



CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

Purpose Permit number:	CPS 10568/1
Permit Holder:	Green Steel of WA Collie Pty Ltd
Duration of Permit:	From 20 February 2025 to 20 February 2040

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

ADVICE NOTE

Allocation of Offset site

In relation to condition 10(a) of this permit a total area of 200.7 hectares at Lot 1 on Diagram 13981, Scotts Brook will be attributed to the offset for the *native vegetation* clearing authorised under this permit. The nominated site will conserve, in perpetuity, 200.7 hectares of established native vegetation that provides high-quality foraging and potential breeding habitat for *black cockatoo species*.

In relation to condition 11 of this permit, a total area of 22.5 hectares at Lot 73 on Deposited Plan 70696, Palmer, will be attributed of the offset for the *native vegetation* clearing authorised under this permit. The nominated site will be *revegetated* to provide suitable foraging and future breeding habitat for *black cockatoo species* and to offset clearing within Zone D of the *Country Areas Water Supply Act 1947* Wellington Dam catchment area. This area is to be conserved, in perpetuity, under condition 10(b).

PART I – CLEARING AUTHORISED

1. Clearing authorised (purpose)

The permit holder is authorised to clear *native vegetation* for the purpose of constructing the Collie Steel Mill.

2. Land on which clearing is to be done

Lot 2 on Deposited Plan 74040, Palmer
 Lot 1486 on Deposited Plan 11082, Shotts
 Lot 1505 on Deposited Plan 110876, Shotts
 Collie State Forest (PIN 1041576)

3. Clearing authorised

The permit holder must not clear more than 29.6 hectares of *native vegetation* 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 20 February 2030.

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. Directional clearing

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

8. Fauna management – South-western bush-tailed phascogale

- (a) In relation to the area cross-hatched yellow in Figure 1 of Schedule 1, the permit holder must engage a *fauna specialist* to inspect that area immediately prior to, and for the duration of clearing activities for the presence of south-western brush-tailed phascogale, wambenger (*Phascogale tapoatafa wambenger*);
- (b) Clearing activities must cease in any area where fauna referred to in condition 8(a) are identified until either:
 - (i) the south-western brush-tailed phascogale, wambenger(s) individuals have moved on from that area to adjoining *suitable habitat*; or
 - (ii) south-western brush-tailed phascogale, wambenger(s) individuals has been removed by a *fauna specialist*.
- (c) Any south-western brush-tailed phascogale, wambenger(s) individuals removed in accordance with condition 8(b) must be relocated by a *fauna specialist* to a *suitable habitat*.
- (d) Where fauna is identified under condition 8(a), the permit holder must within 14 calendar days provide the following records to the *CEO*:

- (i) the number of individuals identified;
- (ii) the date each individual was identified;
- (iii) the location where each individual was identified recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 2020 (GDA2020), expressing the geographical coordinates in Eastings and Northings or decimal degrees;
- (iv) the number of individuals removed and relocated;
- (v) the relevant qualifications of the *fauna specialist* undertaking removal and relocation;
- (vi) the date each individual was removed;
- (vii) the method of removal;
- (viii) the date each individual was relocated;
- (ix) the location where each individual was relocated to, recorded using a GPS unit set to GDA2020, expressing the geographical coordinates in Eastings and Northings or decimal degrees; and
- (x) details pertaining to the circumstances of any death of, or injury sustained by, an individual.

9. Fauna management – black cockatoo breeding habitat

- (a) Prior to undertaking any clearing authorised under this permit within the areas cross-hatched yellow on Figure 1 of Schedule 1, the permit holder must engage a *fauna specialist* to inspect the *black cockatoo habitat trees* listed in Table 1 below, for evidence of current or past breeding use by *black cockatoo species*.

Table 1: Habitat trees containing the suitable black cockatoo hollows.

Species	Easting	Northing
<i>Corymbia calophylla</i> (marri)	429431	6310773
<i>Corymbia calophylla</i> (marri)	429267	6310877

- (b) Where no evidence of current or past use by *black cockatoo species* is identified in accordance with condition 9(a), that tree must only be cleared immediately after the inspection.
- (c) Where the tree hollow shows evidence of current or past breeding use by *black cockatoo species*, and clearing of that tree cannot be avoided, that tree must be monitored by a *fauna specialist* to determine when it is no longer in use for that breeding season.
- (d) If there is evidence of current breeding use by *black cockatoo species*, the tree must not be cleared whilst it is in use for that breeding season as determined by the *fauna specialist* under condition 9(c).
- (e) The permit holder must install an artificial black cockatoo nesting hollow for each *black cockatoo habitat tree* listed in Table 1 of condition 9(a) that cannot be retained.
- (f) The artificial black cockatoo nesting hollow required by condition 9(e) must be installed prior to commencement of the next black cockatoo breeding season following clearing of the related *black cockatoo habitat tree*.

- (g) The artificial black cockatoo nest hollow(s) required by condition 9(e) of this permit must:
 - (i) be installed within the area cross-hatched red on Figure 2 of Schedule 1;
 - (ii) be designed and placed in accordance with the specifications detailed in Schedule 2; and
 - (iii) be monitored and maintained in accordance with the specifications detailed in Schedule 2, for a period of at least ten years.
- (h) Within two months of commencement of clearing authorised under this permit within the combined areas cross-hatched yellow on Figure 1 of Schedule 1, the permit holder must provide the results of the *fauna specialist's* inspection findings in a report to the CEO.
- (i) The fauna inspection report must include the following;
 - (i) the location of the *black cockatoo habitat tree* recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 2020 (GDA2020), expressing the geographical coordinates in Eastings and Northings or decimal degrees;
 - (ii) the name and amount of fauna species identified;
 - (iii) whether the *black cockatoo habitat tree* show current or past use by black cockatoo species; and
 - (iv) the methodology, used to inspect the black cockatoo hollow;

10. Offset – Conservation covenant

Within 24 months of the commencement of clearing authorised under this permit, and no later than 31 August 2027, the permit holder must provide to the *CEO* a copy of a conservation covenant under section 30B of the *Soil and Land Conservation Act 1945*:

- (i) for the protection and management of vegetation in perpetuity over the areas cross-hatched red in Figure 2 of Schedule 1; and
- (ii) for the protection and management in perpetuity over the area cross-hatched red in Figure 3 of Schedule 1.

11. Offset – Revegetation

Within 18 months of the commencement of clearing authorised under this permit, and no later than 28 February 2027, for the *revegetation area* within the area cross hatched red in Figure 3 of Schedule 1, the permit holder must implement the following actions:

- (a) commence *revegetation* of 22.5 hectares within the area cross-hatched red in Figure 3 of Schedule 1 of this permit by;
 - (i) ripping the soil prior to *planting* and/or *direct seeding* to remove any areas of compaction or other obstruction that could prevent root penetration of seedlings;
 - (ii) deliberately *planting* of tubestock and/or *direct seeding* of *Eucalyptus marginata* (jarrah) and *Corymbia calophylla* (marri) species, at a minimum density of 600 stems per hectare, that will result in the establishment of suitable habitat for *black cockatoo species*;
 - (iii) ensuring only *local provenance* species and propagating material are used; and
 - (iv) ensuring *planting* and/or *direct seeding* is undertaken at the *optimal time*;

- (b) undertake *weed* control and watering of the trees on an ‘as needs’ basis to ensure the success of *revegetation*;
- (c) fence along the boundary of the *revegetation area* and undertake regular monitoring of the fence for the term of this permit;
- (d) implement hygiene protocols by cleaning earth-moving machinery of soil and vegetation prior to entering and leaving the site;
- (e) engage an *environmental specialist* to monitor the survival of the trees established under condition 11(a) of this permit, at least once every 12 months for the term of this permit;
- (f) within 36 months of *planting* and/or *direct seeding* the trees in accordance with condition 11(a) of this permit the permit holder must:
 - (i) engage an *environmental specialist* to make a determination that at least 600 stems per hectare of *Eucalyptus marginata* (jarrah) and *Corymbia calophylla* (marri) trees planted under condition 11(a) has been achieved and will persist; and
 - (ii) if the determination made by the *environmental specialist* under condition 11(f) (i) that a minimum of 600 stems per hectare of *Eucalyptus marginata* (jarrah) and *Corymbia calophylla* (marri) trees planted under condition 11(a) has not survived or will not persist, the permit holder must *plant* additional *Eucalyptus marginata* (jarrah) and *Corymbia calophylla* (marri) trees that will result in a minimum of 600 stems per hectare of *Eucalyptus marginata* (jarrah) and *Corymbia calophylla* (marri) trees persisting within the *revegetation area*.
- (g) where additional *planting* and/or *direct seeding* of *Eucalyptus marginata* (jarrah) and *Corymbia calophylla* (marri) trees is undertaken in accordance with condition 11(f)(ii), the permit holder must repeat the activities required by condition 11(a) and 11(b) of this permit.
- (h) Where a determination is made by an *environmental specialist* under condition 11(f) that a minimum of 600 stems per hectare of *Eucalyptus marginata* (jarrah) and *Corymbia calophylla* (marri) trees will survive and persist within the *revegetation area*, that determination must be submitted to the CEO within three months of the determination being made by the *environmental specialist*.

PART III - RECORD KEEPING AND REPORTING

12. 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	<ul style="list-style-type: none"> (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;

No.	Relevant matter	Specifications
		<ul style="list-style-type: none"> (d) direction of the 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; and (g) actions taken to minimise the risk of the introduction and spread of <i>weeds</i> and <i>dieback</i> in accordance with condition 6.
2.	In relation to black cockatoo fauna management pursuant to condition 9	<ul style="list-style-type: none"> (a) the time and date of inspection of the suitable <i>black cockatoo habitat tree</i> by the <i>fauna specialist</i>; (b) a description of the inspection methodology employed by the <i>fauna specialist</i>; (c) the species name of any fauna determined by the <i>fauna specialist</i> to be occupying the suitable <i>black cockatoo habitat tree</i>; (d) where the suitable black cockatoo habitat tree is determined by the fauna specialist to be occupied by black cockatoo species: <ul style="list-style-type: none"> (i) the time and date that it was determined to be no longer occupied; (ii) a description of the evidence by which it was determined to be no longer occupied; and (iii) the time and date that the suitable black cockatoo habitat tree was cleared.
3.	In relation to the installation of artificial black cockatoo nest hollows pursuant to condition 9.	<ul style="list-style-type: none"> (a) the date that the artificial black cockatoo nest hollow was installed; (b) the location where the artificial black cockatoo nest hollow was installed recorded using a GPS unit set to GDA2020, expressing the geographical coordinates in Eastings and Northings or decimal degrees; (c) a photo of the artificial black cockatoo nest hollow; (d) the dates the artificial black cockatoo nest hollow installed was monitored; (e) a description of the monitoring methods employed for the artificial black cockatoo nest hollow installed; (f) a description of the monitoring observations for the artificial black cockatoo nest hollow installed; (g) the date/s the artificial black cockatoo nest hollow installed was maintained; and (h) a description of the maintenance activities undertaken for the artificial black cockatoo nest hollow installed.
4.	In relation to offset management pursuant to condition 10.	<ul style="list-style-type: none"> (a) the location and boundaries of the allocated 196 hectares offset area within Lot 1 on Diagram 13981 and the 22.5 hectares revegetation offset area within Lot 73 on Deposited Plan 70696, Palmer (recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 2020, expressing the geographical coordinates in Eastings and Northings); and

No.	Relevant matter	Specifications
		(b) Copies of the relevant conservation covenants under section 30B of the <i>Soil and Land Conservation Act 1945</i> in accordance with condition 9.
5.	In relation to <i>revegetation</i> management pursuant to condition 11.	(a) the date <i>revegetation</i> activities commenced; (b) the area <i>revegetated</i> recorded using a Global Positioning System (GPS) unit set to GDA2020, expressing the geographical coordinates in Eastings and Northings; (c) the number of <i>Eucalyptus marginata</i> (jarrah) and <i>Corymbia calophylla</i> (marri) individuals planted; (d) <i>revegetation</i> actions taken; (e) <i>weed</i> control, watering and infill <i>planting</i> and/or <i>direct seeding</i> activities undertaken; (f) annual monitoring results; (a) details of the determination by an <i>environmental specialist</i> that the trees planted under condition 10(a) will survive and persist; and (b) the date of any remedial actions undertaken where additional <i>planting</i> and/or <i>direct seeding</i> was required.

13. Reporting

- (a) The permit holder must provide to the CEO, on or before 31 December of each calendar year, a written report containing:
 - (i) the records required to be kept under condition 12; and
 - (ii) records of activities done by the permit holder under this permit between 1 July of the preceding calendar year and 30 June of the current calendar year.
- (b) If no clearing authorised under this permit has been undertaken, a written report confirming that no clearing under this permit has been undertaken, must be provided to the CEO on or before 31 December of each calendar year.
- (c) Prior to 20 November 2039, the permit holder must provide to the CEO a written report of records required under condition 12, where these records have not already been provided under condition 13(a).

DEFINITIONS

In this permit, the terms in Table 3 have the meanings defined.

Table 3: Definitions

Term	Definition
black cockatoo habitat trees	means trees that have a diameter, measured at 130 centimetres from the base of the tree, of 50 centimetres or greater (or 30 centimetres or greater for <i>Eucalyptus salmonophloia</i> or <i>Eucalyptus wandoo</i>) that contain hollows suitable for breeding by black cockatoo species.
black cockatoo species	means one or more of the following species: (a) <i>Zanda latirostris</i> (Carnaby's cockatoo); (b) <i>Zanda Calyptorhynchus</i> (Baudin's cockatoo); and/or (c) <i>Calyptorhynchus banksii naso</i> (forest red-tailed black cockatoo).

Term	Definition
CEO	Chief Executive Officer of the department responsible for the administration of the clearing provisions under the <i>Environmental Protection Act 1986</i> .
clearing	has the meaning given under section 3(1) of the EP Act.
condition	a condition to which this clearing permit is subject under section 51H of the EP Act.
dieback	means the effect of <i>Phytophthora</i> species on native vegetation.
department	means the department established under section 35 of the <i>Public Sector Management Act 1994</i> (WA) and designated as responsible for the administration of the EP Act, which includes Part V Division 3.
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
EP Act	<i>Environmental Protection Act 1986</i> (WA)
fauna specialist	means a person who holds a tertiary qualification specialising in environmental science or equivalent, and has a minimum of 2 years work experience in fauna identification and surveys of fauna native to the region being inspected or surveyed, or who is approved by the CEO as a suitable fauna specialist for the bioregion, and who holds a valid fauna licence issued under the <i>Biodiversity Conservation Act 2016</i> .
fill	means material used to increase the ground level, or to fill a depression.
local provenance	means native vegetation seeds and propagating material from natural sources within 50 kilometres and the same IBRA subregion of the area cleared.
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.
offset	means a direct offset as described in the Government of Western Australia, <i>WA Environmental Offsets Policy, September 2011</i> .
optimal time	means the period from April to June.
planting	means the re-establishment of vegetation by creating favourable soil conditions and planting seedlings of the desired species.
revegetate/ion	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 preclearing vegetation types in that area.
revegetation area	means the 22.5-hectare area devoid of native vegetation within the area cross hatched red in Figure 3 of Schedule 1 (Lot 73 on Deposited Plan 70696).
suitable habitat (south-western brush-tailed phascogale)	means habitat known to support south-western brush-tailed phascogale within the known current distribution of the species. This often includes dry sclerophyll forests and open woodlands, with hollow-bearing trees (usually eucalypts) and sparse understorey.
weeds	means any plant – (a) that is a declared pest under section 22 of the <i>Biosecurity and Agriculture Management Act 2007</i> ; or (b) published in a Department of Biodiversity, Conservation and

Term	Definition
	Attractions species-led ecological impact and invasiveness ranking summary, regardless of ranking; or (c) not indigenous to the area concerned.

END OF CONDITIONS



Jessica Burton
A/MANAGER
NATIVE VEGETATION REGULATION

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

28 January 2025

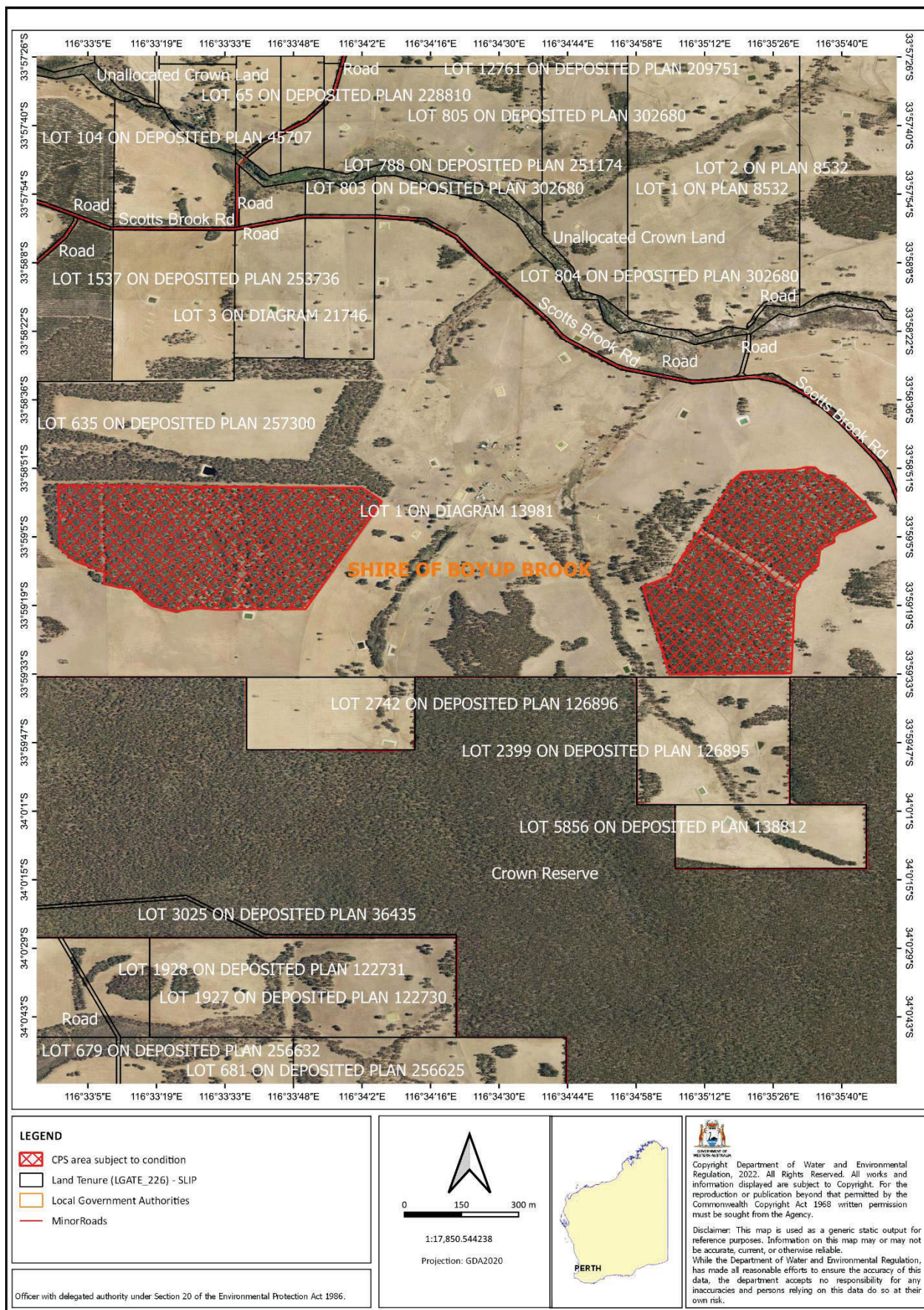
Schedule 1

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



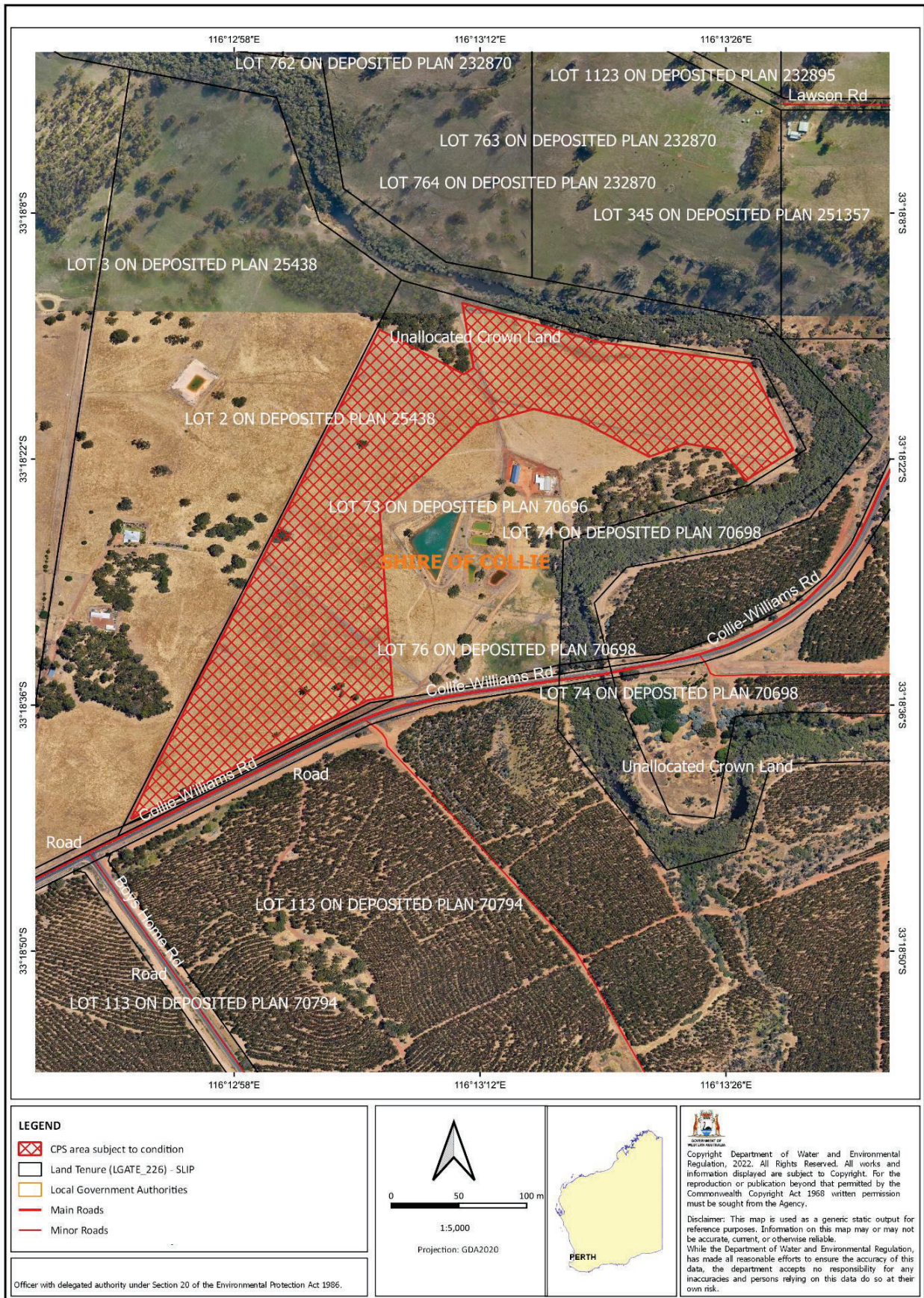
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Figure 1: Map of the boundary of the area within which clearing may occur



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Figure 2: Map of the boundary of the area subject to conditions



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Figure 3: Map of the boundary of the area subject to revegetation conditions

Schedule 2: How to design, monitor and maintain artificial hollows for Carnaby's cockatoo

Artificial Hollows for Black Cockatoos

There are three species of threatened black cockatoos in the southwest of Western Australia (WA): Baudin's cockatoo *Zanda baudinii* (previously *Calyptorhynchus baudinii*), Carnaby's cockatoo *Zanda latirostris* (previously *Calyptorhynchus latirostris*) and forest red-tailed black cockatoo *Calyptorhynchus banksii naso*. Some of the main threats to the three species include nest hollow shortages due to ongoing and extensive habitat loss and degradation, lack of recruitment of new hollow bearing trees, and competition with galahs, corellas, and feral European honey bees.

Artificial hollows can be used to help conserve these threatened black cockatoos by enabling them to breed in areas where natural hollows are limited. This Fauna Note provides advice on how to select an appropriate site, guidelines on how to design and place artificial hollows, and advice on how to maintain and monitor artificial hollows.

The information presented here is based on experience with Carnaby's cockatoo which have many examples of successful use of artificial hollows and forest red-tailed black cockatoo which have a few known examples of use. However, to date there are no records of Baudin's cockatoo using artificial nest hollows.

Sometimes a site may not be suitable for artificial hollows. This Fauna Note includes options for alternative conservation actions that are important to the conservation of black cockatoos and can also be used to complement the placement of artificial hollows.

It is important to remember that the retention of both old and dead trees (stags) that have suitable hollows for black cockatoos is crucial for breeding, and natural replacement of hollow bearing trees for future breeding is vital for the long-term survival of the species. The installation of artificial hollows should not be used to justify the removal of natural hollow-bearing trees.

When to Use Artificial Hollows

Artificial hollows may be useful at sites where natural hollows are a limiting resource. However, cockatoos may not always use artificial hollows, for example if provided in non-traditional nesting areas. Artificial hollows that are installed within 2 km of current breeding sites are regularly taken up. There are ways to select sites for artificial hollows that will increase the chance that they will be used and that birds will be able to successfully raise chicks.

Where do black cockatoos nest?

Black cockatoos nest in the hollows of mature trees in uncleared or remnant Eucalypt woodland or forest, as well as in remnant paddock trees. Trees may take more than 120 years to develop hollows that are a suitable size, and cockatoos use hollows in both living and dead trees. Refer to the maps at the end of this document for the known breeding range of the three species of black cockatoo.

Carnaby's cockatoos generally breed in Wandoo and Salmon Gum in the Wheatbelt, Marri in forested areas, and Tuart along the Swan Coastal Plain. They are also known to nest in Jarrah, Flooded Gum, York Gum, Gimlet, Powderbark Wandoo, and Karri.

Baudin's cockatoos generally nest in Jarrah, Marri, and Karri in densely forested areas. They are also known to nest in hollows in Wandoo and Tuart.



Carnaby's cockatoo nestlings in an artificial hollow. Note this chewing post will require replacement following breeding.

Photo: Rick Dawson

FAUNA NOTES – Artificial Hollows for Black Cockatoos

The breeding habitat for forest red-tailed black cockatoos is in uncleared forest or remnant patches of old Marri. They are also known to nest in Karri, Wandoo, Bullich, Blackbutt, Tuart, and Jarrah.

Is my site suitable for artificial hollows?

It is recommended that artificial hollows be used in known nesting areas where there has been a decrease in the availability of natural nesting hollows. Trials have shown that Carnaby’s cockatoo and forest red-tailed black cockatoos will nest in artificial hollows if installed in suitable areas and are of a satisfactory design. However, putting up artificial hollows may not be the best way to help black cockatoos in your area.

Indeed, attracting birds to attempt to breed in unsuitable areas may result in increased risk of harm to adult birds or their chicks. The installation of artificial hollows in built up and urbanized areas of the metropolitan Perth and Peel regions, and other urban centres in the southwest is not recommended and should not be undertaken. This is due to the increased risk in this area, including car strike to young inexperienced birds, attack by predators such as Australian ravens and pets, and in highly urbanised and cleared areas there may not be sufficient food resource for the adults to successfully raise chicks).

To decide if your site is suitable for artificial hollows you need to consider five essential criteria (Table 1). If your site does not match all criteria, you may wish to consider alternative conservation actions including:

- protecting habitat by fencing and/or rabbit and stock control to encourage regeneration of native vegetation;
- controlling competitive species such as galahs, corellas and feral bees that may occupy hollows;
- repairing old and damaged natural nesting hollows;
- providing access to fresh water;
- revegetating with preferred food species and nesting trees; and/or
- creating linkages of vegetation between nesting and feeding areas.

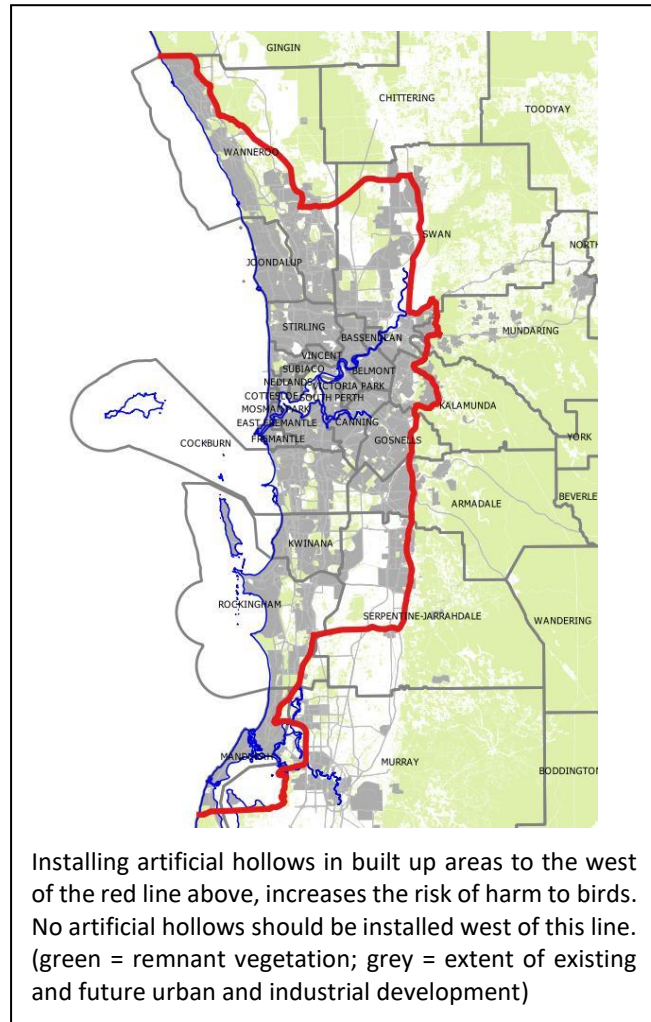


Table 1: Essential criteria for a site to be considered suitable for installation of artificial hollows, with alternative conservation actions suggested for each criterion that is not met.

1.	The site is Eucalypt woodland or forest within the known breeding range of the species	
	<i>Important consideration</i>	Carnaby’s cockatoos tend to nest in Wandoo and Salmon Gum in the Wheatbelt, Marri in forested area and Tuart along the Swan Coastal Plain. Baudin’s cockatoos generally nest in Jarrah, Marri, and Karri and forest red-tailed black cockatoos usually nest in Marri.
	<i>Alternative conservation actions</i>	If the site is not within the known current breeding range of black cockatoos, then it is unlikely that the installation of artificial hollows will attract the birds to the site. However, black cockatoos are highly mobile species that also require habitat for feeding and roosting which means that it is important to protect and manage habitat visited by the cockatoos by fencing, and carrying out other management, such as rabbit and stock control, to retain existing habitat, and to encourage regeneration of native vegetation. It is also important to revegetate areas within the breeding and non-breeding areas with preferred food species, and to create linkages of vegetation to assist the movement of the birds through the landscape.
2.	Breeding by Black cockatoos is known or suspected at the site. There must also be evidence that a lack of suitable available tree hollows is preventing breeding that would otherwise occur in the area.	

FAUNA NOTES – Artificial Hollows for Black Cockatoos

	<i>Important consideration</i>	If the lack of available hollows is due to nest competitors such as galahs, western long-billed corellas or feral bees then any attempt to install artificial hollows must be accompanied by efforts to deter or control these competitors. Alternatively, successful control of competitors may mean that artificial hollows are not needed.
	<i>Alternative conservation actions</i>	<p>If sufficient suitable natural hollows are available in an area, then there is no need to install artificial hollows. This overcomes the need for ongoing maintenance of unnecessary artificial hollows.</p> <p>If breeding is already occurring at the site and there are plenty of available hollows, efforts can be redirected towards caring for existing or future nesting hollows. This may involve repairing old or damaged nesting hollows by covering cracks, removing debris blocking access to hollows or replacing rotted wood in the hollow so that the depth of the nest floor is manageable for the birds. Future hollows can be protected by preventing compaction of ground around trees, fencing and/or rabbit and stock control to encourage regeneration to produce future nesting trees, fire management, and the strategic pruning of limbs to prevent limbs breaking and tearing open hollows. Efforts can also be aimed at enhancing the success of existing breeding by revegetating with preferred food and nesting species, as well as creating linkages of suitable vegetation and fresh water between nesting and feeding areas.</p> <p>If breeding is not occurring at the site despite hollows being available, then there may be a range of factors making the site unsuitable for breeding. These factors must be identified and addressed before breeding can resume in the area (if at all possible). Lack of sufficient food could be the cause, and this can be addressed by revegetating with preferred food species and increasing connectivity in the landscape.</p> <p>To compile a list of plant species suitable for revegetation at your site, refer to the document Plants Used by Carnaby's Black Cockatoo available on the Department of Biodiversity, Conservation and Attractions (DBCA) black cockatoo webpage.</p>
3.	The artificial hollows can be located in close proximity to adequate feeding areas – within a 12 km radius.	
	<i>Important consideration</i>	Feeding areas commonly contain proteaceous species such as banksias (including dryandras) and hakeas. A list of food plants can be obtained by use of the document Plants Used by Carnaby's Black Cockatoo .
	<i>Alternative conservation actions</i>	If the site is not close to adequate food, then the black cockatoos will not be able to successfully raise young. Cockatoos require sufficient food close to nesting areas in order to be able to forage during the day and return to feed nestlings. Existing feeding habitat close (within 12km) to breeding areas can be protected by fencing and/or undertaking rabbit and stock control to encourage regeneration of native vegetation. The amount of feeding habitat in an area can be increased by planting or revegetating with preferred food species.
4.	The hollows are placed in secure locations and the owner/manager of these areas is supportive and willing to provide the necessary long-term security and annual maintenance for the entire time that the artificial hollow will be in place.	
	<i>Important consideration</i>	For advice on the monitoring and maintenance requirements, please refer to the section on how to monitor and maintain artificial hollows.
	<i>Alternative conservation actions</i>	Artificial hollows can be subject to nest robbing and vandalism. It is highly recommended that artificial hollows are not put in exposed or easily accessible areas such as road verges unless they are above 8m and placed on the side of trees away from roads. If the site is considered at high risk of nest robbing or vandalism then alternative actions to assist the conservation of the species are recommended including: revegetation, fencing, repairing old or damaged natural nesting hollows and planting vegetation linkages to connect nesting and feeding areas.
5.	A suitable artificial hollow design is used.	
	<i>Important consideration</i>	For greatest chance of success, please refer to the sections below on how to design and place artificial hollows.
	<i>Alternative conservation actions</i>	If an alternative design is proposed, it is recommended that Department of Biodiversity, Conservation and Attractions, BirdLife Australia, or WA Museum are contacted to discuss and approve design.

How to Design and Place Artificial Hollows

A wide variety of artificial hollow designs have been previously used with mixed success. Evidence suggests that, while artificial hollows must meet some basic requirements, other factors such as proximity to existing breeding areas may be more important in determining the success of artificial hollows.

Successful artificial hollows have been constructed from sections of salvaged natural hollows, or black and white industrial pipe. Research results show that the most effective artificial hollows are made of plastic culvert pipe which is readily available, durable, light, cheap, and easy to install and maintain (see right picture below). When using non-natural materials care must be taken to ensure there are no toxic residues, and that the materials are safe to ingest.

Below are three examples of successful artificial hollows that have been used by black cockatoos for nesting:

- natural log with cut side entrance (left);
- white industrial pipe with top entrance (centre); and
- DBCA recommended polypropylene pipe design (right)

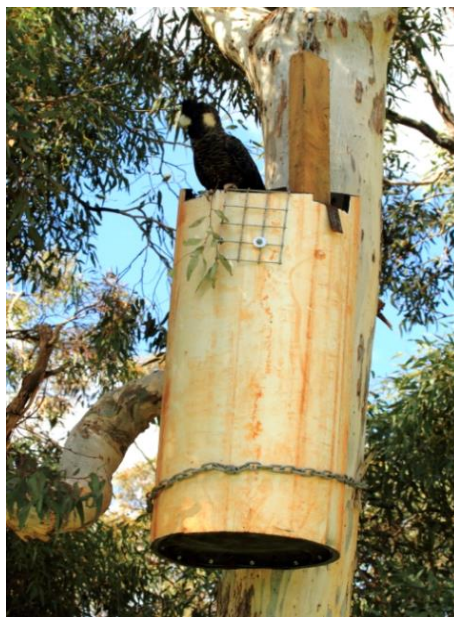


Photo: Christine Groom (left), Rick Dawson (centre and right)

The notes below provides general guidance on design and construction of artificial hollows for black cockatoos. Additional specifications are provided at the end of this Fauna Note which outline current best practice and may be considered recommendations for minimum requirements.

Walls, size, base, and entrance design

The walls of the artificial hollow need to be constructed from a material that is:

- durable enough to withstand exposure to elements for at least 20 years; and
- able to simulate the thermal properties of a natural tree hollow.

Artificial hollows should be:

- not less than 375 mm in internal diameter; and
- preferably 1200 mm deep overall with 200 mm of substrate/nesting material covering the base.

The base of the artificial hollow must be:

- securely fixed to the walls and able to support the weight of an adult and nestling(s);
- durable enough to last the life of the nest, and survive chewing by cockatoos;
- free draining;

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- at least 375 mm in diameter; and
- covered with 200 mm of sterile, dry, free draining substrate/nesting material such as charcoal, hardwood woodchips or wood debris. Do not use saw dust or fibre products that will retain moisture.

Example materials that could be used for artificial hollow bases include heavy duty stainless steel, galvanised or treated metal (e.g. Zincalume®), thick hard plastic, thick hardwood timber slab or marine ply (not chipboard or MDF). The base material must be cut to fit internally with sharp or rough edges ground away or curled inwards, be fixed securely to the walls and have small drainage holes.

The entrance of the artificial hollow:

- must have a diameter of at least 375 mm; and
- preferably be top entry which will minimise use by non-target species.

Top entry hollows are less attractive to nest competitors such as feral bees, galahs and corellas. Side entry hollows have been successful in areas where feral bees, galahs and corellas are not competitors.

Adding ladders and sacrificial chewing posts

For artificial hollows made of non-natural materials, or of processed boards, it is necessary to provide a ladder to enable the birds access to the hollow, and sacrificial chewing posts so that birds can chew material, and so that non-target species can exit the hollow. The post can also assist in providing further material to the substrate, however research has shown that not all posts are heavily chewed.

The ladder must be:

- securely mounted to the inside of the hollow;
- made from an open heavy wire mesh with a mesh size of 30 - 50 mm (such as WeldMesh™); or heavy chain; and
- reach to, or below the level of substrate/nesting material.

If using mesh for the ladder, the width will depend on the curvature of the nest walls. A minimum width of about 60 - 100 mm is recommended.

Do not use material for ladders that the birds can chew, including galvanised metal because the birds may grip or chew the ladder, and ingest harmful compounds.

The sacrificial chewing posts must be:

- made of untreated hardwood such as Jarrah, Marri or Wandoo;
- thick enough to satisfy the birds' needs between maintenance visits;
- extended beyond the top of the hollow as an aid to see whether the nest is being used and reach to the floor of the hollow;
- placed on the inside of the hollow; and
- attached in such a way that they are easy to replace (e.g. a hook over the top of hollow or can slide in/out of a pair of U-bolts fitted to the side of the hollow).

It is recommended that at least one chewing post is provided. Posts 70 x 50 mm have been used but require monitoring at least every second breeding season when the nest is active and replacing when found to be no longer reaching the nesting material or otherwise significantly chewed. Birds do vary in their chewing habits, and therefore the frequency at which the chewing posts require replacement will also vary.

Mounting and placement

It is important that artificial hollows are placed where they will be accessible for future monitoring and maintenance, but preferably not conspicuous to the general public.

The height at which artificial hollows should be placed is variable, between 4 - 8m for Carnaby's cockatoo, and the average height of natural hollows in dominant tree species in the area is a good guide. If located in an area that the general public cannot access, such as a private property, the hollows can be placed as low as 4 m from the ground so that they are easily accessible by ladder. If located in an area where the general public are allowed access, hollows should be placed at least 8 m high (i.e. higher than most ladders) and on the side of the tree away from public view to reduce the chance of interference or poaching.

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Black cockatoos show no preference for aspect of natural hollows. However, it may still be beneficial to place artificial hollows facing away from prevailing weather and where they receive the most shade and protection.

Artificial hollows to be placed in trees require:

- accessibility of the tree for a vehicle, elevated work platform or cherry picker;
- a section of trunk 2 - 3 m long suitable for attaching the hollow; and
- fitted on the side where the most shade can be obtained.

Artificial hollows must be mounted such that:

- the fixings used will last the duration of the nest e.g. galvanized bracket or chain and fixed with galvanized coach screws;
- it is secured by more than one anchor for security and stability;
- it is positioned vertically or near vertically; and
- where possible living trees are to be used to provide shade.

Artificial hollows should not be placed in the open on poles, as this may result in excessive exposure to sun during very hot weather.

Safety

Care needs to be taken when placing artificial hollows to ensure human safety is paramount.

Monitoring and Maintaining Artificial Hollows

It is important to monitor and maintain artificial hollows after they have been erected to ensure their effectiveness and so that problems with pest species or maintenance requirements can be identified and resolved. This will ensure the artificial hollow continues to provide opportunities to be used and that birds will be able to successfully raise chicks

Without regular maintenance, artificial hollows are likely to fail to achieve their objective to provide safe nesting opportunities for threatened black cockatoos. Therefore, it is important to continue a regime of regular maintenance for however long the artificial hollow is required. It may be several (to many) decades until a natural replacement hollow is available. Artificial hollows erected as a condition of development to offset the loss of natural hollows may be required to be available and maintained for the life of the development approval.

How do I monitor artificial hollows?

Before undertaking monitoring of artificial hollows for black cockatoos, it is recommended that you seek advice from the Department of Biodiversity, Conservation and Attractions, BirdLife Australia, or the WA Museum. It is also important to contact the Department's Wildlife Licensing Section, to determine if a lawful authority required (<https://www.dbca.wa.gov.au/licences-permits>).

Monitoring artificial hollows requires keen observation, and naturalist skills. It is often not possible to observe direct evidence of breeding (i.e. nestlings or eggs) and therefore inferences must be made based on other observations. It is also important to limit disturbance to breeding birds. There are many techniques available to monitor artificial hollows, and a combination of several is likely to achieve the best results (**Table 2**).

Monitoring of artificial hollows should consider and record:

- the condition of the tree, hollow fixings and general hollow condition;
- condition and connection of sacrificial chewing posts, ladder and substrate/nesting material inside hollow;
- any use by black cockatoos and nature of activity (adult birds, chewing, eggs, chicks etc.)
- details of use by non-target species (native or pest);
- identify any problems with pest species or maintenance requirements; and
- maintenance actions undertaken to resolve any problems.

The information collected from monitoring should be written down and reported. There are standard fauna report forms available on the Department's website (<https://www.dpaw.wa.gov.au/plants-and-animals/threatened-species-and-communities/threatened-animals>) that can be used to record the details of your sighting. Alternatively, if you are

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frequently monitoring a larger number of artificial hollows, you can put the details into a spreadsheet or use the black cockatoo monitoring forms available on the [DBCA website](http://www.dbca.wa.gov.au). Records should be submitted to the Department by emailing fauna.data@dbca.wa.gov.au. The Department will put the records into the Threatened and Priority Fauna Database, and it will be used to inform conservation and management decisions. Any other opportunistic sightings of Threatened and Priority species can also be reported via the same email.

Table 2: Techniques for monitoring artificial hollows

Technique	Description of Technique								
Looking for signs of use	Cobwebs covering the entrance to the hollow will indicate that the hollow has not been used recently. This would also apply to other light debris that may have fallen to cover the opening partially. Signs of recent use or interest in the hollow include evidence of chewing.								
Observing parent behaviour around a hollow	<p>The behaviour of parent birds around a hollow can indicate an approximate age of young in the nest.</p> <table border="1"> <thead> <tr> <th>Parent Behaviour</th> <th>Approximate Stage and Age of Young</th> </tr> </thead> <tbody> <tr> <td>Prospecting for hollow</td> <td>Unborn</td> </tr> <tr> <td>Male only seen out of hollow</td> <td>Egg or very young nestling (< 3 - 4 weeks)</td> </tr> <tr> <td>Both parents seen entering/exiting the hollow</td> <td>Nestling(s) has hatched (> 3 - 4 weeks)</td> </tr> </tbody> </table>	Parent Behaviour	Approximate Stage and Age of Young	Prospecting for hollow	Unborn	Male only seen out of hollow	Egg or very young nestling (< 3 - 4 weeks)	Both parents seen entering/exiting the hollow	Nestling(s) has hatched (> 3 - 4 weeks)
Parent Behaviour	Approximate Stage and Age of Young								
Prospecting for hollow	Unborn								
Male only seen out of hollow	Egg or very young nestling (< 3 - 4 weeks)								
Both parents seen entering/exiting the hollow	Nestling(s) has hatched (> 3 - 4 weeks)								
Observing feeding flocks	Flocks of all male birds can indicate that females are incubating eggs. When flocks are mixed it suggests the birds have either not laid yet or that the nestlings have hatched and no longer require brooding (approximately 3 - 4 weeks old).								
Tapping to flush female	<p>When females are sitting on eggs they will usually respond to tapping or scraping at the base of their tree by appearing at the entrance or flying from the hollow opening. This is not a guarantee of breeding activity, but an indication that breeding is possibly occurring in the hollow.</p> <p>Tapping or scraping is best undertaken between 10 am - 3 pm when females will most likely to be sitting.</p>								
Observing insect activity around a nest	Faecal matter produced by nestlings attracts insects, especially flies and ants. The type and number of these insects will help to indicate how old any nestlings present may be. Factors such as temperature and humidity will also affect insect activity and so observations of insect activity should only be used as supporting evidence for other indications of age/use. Blowflies around the entrance of a nest usually indicate that a death has occurred.								
Listening for nestling	With experience it is possible to determine if nestlings are present, and a broad estimate of age based on the type and volume of noises they make.								
Looking inside a nest	This can be achieved either with the aid of a telescopic pole and camera or mirror, or with the use of a ladder or other climbing equipment. This method can obtain the most detailed monitoring information for artificial hollows. However, it is also the most time consuming and difficult to organize. Also keep in mind that it is important to limit disturbance to breeding birds. Special equipment is likely to be needed depending on the height and positioning of artificial hollows. There are also safety issues associated with ladder or rope climbing to reach nests to undertake observations.								

When do I monitor artificial hollows?

The minimum frequency of monitoring, and the techniques used will be determined by the aims of the monitoring, and the resources available. It is important to limit disturbance to breeding birds, and this should be considered when determining the techniques, frequency, and timing of monitoring (Table 3).

Breeding by the three southwest black cockatoos varies, and the timing of monitoring of artificial hollows should accommodate the breeding of the likely target species. The Commonwealth Department of Climate Change, Energy,

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the Environment and Water (DCCEEW) Species Profile and Threats Database (SPRAT) database records the breeding periods of each of the species as:

- Carnaby's cockatoo - July to November (with peak between August to September)
- Baudin's cockatoo - October to January
- Forest red-tailed black cockatoo - every month, with peaks in April to June and August to October

The age of Carnaby's cockatoo nestlings can be determined by using the following publication:

Saunders, D. A., Dawson, R. and Nicholls, A. O. (2015). Aging nestling Carnaby's cockatoo, *Calyptorhynchus latirostris*, and estimating the timing and length of the breeding season. *Nature Conservation* **12**: 27-42
<http://dx.doi.org/10.3897/natureconservation.12.4863>

This document provides a series of photographs to illustrate changes in size and plumage of nestlings over the 10–11 weeks of the nestling period which can be used to estimate the approximate age of Carnaby's cockatoo nestlings, up to about nine weeks, by comparing appearance with the nestlings illustrated in the photographs.

Any monitoring that involving disturbance or handling of black cockatoos, requires lawful authority (<https://www.dbca.wa.gov.au/licences-permits>). Such activity requires specialist skills and authorisation under the *Biodiversity Conservation Act 2016*.

Table 3: Recommended frequency for monitoring artificial hollows, as determined by the aim of the monitoring

Monitoring Aim	Frequency of Visits	Monitoring Techniques
To determine possible use by black cockatoos	At least once during peak breeding season.	<ul style="list-style-type: none"> • Looking for signs of use (evidence of chewing) • Observing behaviour of adults around a hollow • Tapping or scraping to flush female • Listening for nestlings • Looking inside nest
To confirm use by black cockatoos	At least two visits during peak breeding season.	<ul style="list-style-type: none"> • Looking for signs of use (evidence of chewing) • Observing behaviour of adults around a hollow • Tapping or scraping to flush female • Listening for nestlings • Looking inside a nest <p>Observing breeding evidence from at least two of the techniques confirms use by black cockatoos.</p>
To determine nesting success by black cockatoos	Preferably fortnightly visits between July and December. As a minimum, at least 3 visits spread throughout breeding season.	<ul style="list-style-type: none"> • Observing insect activity around a nest • Listening for nestlings • Looking inside a nest <p>The presence of eggs or nestlings inside a nest will help to determine nesting success.</p>
To determine use by any species	As often as possible.	<p>As a minimum, inspection from the ground:</p> <ul style="list-style-type: none"> • Looking for signs of use <p>To confirm:</p> <ul style="list-style-type: none"> • Looking inside a nest
To determine maintenance requirements	At least every two years and preferably annually.	A basic maintenance check can be undertaken from the ground. Looking inside the nest using a telescopic pole with camera or mirror enables inspection of the sacrificial chewing posts and level of substrate/nesting material. A ladder or elevated work platform will be required for a comprehensive check, and to replace sacrificial chewing posts and carry out other maintenance.

How do I maintain artificial hollows?

Natural hollows used by black cockatoos are typically present for many decades and if artificial hollows are expected to provide a similar role, then they will require maintenance to ensure they continue to function as potential nesting locations for black cockatoos for the long term.

In many cases artificial hollows are required as a condition of development to offset loss of natural hollows, in which case State and Commonwealth offset policy expects that the artificial hollows continue to provide that function for the duration of the impact (or alternatively the expected period of time the natural hollow would have persisted, or the life of the environmental approval). As part of establishing artificial hollows the responsibility and regime for long term monitoring and maintenance should also be established.

Periodic maintenance checks should be undertaken at least every two years, preferably annually, for as long as the artificial hollow is required. Maintenance actions should be completed prior to the breeding season.

Any problems identified during monitoring or maintenance checks should be addressed as soon as possible and will require similar specialist skills and equipment as used in installation. If breeding is currently occurring, maintenance may need to be delayed if it is likely to disturb the parents or nestling. Maintenance concerns regarding the security of attachment points or the stability of the tree or pole should be addressed as a priority for safety reasons. Likely maintenance includes:

- replacement of sacrificial chewing posts (frequently);
- top-up or replacement of nesting substrate to ensure it reaches the ladder and chewing posts (occasionally);
- replacement of nest bases (occasionally);
- repair or replacement of attachment points (infrequently); and/or
- repair of any cracks to wooden hollows (infrequently).

For artificial hollows known to be used, spare chewing posts should be taken into the field when undertaking maintenance checks as these are likely to need replacement.

Artificial hollows are likely to need to be completely replaced after many years, and other circumstances may require the relocation of artificial hollows (e.g. if the tree they are in becomes damaged).

Applying this guidance to forest red-tailed black cockatoo and Baudin's cockatoo

The information presented here is based on experience with Carnaby's cockatoo, for which many examples of successful use of artificial hollows exist, and forest red-tailed black cockatoo for which a few known examples of use exist. However, to date there are no records of Baudin's cockatoo using artificial nest hollows.

A definite reason for this lack of use is not yet known but may relate to the location of artificial hollows installed to date (few or none placed in Baudin's cockatoo breeding sites where breeding is occurring and natural hollows are limiting) or design or installation issues, such as hollows not being installed high enough in tall forest canopy.

Before deciding to install artificial hollows for forest red-tailed black cockatoo or Baudin's cockatoo, it is recommended that you discuss your proposal with, and/or seek advice from, the Department of Biodiversity, Conservation and Attractions, BirdLife Australia, or the WA Museum.



Artificial hollow base needing repair.
Photo by Christine Groom

Maps of Black Cockatoo Breeding Range

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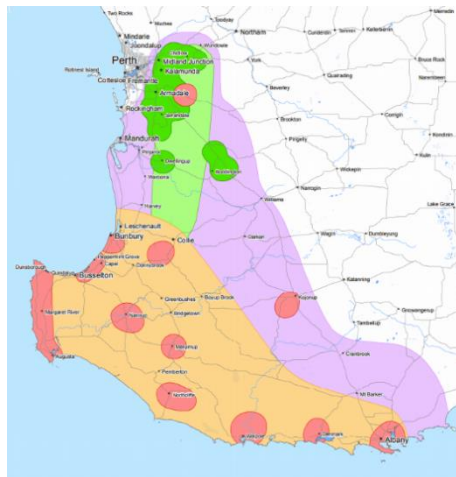


Image: [Commonwealth of Australia, 2011](#)

The maps show the modelled distributions of Carnaby's cockatoo (left), Baudin's cockatoo (centre) and forest red-tailed black cockatoo (right). For Baudin's cockatoo, the breeding range is indicated by the red (known breeding areas) and yellow (predicted breeding range), and for Carnaby's cockatoo, the breeding range is indicated by the orange.

Artificial Hollows – best current design and installation specifications

The specifications below outline the most recent detailed specifications for artificial hollow construction installation and maintenance. These would provide for a well-constructed and installed artificial hollow that is most likely to have an adequate lifespan (minimum 50-years). To ensure longevity, regular maintenance will be required on the nesting material, sacrificial post, and removal of debris from the hollow.

It is highly recommended that any artificial hollows installed as a condition of environmental approval (for example where the artificial hollow is expected to provide benefit for a long period), or installed on DBCA managed lands would meet these specifications as a minimum.

Artificial Hollow Construction Specifications

- Dimensions:** internal diameter 375mm (430 mm external), 1200 mm in height, and installed a minimum of 4 m above ground on private property and 8 m on public land.
- Pipe material:** Fifty-year UV rated culvert pipe (polypropylene material used with corrugated outer wall and thin inner sleeve. Recommended brand or similar: The 'Vinidex StormPRO' pipes are twin wall, corrugated, polypropylene pipes for non-pressure stormwater and drainage applications, which meet all the requirements for artificial hollows.
- Chain:** 6 mm galvanised (not zinc plated). The hollows will be attached to the tree by chain and fixed by 4 points.
- Fixings:** Galvanised M10 coach screws four x 75 mm. Two on the weight bearing chain at the top and one each side of the hollow.
- Ladder:** 50 x 50 mm square galvanised weldmesh 4mm thick.
- Chewing posts:** Untreated Jarrah, Marri or Wandoo that meet requirements in "Adding ladders and sacrificial chewing posts" above.

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Artificial hollow design, the fixing method, and the sacrificial chewing post extending above the hollow rim. Left image shows the side chains that are to be at a 30-degree upwards angle to allow the hollow to move up the tree as the tree grows. Right image shows the top weight bearing fixing which is to be 100 mm above the hollow to allow upwards movement.



Left image shows the internal view, including substrate material placed on the floor to line the hollow, and the internal weld mesh ladder. Substrate material must be coarse, hard, wood chips at least 200 mm deep.

Centre image shows one hard wood sacrificial post which is to fit and connect to the rim of the hollow by a hook screwed to the post to ensure it does not come loose, block the hollow or injure the occupants.

Right image shows the hard plastic floor which is to be securely fixed with a minimum of 12 small drainage holes. Larger holes may result in the occupants chewing the base.

Monitoring and Maintaining Artificial Hollows

It is important to continue a regime of regular maintenance for however long the artificial hollow is required. Artificial hollows erected as a condition of development to offset the loss of natural hollows may be required to be available and maintained for the life of the development approval. As part of establishing artificial hollows the responsibility and regime for long term monitoring and maintenance should also be established.

Periodic maintenance checks should be undertaken at least every two years, preferably annually, for as long as the artificial hollow is required. Maintenance actions should be completed prior to the breeding season.

Further Reading

DBCA webpage and fauna profiles: [Black cockatoos](#)

Department information sheets: [Fauna Note – Corellas and other flocking cockatoos](#)

BirdLife Australia webpage and brochure: [Identify your Black cockatoo](#)

Western Australian Museum webpage and fact sheets: [Cockatoo Care](#)

Saunders DA et al. (2022) Artificial nesting hollows for the conservation of Carnaby's cockatoo *Calyptorhynchus latirostris*: definitely not a case of erect and forget. Pacific Conservation Biology [doi:10.1071/PC21061](https://doi.org/10.1071/PC21061)

Acknowledgements

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Last updated: 08 Feb 2023



Clearing Permit Decision Report

1 Application details and outcome

1.1. Permit application details

Permit number:	CPS 10568/1
Permit type:	Purpose permit
Applicant name:	Green Steel of WA Collie Pty Ltd
Application received:	24 March 2024
Application area:	29.6 hectares of native vegetation
Purpose of clearing:	Construction of the Collie Steel Recycling Mill
Method of clearing:	Mechanical Clearing
Property:	Lot 2 on Deposited Plan 74040, Palmer Lot 1486 on Deposited Plan 11082, Shotts Lot 1505 on Deposited Plan 110876, Shotts Collie State Forest (PIN 1041576)
Location (LGA area/s):	Shire of Collie
Localities (suburb/s):	Palmer and Shotts

1.2. Description of clearing activities

Green Steel of Western Australia (GSWA) is proposing to establish a green steel recycling facility (green steel recycling steel mill) within the Coolangatta Industrial Estate. The facility is intended to recycle approximately 450,000 tonnes of scrap metal, which is currently being exported overseas from Western Australia for processing. The facility will turn the scrap metal into reinforcing bar (rebar), predominantly for the Australian market (GSWA, 2024b).

The development envelope is a 75-hectare area within a larger 302-hectare site. It is located approximately five kilometres to the north-east of the Collie townsite and comprises of land generally between the Blue Waters Power Station, Griffin Coal's Ewington open cut mine and the Collie State Forest. Majority of site is currently being used for grazing purposes (GSWA, 2024b).

The vegetation proposed to be cleared is distributed across four properties (see Figure 1, Section 1.5). The proposed clearing include:

- Clearing of 21.1 hectares of native vegetation within Lot 2 on Deposited Plan 74040, Lot 1486 on Deposited Plan 11082 and Lot 1505 on Deposited Plan 110876, for the purpose of constructing the Collie steel mill and the rail line associated with this project.
- Unavoidable clearing of 8.5 hectares within the Collie State Forest is required to construct the rail line which will connect the Collie Steel Mill to the existing main rail line.

The majority of the vegetation proposed for clearing is mapped as forest of *Eucalyptus marginata* subsp. *marginata* (*Allocasuarina fraseriana*) over pasture and is considered parkland cleared (Onshore Environmental, 2024c). The majority of the vegetation is identified as being in a completely degraded to degraded condition (Keighery, 1994) and good to very good condition (Keighery, 1994) within the State Forest (Onshore Environmental, 2024c).

1.3. Decision on application

Decision:	Granted
Decision date:	28 January 2025
Decision area:	29.6 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 (department) advertised the application for 21 days and no submissions were received.

In making this decision, the Delegated Officer had regard for:

- avoidance and minimisation actions implemented by the applicant along with consideration of alternative sites;
- site characteristics and analysis of flora, fauna and ecological communities recorded/mapped within the local area (a 10 kilometres radius buffer from the application area) (See Appendix B);
- the 10 Clearing Principles set out in Schedule 5 of the EP Act (see Appendix C);
- a detailed assessment of the clearing impacts on environmental values (see Section 3.2);
- available datasets at the time of the assessment (see Appendix G);
- other matters considered relevant to the assessment (see Section 3.3) which include:
 - The site is located within the wider Coolangatta Industrial Estate (CIE) which is subject to further planning by the State to deliver a strategic industrial area consistent with the Shire of Collie's Local Planning Strategy, and to provide development ready industrial land.
 - The application area is zoned 'Industrial Development' under the Shire of Collie's Local Planning Scheme No 6. Development Approval was approved by the Regional Joint Development Assessment Panel (RJDAP) on 15 May 2024.
 - Works Approval/ Licence under Part V (Division 3) of the EP Act was obtained from the department on 2 September 2024.
- the additional information obtained during the assessment, including the findings of:
 - a targeted camera trap fauna assessment (Onshore Environmental, 2023);
 - black cockatoo habitat tree assessment (Onshore Environmental, 2024a);
 - a targeted vertebrate fauna survey (Onshore Environmental, 2024b)
 - a detailed flora and vegetation report (Onshore Environmental, 2024c); and
 - an environmental impact assessment (GHD, 2024).
- expert advice received from the Department of Biodiversity, Conservation and Attractions (DBCA, 2024); and
- internal expert advice received from the department's water source protection branch regarding *Country Areas Water Supply Act 1914* (CAWS) matters (DWER, 2024a).

In addition to the above, the Delegated Officer also took into consideration the necessity and purpose of the proposed clearing which includes:

- The proposed Collie Steel Mill is expected to recycle 500,000 tonnes of WA scrap steel which is currently exported or landfilled.
- The Collie Steel Mill will create a circular economy for steel in WA while eliminating between 200,000 and 800,000 tonnes of carbon dioxide emission per annum compared to existing methods of steel production.
- The project will create over 500 long term, highly skilled jobs for workers most impacted by Collie's energy transition and 2000 indirect jobs.
- The project will contribute around 450 million dollars to WA's economy annually.
- The project will bring in critical rail infrastructure and act as a catalyst to help activate the Coolangatta Strategic Industrial Area (SIA) by attracting other industries to co-locate to support the mill, helping Collie transition from its current coal-based industries to become a green manufacturing hub for the State; and
- This project is significant in the implementation of Collie's Just Transition Plan and creating future skilled employment in the area, with the State's commitment to close State run coal fired power stations in Collie.

The assessment identified that the proposed clearing will result in:

- the loss of approximately 27.23 hectares of native vegetation that provides suitable foraging habitat for *Zanda latirostris* (Carnaby's black cockatoo), *Zanda baudinii* (Baudin's black cockatoo) and the *Calyptorhynchus banksii naso* (Forest red-tailed black cockatoo) species. The 27.23 hectares comprises of:
 - 24.66 hectares of high quality black cockatoo foraging habitat; and
 - 2.57 hectares of low quality black cockatoo foraging habitat;
- the loss of approximately 8.5 hectares of remnant vegetation within a conservation area, that is the Collie State Forest;
- the loss of two suitable nesting trees, with no signs of past or current use, for Carnaby's black cockatoo, Baudin's black cockatoo and Forest red-tailed black cockatoo species.
- reduction of native vegetation within the land holding below the 10 per cent threshold outlined in the *Country Areas Water Supply Act 1947* (CAWS Act) and may increase salinity within the catchment;
- the potential introduction and spread of weeds into adjacent vegetation, which could impact on the quality of the adjacent vegetation and its habitat values; and
- cause potential land degradation in the form of wind erosion.

After consideration of the available information, as well as the applicant's minimisation and mitigation measures (see Section 3.1), the Delegated Officer determined that some of the impacts of the proposed clearing, including direct impacts to individual fauna, indirect hydrological impacts, the risk of land degradation, and the potential to facilitate the introduction of weeds and dieback, can be minimised and managed to be unlikely to lead to an unacceptable risk to environmental values through permit conditioning. However, impacts to native vegetation that is representative of significant foraging habitat for black cockatoo species, impact to deep rooted vegetation within a landholding containing less than 10 % vegetation cover within a CAWS area, and impact on vegetation growing within State Forest remained significant even after the application of minimisation and mitigation measures and constitutes a significant residual impact.

Having considered the environmental impacts outlined above, the applicant's implementation of the mitigation hierarchy and planning and other matters (including the consistency of the proposal with the planning framework and the public benefit of the proposed Steel Mill), the Delegated Officer determined that, on balance, it was appropriate to grant the clearing permit subject to an adequate environmental offset being provided by the proponent, consistent with the *WA Environmental Offsets Policy* (2011) and the *WA Environmental Offsets Guidelines* (2014), to counterbalance the significant residual impacts to native vegetation that provides suitable foraging habitat for black cockatoo species and vegetation occurring within State Forest (see Section 4).

Given the above, the Delegated Officer determined that the proposed clearing is unlikely to have any long-term adverse impacts on the environment, and that management, mitigation and offset measures conditioned on the clearing permit will mitigate and offset impacts. The Delegated Officer decided to grant a clearing permit subject to conditions to:

- avoid, minimise to reduce the impacts and extent of clearing;
- take hygiene steps to minimise the risk of the introduction and spread of weeds;
- undertake slow, progressive one directional clearing to allow terrestrial fauna to move into adjacent habitat ahead of the clearing activity;
- engage a fauna specialist to inspect the proposed clearing area immediately prior to, and for the duration of clearing activities for the presence of south-western brush-tailed phascogale, wambenger (*Phascogale tapoatafa wambenger*);
- engage a fauna specialist to inspect the two suitable black cockatoo nesting hollows prior to clearing, and install artificial hollows if the trees cannot be retained.
- revegetation of 22.5 hectares from a completely degraded (Keighery, 1994) condition to a good condition (Keighery, 1994); with deep rooted species (Jarrah and Marri) that will provide suitable foraging and future roosting and nesting habitat for black cockatoo species; and
- conserve and protect in perpetuity, of 200.7 hectares of high quality black cockatoo habitat.

1.5. Site map



Figure 1 Map of the application area

The areas crosshatched yellow indicate the areas authorised to be cleared under the granted clearing permit.

2 Legislative context

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

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

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

Other legislation of relevance for this assessment include:

- *Biodiversity Conservation Act 2016* (WA) (BC Act)
- *Conservation and Land Management Act 1984* (WA) (CALM Act)
- *Country Areas Water Supply Act 1947* (WA) (CAWS Act)
- *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act)
- *Planning and Development Act 2005* (WA) (P&D Act)
- *Soil and Land Conservation Act 1945* (WA)

Relevant policies considered during the assessment include:

- *Environmental Offsets Policy* (2011)

The key guidance documents which inform this assessment are:

- *A guide to the assessment of applications to clear native vegetation* (DER, December 2013)
- *Procedure: Native vegetation clearing permits* (DWER, October 2019)
- *Environmental Offsets Guidelines* (August 2014)
- Technical guidance – *Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA, 2016)
- Technical guidance – *Terrestrial Fauna Surveys for Environmental Impact Assessment* (EPA, 2020)

3 Detailed assessment of application

3.1. Avoidance and mitigation measures

Avoidance

During the assessment, the Applicant revised the earthworks design and identified opportunities to reduce the overall application area, particular within the State Forest. This has reduced the overall proposed clearing area from 41.5 hectares to 29.6 hectares (GSWA, 2024c).

In addition to the above, the Applicant advised that the clearing of 0.25 hectares was avoided by proposing to use horizontal directional drilling for the water pipeline installation (GSWA, 2024d).

The applicant advised that the proposed clearing has been restricted to the smallest extent possible and to disturbed areas, to minimise the clearing of vegetation. During the design phase of the proposal (GSWA, 2024b) the following was considered:

- The steel mill plant and access road has been located in previously disturbed agricultural land within Lot 2 which has been subject to disturbance and is mapped as degraded to completely degraded (Keighery, 1994).
- The water pipeline is proposed to be constructed in an existing Western Power 25-metre-wide easement (portion of Lot 116 on Deposited Plan 412278) which is predominantly cleared.
- The Proposal has been designed so that the rail spur is located on the boundary of native vegetation (Collie State Forest) and adjacent to existing disturbed land to avoid fragmentation, avoid clearing of trees with suitable hollows for black cockatoos and to reduce indirect impact of clearing.

Due to the size of the facility, bushfire management requirements and the need for connecting to the existing rail loop adjacent to the application area, clearing of 29.6 hectares of native vegetation is required (GSWA, 2024b).

Mitigation

A Construction Environmental Management Plan will be implemented throughout the project (GSWA, 2024d). The plan comprises of:

- Clearing management;
- Fauna spotter to be on site during clearing;
- Hazardous materials contained and managed using MSDS

- Waste management processes implemented
- Dust management processes implemented
- Noise management
- Stabilisation processes implemented to minimise erosion
- Hygiene managed to avoid introduction and spread of dieback / weeds

Revegetation on site to mitigate impacts of the proposed clearing was not deemed feasible given the future development plans as part of the Coolangatta Industrial Area structure plan (GSWA, 2024c).

After consideration of avoidance and mitigation measures, it was determined that an offset to counterbalance the significant residual impacts to black cockatoo foraging habitat and vegetation growing in state forest were necessary. In accordance with the Government of Western Australia's *Environmental Offsets Policy 2011* and *Environmental Offsets Guidelines 2014*, 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.

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 (see Appendix C) identified that the impacts of the proposed clearing present a risk to biological values (fauna, adjacent flora and vegetation), conservation areas and land 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.

3.2.1. Biological values (fauna) - Clearing Principles (b)

Assessment

Fauna habitat within the application area was described as (Onshore Environmental, 2023; Onshore Environmental, 2024b):

- *Eucalyptus marginata* (jarrah) - *Allocasuarina fraseriana* (sheoak) Forest;
- Parkland cleared Jarrah Forest remnant; and
- Paddock/disturbed areas.

The fauna surveys and the black cockatoo habitat assessments made the following observations (Onshore Environmental, 2023; Onshore Environmental, 2024a; Onshore Environmental, 2024b):

- Brush-tailed Phascogale (*Phascogale tapoatafa wambenger*) listed as Conservation Dependant under the BC Act was recorded on 14 occasions from four cameras.
- Western Brush Wallaby (*Notamacropus irma*) listed as Priority 4 fauna by the DBCA was recorded on three occasions from three cameras.
- Roosting evidence of a black cockatoo species including droppings, feathers and branch clippings was recorded at one location within the parkland cleared Jarrah Forest habitat.
- Direct observation of Baudin's black cockatoo and the Forest red-tailed black cockatoo feeding on marri and jarrah nuts were observed within the survey area.
- Foraging evidence of Forest red tailed black cockatoo from 34 locations and foraging evidence of Baudin's black cockatoos from five locations were identified within the survey area.
- Two trees with hollows of suitable size, orientation and depth were recorded within the application area, however no current or past signs of use by black cockatoo species were identified.

According to available databases, a total of 17 conservation significant fauna species have been recorded within the 10 kilometres radius local area. Noting the habitat requirements, distribution of the recorded species, the mapped vegetation type, the condition (Keighery, 1994) of the vegetation within the application area, as well as the findings of the fauna assessments (Onshore Environmental, 2023; Onshore Environmental, 2024a; Onshore Environmental, 2024b), the application area is likely to comprise suitable habitat for the following species:

- Black cockatoo species
 - *Zanda baudinii* (Baudin's black cockatoo) - Endangered
 - *Zanda latirostris* (Carnaby's black cockatoo) - Endangered
 - *Calyptorhynchus banksii naso* (Forest red-tailed black cockatoo) - Vulnerable
- *Falco peregrinus* (Peregrine falcon) – Specially Protected
- *Notamacropus Irma* (Western brush wallaby) – Priority four

- *Pseudocheirus occidentalis* (western ringtail possum, ngwayir) – Critically endangered
- *Phascogale tapoatafa wambenger* (south-western brush-tailed phascogale, wambenger) – Conservation dependent
- *Isodon fusciventer* (quenda, southwestern brown bandicoot)

Black cockatoo species

The application area is mapped within the known distribution zones of the endangered Baudin's cockatoo, Carnaby's cockatoo and the vulnerable Forest red-tailed black cockatoo (FRTBC), collectively referred to as 'black cockatoos' hereafter. Baudin's and FRTBC cockatoo are more commonly associated with the forests of the Jarrah Forest Bioregion, with Carnaby's cockatoo more commonly associated with the Swan Coastal Plain (DAWE 2022).

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).

Available databases indicate that there are two black cockatoo roosts within the local area with the closest being approximately 6.2 kilometres from the application area. No black cockatoo breeding sites are recorded within a 12-kilometre radius from the application area.

Foraging habitat

Critical foraging habitat for black cockatoo species includes foraging material that is within an approximate six-to-12-kilometre radius of a nesting site and within six kilometres of a night roosting site. The preferred foraging habitat for each of the species is described below (DAWE, 2022):

- Baudin's cockatoo – eucalypt woodlands and forest, proteaceous woodland, and heath. Primarily feeding on marri during the breeding season and non-native species outside of the breeding season (DAWE, 2022). During the breeding season (October to late January/early February), Baudin's has a preference for marri seeds (Commonwealth of Australia, 2012).
- Carnaby's cockatoo – Native shrubland, kwongan heathland and woodland on seeds, flowers and nectar of native proteaceous plant species (*Banksia* spp., *Hakea* spp. and *Grevillea* spp.), as well as *Callistemon* spp. and Marri.
- Forest red-tailed black cockatoo – Primarily seeds of jarrah and marri in woodlands and forest, and edges of karri forests, including wandoo and blackbutt. Forages on *Allocasuarina* cones, fruits of *Persoonia longifolia* (snottygobble) and *C. haematoxylon* (mountain marri). Other less important foods include Blackbutt, Bullich, *Allocasuarina fraseriana*, *Hakea* spp., Tuart, *E. decipiens* (redheart moit) and *E. lehmannii* (bushy yate).

Food resources within the range of breeding sites and roost sites are important to sustain black cockatoo populations. Foraging resources are therefore, viewed in the context of known breeding and night roosting sites. It is considered that foraging habitat within 6 to 12 kilometres of an application area are a significant food source (DAWE, 2022).

The application area contains jarrah and marri species which are known as primary foraging habitat for all three species of black cockatoo. Foraging evidence of Baudin's and FRTBC was observed during the fauna survey (Onshore Environmental, 2024a). According to the black cockatoo assessment report (Onshore Environmental, 2024a). The proposed clearing area comprised of 24.66 hectares of high-quality foraging habitat and 2.57 hectares of low-quality foraging habitat (Onshore Environmental, 2024a) for black cockatoo.

Although the local area is highly vegetated and comprises of vegetation that can provide foraging resources to black cockatoos, the cumulative impact of clearing black cockatoo foraging habitat within the Jarrah Forest is resulting in an ongoing decline in foraging resources available to black cockatoos. Based on this, the proposed clearing is likely to have a significant impact on black cockatoo foraging.

Based on the above findings and the site context, it is considered that majority of the application area provides high quality foraging habitat for black cockatoos. Clearing of this vegetation would result in a significant residual impact and requires an offset.

Breeding

Breeding habitat for black cockatoos includes trees that either have a suitable nest hollow or are of a suitable diameter at breast height (DBH) to develop a nest hollow. Suitable DBH for nest hollows is 500 millimetres for most tree species (Commonwealth of Australia, 2012; DAWE, 2022) however, is reduced to 300 millimetres for wandoo and salmon gum (Commonwealth of Australia, 2012). Breeding habitat for species of black cockatoos is described as the following (DAWE, 2020):

- Baudin's cockatoo - Generally in woodland or forest but may also breed in former woodland or forest now present as isolated trees. Nest in hollows in live or dead trees of *Eucalyptus diversicolor* (karri), *Corymbia calophylla* (marri), *Eucalyptus wandoo* (wandoo) and tuart *Eucalyptus gomphocephala* (tuart).
- Carnaby's cockatoo - Generally in woodland or forest, but also breeds in former woodland or forest now present as isolated trees. Nest in hollows in live or dead trees of *Eucalyptus Salmonophloia* (salmon gum), wandoo, tuart, jarrah, *Eucalyptus rudis* (flooded gum), *Eucalyptus loxophleba* subsp. *Loxophleba* (york gum), *Eucalyptus accedens* (powder bark), karri and marri.
- FRTBC - Generally in woodland or forest but may also breed in former woodland or forest now present as isolated trees. Nest in hollows in live or dead trees of marri, karri, wandoo, *Eucalyptus megacarpa* (bullish), *Eucalyptus patens* (blackbutt), tuart and jarrah.

According to the most recent black cockatoo habitat assessment (Onshore Environmental, 2024b) results, the proposed clearing area includes 30 potential black cockatoo habitat trees within the survey area. The 30 trees were further analysed to determine whether they contained hollows that were suitable for black cockatoo breeding. Two suitable nesting trees that contained hollows of suitable size and orientation with sufficient depth were identified. No evidence of use of these hollows, by the black cockatoo birds were recorded during the survey. The hollows on the remaining 27 trees were either too small, or had an unsuitable orientation or depth to be identified as hollows suitable for black cockatoo breeding (Onshore Environmental, 2024b). Details and locations of habitat trees proposed for clearing are provided in Appendix F.

Given the two potential suitable breeding hollows within the application area, a pre-clearance survey to identify whether the hollows are currently being used is required prior to the commencement of the proposed clearing. If it is determined that the hollows are being used, clearing must not occur whilst it is in use for that breeding season. To ensure there is no net loss in the availability of suitable nesting hollows for black cockatoos, the applicant must install artificial hollows within the proposed offset area.

Roosting

Roosting habitat is defined as a suitable tree (generally the tallest) or group of tall trees, native or introduced, usually close to an important water source, within an area of quality foraging habitat that provides black cockatoos with shelter during the heat of the day and safe resting places at night (EPA, 2019). Individual night roosting sites need suitable foraging habitat and water within six kilometres (EPA, 2019).

According to the black cockatoo habitat assessment (Onshore Environmental, 2024b), evidence of roosting was identified within the application area. Given the highly vegetated local area and the remnant vegetation available to the east of the application area which is likely to contain tall trees that provide roosting habitat for the black cockatoos, it is not likely that the proposed clearing will significantly impact black cockatoo roosting habitat in the local area.

Brush-tailed Phascogale

The preferred habitat for phascogale species in WA is within dry sclerophyll forests and open woodlands that contain hollow bearing trees. The species almost exclusively forages among the tree canopy (DEC, 2012).

Brush-tailed Phascogale individuals were observed on 14 occasions within Jarrah-Sheoak Forest habitat during the field survey (Onshore Environmental, 2023). Approximately 15.5 hectares of suitable habitat for the Brush-tailed Phascogale (Jarrah-Sheoak Forest) is proposed to be cleared within the application area. Given the abundant remnant vegetation that is available within the local area, it is not consider likely that the proposed clearing would result in an impact to critical habitat for this species.

Clearing in a slow, progressive and directional manner towards adjacent vegetation is likely to reduce impacts to individuals that are present within the application area, during clearing. A condition requiring inspection and translocation of this species prior to clearing will also mitigate impacts to individuals present during clearing activities.

Western Brush Wallaby

Western brush wallaby inhabits 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 heathland. The species is highly mobile and does not rely on specialist niche habitats (DBCA, 2012). The species has been recorded approximately 0.56 kilometres from the application area.

Western brush wallaby individuals were observed on three occasions within Jarrah-Sheoak Forest habitat during the field survey of the application area (Onshore Environmental, 2023). The application area has connectivity with large areas of native vegetation to the south reserved under State Forest (Collie State Forest and Muja State Forest).

Based on the mobility of the species, the limited habitat preferred by the species within the application area and the abundant vegetation available adjacent to the application area, the proposed clearing will not significantly impact on the western brush wallaby.

However, given the Western Brush Wallaby was observed at multiple location within the survey area, there is a high likelihood that this species would be present within the application area at the time of clearing. Clearing in a slow, progressive and directional manner towards adjacent vegetation is likely to reduce impacts to individuals that are present within the application area, during clearing. The proposed clearing is unlikely to result in a significant residual impact on the western brush wallaby.

Western ringtail possums

The *Pseudocheirus occidentalis* (Western Ringtail Possum (WRP)) is listed as Critically Endangered under the BC Act, as well as the EPBC Act. According to the WRP recovery plan (DPaW, 2017), habitat critical to survival for WRP is not well understood and is therefore, based on the habitat variables observed where WRP are most commonly recorded. These appear to vary between key management zones. The common findings however are high nutrient foliage, availability for food, suitable structure for protection/nesting and canopy continuity to avoid/escape predation and other threats. Current distribution of WRP in the south-west of Western Australia is limited to three management zones and within the Southern Forest zone, WRP typically occupy within the jarrah forests near Manjimup where peppermint is generally absent (DPaW, 2017). WRP resting sites include constructed dreys and tree hollows, with dreys constructed in the canopy when hollows are not available (Jones et al, 1994). No observations of the WRP were recorded during the camera trap survey undertaken by Onshore Environmental (Onshore Environmental, 2024b).

WRP known habitat includes peppermint (*Agonis flexuosa*) dominated woodlands, jarrah (*Eucalyptus marginata*) and marri (*Corymbia calophylla*) forests, riparian vegetation with a canopy of Bullich (*Eucalyptus megacarpa*) or flooded gum (*Eucalyptus rudis*), karri (*Eucalyptus diversicolor*) forests, sheoak (*Allocasuarina fraseriana*) dominated woodlands, and other stands of myrtaceous trees growing near swamps, watercourses or floodplains (DPaW, 2017).

The vegetation within the application area is predominately Jarrah and Sheoak in a degraded condition (Keighery, 1994), except for the area proposed for clearing within the State Forest, where the condition of the vegetation is in good to very good condition (Keighery, 1994) (Onshore Environmental, 2024c). According to the available mapping, the application area is not mapped within WRP suitability area.

The fauna survey has identified the habitat within the proposed clearing area to be unsuitable for WRP given the openness of the understorey strata and the presence of feral animals such as foxes and cats (Onshore Environmental, 2024b). The lack of foliage cover over the parkland cleared portion of the application area and the edge effects of the State Forest is not ideal habitat for WRP. A small area of suitable habitat for WRP was identified within the survey area. However, this vegetation did not fall within the proposed clearing footprint (Onshore Environmental, 2024b).

A targeted search for WRP individuals and sign of evidence of use by WRP were conducted. The survey also searched for dreys or other potential day time refuge sites within the application area. No evidence of scats, dreys or scratching of tree trunks were identified. The sensor cameras that were placed throughout the application area did not capture any WRP's utilising the application area (Onshore Environmental, 2024b).

There is abundant, better-quality vegetation available adjacent to the application area that may provide suitable habitat for WRP. There were 16 records of the WRP from the local area with the closest record being approximately 3.4 kilometres from the application area. Based on the landscape context of the application area (edge of the State Forest and the openness of the application area) and the intact vegetation surrounding the application area, it is unlikely that the application area to contain significant habitat for this species.

Peregrine falcon

The Australian Museum website states that this species 'is found in most habitats, from rainforests to the arid zone, and at most altitudes, from the coast to alpine areas. It requires abundant prey and secure nest sites and prefers coastal and inland cliffs or open woodlands near water and may even be found nesting on high city buildings' (Australian Museum, 2020). This species is widespread and highly mobile, and is found in various habitats, and may utilise the application area. The nearest record is approximately four kilometres from the application area. Given the large home range, it is unlikely the proposed clearing will impact on significant habitat for the Peregrine falcon.

Quenda

Quendas are ground dwelling marsupials that tend to inhabit forest, woodland and heathland, usually with dense understorey vegetation, sometime wetland fringes. They forage for plant material, fungi and insects by digging in leaf litter and soil (DBCA, 2017). In their natural habitat, Quenda's live in dense understories in swampland areas, Banksia and Jarrah (*Eucalyptus marginata*) woodlands. However, Quendas have adapted to urban and suburban habitats in recent years (DBCA, 2017). According to available databases, the nearest record is approximately 0.693 kilometres from the application area with 21 records identified in the local area.

The fauna assessment conducted within the application area did not identify any quenda individuals or evidence of use by Quenda (Onshore Environmental, 2024b). The good to very good condition (Keighery, 1994) vegetation (Keighery, 1994) that may provide habitat for Quenda is located within the State Forest. Quendas are unlikely to be utilising the degraded area (Keighery, 1994) of the application given the open nature of the site. There is abundant amount of remnant native vegetation immediately south of the application area. Therefore, it is considered that the proposed clearing would not result in a significant residual impact on the availability of habitat for Quenda.

Conclusion

Based on the above assessment, the application area is likely to provide significant habitat for black cockatoos. For the reasons set out above, it is considered that the impacts of the proposed clearing to significant habitat for black cockatoos constitutes a significant residual impact. In accordance with the Environmental Offsets Policy (2011) and Environmental Offsets Guidelines (2014), this significant residual impact has been addressed through the conditioning of environmental offset requirements, as outlined under Section 4.

Conditions

To address the above impacts, the following conditions will be placed on the clearing permit:

- avoid and minimise clearing, to minimise the direct impacts to native vegetation
- 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.
- offset – revegetation and conservation of 22.5 hectares with black cockatoo habitat and the acquisition and conservation of 200.7 hectares of black cockatoo habitat.
- engage a fauna specialist to inspect the clearing area immediately prior to, and for the duration of clearing activities, for the presence of south-western brush-tailed phascogale and western brush wallaby.

3.2.2. conservation areas - Clearing Principles (h)

Assessment

Approximately 8.5 hectares of the application area is mapped within the Collie State Forest (Class A), which is a conservation area managed by the DBCA. The Applicant has advised that the proposed clearing within the State Forest to construct the rail lines to connect the Collie steel mill to the main rail line is unavoidable (GSWA, 2024c). The area of proposed clearing has been minimised by locating the rail line, where possible, outside or at the edge of the State Forest (GSWA, 2024c). The Applicant initially proposed to clear 18.5 hectares within the State Forest, however during the assessment the Applicant further avoid and minimised clearing in State Forest and reduced the proposed clearing area within the State Forest to 8.5 hectares. The Applicant advised that the footprint of the rail line:

- avoids fragmentation of native vegetation and fauna habitat; and
- avoids clearing of potential black cockatoo nesting trees with suitable hollow/s to the east of the rail spur; a

The proposed clearing of remnant vegetation within Collie State Forest constitutes a significant residual impact. The Applicant, as part of the offset requirements has agreed to undertake the following actions:

- revegetation of 22.5 hectares within Lot 73 on Deposited Plan 70696, Palmer; and
- acquisition of 200.7 hectares within Lot 1 on Diagram 13981, Scotts Brook.

The Applicant proposes to revegetation of 22.5 hectares within Lot 73 which will significantly contribute to the linkage between two portions of Harris River State Forest. The proposed offset at the Scott's Brook property is also adjacent to Tone-Perup Nature Reserve and is connected through continuous vegetation in the western portion of the offset site to this conservation area. The conservation in perpetuity of connected adjacent vegetation to this reserve will increase the conservation area by 75 hectares.

Conclusion

The proposed clearing is likely to result in a significant residual impact on the remnant vegetation within Collie State Forest, which is identified as a conservation area. It is considered that the Applicant's proposed offset adequately counterbalance the significant residual impact of the clearing by increasing the area protected for conservation and improving the ecological function of the landscape, including between conservation areas.

Conditions

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

- avoid and minimise clearing, to minimise the direct impacts to native vegetation
- weed and dieback management condition to minimize the spread of weeds and dieback within State Forest.
- offset – revegetation and conservation of 22.5 hectares within Lot 73 Collie-Williams Road and the acquisition and conservation of 200.7 hectares within 1270 Scotts Road.

3.2.3. Land and water resources - Clearing Principles (i)

Assessment

the proposed clearing area lies within the CAWS Act Wellington Dam Catchment Area which has been subject to native vegetation controls under the CAWS Act since November 1976, to prevent salinisation of water resources.

The proposed clearing is located in Zone D of the catchment which is a low salinity risk area where the CAWS Act Policy and Guidelines for Licences to Clear, allow for clearing for any purpose subject to the statutory requirement that greater than one-tenth native vegetation remain on the land holding (10 per cent). If more than one-tenth is proposed to be cleared, the clearing is not in accordance with the statutory requirements of the CAWS Act (DWER, 2024a).

Analysis of 2021 imagery indicates that approximately 10.2 per cent of remnant native vegetation remains within Lot 2 on Deposited Plan 74740. The proposed clearing within Lot 2 (23.05 ha within Lot 2), would reduce this native vegetation coverage to only 2.5 per cent with 7.74 ha of native vegetation remaining on that land parcel. Advice from the department's water source protection branch advised that clearing of native vegetation on Lot 2 should be minimised and if this is not possible, then native vegetation should be restored to ensure that native vegetation extent is greater than 10 per cent on the property, post clearing to protect the water resource (DWER, 2024a). To comply with the requirements of the CAWS Act, planting of deep-rooted native vegetation would, therefore, need to occur over at least 22.5 hectares, if clearing cannot be minimised on Lot 2.

Furthermore, in order to be the most effective for the conservation of water resources, any offsets should be established within the high salinity risk Zone A of the CAWS catchment. It is the department's view that this action would satisfy the CAWS Act Part II A Section 12C(3) exceptional circumstances requirements.

Based on the above, the department has requested for an offset from the Applicant to minimise the risk to water resources. The Applicant advised that vegetation within Lot 2 was not possible due to constraints of future land use of the site. However, the Applicant has agreed to revegetate 22.5 hectares with deep rooted native vegetation within a completely degraded (Keighery, 1994) land parcel located within a high salinity risk Zone A area of the catchment, to ensure compliance with CAWS Act regulation requirements. The proposed offset area is located 3.8 kilometres north of the application area and will be conserved in perpetuity under a conservation covenant.

Conclusion

Due to the potential significant impact clearing may have on the increased risk of salinity within this catchment, a salinity mitigation offset is required when granting this clearing (DWER, 2022b). The revegetation proposed satisfies the exceptional circumstances constraint under Section 12C(3) of the CAWS Act. Further details on suitability of offsets can be found in Section 4.

Conditions

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

- revegetation and conservation of 22.5 hectares of deep-rooted native vegetation within Lot 73 Collie-Williams Road.

3.3. Relevant planning instruments and other matters

Collie Just Transition Plan

The State Government's Collie Just Transition Plan builds on the significant projects supported by the WA Government since 2017, for the economic transformation and diversification of the Collie district. The purpose of a Just Transition is to create sustainable future for Collie as it shifts away from a dependence on coal and coal-fired energy production (GHD, 2024b). The Just Transition includes a range of initiatives but includes:

- A strategic focus on maximising opportunities to workers affected by changes to the local economy.
- Achieving a transition away from emission intensive industries.
- Plan for new industries to offset changes to the local industry profile.

This proposed green steel mill is significant in the implementation of Collie's Just Transition Plan as it will create substantial future skilled employment in the Collie area (GHD, 2024b).

Approval under the EPBC Act

The Applicant has submitted an EPBC referral to DCCEEW which has been accepted and determined to be a controlled action on 01 July 2024. The proposed action, therefore, requires assessment and approval under the EPBC Act prior to any clearing can commence. The department notes that the Applicant has applied for approval under the EPBC Act and the application is currently under assessment (2024/09828).

Water Licences

The Applicant has advised that they have secured a water (scheme water) supply agreement from the Water Corporation to supply the proposed steel mill. Water Corporation advised that the scheme water supply is from the Great Southern Towns Water Supply Scheme (GSTWSS). Groundwater is not required for the activities associated with the construction of the green steel mill.

Development Approval

The application area is zoned 'Industrial Development' under the Shire of Collie Local Planning Scheme No 6. The Development Approval was approved by the Regional Joint Development Assessment Panel on 15 May 2024. Conditions on the Development Approval include the requirement to develop a construction management plan prior to commencement.

Prior to formal advertising as part of the development application, the Applicant undertook pre-consultation through multiple community drop-in sessions and advertising in the local newspaper and on the local radio station to obtain feedback on the proposal and answer community questions. The application underwent public consultation through the following ways, for a total period of 28 days: - Shire website from 27 February to 26 March; - Notification in local newspaper on 7 and 14 March; - Shire Facebook page on 5 and 12 March. No submissions were received from the public on the proposal.

Works Approval

The Applicant applied for a works approval for a prescribed premise under Part V (Division 3) of the EP Act. Works Approval/ Licence under Part V (Division 3) of the EP Act was obtained from the department on 02 September 2024.

State Forest Tenure considerations

A portion of the application area that is intended for the purpose of accommodating a spur line from the existing Griffin Coal rail loop occurs within the Collie State Forest. DBCA has advised that a formal process including wide consultation is required for an excision from State Forest for the rail spur element of the proposal to proceed. In addition, the area of State Forest under application is currently subject to a State Agreement, surrounding mining and industrial disturbance and uncertainties regarding future tenure and land use of the local area. An amendment to this agreement may also be required to facilitate authorisation to undertake clearing activities. DBCA has consented to the submission of a development application and native vegetation clearing application. This consent does not confer any right or support to enter the subject land for the applied activities (DBCA, 2024)

DBCA advised that they do not object to this proposal, however the applied clearing is currently not consistent with the allowable activities designated for State Forest tenure under the Forest Management Plan 2024 – 2033 (DBCA, 2024).

It is the Applicant's responsibility to ensure that they comply with the requirements of all Commonwealth, State, and local government legislation and obtain the legal authority to access and conduct the proposed activity within State Forest Tenure, prior to the commencement of clearing.

Native Title

There are two native titles claim over the area under application. The site of the proposed clearing is located within the boundaries of the registered Gnaala Karla Booja Indigenous Land Use Agreement (ID WI2015/005). Under section 24CA-24CL of the *Native Title Act 1993* (Cth), the department is required to provide an opportunity to the Gnaala Karla Booja Aboriginal Corporation to comment on the clearing permit application as it proposes clear native vegetation in Collie State Forest to construct a rail spur. No response from the Aboriginal communities were received.

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.

4 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:

- the removal of approximately 27.23 hectares of native vegetation that provides suitable foraging habitat for black cockatoo species. The suitable habitat comprised of:
 - 24.66 hectares of high quality foraging habitat
 - 2.57 hectares of of flow quality foraging habitat
- the removal of approximately 8.5 hectares of Collie State Forest which is classed as a conservation area.
- the loss of two suitable nesting trees for black cockatoo species.

Addition to the above, the proposed clearing lies within Zone D of the CAWS Act Wellington Dam Catchment Area and the proposed clearing will reduce the extent of remnant vegetation remaining on site from 10.2 per cent to 2.5 per cent (below the one-tenth retention threshold required under the CAWS Act).

In determining the appropriateness of an offset, the Delegated Officer took into consideration the applicant's implementation of the mitigation hierarchy and the public benefit of the proposed clearing (see Section 3.1). In considering these matters, the Delegated Officer determined that it was appropriate to grant the clearing permit in relation to the significant residual impacts, on the basis that a suitable environmental offset was implemented to counterbalance the impacts.

Consideration of alternatives:

- the Applicant has advised that on site revegetation is not possible due to the limited area of land remaining following construction of the steel mill and associated infrastructure (GSWA, 2024b).
- Revegetation on the remainder of Lot 2 is not possible due to the future development plans (Coolangatta industrial area) (GSWA, 2024b).

Offset 1:

To offset the significant residual impact of clearing within a Zone D catchment area and to comply with the CAWS Act, and to contribute to counterbalancing the impact to black cockatoo foraging habitat, the Applicant has proposed to revegetate 22.5 hectares with deep rooted native vegetation that provide suitable foraging habitat for black cockatoo species within Lot 73 Collie Williams Road. This proposed offset:

- Is located within the CAWS Wellington Dam Catchment Area – Zone A
- the site has the minimum revegetation area of 22.5 hectares as required to meet the salinity mitigation outcomes for the Wellington Dam Catchment Area;
- the site is located approximately 3.3 kilometres from the proposed clearing area, and is considered local revegetation;
- Harris River State Forest is located adjacent to the revegetation offset site; and
- Tranen consultants visited the site on November 2024 and determined that the site is suitable for establishing suitable foraging habitat for black cockatoos with deep rooted species (GSWA, 2024d).

The department has reviewed the proposed offset and advised the Applicant that the above offset would meet the requirements under the CAWS Act, and also contribute towards the offset for black cockatoo foraging habitat.

The Applicant proposed the following management objectives within the offset revegetation site (GSWA, 2024d):

- livestock exclusion by fencing and access control to property;
- control of weeds to not out compete revegetation;
- dieback does not significantly impact the offset site;

- the offset is not significantly impacted by frequent hot fires;
- revegetation to improve quality of foraging habitat for black cockatoos, with jarrah and marri species; and
- the site-specific revegetation works will be undertaken in accordance with a revegetation plan that is currently in preparation (to meet DCCEEW requirements).

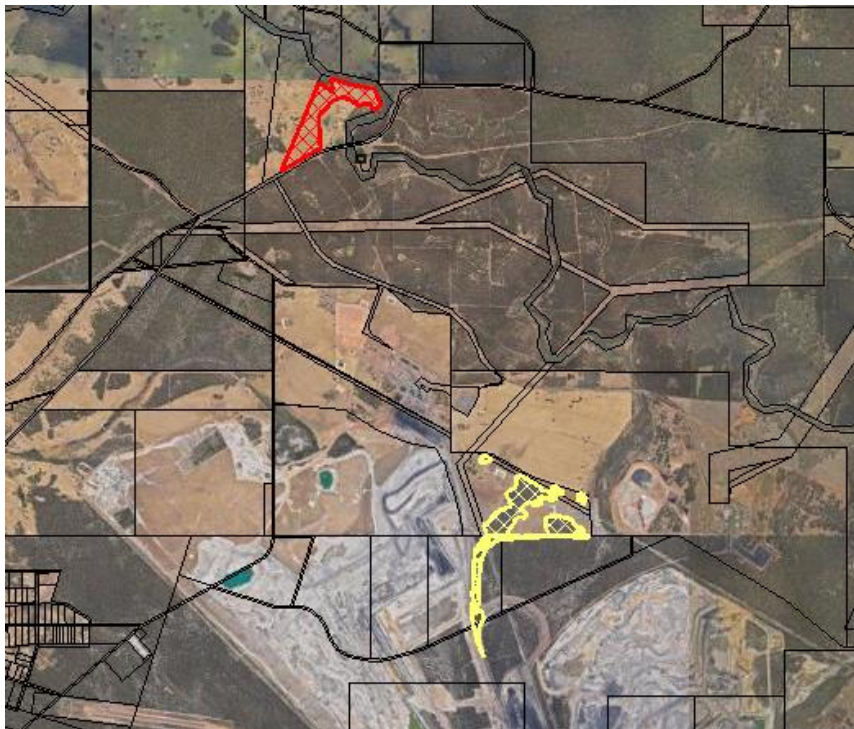


Figure 2: Location of the offset site 1 (hatched red) compared to the permit area (hatched yellow)

Offset 2

In addition to offset 1, the Applicant has proposed to conserve and protect 200.7 hectares of high quality foraging and potential roosting and breeding habitat for black cockatoo species located at 1270 Scotts Brook Road, Mayanup. This site is located approximately 78 kilometres south of the application area. A site assessment of the site was undertaken on 2 and 3 October 2024 by Onshore Environmental. The site assessment found (GSWA, 2024d):

- the vegetation within the proposed offset area comprises of Jarrah-Marri Forest and Jarrah-Wandoo Forest;
- FRTBC Individuals were observed on site during the survey with foraging evidence throughout the offset area (see Figure 3); and
- 52 potential black cockatoo nesting trees were identified within the proposed offset site. One tree with evidence of historical breeding use (known breeding tree) and six suitable nesting trees (with suitable hollows) were also observed (Figure 4). Further details about the habitat trees recorded from the offset are available under Appendix F.

Photographs of the Scotts Brook offset area (offset 2)



Plate 1 Jarrah-Marri Forest in the eastern remnant.



Plate 2 Jarrah Forest in the eastern sector of the central remnant.



Plate 2 Jarrah Forest in the eastern sector of the central remnant.



Figure 3: A map representing the black cockatoo observations and foraging evidence identified within the proposed land acquisition offset site (Offset 2).

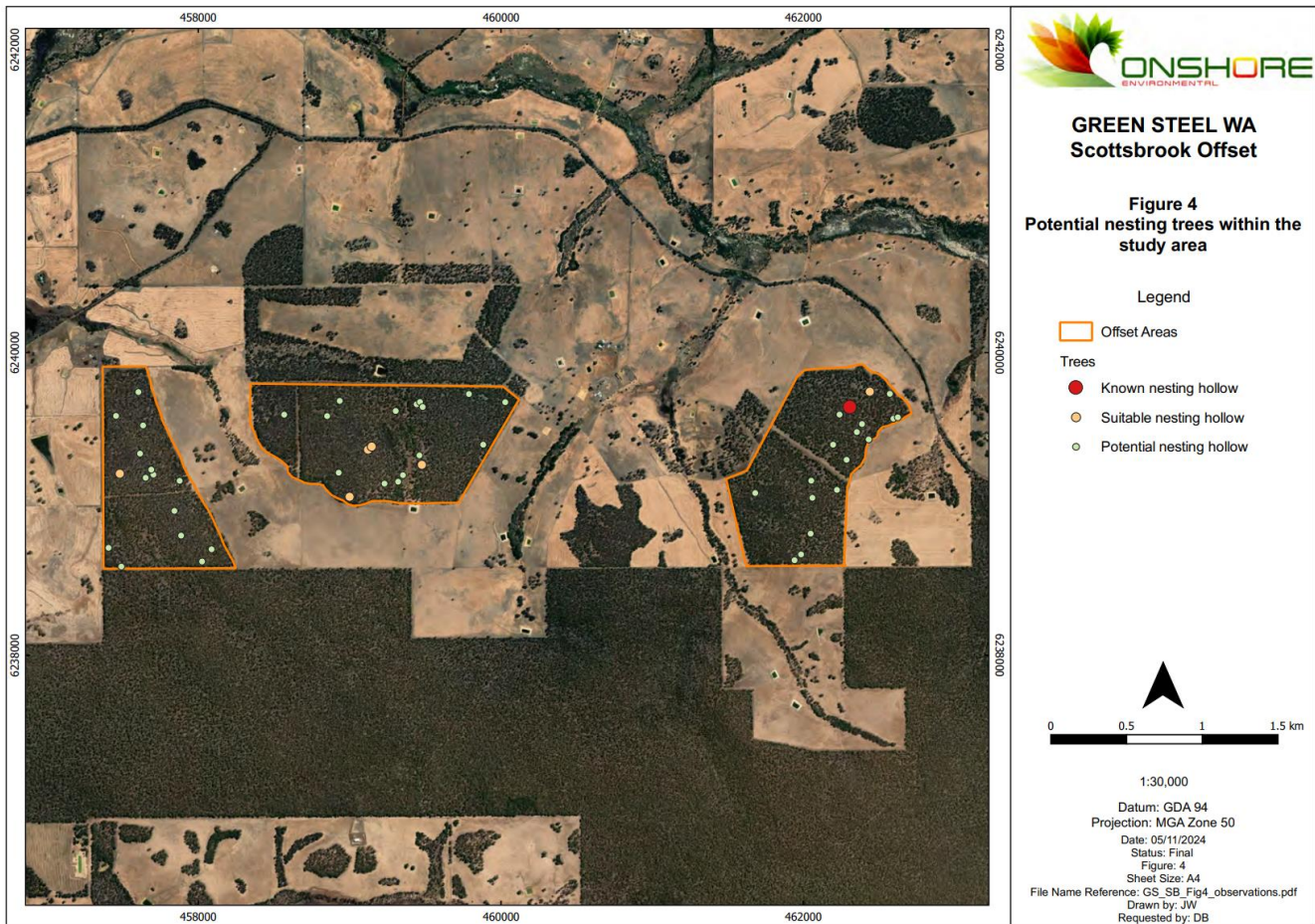


Figure 4: A map representing the locations of the known, suitable and potential black cockatoo nesting trees identified within the proposed land acquisition offset site (Offset 2).

Based on the information received through the offset proposal, an offset calculation using the WA offset metric ‘calculator’ was undertaken by the department. The calculation has identified that:

- Revegetation of 22.5 hectares within Lot 73 Collie-Willams Road would adequately counterbalance the clearing within a CAWS Act catchment.
- The revegetation of 22.5 hectares from a completely degraded condition (Keighery, 194) to a good condition (Keighery, 1994), with Jarrah and Marri species will counterbalance the significant residual impact of clearing black cockatoo foraging habitat by 28 per cent.
- The conservation in perpetuity, under a conservation covenant of 200.7 hectares within 1270 Scotts Road offset site will offset the remaining significant residual impact on black cockatoo foraging habitat, by 72 per cent. The 200.7 hectares is to be placed under a *Soil and Lands Conservation Act 1945* Conservation Covenant to protect the vegetation in perpetuity.

To counterbalance the impact to 8.5 hectares of native vegetation within Collie State Forest a three to one offset is required. Given 8.5 hectares of State Forest is proposed for clearing, an area of 25.5 hectares, to be protected in perpetuity, is required. The department considers that the the above offsets will adequately counterbalance the impacts to State Forest through increasing connection between conservation areas and conserving in perpetuity an additional 200.7 hectares of native vegetation.

Conclusion

The Delegated Officer considers the proposed offset is consistent with the WA Environmental Offsets Policy (2011) and the WA Environmental Offsets Guidelines (2014), and that it adequately counterbalances the significant residual impacts to native vegetation that is representative of foraging habitat for black cockatoo species and is vegetation that occurs within State Forest. The justification for the values used in the offset calculation is provided in Appendix F.

End

Appendix A. Additional information provided by applicant

Information	Description
A black cockatoo habitat tree report (Onshore Environmental, 2024a)	Onshore Environmental Consultants Pty Ltd (Onshore Environmental) undertook a black cockatoo habitat tree assessment on the 11th and 12th of October 2023 and 22nd of February 2024. The assessment included the presence and the condition of foraging, breeding and roosting habitat for black cockatoo species within the study area.
Fauna camera trap report (Onshore Environmental, 2023)	<p>Onshore Environmental was commissioned by GSWA to undertake a targeted fauna survey using camera traps. The field survey was completed on the 11th of October 2023 (camera deployment) and the 8th of November 2023 (camera retrieval). This is within the recommended survey timing in the southern climatic region for reptiles, birds and mammals.</p> <p>Preferred habitat and indirect evidence of fauna species within the study area was also assessed and documented. A total of ten motion sensor cameras were placed within the study area where habitat for fauna species was present. Location of these cameras are represented in Figure 12 under Appendix F.</p>
Targeted Vertebrate Fauna survey (Onshore Environmental, 2024b)	<p>Onshore Environmental was commissioned by GSWA to undertake an additional targeted fauna survey. The survey was conducted between 05 and 07 August 2024.</p> <p>Targeted searches were undertaken for conservation significant fauna species throughout the study area. A targeted western ringtail possum survey was also undertaken as part of this survey.</p>
Flora and vegetation report (Onshore Environmental, 2024c)	<p>Onshore Environmental completed a single season detailed flora and vegetation survey of the area proposed for the Collie Green Steel Recycling Mill over six field days between the 1st and 14th of September 2023, 8th of November 2023 and 22nd of February 2024. A target search was completed on the 22 February 2024.</p> <p>The survey area includes approximately 148.9 ha (including 77 ha of largely disturbed ground and cleared annual pasture, and 71 ha of native vegetation).</p> <p>The field survey involved systematic sampling using 24 quadrats. The quadrat sizes were 10 metres by 10 metres in size.</p>
Assessment against the ten clearing principals (GHD, 2024a)	On behalf of the GSWA, GHD Environmental has undertaken an assessment against the 10 clearing principles set out in Schedule 5 of the EP Act.
Matters of National Environmental Significance assessment (GHD, 2024a)	A report was prepared by GHD Pty Ltd on behalf of GSWA that includes an assessment of Matters of National Environmental Significance (MNES) listed under the Environment Protection and <i>Biodiversity Conservation Act 1999</i> (EPBC Act) which may be potentially impacted by the Proposal.

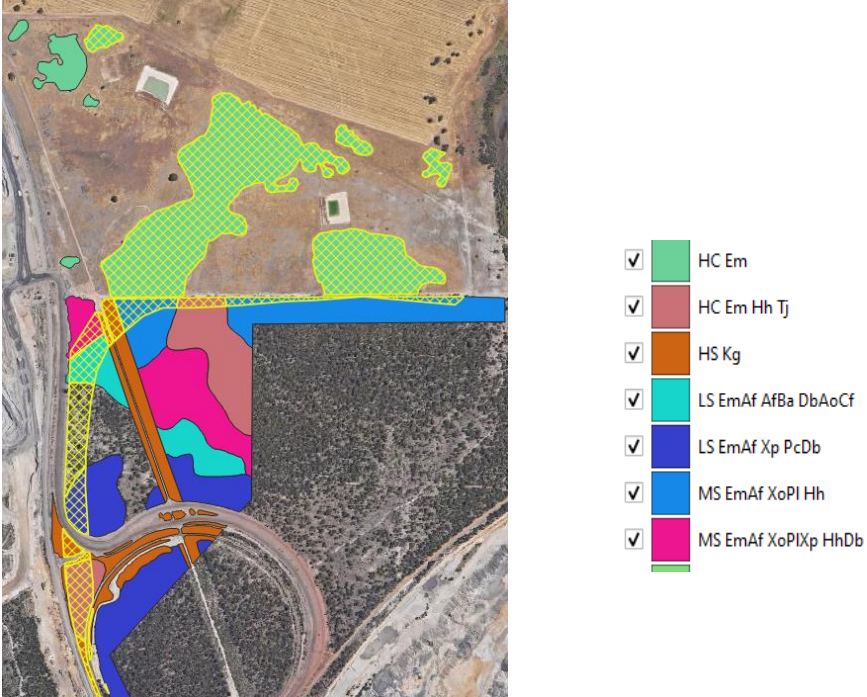
Information	Description
Project overview (GSWA, 2024b)	A report was prepared by GHD on behalf of GSWA that include information about the activities associated with the construction of the Green Steel Recycling Mill to support the clearing permit assessment process.
Works Approval supporting documentation (GHD, 2024b)	A report was prepared by GHD on behalf of GSWA to support the works approval application for the Collie Green Steel Recycling Mill to be developed. This report included technical information relevant to the proposal and provided information in regard to construction of the works. It also includes benefits the proposal will include.


Appendix B. Site characteristics

B.1. Site characteristics

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

Characteristic	Details
Local context	<p>The area proposed to be cleared is located approximately 5 kilometres to the north-east of the Collie townsite. The application area falls within the wider Coolangatta Industrial Estate (CIE). Majority of the CIE is cleared of vegetation.</p> <p>Aerial imagery and Spatial data indicates the local area (10-kilometre radius from the centre of the area proposed to be cleared) retains approximately 60 per cent of the original native vegetation cover.</p>
Ecological linkage	The application area is surrounded by the mapped The South West Regional Ecological Linkage (SWREL) from all directions. The SWREL is mapped approximately 1.2 kilometres north of the application area and more than 2 kilometres to other directions from the application area. The proposed clearing is not considered to significantly impact the connectivity of this linkage.
Conservation areas	The southern section of the application area (8.5 ha) proposed for the railway is mapped within the Collie State Forest, which is an A class reserve.
Vegetation description	<p>The flora and Vegetation survey (Onshore Environmental, 2024c) indicate the vegetation within the proposed clearing area consists of:</p> <ul style="list-style-type: none"> • Veg unit HC Em, that is forest of <i>Eucalyptus marginata</i> subsp. <i>marginata</i> (<i>Allocasuarina fraseriana</i>) over parkland cleared ground cover. • Veg unit HC Em Hh Tj, that is forest of <i>Eucalyptus marginata</i> subsp. <i>marginata</i> (<i>Allocasuarina fraseriana</i>) over Low Heath of <i>Hibbertia hypericoides</i> (<i>Bossiaea ornata</i>) over open low sedges of <i>Netrostylis</i> sp. Jarrah Forest (R. Davis 7391). • Veg unit HS Kg, that is thicket of <i>Kunzea glabrescens</i> along cleared infrastructure corridors – only a very small section • Veg unit LS EmAf AfBa DbAoCf, that is open woodland of <i>Eucalyptus marginata</i> subsp. <i>marginata</i> and <i>Allocasuarina fraseriana</i> over low forest A of <i>Allocasuarina fraseriana</i> and <i>Banksia attenuate</i> over Dwarf Scrub D of <i>Dasypogon bromeliifolius</i>, <i>Adenanthos obovatus</i> and <i>Calytrix flavescens</i>. • Veg unit MS EmAf XoPIXp HhDb, that is forest of <i>Eucalyptus marginata</i> subsp. <i>marginata</i> and <i>Allocasuarina fraseriana</i> over open scrub (to scrub) of <i>Xylomelum occidentale</i>, <i>Persoonia longifolia</i> and <i>Xanthorrhoea preissii</i> over low heath C of <i>Hibbertia hypericoides</i> and <i>Dasypogon bromeliifolius</i>. • Veg unit MS EmAf XoPI Hh, that is forest of <i>Eucalyptus marginata</i> subsp. <i>marginata</i> and <i>Allocasuarina fraseriana</i> (<i>Corymbia calophylla</i>) over open scrub of <i>Xylomelum occidentale</i> and <i>Persoonia longifolia</i> over Low Heath D of <i>Hibbertia hypericoides</i>.

Characteristic	Details
	<ul style="list-style-type: none"> LS EmAf Xp PcDb, that is low Woodland A of <i>Eucalyptus marginata</i> subsp. <i>marginata</i> and <i>Allocasuarina fraseriana</i> over open low scrub A of <i>Xanthorrhoea preissii</i> over Low Heath D of <i>Phlebocarya ciliata</i> and <i>Dasypogon bromeliifolius</i> on grey sand on lower hill slopes.  <p>Figure 5: A map representing the vegetation types mapped within the area approved for clearing (yellow).</p> <p>Representative photos and the full survey descriptions and maps are available in Appendix F.</p> <p>The broad scale mapped vegetation types:</p> <ul style="list-style-type: none"> Collie vegetation complex (50), which is described as open forest of <i>Eucalyptus marginata</i> subsp. <i>marginata</i>-<i>Corymbia calophylla</i>-<i>Allocasuarina fraseriana</i> on gravelly-sandy upland soils in the subhumid zone. (Shepherd et al, 2001) Cardiff vegetation complex (49), which is described as open woodland of <i>Allocasuarina fraseriana</i>-<i>Banksia spp.</i>-<i>Xylomelum occidentale</i>-<i>Nuytsia floribunda</i> on sandy soils on valley slopes in the subhumid zone. Yarragil vegetation complex (319), which is described as open forest of <i>Eucalyptus marginata</i> subsp. <i>thalassica</i>-<i>Corymbia calophylla</i> on slopes, woodland of <i>Eucalyptus patens</i>-<i>Eucalyptus rudis</i> with <i>Hakea prostrata</i> and <i>Melaleuca viminea</i> on valley floors in subhumid and semiarid zones. <p>The mapped vegetation types retain greater than 50 per cent of the original extent (Government of Western Australia, 2019).</p>
Vegetation condition	The flora and vegetation survey (Onshore Environmental, 2023) indicate the vegetation within the proposed clearing ranges from degraded to very good (Keighery, 199) condition.

Characteristic	Details
	 <p data-bbox="443 848 1457 909">Figure 6: A map representing the condition of the vegetation mapped within the area approved to be cleared (yellow).</p> <p data-bbox="443 949 1295 981">The full Keighery (1994) condition rating scale is provided in Appendix D.</p> <p data-bbox="443 1021 1466 1081">Representative photos and the full survey descriptions and mapping are available in Appendix F.</p>
Climate and landform	<p data-bbox="443 1106 1466 1227">The climate of south-west Western Australia is Mediterranean, with hot, dry summers and mild, wet winters. The Collie weather station is located nearby to the study area and has a long-term rainfall average of 920.9 mm (1899 to 2023), with the highest monthly rainfall received during June (172 mm) and July (175 mm).</p> <p data-bbox="443 1245 1386 1274">The application area is mapped within three soil landscape map units, which are:</p> <ul data-bbox="480 1292 1466 1509" style="list-style-type: none"> • Collie Subsystem, described as Broad lateritic divides over coal measures relief 5-25 m, slopes 2-10%. Soils are deep sands and sandy gravels. • Cardiff Subsystem, described as Low lying poorly drained flats over coal measures. Soils are deep sands and wet soils. • Stockton downstream valleys Phase, described as Relief 10-20 m, slopes 3-5%, valley floor is broader and swampier than upstream phase. <p data-bbox="443 1527 1243 1556">The application area is within the Collie Basin of the Darling Plateau.</p>
Soil description	<ul data-bbox="480 1592 1466 1930" style="list-style-type: none"> • Collie subsystem - Duplex sandy gravels, Pale deep sands, shallow gravels and yellow deep sands. Well drained. The sands and sandy gravels have poor to moderate moisture and nutrient retention. • Cardiff Subsystem - Wet and semi-wet soils, pale deep sands and duplex sandy gravels. Much land has drainage limitations. Nutrient leaching is a concern on the waterlogged sandy soils. • Stockton downstream valleys Phase - Wet and semi-wet soils and duplex sandy gravels. While the sideslopes are generally well drained, the valley floors are swampy and subject to flooding. The sands and sandy gravels have poor to moderate moisture and nutrient retention.

Characteristic	Details
	The field survey has identified brown sandy loam on hill crests (majority of the northern area of the application area) and grey sand on mid and lower hill slopes (Onshore Environmental, 2024c)
Land degradation risk	The application area had a high risk of wind erosion and subsurface acidification and low/medium risk against the remainder of land degradation impacts. See land degradation risk table.
Waterbodies	The desktop assessment and aerial imagery indicated that no wetlands or watercourses are mapped within the application area. The Collie River is mapped approximately 1.2 kilometres south of the application area.
Hydrogeography	The application is within the Collie River irrigation district surface water area and the Collie groundwater area proclaimed under the <i>Rights in Water and Irrigation Act 1914</i> (RIWI Act), The application area also falls within the Zone D Wellington Dam Catchment Area under the CAWS Act Groundwater salinity within the application area is mapped at less than 500 milligrams per litre total dissolved solids.
Flora	According to the desktop assessment, 19 conservation significant flora species were recorded from the local area, which comprised of 18 Priority flora and one threatened flora. Closest recorded flora is <i>Calytrix pulchella</i> at 1.8 kilometres from the application area. The most recorded flora is <i>Grevillea ripicola</i> with 16 records from the local area.
Ecological communities	According to the desktop assessment, there are no known records of Priority Ecological Community or Threatened ecological community within the local area.
Fauna	According to the desktop assessment, 17 conservation significant fauna species are mapped within the local area, which comprised of six bird species, 10 mammals and one reptile. The most recorded fauna is Carnaby's cockatoo. The closest recorded fauna is the quenda. The followings are noted from the local area. <ul style="list-style-type: none"> • Two black cockatoo roost sites within the 10 km buffer area and four black cockatoo roost sites within the 20 km buffer area. • One natural confirmed breeding site within the 20 km buffer. • The application area is mapped within the distribution zone of all three black cockatoo birds. • Not mapped within the WRP habitat suitability area

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*					
Jarrah forest	4,506,660.25	2,399,838.15	53.25	1,673,614.25	37.14
Vegetation complex					
Collie (50)	11,004.73	7,354.88	66.83	6,450.50	58.62
Cardiff (49)	6,236.58	3,360.93	53.89	2,781.51	44.6
Yarragil (319)	50,259.16	46,475.31	92.47	43,941.16	87.43

	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
Local area					
10 km radius	37,497.24	22,774.27	60.74	-	-

*Government of Western Australia (2019a)

**Government of Western Australia (2019b)

B.3. Flora analysis table

Based on the department's desktop assessment, the following flora species were recorded from the ten kilometres buffer and was identified as having a likelihood to occur within the vegetation mapped in good condition (Keighery, 1994) within the application area. All the flora species listed in the table below were considered in the flora and vegetation survey report (Onshore Environmental, 2023). No priority or threatened flora species were recorded during the six-day field visit to identify conservation significant flora species, vegetation type and condition within the application area. The survey extended beyond the application area. No conservation significant flora was recorded from the survey area (Onshore Environmental, 2024c).

Species name	Conservation status	Number of known records (total)	Distance of closest record to application area (km)	Did survey identify? [Y, N, N/A]
<i>Drakaea confluens</i>	T	1	7.965	N
<i>Acacia semitrullata</i>	4	2	4.995	N
<i>Calothamnus graniticus</i> subsp. <i>leptophyllus</i>	4	2	6.005	N
<i>Calytrix pulchella</i>	3	1	1.836	N
<i>Daviesia mesophylla</i>	2	5	2.881	N
<i>Dillwynia</i> sp. Capel (P.A. Jurjevich 1771)	3	2	4.288	N
<i>Eucalyptus rudis</i> subsp. <i>cratyantha</i>	4	1	5.359	N
<i>Grevillea ripicola</i>	4	16	6.632	N
<i>Isopogon</i> sp. Canning Reservoir (M.D. Tindale 121 & B.R. Maslin)	1	1	2.887	N
<i>Leucopogon extremus</i>	2	1	5.535	N
<i>Pultenaea skinneri</i>	4	7	4.215	N
<i>Synaphea hians</i>	3	5	6.610	N

B.4. Fauna analysis table

Based on the department's desktop assessment, the following fauna species were recorded from the ten kilometres buffer and was identified as having a likelihood to occur within the application area.

Species name	Common name	Conservation code	Distance of closest record to application area (km)	Year of the most recent record	Number of known records (total)	Recorded during the survey? [Y/N]
Baudin's cockatoo	<i>Zanda baudinii</i>	EN	1.069	2018	37	Y
Carnaby's cockatoo	<i>Zanda latirostris</i>	EN	3.415	2012	481	N
forest red-tailed black cockatoo	<i>Calyptorhynchus banksii naso</i>	VU	0.812	2022	86	Y
peregrine falcon	<i>Falco peregrinus</i>	OS	3.951	2012	1	N
quenda, southwestern brown bandicoot	<i>Isoodon fusciventer</i>	P4	0.693	2021	21	N

Species name	Common name	Conservation code	Distance of closest record to application area (km)	Year of the most recent record	Number of known records (total)	Recorded during the survey? [Y/N]
south-western brush-tailed phascogale, wambenger	<i>Phascogale tapoatafa wambenger</i>	CD	6.551	2021	18	Y
western brush wallaby	<i>Notamacropus irma</i>	P4	1.995	2018	8	Y
western ringtail possum, ngwayir	<i>Pseudocheirus occidentalis</i>	CR	3.246	2022	16	N
white-tailed black cockatoo	<i>Zanda</i> sp. 'white-tailed black cockatoo'	EN	3.204	2018	221	-

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

B.5. Land degradation risk table

Risk categories	Collie Subsystem
Wind erosion	91% of map unit has a high to extreme hazard
Water erosion	0% of map unit has a very high to extreme hazard
Salinity	0% of map unit has a moderate hazard
Subsurface Acidification	98% of map unit has a high susceptibility
Flood risk	0% of the map unit has a moderate to high hazard
Water logging	3% of map unit has a moderate to very high risk
Phosphorus export risk	13% of map unit has a high to extreme hazard
Risk categories	Cardiff Subsystem
Wind erosion	47% of map unit has a high to extreme hazard
Water erosion	1% of map unit has a very high to extreme hazard
Salinity	0% of map unit has a moderate hazard
Subsurface Acidification	100% of map unit has a high susceptibility
Flood risk	1% of the map unit has a moderate to high hazard
Water logging	60% of map unit has a moderate to very high risk
Phosphorus export risk	60% of map unit has a high to extreme hazard
Risk categories	Stockton downstream valleys Phase
Wind erosion	46% of map unit has a high to extreme hazard
Water erosion	45% of map unit has a very high to extreme hazard
Salinity	0% of map unit has a moderate hazard
Subsurface Acidification	100% of map unit has a high susceptibility
Flood risk	45% of the map unit has a moderate to high hazard
Water logging	51% of map unit has a moderate to very high risk
Phosphorus export risk	53% of map unit has a high to extreme hazard

Appendix C. Assessment against the clearing principles

Assessment against the clearing principles	Variance level	Is further consideration required?
Environmental value: biological values		
<p>Principle (a): "Native vegetation should not be cleared if it comprises a high level of biodiversity."</p> <p>Assessment:</p> <p>The flora and vegetation survey recorded 178 plant taxa from 42 families and 119 genera. Species representation was greatest among the Fabaceae, Orchidaceae, Asteraceae, Proteaceae, Asparagaceae, Cyperaceae, Dilleniaceae, Myrtaceae and Stylidiaceae families. The most species genera</p>	May be at variance	No

Assessment against the clearing principles	Variance level	Is further consideration required?
<p>were <i>Hibbertia</i>, <i>Lomandra</i>, <i>Drosera</i>, <i>Gompholobium</i>, <i>Stylidium</i>, <i>Acacia</i>, <i>Styphelia</i>, <i>Banksia</i>, <i>Caladenia</i>, <i>Centrolepis</i>, <i>Conostylis</i> and <i>Lepidosperma</i> (Onshore Environmental, 2023).</p> <p>None of the plant taxa recorded from the study area was listed as Threatened flora under the Commonwealth EPBC Act or the Western Australian BC Act, and there were no DBCA listed Priority flora taxa recorded from the survey area. All flora species that were identified through the department's desktop assessment was considered during the flora search on site.</p> <p>A total of 15 introduced species were recorded from the study area. None of the weed taxa were listed as declared pests and under the <i>Biosecurity and Agriculture Management Act 2007</i> (BAM Act).</p> <p>None of the vegetation types aligned with Commonwealth or Western Australian listed TECs or DBCA listed PECs.</p> <p>The application area comprised of significant foraging habitat, roosting habitat and suitable nesting hollows for the three threatened black cockatoo species. It is also habitat for the south-western brush-tailed phascogale.</p>		
<p><u>Principle (b):</u> "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."</p> <p><u>Assessment:</u></p> <p>The area proposed to be cleared contains significant foraging habitat for black cockatoo species. Night roosting trees and two suitable nesting trees for black cockatoo birds were also identified within the application area. It also provides habitat for other conservation significant fauna species.</p>	At variance	Yes <i>Refer to Section 3.2.1, above.</i>
<p><u>Principle (c):</u> "Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora."</p> <p><u>Assessment:</u></p> <p>One threatened flora is identified within the local area, that is <i>Drakaea confluens</i>. The area proposed to be cleared is unlikely to contain flora species listed under the BC Act. A flora survey did not identify any threatened flora within the application area.</p>	Not likely to be at variance	No
<p><u>Principle (d):</u> "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."</p> <p><u>Assessment:</u></p> <p>The area proposed to be cleared does not contain species indicative of a threatened ecological community listed under the BC Act.</p>	Not likely to be at variance	No
Environmental value: significant remnant vegetation and conservation areas		
<p><u>Principle (e):</u> "Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared."</p> <p><u>Assessment:</u></p> <p>The extent of the mapped vegetation types and the 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 mapped significant ecological linkage in the local area.</p>	Not likely to be at variance	No

Assessment against the clearing principles	Variance level	Is further consideration required?
<p><u>Principle (h):</u> <i>“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.”</i></p> <p><u>Assessment:</u></p> <p>Given the southern section of the application area is mapped within the Collie State Forest, the proposed clearing is likely to have a significant residual impact on the environmental values of the conservation area and require an offset to counterbalance the residual environmental impacts.</p>	At variance	<p>Yes</p> <p><i>Refer to Section 3.2.2, above.</i></p>
Environmental value: land and water resources		
<p><u>Principle (f):</u> <i>“Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.”</i></p> <p><u>Assessment:</u></p> <p>Given no water courses or wetlands are recorded within of the application area, the proposed clearing is unlikely to impact on- or off-site hydrology and water quality.</p> <p>The vegetation present within the application area is not consistent with riparian vegetation.</p>	Not likely to be at variance	No
<p><u>Principle (g):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.”</i></p> <p><u>Assessment:</u></p> <p>The mapped soils are highly susceptible to wind erosion. Given the size of the proposed clearing appreciable land degradation through wind erosion may occur if not managed.</p>	May be at variance	No
<p><u>Principle (i):</u> <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.”</i></p> <p><u>Assessment:</u></p> <p>The application area lies within the CAWS Act Wellington Dam Catchment Area, that is a Zone D catchment. The proposed clearing will reduce the extent of remnant vegetation remaining on site from 10.2 per cent to 2.5 per cent (below the one-tenth retention threshold under the CAWS Act). To manage salinity within the Wellington Dam Catchment 10 per cent vegetation remaining on a landholding is required.</p>	At variance	<p>Yes</p> <p><i>Refer to Section 3.2.3, above.</i></p>
<p><u>Principle (j):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.”</i></p> <p><u>Assessment:</u></p> <p>The mapped soils and topographic contours in the surrounding area do not indicate the proposed clearing is likely to contribute to increased incidence or intensity of flooding.</p> <p>Given no water courses or wetlands are recorded within the application area, the proposed clearing is unlikely to contribute to waterlogging.</p>	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.
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 1: Revegetation offset for Carnaby's black cockatoos (EN), Baudin's black cockatoos and FRTBC (VU).

Field Name	Description	Justification for value used
Area of impact (habitat/community) or Quantum of impact (features/individuals)	The area of habitat/community impacted, or number of features/individuals impacted	27.3 hectares of native vegetation representing significant foraging habitat for the three threatened black cockatoo species. <ul style="list-style-type: none"> • 24.66 ha high quality habitat • 2.57 ha of low quality habitat
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	8 – high quality foraging trees across entire application area. Baudin's and FRTBC were observed during the survey. The application area is within the distribution zone of all three black cockatoo species. 2 roost sites within 12 km radius of the application area and 1 breeding site (natural, confirmed) mapped within 20 km buffer of the application area.
Time over which loss is averted (habitat/community)	This describes the timeframe over which changes in the level of risk to the	20 - the offset site will be conserved in perpetuity under a conservation

	proposed offset site can be considered and quantified	covenant. 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 offset to be realised	17 – taking into account the time for trees to provide foraging material and for revegetation to commence.
Start area (habitat/community) or Start value (features/individuals)	The area of habitat/community or number of features/individuals proposed to offset the impacts	22.5 ha - An area of 22.5 hectares would be required to be revegetated to meet CAWS Act requirements, which would also contribute to the offset for black cockatoo foraging impacts.
Start quality (habitat/community)	The quality score for the area of habitat/community proposed as an offset - a measure of how well a particular site supports a particular threatened species or ecological community and contributes to its ongoing viability	1 – the area proposed for revegetation is in a completely degraded (Keighery, 1994) condition but occurs in close proximity to roosting sites.
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 offset site without the offset	1 – a change in condition of the vegetation is not expected.
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 offset site with the offset	5 - revegetation using black cockatoo foraging species at a minimum density of 600 stems per ha would improve the quality of the site and provide foraging habitat for the black cockatoo species
Risk of loss (%) without offset (habitat/community)	This describes the chance that the habitat/community on the proposed offset site will be completely lost (i.e. no longer hold any value for the protected matter of concern) over the foreseeable future without an offset	15% - the offset area is located within a rural zoning.
Risk of loss (%) with offset (habitat/community)	This describes the chance that the habitat/community on the proposed offset site will be completely lost (i.e. no longer hold any value for the protected matter of concern) over the foreseeable future with an offset	5% - placing a conservation covenant over the proposed offset area will reduce the risk of loss of native vegetation on this property. The risk of catastrophic events (fire, dieback etc.) still remain.
Confidence in result (%)	The capacity of measures to mitigate risk of loss of the proposed offset site	80% - there is a high confidence in the revegetation works.
% of impact offset	% of the significant residual impact that would be offset by the proposed offset (note: the offset calculations combined should equate to 100% for each residual impact)	Carnaby's and Baudin's: 27.9% - Obtained through the input of variables explained above. FRTBC: 32.3% - Obtained through the input of variables explained above.

Offset 2: Conservation covenant to offset for Carnaby's black cockatoos (EN), Baudin's black cockatoos and FRTBC tailed black cockatoos (VU).

Field Name	Description	Justification for value used
Area of impact (habitat/community) or Quantum of impact (features/individuals)	The area of habitat/community impacted, or number of features/individuals impacted	27.3 hectares of native vegetation representing significant foraging habitat for the three threatened black cockatoo species. <ul style="list-style-type: none"> • 24.66 ha high quality habitat • 2.57 ha of flow quality habitat

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	8 – high quality foraging trees across application area. Baudin's and FRTBC were observed during the survey. The application area is within the distribution zone of all three black cockatoo species. 2 roost sites within 12 km radius of the application area and 1 breeding site (natural, confirmed) mapped within 20 km buffer of the application area.
Time over which loss is averted (habitat/community)	This describes the timeframe over which changes in the level of risk to the proposed offset site can be considered and quantified	20 - the offset site will be conserved in perpetuity under a conservation covenant. 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 offset to be realised	1 year for the habitat to be protected and conserved under a conservation covenant.
Start area (habitat/community) or Start value (features/individuals)	The area of habitat/community or number of features/individuals proposed to offset the impacts	200.7 - An area of approximately 200.7 ha that includes black cockatoo foraging /roosting would be required to counterbalance 100% of significant residual impact (SRI)
Start quality (habitat/community)	The quality score for the area of habitat/community proposed as an offset - a measure of how well a particular site supports a particular threatened species or ecological community and contributes to its ongoing viability	8 - vegetation survey of the offset site is conducted. the vegetation is jarrah, marri and wandoo. Falls within the distribution zone of all three black cockatoo birds. Evidence of use by FRTBC found.
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 offset site without the offset	8 - no change in value is expected although there is evidence of grazing and weed
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 offset site with the offset	8 - no significant change expected. Offset site will be fenced.
Risk of loss (%) without offset (habitat/community)	This describes the chance that the habitat/community on the proposed offset site will be completely lost (i.e. no longer hold any value for the protected matter of concern) over the foreseeable future without an offset	15% - the offset area is located within a rural zoning.
Risk of loss (%) with offset (habitat/community)	This describes the chance that the habitat/community on the proposed offset site will be completely lost (i.e. no longer hold any value for the protected matter of concern) over the foreseeable future with an offset	5% - placing a conservation covenant over the proposed offset area will reduce the risk of loss of native vegetation on this property. The risk of catastrophic events (fire, dieback etc.) remain.
Confidence in result (%)	The capacity of measures to mitigate risk of loss of the proposed offset site	90% - a high confident the offset outcomes will be successful.
% of impact offset	% of the significant residual impact that would be offset by the proposed offset (note: the offset calculations combined should equate to 100% for each residual impact)	Carnaby's and Baudin's: 72% - Obtained through the input of variables explained above. FRTBC: 73.4% - Obtained through the input of variables explained above.

Appendix F. Biological survey information excerpts and photographs of the vegetation (Onshore Environmental, 2023; Onshore Environmental 2024a; Onshore Environmental, 2024b and Onshore Environmental, 2024c)



Figure 7: A representation of the vegetation proposed to be cleared

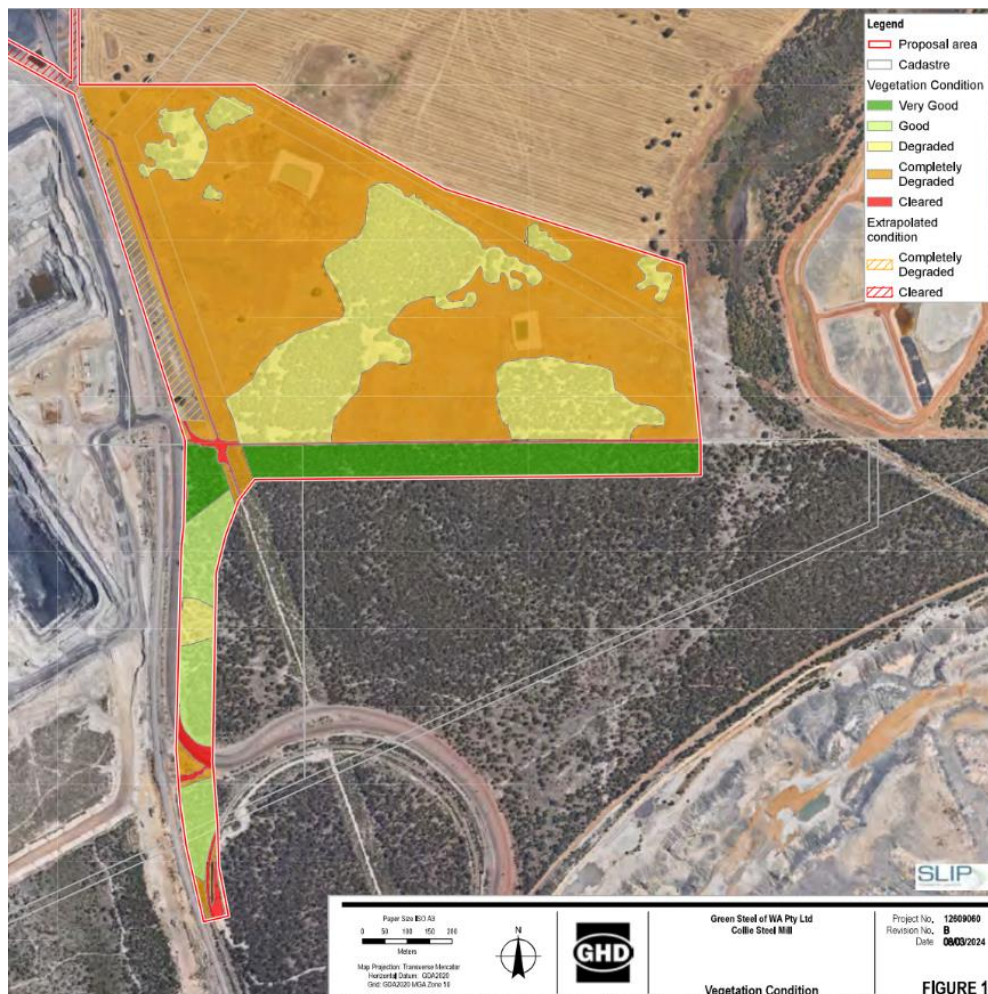


Figure 8: A map representing the condition of the vegetation within the survey area.

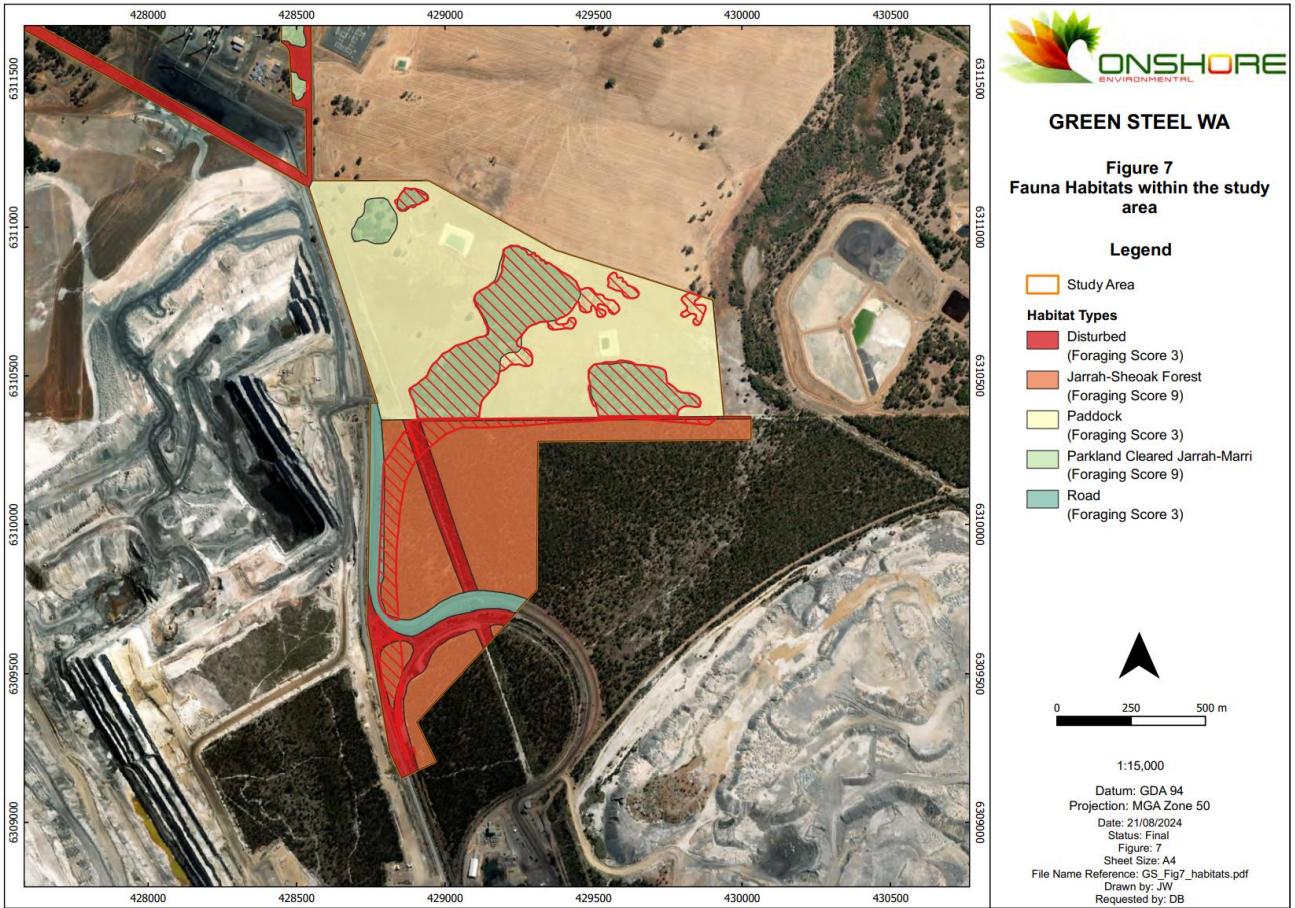


Figure 9: A map representing the fauna habitat within the survey area.

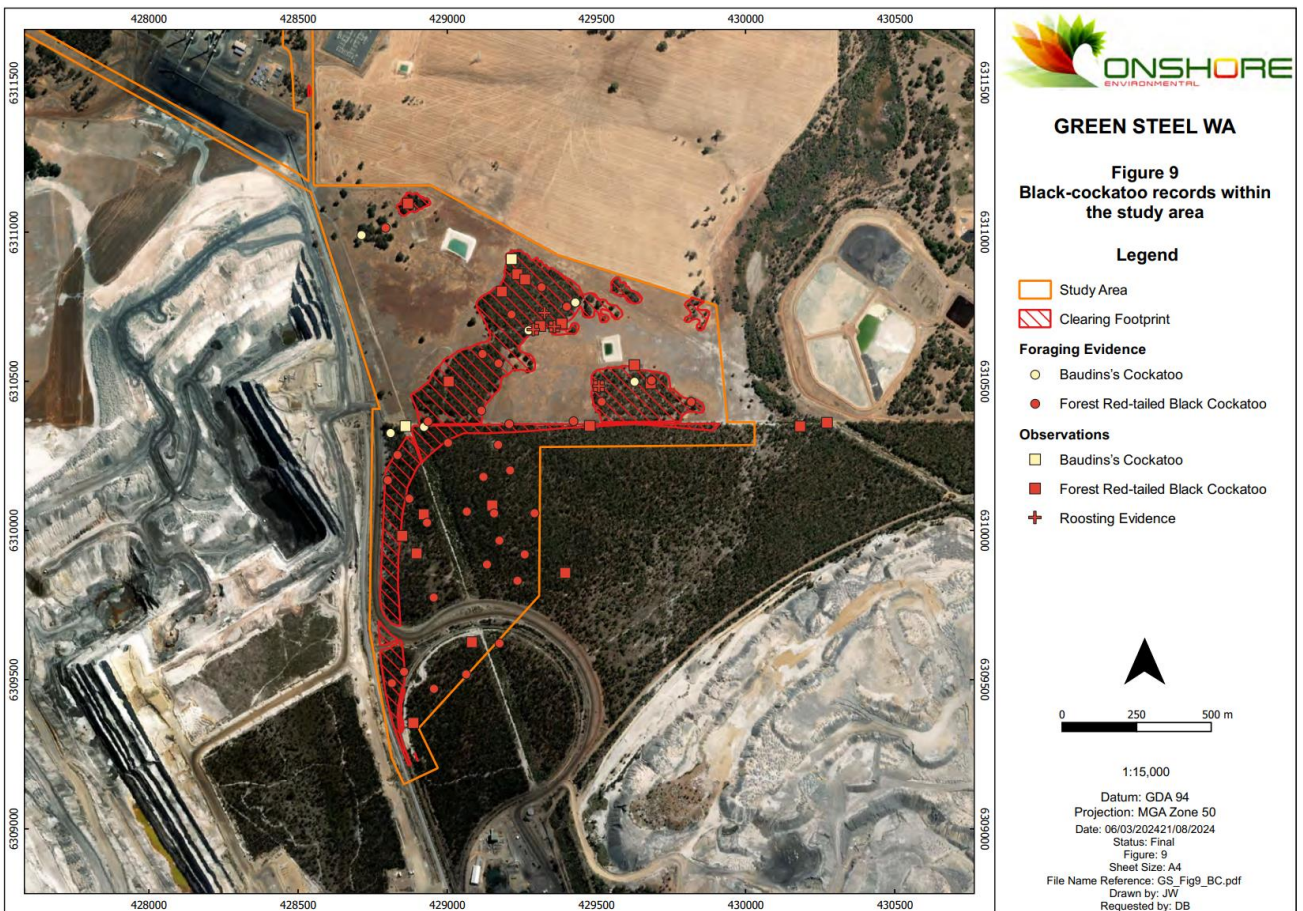


Figure 10: A map representing black cockatoo records within the survey area.

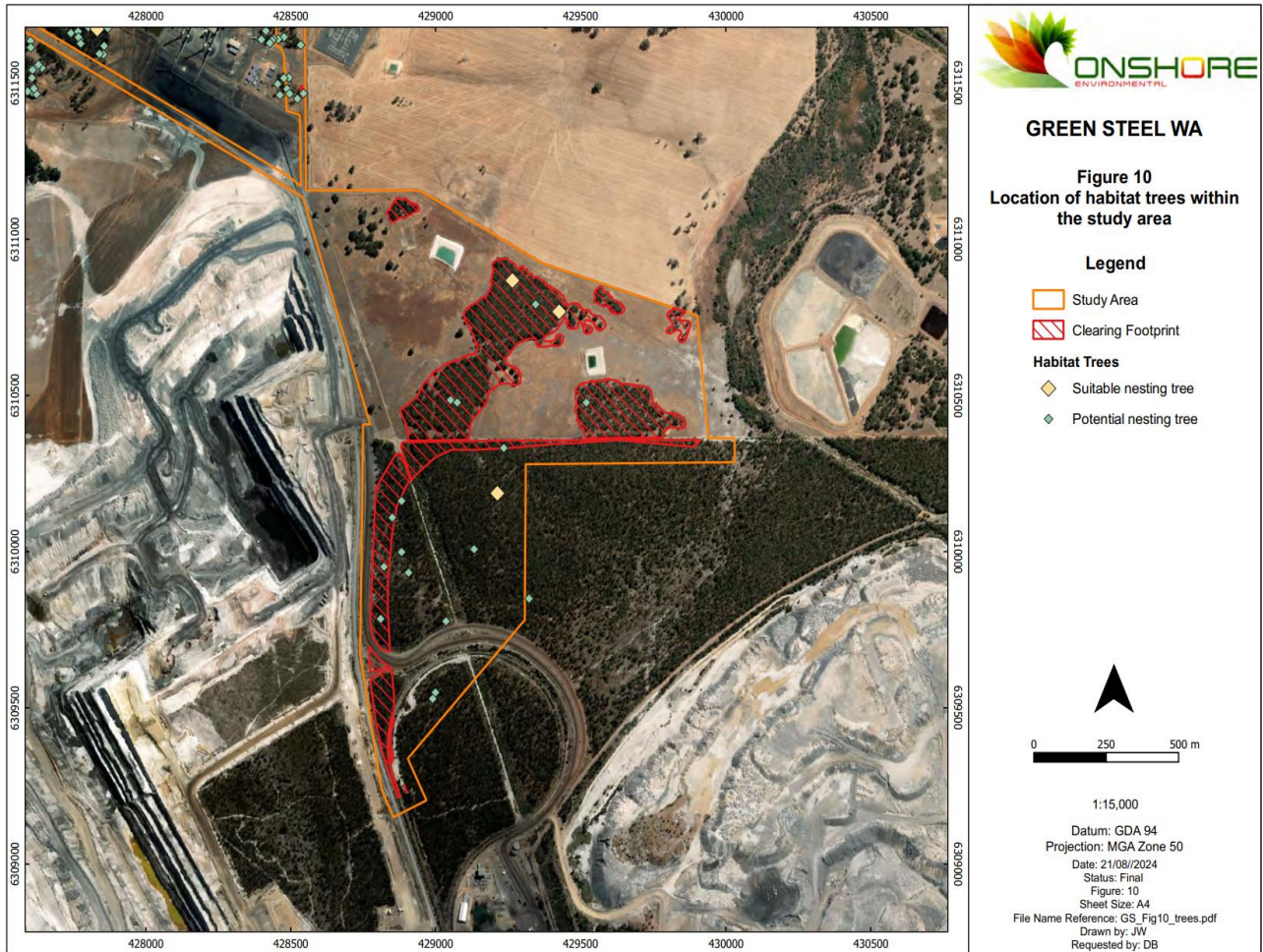


Figure 11: A representing the locations of habitat trees within the survey area.

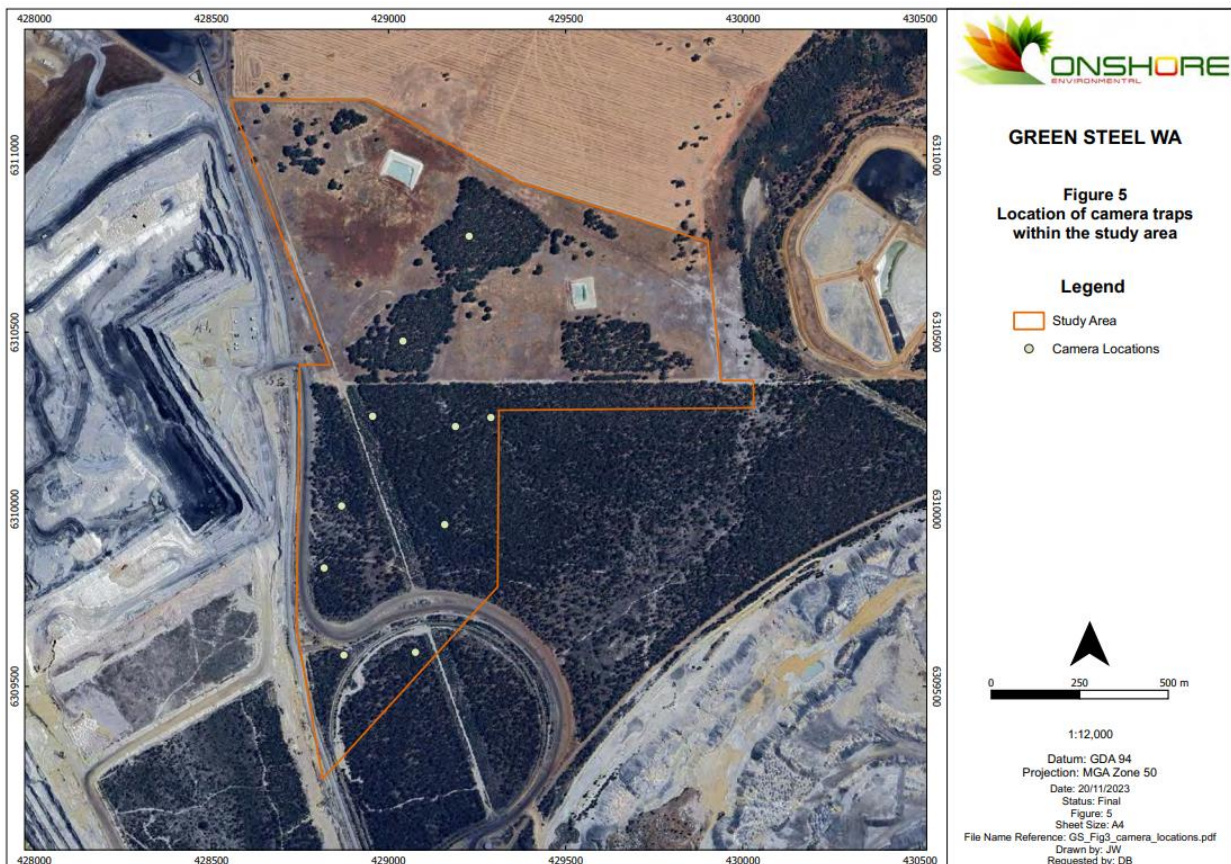


Figure 12: Locations of the camera traps installed during the survey.



Figure 13: Locations of the significant fauna found within the survey area.



Brush-tailed Phascogale (Conservation Dependent)



Western Brush Wallaby (Priority 4)

Figure 14: Photographs of the significant fauna detected through the camera traps from the survey area.


Name		Description	
Jarrah-Sheoak Forest		Jarrah-Sheoak Forest on hillslopes	
Landform		Hillslopes and lower slopes	
Area (ha)		6.15ha within clearing footprint	
Vegetation Description		Forest of <i>Eucalyptus marginata</i> subsp. <i>marginata</i> and <i>Allocasuarina fraseriana</i> over Open Scrub (to Scrub) of <i>Xylomelum occidentale</i> , <i>Persoonia longifolia</i> and <i>Xanthorrhoea preissii</i> over Low Heath C of <i>Hibbertia hypericoides</i> and <i>Dasyopogon bromeliifolius</i>	
% Ground Cover	Rock	<2%	
	Leaf Litter	>70%	
	Logs	2-10%	
	Vegetation	10-30%	
Rocks	Type	Laterite	
	Size	<5 cm	
Soil	Type	Sand	
	Colour	Grey	
Habitat Features Habitat includes areas with many logs and log piles, dense leaf litter, larger trees occur within this habitat providing some hollows.	Slope	Low	
	Water	None	
	Woody Debris	Moderate	
	Peeling Bark	Minor	
	Rock Crevices	Minor	
	Burrowing Suitability	High	
	Tree Hollows (<10cm)	Present	
	Tree Hollows (>10cm)	Occasional	
Condition	Condition	Degraded to Very Good	
	Disturbances	Logging, frequent fire, roads/access tracks, mining infrastructure/rail and powerline corridors, adjacent coal mine haul road, siltation from haul road, rubbish, weeds, rabbits.	
	Fire Age	Moderate (3-6 years) to Old (>6 years)	
			

Figure 15: Description of the Jarrah-Sheoak Forest fauna habitat within the survey area.


Name		Description
Parkland Cleared		Parkland Cleared Jarrah-Marri Forest on hill crests and upper hill slopes
Landform	Hill crests and upper hill slopes	
Area (ha)	18.52 ha within the clearing footprint	
Vegetation Description	Forest of <i>Eucalyptus marginata</i> subsp. <i>marginata</i> (<i>Allocasuarina fraseriana</i>) over parkland cleared ground cover on brown sandy loam on hill crests	
% Ground Cover	Rock	30-70% (lateritic outcropping)
	Leaf Litter	2-10%
	Logs	2-10%
	Vegetation	<2% (understorey), 30-70% (canopy)
Rocks	Type	Laterite
	Size	<30cm
Soil	Type	Sandy loam (gravelly)
	Colour	Brown
Habitat Features Habitat contains Wandoo with small hollows, areas of dense understorey cover including low shrubs and has minor pools of water in winter	Slope	Low
	Water	None
	Woody Debris	Minor
	Peeling Bark	Minor
	Rock Crevices	Moderate
	Burrowing Suitability	Low
	Tree Hollows (<10cm)	Present
	Tree Hollows (>10cm)	Present
Condition	Condition	Degraded
	Disturbances	Fire, logging, grazing by domestic stock, weeds from adjacent farmland, feral animals
	Fire Age	Old
		

Figure 16: Description of the Jarrah-Marri Forest fauna habitat within the survey area.


Name	Description	
<i>Melaleuca</i> Scrub	<i>Melaleuca</i> Scrub on minor drainage line	
Landform	Minor drainage line	
Area (ha)	Not within clearing footprint	
Vegetation Description	Scrub of <i>Hakea prostrata</i> and <i>Melaleuca incana</i> subsp. <i>tenella</i> over Low Scrub A of <i>Melaleuca incana</i> subsp. <i>tenella</i> and <i>Astartea scoparia</i> over Open Low Scrub B of <i>Xanthorrhoea preissii</i> over Dwarf Scrub D of <i>Hypocalymma angustifolium</i> and <i>Acacia stenoptera</i> over Open Low Sedges of <i>Cyathochaeta avenacea</i> and <i>Desmocladius asper</i>	
% Ground Cover	Rock	<2%
	Leaf Litter	30-70%
	Logs	<2%
	Vegetation	70-100% (all strata)
Rocks	Type	Laterite
	Size	<10 cm
Soil	Type	Silty clay loam
	Colour	Grey
Habitat Features Dense sedges and shrubs provide refuge. Small seasonal puddles of water along drainage line.	Slope	Low
	Water	Yes (seasonally wet)
	Woody Debris	Minor
	Peeling Bark	Minor
	Rock Crevices	None
	Burrowing Suitability	Low
	Tree Hollows (<10cm)	None
	Tree Hollows (>10cm)	None
Condition	Condition	Good
	Disturbances	Vegetation previously cleared for construction of kVA transmission line and service track.
	Fire Age	Old
		

Figure 17: Description of Melaleuca Scrub habitat within the survey area.


Name		Description
Paddock		Paddock (cleared farmland supporting annual pasture)
Landform	Lateritic hill crest and hill slopes	
Area (ha)	2.6 ha within clearing footprint	
Vegetation Description	No native vegetation (introduced annual pasture with common introduced weed species)	
% Ground Cover	Rock	<2%
	Leaf Litter	0%
	Logs	0%
	Vegetation	0%
Rocks	Type	Laterite
	Size	<2 cm
Soil	Type	Sandy loam
	Colour	Grey / brown
Habitat Features Areas of dense low ground cover.	Slope	Low
	Water	Two farm dams excavated
	Woody Debris	None
	Peeling Bark	None
	Rock Crevices	None
	Burrowing Suitability	Low
	Tree Hollows (<10cm)	None
	Tree Hollows (>10cm)	None
Condition	Condition	Completely Degraded
	Disturbances	Cleared of native vegetation, farms dams, application of fertiliser, grazing by cattle
	Fire Age	Old
		

Figure 18: Description of the paddock habitat within the survey area.

Latitude	Longitude	Date	Tree Species	Alive/Dead	DBH (cm)	Category
-33.98555302	116.5574186	2/10/2024	Jarrah	alive	650	suitable
-33.98275782	116.5672491	2/10/2024	Jarrah	dead	650	potential
-33.98716939	116.5415047	2/10/2024	Jarrah	dead	600	potential
-33.98698532	116.5420624	2/10/2024	Jarrah	dead	600	potential
-33.98506452	116.5932898	2/10/2024	Jarrah	dead	600	potential
-33.98627403	116.5917017	2/10/2024	Jarrah	dead	620	potential
-33.98823397	116.5851569	2/10/2024	Jarrah	dead	650	potential
-33.9906664	116.5891091	2/10/2024	Jarrah	dead	700	potential
-33.98347666	116.5394074	2/10/2024	Jarrah	dead	750	potential
-33.98462556	116.5924449	2/10/2024	Jarrah	dead	920	potential
-33.98414645	116.5928156	2/10/2024	Jarrah	alive	1000	potential
-33.98325261	116.5594103	2/10/2024	Jarrah	alive	500	potential
-33.98590732	116.5610945	2/10/2024	Jarrah	alive	600	potential
-33.98285866	116.5609071	2/10/2024	Jarrah	alive	800	potential
-33.98746904	116.5595621	2/10/2024	Jarrah	alive	800	potential
-33.98383163	116.5950675	2/10/2024	Jarrah	alive	900	potential
-33.98806608	116.5910058	2/10/2024	Jarrah	alive	900	potential
-33.99133318	116.5388292	2/10/2024	Jarrah	dead	400	potential
-33.98205995	116.541014	2/10/2024	Jarrah	dead	400	potential
-33.9869181	116.5553159	2/10/2024	Jarrah	dead	600	potential
-33.98405023	116.5413381	2/10/2024	Jarrah	dead	650	potential
-33.98572871	116.5411122	2/10/2024	Jarrah	dead	650	potential
-33.9826388	116.5554103	2/10/2024	Jarrah	dead	700	potential
-33.98354078	116.5545064	2/10/2024	Jarrah	dead	800	potential
-33.99245393	116.539739	2/10/2024	Jarrah	dead	800	potential
-33.98528446	116.5656591	2/10/2024	Jarrah	alive	1000	potential
-33.98235356	116.5948154	2/10/2024	Jarrah	alive	500	potential
-33.98375904	116.5953826	2/10/2024	Jarrah	alive	650	potential
-33.99224572	116.5879501	2/10/2024	Jarrah	alive	650	potential
-33.98537138	116.590742	2/10/2024	Jarrah	alive	700	potential
-33.98226354	116.5646535	2/10/2024	Jarrah	alive	800	potential
-33.99190156	116.5884197	2/10/2024	Jarrah	alive	900	potential
-33.9869191	116.5396581	2/10/2024	Jarrah	dead	575	suitable
-33.98835585	116.5560863	2/10/2024	Jarrah	dead	650	suitable
-33.98312663	116.5919446	2/10/2024	Marri	alive	950	known
-33.98222096	116.5933845	2/10/2024	Marri	alive	1100	suitable
-33.98853321	116.5892452	2/10/2024	Marri	dead	900	potential
-33.98357741	116.5912122	2/10/2024	Marri	alive	700	potential
-33.98708079	116.5599082	2/10/2024	Marri	alive	750	potential
-33.98751279	116.58917	2/10/2024	Marri	alive	750	potential
-33.9853703	116.5576839	2/10/2024	Wandoo	alive	650	suitable
-33.98272354	116.5611497	2/10/2024	Wandoo	alive	1000	potential
-33.9864669	116.5612652	2/10/2024	Wandoo	alive	550	suitable
-33.98302319	116.5613392	2/10/2024	Wandoo	alive	650	potential
-33.98758119	116.5585882	2/10/2024	Marri	alive	1100	potential
-33.98344413	116.5514338	2/10/2024	Jarrah	dead	1000	potential
-33.99144843	116.5461992	2/10/2024	Jarrah	dead	850	potential
-33.99217355	116.5455132	2/10/2024	Jarrah	dead	950	potential
-33.9906234	116.5440223	2/10/2024	Jarrah	dead	1100	potential
-33.98915078	116.5435523	2/10/2024	Jarrah	dead	850	potential
-33.98735974	116.5439333	2/10/2024	Jarrah	dead	800	potential

Latitude	Longitude	Date	Tree Species	Alive/Dead	DBH (cm)	Category
-33.98668609	116.5419094	2/10/2024	Jarrah	dead	1200	potential

Figure 19: Details of habitat trees recorded from the offset area.

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)
- Cadastre (LGATE-218)
- 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

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

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