaby's cockatoo (*Zanda latirostris*) – Endangered (EPBC Act and BC Act)
- Forest red-tailed black cockatoo (Calyptorhynchus banksii naso) – Vulnerable (EPBC Act and BC Act)
- Quenda (Isoodon fusciventer) – Priority 4 (DBCA)
- Perth lined skink (Lerista lineata) – Priority 3 (DBCA); and
- Black-striped snake (Neelaps calonotos) – Priority 3 (DBCA)
- Western Brush Wallaby (*Macropus Irma*) – Priority 4 (DBCA)

Black cockatoos

The application area falls within the modelled distribution Carnaby's cockatoo (*Zanda latirostris*) and forest red-tailed black cockatoo (*Calyptorhynchus banksia* subsp. *naso*) (collectively referred to as 'black cockatoos' herein this report). The seasonal movements of black cockatoos mean they require large areas of habitat for breeding, night roosting and foraging, as well as connectivity between these habitats to assist their movement through the landscape (Commonwealth of Australia, 2012).

The application area may provide suitable breeding habitat for black cockatoos which includes trees that either have a suitable nest hollow or are of a suitable diameter at breast height (DBH) (of 500 millimetres) to develop a nest hollow (Commonwealth of Australia, 2012). Carnaby's cockatoo typically nests in eucalypt woodlands, primarily in the hollows of wandoo (Eucalyptus wandoo), salmon gum (E. salmonophloia) and marri (Corymbia calophylla) (Groom, 2015). Black cockatoos are also known to develop nests in Tuart trees (*Eucalyptus gomphocephala)* (DAWE 2022)

A black cockatoo assessment identified 58 Tuart trees with the diameter at breast height (DBH) greater than 500 millimetres within the application area. Although none of these trees had suitable hollows, these 58 trees are considered to be potential breeding trees (PGV Environmental, 2022).

Noting typical food resources for black cockatoos, the application area contains approximately 1.53 hectares of foraging habitat for these species. Forest red-tailed black cockatoo feed on the seeds of marri and jarrah, as well as other Eucalyptus species and Allocasuarina cones (Commonwealth of Australia, 2012). Carnaby's cockatoo feeds on the seeds, nuts and flowers of a large variety of plants including Proteaceous species (Banksia, Hakea and Grevillea), as well as Allocasuarina and Eucalyptus species, Corymbia calophylla and a range of introduced species (Valentine and Stock, 2008).

A black cockatoo habitat assessment identified one suitable black cockatoo foraging species within the application area to include tuarts (*E. gomphocephala*) (PGV Environmental, 2022). No evidence of foraging by black cockatoo's was identified on site. The foraging habitat on the site is considered to be low to moderate quality foraging habitat for the Carnaby's cockatoo. Forest red-tailed black cockatoo and Baudin's are not known to forage on Tuart trees (PGV Environmental, 2022).

The application area is considered to provide low to moderate foraging habitat that supports black cockatoo breeding. While breeding, black cockatoos will generally forage within a 6–12 kilometre radius of their nesting site (Commonwealth of Australia, 2012; EPA, 2019). The application area is located just outside the mapped confirmed breeding area for Carnaby's cockatoo and is within 8.8 km from a confirmed breeding hollow.

The assessment also determined that the application area is considered to provide foraging habitat that supports black cockatoo roosting sites. Individual roost sites need suitable foraging habitat and a water source within 6 kilometres (EPA. 2019). Overlapping foraging ranges within 12 kilometres also support roosting sites and maintain habitat connectivity and movement across the landscape (EPA, 2019). Available databased indicate that there are 15 known roosting sites for black cockatoos within the local area with a total of 9 within a 6 km radius.

There was no evidence of roosting observed during the site assessment on 1 July 2021 (PGV Environmental, 2022).

It is estimated that the local area comprises approximately 22407 hectares of native vegetation which is mapped as black cockatoo foraging habitat. The application area represents approximately 0.006 per cent of this extent. However, considering that the local area is highly cleared with only 32 percent pre-European vegetation extent remaining, the application area is considered significant in supporting the viability of the local populations of black cockatoos.

Considering the above the application area is considered to represent critical habitat for black cockatoos.

Other conservation significant fauna

Noting the vegetation identified (PGV Environmental, 2023a) within the application area and its quality, the habitat requirements and distribution of the below species, the application area provides suitable habitat for each of these species (Table 1). Taking into consideration the extent of the proposed clearing relative to the surrounding native vegetation, the habitat within the application area is not considered significant in the local context.

Whilst not considered significant habitat, impacts to individual terrestrial fauna may occur at the time of clearing. To minimise these potential impacts, the applicant will be required to undertake slow, progressive one directional clearing to allow terrestrial fauna to disperse ahead of the clearing activity should they occur on site at the time of clearing.

A number of conservation significant marine, coastal, waterbirds have been recorded within the local area, the habitat for these species are widespread and varied and the proposed clearing is not likely to impact upon significant habitat for these species.

Table 1: Fauna descriptions of species likely to have habitat within the application area

Quenda	The Quenda is listed as priority 4 by DBCA, is known to inhabit scrubby, swampy vegetation with low, dense understorey, located nearby water courses, pasture, or forest/woodland that is regularly burnt and is in areas of pasture and cropland lying close to dense cover. Populations which inhabit jarrah and wandoo forests are usually associated with watercourses. Quendas will thrive in more open habitat subject to exotic predator control. For example, quenda have become abundant in Lake Magenta Nature Reserve (Western Australia) in Mallee scrub and woodland following fox control (Department of Conservation, 2012a).
Black-striped snake, black-striped burrowing snake	Black-striped snake, black-striped burrowing snake (*Neelaps calonotos*) is one of five species of small burrowing elapids in the Perth region. The species is more abundant north of the Swan River, whereas records are comparatively scarcer to the south. *N. calonotos* typically occupy Banksia woodlands atop soft calcareous sand and, to a lesser extent, coastal heathlands and shrublands. Although relatively abundant in both habitats, scientists recorded higher capture rates of *N. calonotos* in Banksia woodlands which are also the preferred habitat for skinks, such as *Aprasia* and *Lerista spp*., which are exclusive food resources for *N. calonotos*. *N. calonotos* is rarely found in small urban bushland remnants as these are more susceptible to weed infestation, bushfires and predation by feral species, with weeds having an adverse effect on the composition of microhabitats required by fossorial species (He, 2021).
Western Brush Wallaby	The Western Brush Wallaby's optimum habitat is open forest or woodland, particularly favouring open, seasonally-wet flats with low grasses and open scrubby thickets. It is also found in some areas of mallee and heath-land, and is uncommon in karri forest (DEC, 2012).
Perth slider, lined skink	Perth slider, lined skink (*Lerista lineata*) is largely restricted to the Swan Coastal Plain including Garden and Rottnest Island, mostly within the highly developed southern Perth Metropolitan Area. The species likely has poor dispersal abilities and relies on litter ground cover and other debris for shelter, which makes it vulnerable to fire. *L. lineata* is known to occur in several bush remnants near Perth, including Forrestdale Lake Nature Reserve, Jandakot Airport, Modong Nature Reserve and

	Woodman Point. The species unlikely occupies small remnants of native vegetation (Threatened Species Scientific Committee, 2020).

Conclusion
Based on the above assessment, the proposed clearing will result in:

- potential introduction and spread of weeds into adjacent vegetation, which could impact on the quality of the adjacent vegetation and its habitat values;
- will impact upon individual conservation significant fauna if present during clearing activities;
- loss of 1.4 hectares of low to moderate black cockatoo foraging habitat; and
- loss of 58 future potential black cockatoo breeding trees.

Conditions

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

- weed and dieback management to minimise the risk of introduction and spread of weeds and dieback;
- fauna management to provide fauna an opportunity to move into adjacent native vegetation ahead of the clearing activity; and
- offsetting to counterbalance the significant residual impacts to black cockatoos.

The Delegated Officer determined that the significant residual impacts can be addressed through a suitable offset (as conditioned on the clearing permit). Section 4 of this report provides further information on the offset provided.

2.2.2. Biological values (biodiversity, flora and threatened ecological communities) - Clearing Principles (a) and (d)

Assessment:
Flora

According to available databases, three threatened and 17 Priority flora species are known to occur within the local area. To confirm the presence/absence of these species within the application area, the applicant commissioned PGV Environmental (2023a) to undertake a flora and vegetation survey.

The PGV Environmental (2023a) flora and vegetation survey was undertaken on two occasions on 1 July 2021 and 15 October 2021, which is considered an appropriate time for vegetation surveys on the Swan Coastal Plain (EPA, 2016). The survey identified a total of 55 species, 13 native and 42 introduced species. Of these, no flora listed as threatened or Priority by DBCA was identified within the application area.

Noting the survey efforts, survey timing and flowering periods of the species considered as potentially occurring within the application area, it is considered that the application area is unlikely to provide habitat for other conservation significant flora known to occur within the local area.

Threatened Ecological Community (TEC)
Tuart Woodlands

A TEC Assessment undertaken by PGV Environmental (2022) determined that one patch of 'Tuart (*Eucalyptus gomphocephala*) woodlands and forests of the Swan Coastal Plain' (Tuart woodland TEC) occurs within the application area. The proposed clearing will result in the loss of 3.566 hectares of native vegetation which represents the Tuart Woodland TEC.

The proposed clearing of 3.556 hectares of the Tuart Woodlands ecological community is likely considered a significant impact on a local scale. The cumulative impacts to this ecological community from land clearing in the local area have resulted in a considerable reduction in size of what was once a much larger patch that likely would have once extended to the north and southeast before being cleared. The loss of the ecological community may also result in increased risk to the viability of the remaining patch of the ecological community which extends to the southwest from weed invasion, rubbish and hydrological changes (DBCA, 2022).

The vegetation representative of this TEC is in a completely degraded (Keighery, 1994) condition, however the vegetation identified as 'Eg' in the flora and vegetation survey meets the definition of the Tuart Woodlands TEC, as the size of the patch is larger than 5 hectares minimum required for a patch of Tuart Woodland TEC in poor condition, in accordance with the Conservation Advice for this TEC. Although the patch of TEC proposed to be cleared will need intensive management to improve its condition, it has important ecological value at a regional scale as it

provides linkage to the remaining area of the ecological community which extends to the southwest and as a vegetation buffer to Reserve 52979 on the western boundary (DBCA, 2022).

FCT 19b

An occurrence of the 'Woodlands over Sedgelands in Holocene dune swales of the southern Swan Coastal Plain (FCT 19b) threatened ecological community has been mapped adjacent to the proposed clearing area.

A wetland evaluation study was undertaken by the applicant to determine if the proposed clearing would impact the adjacent TEC as the wetland mapped within the application area and the adjacent FCT19b TEC may be hydrologically linked.

The wetland evaluation study which including a hydrological assessment was undertaken that reviewed available information including groundwater flow and behaviour, geotechnical information, wetland conditions, existing management plans, and stormwater management techniques to provide an assessment of potential impacts. The wetland evaluation determined the following:

- The maximum historical groundwater level under the site would be 1m below surface;
- The average annual maximum groundwater level (AAMGL) for the site is at approximately 2m AHD, or 2m below the existing natural surface. This depth is greater than would normally be expected for a wetland.
- Groundwater investigations for the Rockingham Industry Zone found the groundwater gradient to be very flat with a minor gradient to the northeast locally, which indicates flow at the site to be away from the conservation area containing wetlands and SCP 19 to the west.
- The area of vegetation within the site proposed for clearing represents only a minor proportion compared to the total conservation area located to the west and the wider catchment contributing to the local hydrology.
- On this basis and considering the site characteristics described above, the proposed clearing is therefore considered unlikely to have any noticeable influence on regional groundwater levels or flow direction in relation to the conservation area to the west of the site; and
- Based on the above assessment, it is considered that clearing within the site will not have any adverse effect on the hydrological behaviour of the superficial aquifer locally, with groundwater levels within the conservation area continuing to vary seasonally and annually within its current range of variability (PGV Environmental, 2023b).

Given the above, and that the vegetation proposed to be clearing has been historically impacted, partially cleared and is in a degraded (Keighery, 199) condition, the proposed clearing is not likely to have a significant impact on this adjacent TEC. The proposed clearing may indirectly impact this TEC through the spread of weeds and dieback. Weed and dieback management practices will help mitigate this risk.

Conclusion
Based on the above assessment, the proposed clearing will result in the loss of 3.566 hectares of native vegetation which represents the Tuart Woodland TEC in poor to moderate condition.

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

- Weed and dieback management condition to minimise the risk of introduction and spread of weeds and dieback; and
- offset conditions to counterbalance the significant residual impacts of the clearing.

Delegated Officer determined that the significant residual impacts can be addressed through a suitable offset (as conditioned on the clearing permit). Section 4 of this report provides further information on the offset provided.

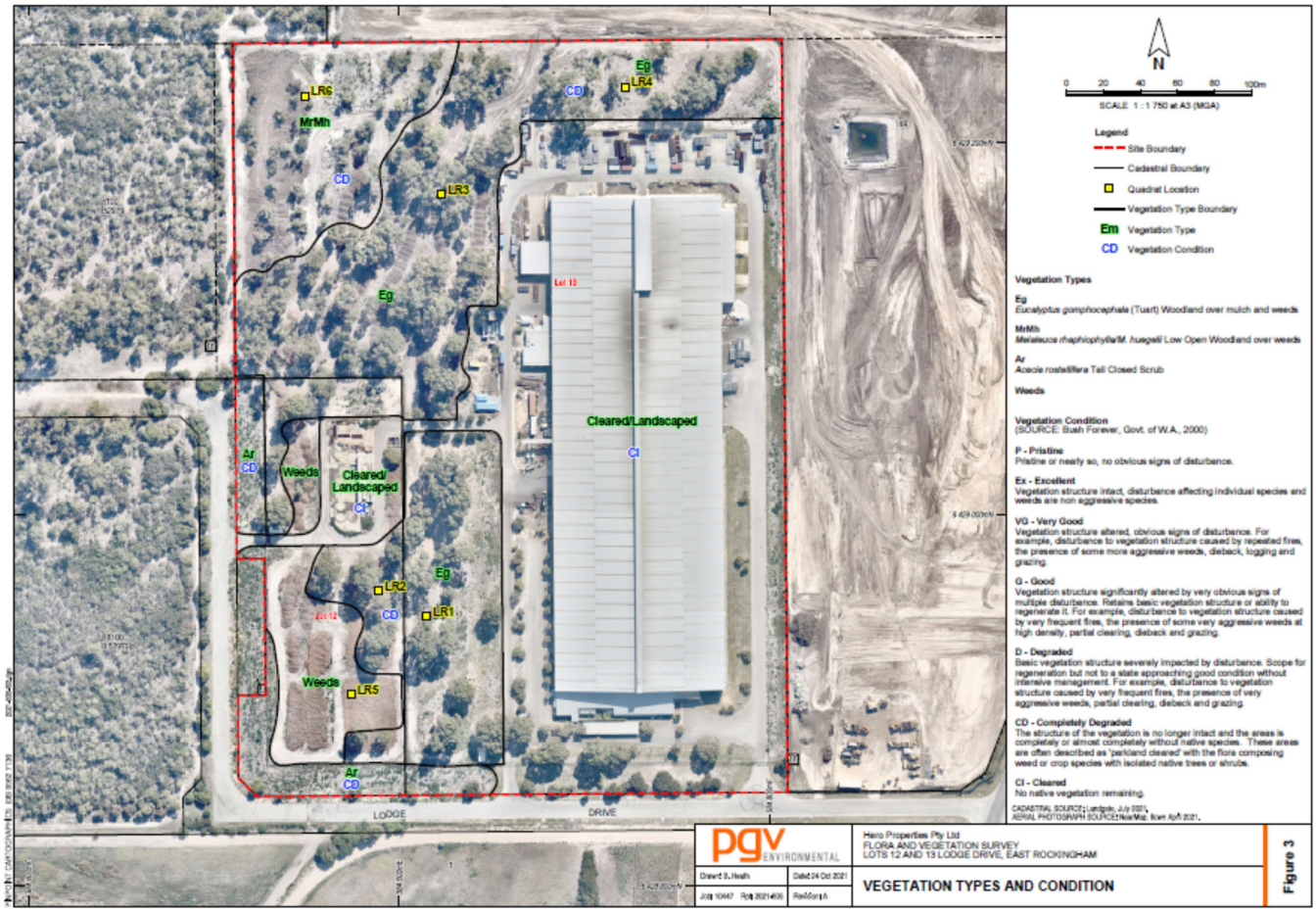
2.2.3. Biological values (wetlands) - Clearing Principles (f)

Assessment:
Two conservation category wetlands are mapped within the application area. Conservation category wetlands support a high level of ecological attributes and function through various mechanisms (Water and Rivers Commission, 2001). Approximately 0.5 hectares of the mapped wetland is proposed to be cleared.

The two conservation category wetlands (CCW) (UFI 6621 and UFI 6383) have been highly modified through clearing and grazing between 1961 and 1995 and then by the construction of a road that divided the eastern portion of the wetlands off from the larger main sections to the west of the application area, between 1995 and 2000. UFI 6383

extends into the site by 10-17m and UFI 6621 by 140m, both are separated by a road from the western extent of the main portion of the wetlands.

The Flora and Vegetation survey report by PGV (2023a) (see Figure 2 below) identifies the vegetation within the mapped wetland as occurring in predominantly degraded to completely degraded (Keighery, 1994) condition and has been significantly impacted by historical clearing and weed evasion (PGV, 2023a). The vegetation within the mapped wetland consists of areas of Tuart trees over grassy weeds and areas of Acacia dominated shrubland (PGV, 2023a).



A wetland evaluation study was undertaken by PGV Environmental (2023b) in accordance with 'A methodology for the evaluation of wetlands on the Swan Coastal Plain, Western Australia (DBCA, 2017). PGV Environmental (2023b) advised that the two wetlands mapped as overlapping the site do not meet the preliminary evaluation criteria of automatic identification as a CCW. According to the secondary evaluation criteria the two wetlands were determined to be Resource Enhancement wetland management category (REW).

DBCA assessed the wetland evaluation study and agreed that within the application area, most of the mapped wetland areas contain values commensurate with a REW category (DBCA, 2023a). REWs are wetlands which have been partially modified but still retain wetland ecological attributes and functions (Water and Rivers Commission, 2001). However, DBCA advised that recent aerial imagery indicates that two small portions (approximately 0.06 hectares) (see Figure 2 below) appear to have more vegetative cover now then in 2021, when the survey was conducted by PGV. Although these two areas were included in the survey in 2021, given the change in vegetative cover and limited photographs or quadrat data supplied, DBCA determined that there is insufficient evidence to support a change in management category from CCW to REW of these two small areas (DBCA, 2023b).

Figure 2: Red outlined areas indicate portion of wetlands that retain conservation category. Green hatched area indicates location of mapped wetland within the application area. The blue hatched area is the area proposed to be cleared.

Conclusion

Based on the above assessment, the proposed clearing will result in the loss of 0.44 hectares of native vegetation mapped as growing within two REWs and 0.06 hectares that is mapped as being consistent with a CCW. Given the degraded to completely degraded (Keighery, 1994) condition of the REW portion of the application area which has been impacted by current and previous infrastructure, the proposed clearing of these areas is not considered to impact on significant wetland values. While the clearing of 0.06 hectares of native vegetation mapped as CCW is relatively small, the Delegated Officer considers that the clearing of any vegetation mapped as CCW to be a significant residual impact.

Conditions

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

- Weed and dieback management condition to minimise the risk of introduction and spread of weeds and dieback into adjacent wetland areas.
- Offset to counterbalance impact to 0.06 ha of mapped CCW.

The Delegated Officer determined that the significant residual impact to the CCW mapped area can be addressed through a suitable offset (as conditioned on the clearing permit). Section 4 of this report provides further information on the offset provided.

2.3. Relevant planning instruments and other matters

The application area falls within the Cockburn Groundwater Area, as proclaimed under the *Rights in Water and Irrigation Act 1914* (RIWI Act). The construction of a well and to take groundwater for non-domestic purposes, such as dust suppression for construction and irrigation of landscaping, would require a licence from DWER. There is an existing licence to take water GWL206642 for Lot 13. The department has not received any amendment or new applications for the properties to date. The groundwater resource in this area is fully allocated and therefore the department would be unlikely to grant new requests for water. However, the department can consider temporary licences for dewatering, earthworks and dust suppression (DWER, 2022).

The Metro Outer Joint Development Assessment Panel granted planning approval accordance with regulation 8 of the *Planning and Development (Development Assessment Panels) Regulations 2011*, on 9 May 2023 for a 'proposed tyre recycling facility' within Lot 12 (No.4) ad 13 (No.6) Lodge Drive, East Rockingham.

The Department of Climate Change, Energy, the Environment and Water (DCCEEW, 2023) approved commercial development of Lots 12 and 13 Lodge Drive, East Rockingham, WA (EPBC 2021/9069) under section 133(1) of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The approval authorised the action to construct and operate a commercial site on Lots 12 and 13 Lodge Drive, East Rockingham, Western Australia subject to conditions.

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

The City of Cockburn (2022) advised that that multiple Aboriginal scarred trees have been recently identified in the RIZ area but not within the area under application. Under section s17 of the *Aboriginal Heritage Act 1972* (Western Australia), it is an offence to damage or disturb an Aboriginal scarred tree. As such, the following recommendations are applicable:

- The applicant is advised that Aboriginal scarred trees may be present on-site, which are protected under the *Aboriginal Heritage Act 1972*;
- The applicant is encouraged to engage a suitably qualified heritage consultant to determine whether any scarred trees are present on-site; and
- The applicant is reminded of its obligation to obtain the necessary heritage approvals before undertaking clearing on the site.

The applicant advised that they are aware of the occurrences of the Scar Trees within the Rockingham Industrial Zone and that one occurs to the north of the site and will not be impacted by the proposed clearing.

3 Suitability of offsets

Through the detailed assessment outlined in Section 3.2 above, the Delegated Officer has determined that the following significant residual impacts remain after the application of the avoidance and mitigation measures summarised in Section 3.1:

- Loss of 1.4 hectares of native vegetation that provides low to moderate quality foraging habitat for Carnaby's cockatoo
- Loss of 3.566 hectares of native vegetation that is representative of the Tuart Woodland TEC in poor to moderate condition; and
- 58 trees that provide potential future breeding habitat for Carnaby's cockatoos.
- 0.06 hectares mapped as conservation category wetland

To counterbalance the above impacts impacts and as a result of discussion with the applicant and DBCA, the following offset has been proposed:

- Revegetaiton of 3.5 hectares of the Tuart Woodland TEC to very high condition in accodance with the Conservation Advice for this TEC, which will comprise foraging and breeding habitat (including Banksia and Hakea species) for the Carnaby's cockatoo. The revegetation is proposed within Rockingham Lakes Regional Park which is also a Bush Forever site (Map below). An appropate revegetation plan has been provided by the applicant to support the revegetation offset.

- Provision of a monetary contribution to the WA Offset Fund, prior to clearing, which will be used for the purchase of 0.26 hectares of native vegetation within the Shire of Waroona that consists of wetland dependent vegetation in very good to excellent condition, to be protected in perpetuity and ceded to Department of Biodiversity, Conservation and Attractions (DBCA).

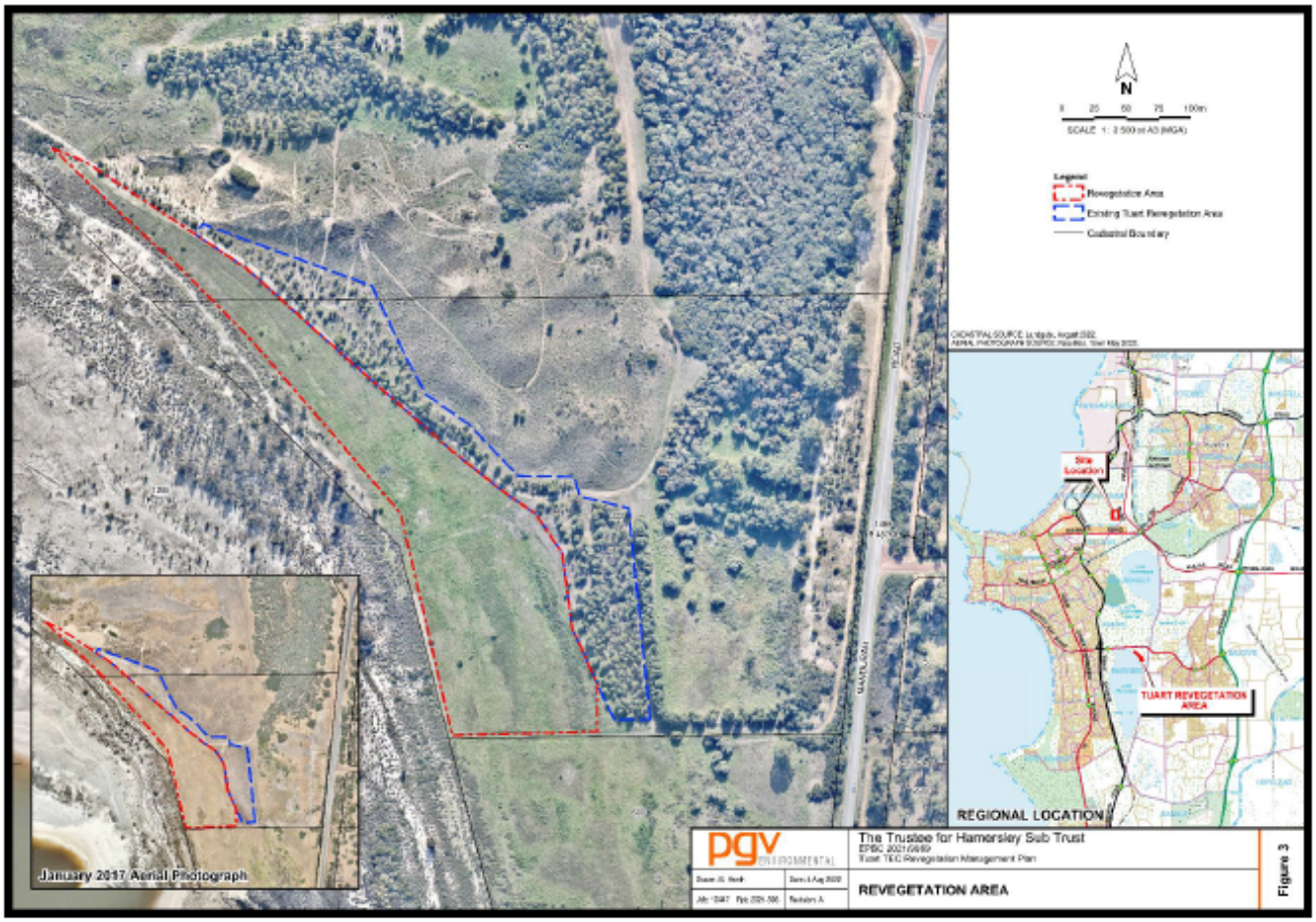


Figure 2. Location of site for revegetation offset.

WA Offset Metric calculations

In assessing whether the proposed offset is adequately proportionate to the significance of the environmental values being impacted, calculations using the WA Offsets calculator were undertaken. These calculations indicate that the revegetation offset and monetary contribution to the offset fund proposed, are sufficient to adequately counterbalance the significant residual impacts of the proposed clearing. Justification for the values used in the offset calculation are provided in Appendix E.

End

Appendix A. Additional information provided by applicant

Summary of comments	Consideration of comment
Avoidance, minimisation and mitigation measures and the need for the clearing provided by applicant.	Information has been included under section 2.1
Supporting information – wetland evaluation (PGV Environmental, 2023b)	Information presented in the survey report has been incorporated into the assessment where relevant.
Supporting information – Offset proposal (PGV Environmental 2023b) and revegetation management plan (PGV Environmental, 2023c)	Information presented has been incorporated into the assessment under section 3.

Appendix B. Site characteristics

B.1. Site characteristics

Characteristic	Details
Local context	The area proposed to be cleared is a 3.556-hectare patch of native vegetation in the intensive land use zone of Western Australia. The site is bound to the north and east by cleared land in the Clipper Precinct of the Rockingham Industry Zone (RIZ), to the south by cleared rural land and to the west by native vegetation in the RIZ Conservation Area. The vegetation type was assessed as being part of the Tuart Woodlands and Forests of the Swan Coastal Plain TEC which is listed as Critically Endangered under the Commonwealth EPBC Act. The proposed clearing area is mapped as containing Conservation Category Wetlands in the south-west portion of the site. Aerial imagery indicates the local area (10-kilometre radius from the centre of the area proposed to be cleared) retains approximately 32.5 per cent of the original native vegetation cover.
Ecological linkage	The application area does not intersect any formally mapped ecological linkages. Given the application area consists of remnant native vegetation surrounded by highly disturbed area, it is not considered to be contributing significantly to the values of the nearby mapped linkages or to any formal ecological linkages in the local area.
Conservation areas	The closest conservation area is the DBCA legislated tenure (id 7621), located approximately 750 metres east of the application area.
Vegetation description	A flora and vegetation survey (PGV Environmental, 2023a) indicates the vegetation within the proposed clearing area consists of *Eucalyptus gomphocephala* (Tuart) Woodland over Mulch and Weeds. One area of *Melaleuca rhaphiophylla/M. huegelii* Low Open Woodland over weeds occurred in the north and south west corners. The site has a high density of weed coverage (PGV Environmental, 2023a). Representative photos and the full survey descriptions and maps are available in Appendix FF. This is consistent with the Swan Coastal Plain vegetation association Quindalup Complex mapped vegetation type which is described as Coastal dune complex consisting mainly of two alliances - the strand and fore-dune alliance and the mobile and stable dune alliance. Local variations include the low closed forest of *Melaleuca lanceolata* (Rottnest Teatree) - *Callitris preissii* (Rottnest Island Pine), the closed scrub of *Acacia rostellifera* (Summer-scented Wattle) and the low closed *Agonis flexuosa* (Peppermint) forest of Geographe Bay.

Characteristic	Details
	The mapped vegetation type retain approximately 60.49 per cent of the original extent (Government of Western Australia, 2019b).
Vegetation condition	Vegetation survey (PGV Environmental, 2023a) indicates the vegetation within the proposed clearing area is in Completely Degraded (Keighery, 1994) condition due to historic clearing, very low native understorey species and high weed densities. This condition is described as: • 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. The full Keighery (1994) condition rating scale is provided in Appendix DD. The full survey descriptions and mapping are available in Appendix FF.
Climate and landform	• Rainfall – Mean Annual: 800 millimetres • Evapotranspiration – Areal Actual: 700 millimetres • Topography: The site is flat at around 4m AHD, however the site's natural contours have been modified as a result of earthworks for past land use and importation of mulch (PGV Environmental, 2023).
Soil description	The soil is mapped as Quindalup Phase 3 (211Qu) Safety Bay sands which is described as calcareous deep sands and yellow sands and coastal scrub (DPIRD 2022).
Land degradation risk	The mapped soil subsystem has elevated risks of water repel; all remaining land degradation risks are low (DPIRD, 2021). Given the mapped land degradation risks and the purpose for clearing the risks of appreciable land degradation are very low.
Waterbodies	The desktop assessment, aerial imagery and vegetation survey indicated that the areas proposed to clear contain two Conservation Category Wetlands (CCW) in the south-west part of the site. The areas now contain a layer of mulch, up to 0.5m thick (PGV Environmental, 2023a).
Hydrogeography	The application area falls within the Cockburn Groundwater Area, as proclaimed under the *Rights in Water and Irrigation Act 1914* (RIWI Act).
Flora	According to available databases, a total of three flora species listed as threatened under the BC Act and 17 priority listed flora by DBCA have been recorded within the local area. The vegetation identified 55 plant species consisting of 13 native and 42 introduced species. The survey did not identify any species listed as a Threatened or Priority species (PGV Environmental, 2023a).
Ecological communities	The desktop assessment identified two ecological communities namely: • Tuart woodlands (Tuart (*Eucalyptus gomphocephala)* woodlands and forests of the Swan Coastal Plain)- Critically Endangered • SCP19b (Sedgelands in Holocene dune swales of the southern Swan Coastal Plain)- Endangered The application area is mapped within Tuart woodlands TEC and located adjacent to a mapped occurrence of the SCO19b ecological community.
Fauna	According to available databases, a total of 50 conservation significant fauna species have been recorded within the local area. Given the boundary of the local area overlaps the ocean, the majority of the recorded species are exclusively associated

Characteristic	Details
	with marine, estuarine or freshwater habitats that do not occur within the application area. Noting the habitat requirements, distribution of the recorded species, the mapped vegetation type, the condition of the vegetation within the application area, and the findings of the flora and vegetation survey (PGV, Environmental 2023a) the application area is likely to comprise suitable habitat for: • Carnaby's cockatoo (*Zanda latirostris*) – Endangered (EPBC Act and BC Act) • Forest red-tailed black cockatoo (Calyptorhynchus banksii naso) – Vulnerable (EPBC Act and BC Act) • Quenda (Isoodon fusciventer) – Priority 4 (DBCA) • Perth lined skink (Lerista lineata) – Priority 3 (DBCA); and • Black-striped snake (Neelaps calonotos) – Priority 3 (DBCA) • Western Brush Wallaby (*Macropus Irma*) – Priority 4 (DBCA)

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	10,418.06	3043.13	29.21	855.93	8.22
Vegetation complex					
Quindulup	54,573.87	33,011.64	60.49	5994.64	10.98
Local area					
10km radius			32.50	-	-

*Government of Western Australia (2019a)

**Government of Western Australia (2019b)

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 application area contains values which are considered to indicate a high level of biodiversity; namely, vegetation representative of two listed TEC's and significant habitat for conservation significant fauna.	At variance	Yes *Refer to Section 3.2.1 and 3.2.2, above.*

Assessment against the clearing principles	Variance level	Is further consideration required?
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 proposed clearing area contains significant foraging habitat for Carnaby's and forest red-tailed black cockatoos. Ground dwelling conservation significant fauna may also utilise the application area.	At variance	Yes *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."* Assessment: The application area is unlikely to contain habitat for threatened flora species due to available habitats within the application area and based on an appropriately timed flora survey of the application area.	Not likely to be 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."* Assessment: The proposed clearing area contain species composition indicative of a TEC listed under the BC Act and/or EPBC Act.	At variance	Yes *Refer to Section 3.2.2, 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: *Example:* The extent of the mapped vegetation type and native vegetation in the local area is consistent 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.	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 not likely to have an impact on the environmental values of nearby conservation areas.	Not likely to be at variance	No
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: The application is mapped within a conservation category wetland.	At variance	Yes *Refer to Section 3.2.3, above.*

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 soil subsystem has elevated risks of water repellance; all remaining land degradation risks are low (DPIRD, 2023). Given the mapped land degradation risks and the purpose for clearing, the risks of appreciable land degradation is low.	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 the completely degraded (Keighery, 1994) nature of the application area, the proposed clearing is not likely to cause deterioration in the quality of surface or underground water.	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 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 likely to be at variance	No

Appendix D. Vegetation condition rating scale

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

Considering its location, the scale below was used to measure the condition of the vegetation proposed to be cleared. This scale has been extracted from:

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

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

Condition	Description
Pristine	Pristine or nearly so, no obvious signs of disturbance.
Excellent	Vegetation structure intact, with disturbance affecting individual species; weeds are non-aggressive species.
Very good	Vegetation structure altered, with obvious signs of disturbance. For example, disturbance to vegetation structure caused by repeated fires, the presence of some more aggressive weeds, dieback, logging and/or grazing.
Good	Vegetation structure significantly altered by very obvious signs of multiple disturbances. Retains basic vegetation structure or ability to regenerate it. For example, disturbance to vegetation structure caused by very frequent fires, the presence of some very aggressive weeds at high density, partial clearing, dieback and/or grazing.

Condition	Description
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. Offset calculator value justification

Offset calculation for residual impact to Tuart woodland TEC and significant habitat for black cockatoos.

Field Name	Description	Justification for value used
IUCN Criteria	The IUCN criteria for the value being impacted	**6.8%** - Afforded to Tuart Woodland TEC as this community is listed as Critically Endangered under the EPBC Act.
		1.2% - Afforded to Carnaby's cockatoo habitat as this species is listed as Endangered under the BC Act and the EPBC Act.
Area of impact (habitat/community) or Quantum of impact (features/individuals)	The area of habitat/community impacted or number of features/individuals impacted	**3.57** - The application area includes 3.57 hectares of vegetation representative of Tuart Woodland TEC
		1.4 - The application area comprises 1.4 hectares of Carnaby's cockatoo foraging habitat
		58 – The application area includes 58 future Carnaby cockatoo breeding trees.
Quality of impacted area (habitat/community)	The quality score for area of habitat/community being impacted - a measure of how well a particular site supports a particular threatened species or ecological community and contributes to its ongoing viability	**2** - best fit for the combination of vegetation condition (completely degraded), site context (low) and habitat attributes (moderate) for **Tuart Woodland TEC on the SCP**
		6 - best fit (average) for the combination of vegetation condition (moderate), site context (high) and habitat attributes (high) for **Carnaby's cockatoo** on the SCP
Duration (habitat/community)	This describes the timeframe over which changes in the level of risk to the proposed mitigation site can be considered and quantified	**20** - The offset site will be vested as 'conservation'. 20 years is the maximum value associated with this field.
Time until ecological benefit (habitat/community) or Time horizon (features/individuals)	This describes the estimated time (in years) that it will take for the main benefit of the quality (habitat/community) or value (features/individuals) improvement of the proposed mitigation to be realised	**6 – 6** years has been assigned for revegetation of the TEC representing the expected time the revegetation of Tuart will meet the diagnostic criteria for the Tuart TEC **10 – 10** years has been assigned for revegetation offset sites representing the expected age for the revegetation site to provide moderate foraging habitat for Carnaby's cockatoo
Start quality (habitat/community)	The quality score for the area of habitat/community proposed as mitigation - a measure of how well a particular site supports a particular threatened species or ecological community and contributes to its ongoing viability	**0 –** A quality score of (0) has been assigned for the revegetation offset based on the offset area in a completely degraded condition comprising of a bare paddock with not native vegetation present.
Future quality without offset (habitat/community) or Future value without offset (features/individuals)	The predicted future quality score (habitat/community) or value (features/individuals) of the proposed mitigation site without the mitigation	**0 –** A quality score of () has been assigned for the revegetation offset based on the offset area being managed for conservation under a business as usual model.

Future quality with offset (habitat/community) or Future value with offset (features/individuals)	The predicted future quality score (habitat/community) or value (features/individuals) of the proposed mitigation site with the mitigation	**4 –** A quality score of (4) has been assigned for the revegetation offset based on the provision of a revegetation plan and 5 year period proposed to achieve the Tuart Woodland TEC **5 –** A quality score of (5) has been assigned for the revegetation offset based on the provision of a revegetation plan and 10 year period required to achieve low to moderate quality foraging habitat.
Risk of loss (%) without offset (habitat/community)	This describes the chance that the habitat/community on the proposed mitigation site will be completely lost (i.e. no longer hold any value for the protected matter of concern) over the foreseeable future without the mitigation	**5%** - A risk of loss percentage without offset of 5% has been assigned as revegetation is proposed to take place within Rockingham Lakes Regional Park (Bush Forever site 356) which is currently managed for conservation.
Risk of loss (%) with offset (habitat/community)	This describes the chance that the habitat/community on the proposed mitigation site will be completely lost (i.e. no longer hold any value for the protected matter of concern) over the foreseeable future with the mitigation	**5%** - A risk of loss percentage without offset of 5% has been assigned as revegetation is proposed to take place within Rockingham Lakes Regional Park (Bush Forever site 356) which is currently managed for conservation.
Confidence in result (%) – Change in quality (habitat/community) or Change in value (features/individuals)	The level of certainty about the successful achievement of the proposed change in quality (habitat/community) or value (features/individuals)	**80%** - A confidence in result (risk of loss) value of (80%) has been assigned due to the high level of certainty about the risk without the proposed offset due to the delivery agent for revegetation.

Offset calculation for residual impact to vegetation mapped as conservation category wetland.

Field Name	**Description**	**Justification for value used**
IUCN Criteria	The IUCN criteria for the value being impacted	**0.1%** - Afforded to a category wetland for which an offset is required.
Area of impact (habitat/community) or Quantum of impact (features/individuals)	The area of habitat/community impacted or number of features/individuals impacted	**0.06 ha** - The application area includes 0.06 hectares of vegetation mapped as a conservation category wetland
Quality of impacted area (habitat/community)	The quality score for area of habitat/community being impacted - a measure of how well a particular site supports a particular threatened species or ecological community and contributes to its ongoing viability	3 - Vegetation may be in degraded to good condition. Although these areas were included in the survey, the information supplied about them was limited, hence consideration given to the quality of surrounding areas, aerial imagery and also a precautionary approach has been applied in selecting a metric input score.
Duration (habitat/community)	This describes the timeframe over which changes in the level of risk to the proposed mitigation site can be considered and quantified	**20** - The offset site will be vested as 'conservation'. 20 years is the maximum value associated with this field.
Time until ecological benefit (habitat/community) or Time horizon (features/individuals)	This describes the estimated time (in years) that it will take for the main benefit of the quality (habitat/community) or value (features/individuals) improvement of the proposed mitigation to be realised	1 – 1 years for offset site to be purchased by DBCA and protected for conservation purposes
Start quality (habitat/community)	The quality score for the area of habitat/community proposed as mitigation - a measure of how well a particular site supports a particular threatened species or ecological community and contributes to its ongoing viability	7 - condition offset site to be in very good to excellent condition and representing a CCW
Future quality without offset (habitat/community) or Future value without offset (features/individuals)	The predicted future quality score (habitat/community) or value (features/individuals) of the proposed mitigation site without the mitigation	7 - condition of offset site is not likely to change without intervention.
Future quality with offset (habitat/community) or Future value with offset (features/individuals)	The predicted future quality score (habitat/community) or value (features/individuals) of the proposed mitigation site with the mitigation	7 - condition of offset site is not likely to change without intervention.

Risk of loss (%) without offset (habitat/community)	This describes the chance that the habitat/community on the proposed mitigation site will be completely lost (i.e. no longer hold any value for the protected matter of concern) over the foreseeable future without the mitigation	**15%** - A risk of loss percentage without offset of 15% as offset site is likely to be zoned rural.
Risk of loss (%) with offset (habitat/community)	This describes the chance that the habitat/community on the proposed mitigation site will be completely lost (i.e. no longer hold any value for the protected matter of concern) over the foreseeable future with the mitigation	**5%** - A risk of loss percentage with offset of 5% has been assigned as offset site will be protected in perpetuity as DBCA managed land.
Confidence in result (%) – Change in quality (habitat/community) or Change in value (features/individuals)	The level of certainty about the successful achievement of the proposed change in quality (habitat/community) or value (features/individuals)	**90%** - A confidence in result (risk of loss) value of (90%) confidence that an adequate offset site will be purchased

Appendix F. Flora and vegetation survey, TEC and Black Cockatoo assessment and Wetland Evaluation information excerpts

Flora and vegetation survey – Lots 12 and 13 Lodge Drive, East Rockingham (PGV Environmental, 2023)

Table 5: Vegetation Type on the Site

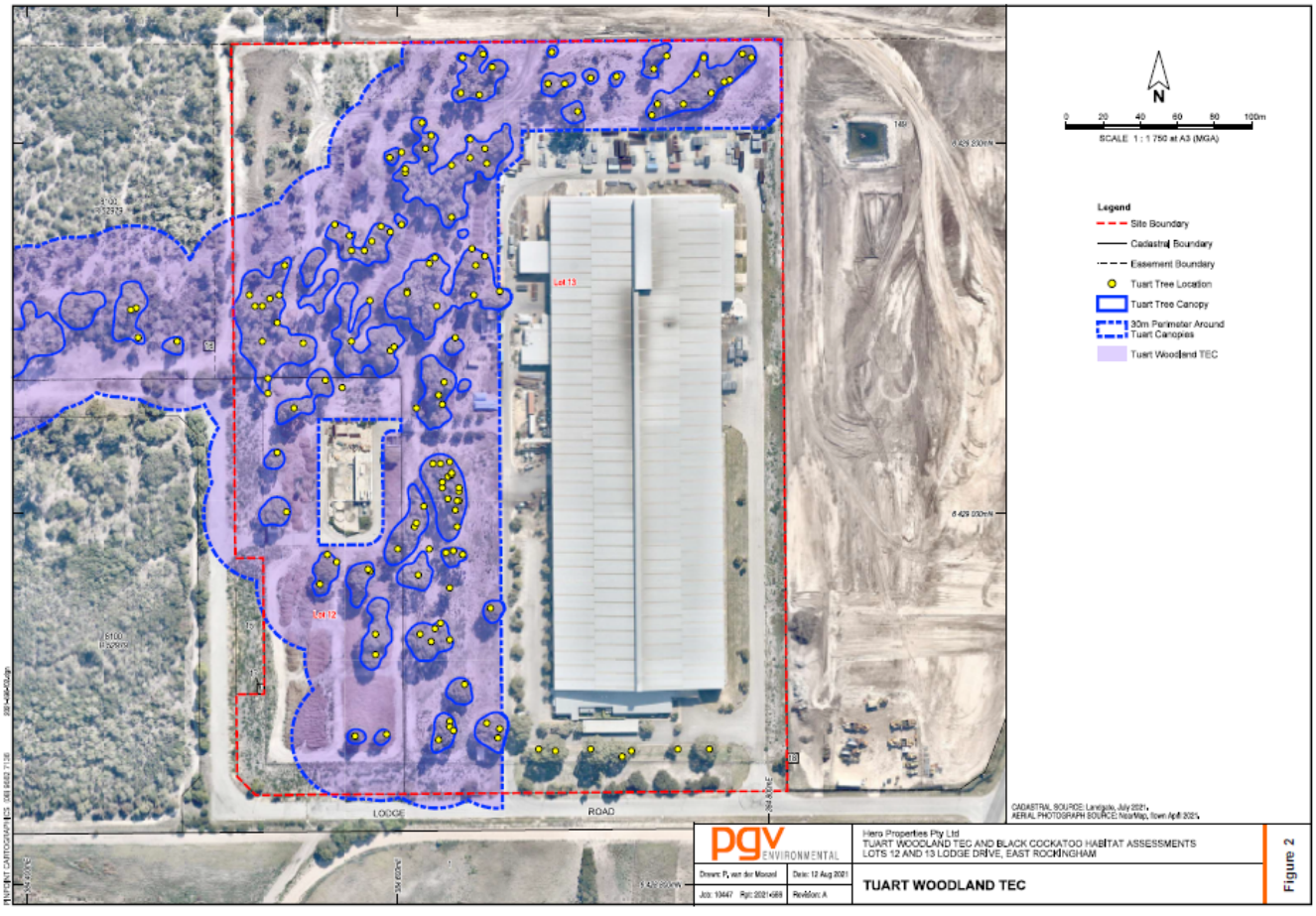
Vegetation Type	Description	Photograph
Eg *Eucalyptus gomphocephala* (Tuart) Woodland over mulch and weeds	This is the main vegetation type occurring on the site. The Tuart trees were around 12-15m high with an average canopy cover of 20-25%. There were very few native understorey species present throughout the site. The only native shrub species that was reasonably common on the site was *Acacia rostellifera* while the climbing plant *Clematis linearifolia* was sometimes present. The 'soils' were mostly a half metre of mulch that had been spread out over the site in the past. Quadrats LR1, 2, 3 and 4 are representative of this vegetation type.	 

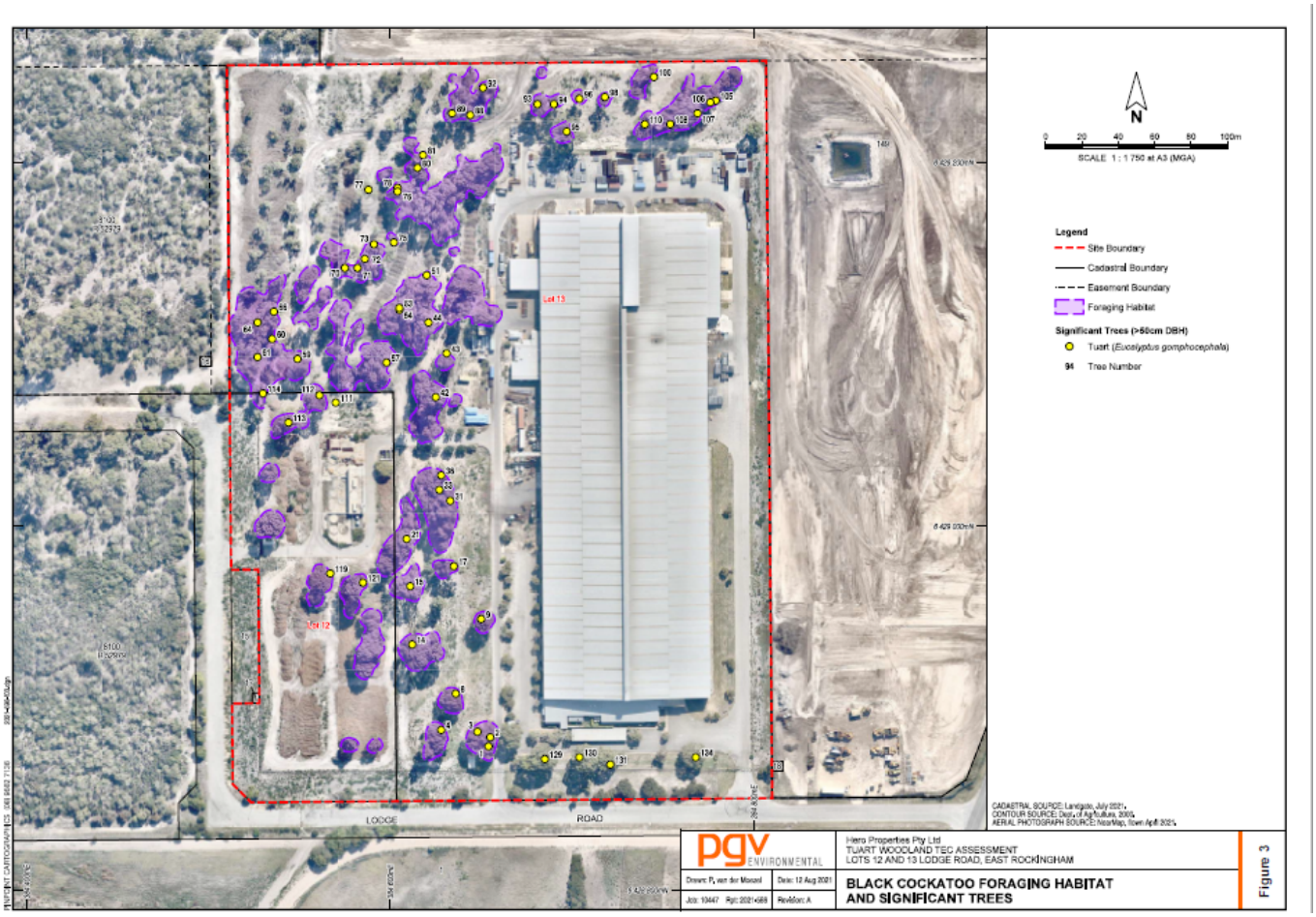
Vegetation Type	Description	Photograph
MrMh *Melaleuca rhaphiophylla/M. huegelii* Low Open Woodland over weeds	This vegetation type occurred in the north-west corner of the site. The vegetation type contained medium tree species *Melaleuca rhaphiophylla* and to a lesser extent *M. huegelii* and some *Banksia littoralis* up to 5m high. *Acacia rostellifera* and *Spyridium globulosum* were sparse native shrubs in the area otherwise the understorey was all introduced species. The dominant shrub species are indicative of wetland vegetation found elsewhere in the RIZ, however the area is not mapped as a wetland and the 0.5m layer of mulch has altered the natural surface level such that wetland species are unlikely to regenerate in the area over time. The 'soils' were mostly a half metre of mulch that had been spread out over the site in the past. Quadrat LR6 is representative of this vegetation type.	
Weeds	Several areas occurred on the site that did not have any native species. These areas had been mulched in the past up to as much as 0.5m deep. The condition of the areas prior to the mulching is not known. The areas contained abundant weeds, particularly grass species. No regeneration of any native species was observed in these areas. The 'soils' were mostly a half metre of mulch that had been spread out over the site in the past. Quadrat LR5 is representative of this vegetation type.	

Plate 6: Rhamnus in the Conservation Category Wetland Area

Plate 6: Tuart Trees over Mulch

Plate 7: Tuart Trees over Weeds





Appendix G. Sources of information

G.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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