



CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

Purpose Permit number:	CPS 9863/1
Permit Holder:	Midland Brick Pty Ltd
Duration of Permit:	From 19 December 2022 to 19 December 2032

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

PART I – CLEARING AUTHORISED

1. Clearing authorised (purpose)

The permit holder is authorised to clear *native vegetation* for the purpose of clay extraction.

2. Land on which clearing is to be done

Lot M 1326 on Diagram 5449, Muchea

3. Clearing authorised

The permit holder must not clear more than 0.14 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 19 December 2027.

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:

- avoid the clearing of *native vegetation*;
- minimise the amount of *native vegetation* to be cleared; and
- 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. Wind erosion management

The permit holder must commence the extraction of clay no later than three (3) months after undertaking the authorised *clearing* activities to reduce the potential for wind erosion.

8. Fauna management – black cockatoo habitat

- (a) Within 48 hours prior to undertaking any *clearing* authorised under this permit within the areas cross-hatched yellow on Figures 1 of Schedule 1, the permit holder must engage a *fauna specialist* to conduct a *fauna survey* of the permit area to identify *black cockatoo habitat tree/s* being utilised by *black cockatoo species* listed below:
 - (i) *Zanda latirostris* (Carnaby's cockatoo)
 - (ii) *Calyptorhynchus banksii naso* (forest red-tailed black cockatoo)
- (b) Where *black cockatoo habitat tree/s* are identified under *condition* 8(a), the permit holder must engage a *fauna specialist* to map *black cockatoo habitat tree/s* within the permit area.
- (c) Each *black cockatoo habitat tree* identified must be inspected by a *fauna specialist* for *evidence* of current or past breeding use by *black cockatoo species*.
- (d) Where a *black cockatoo habitat tree* with no *evidence* of current or past use by *black cockatoo species* is identified in accordance with *condition* 8(a), that tree must only be cleared immediately after the inspection.
- (e) Where a *black cockatoo habitat tree* is identified within the areas cross-hatched yellow on Figure 1 of Schedule 1 and that tree shows *evidence* of current or past breeding use by *black cockatoo species* under *condition* 8(c), 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.
- (f) Any *black cockatoo breeding tree* with *evidence* of current breeding use by *black cockatoo species* must not be cleared whilst it is in use for that breeding season as determined by the *fauna specialist* under *condition* 8(e).
- (g) For each nest hollow that is suitable for use for breeding by *black cockatoo species* within the areas cross-hatched yellow on Figures 1 of Schedule 1, the permit holder must install an artificial black cockatoo nest hollow.
- (h) Each artificial black cockatoo nesting hollow required by *condition* 8(g) must be installed prior to commencement of any *clearing* activities otherwise authorised under this permit.

- (i) The artificial black cockatoo nest hollow(s) required by *condition* 8(g) of this permit must:
 - (i) be installed within the area hashed 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 3, for a period of at least ten years.
- (j) Within two months of *clearing* authorised under this permit within the areas cross-hatched yellow on Figure 1 of Schedule 1, the permit holder must provide the results of the *fauna survey* in a report to the *CEO*.
- (k) The *fauna survey* report must include the following;
 - (i) the location of the *black cockatoo habitat tree(s)* recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 1994/2020 (GDA94/2020), expressing the geographical coordinates in Eastings and Northings or decimal degrees;
 - (ii) the location of any fauna species listed in *condition* 8(a), if identified, recorded using a GPS unit set to GDA94/2020, expressing the geographical coordinates in Eastings and Northings or decimal degrees;
 - (iii) the name and amount of each fauna species identified;
 - (iv) whether the *black cockatoo habitat tree/s* identified show current or past use by black cockatoo species;
 - (v) the methodology, used to survey the permit area;
 - (vi) a photo of the black cockatoo habitat tree(s) identified; and
 - (vii) a description of the *black cockatoo habitat tree(s)* identified, including the:
 - (A) species of *black cockatoo habitat tree(s)*; and
 - (B) *condition* of the *black cockatoo habitat tree(s)*.

9. Revegetation (temporary works)

- (a) The permit holder must at an optimal time within 12 months following completion of clay extraction and no later than 19 December 2028, revegetate the areas not required for the purpose of which they were cleared under the permit by implementing the '*Extractive Industry Application & Clay Extraction Management Plan Lot M1326 Wandena Road, Muchea*' prepared by Land Insights (June 2017), including, but not limited to the following actions;
 - (i) ripping the ground on the contour to remove soil compaction;
 - (ii) implementing hygiene protocols by cleaning earth-moving machinery of soil and vegetation prior to entering and leaving the site;
 - (iii) undertaking *weed* control activities bi-annually;
 - (iv) undertaking deliberate *planting* of native tree species that provide foraging and breeding habitat for *black cockatoo species*, including *Corymbia calophylla*, *Eucalyptus wandoo* and *Eucalyptus rudis*, at a ratio of 2:1 for each tree cleared;
 - (v) ensure only *local provenance* propagating material is used for *planting*;
 - (vi) ensure *planting* is undertaken at an *optimal time*; and

- (vii) undertake watering of seedlings, as required, for at least two years post *planting*.
- (b) The permit holder must, within 24 months of *planting* in accordance with condition 9(a)(iv)-(vii) of this permit;
 - (i) engage an *environmental specialist* to make a determination on the likelihood of survival of *planted* trees;
 - (ii) if the determination made by the *environmental specialist* under condition 9(b)(i) is that any *planted* trees will not survive, the permit holder must plant additional trees that will result in a ratio of 2:1 for each tree cleared persisting at the suitable location; and
 - (iii) where additional *planting* of trees is undertaken in accordance with condition 9(b)(ii), the permit holder must repeat the activities required under conditions 9(a) (iv)-(vii) of this permit.

PART III – RECORD KEEPING AND REPORTING

10. Records that must be kept

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

Table 1: Records that must be kept

No.	Relevant matter	Specifications
1.	In relation to the authorized 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 <i>clearing</i> occurred, recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 1994/2020 (GDA94/2020), expressing the geographical coordinates in Eastings and Northings; (c) the date that the area was cleared; (d) the size of the area cleared (in hectares); and (e) actions taken to avoid, minimise, and reduce the impacts and extent of clearing in accordance with condition 5; and (f) 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 management pursuant to conditions 8	<ul style="list-style-type: none"> (a) the time(s) and date(s) of inspection(s) 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 <i>black cockatoo habitat tree</i> is determined by the <i>fauna specialist</i> to be occupied by <i>black cockatoo species</i>:

No.	Relevant matter	Specifications
		<ul style="list-style-type: none"> (i) the time and date that it was determined to be no longer occupied; and (ii) a description of the evidence by which it was determined to be no longer occupied. (g) the time and date that the suitable <i>black cockatoo habitat tree</i> was cleared; (h) the date and location the artificial nesting hollows were installed in accordance with condition 8(g), recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 1994/2020 (GDA94/2020), expressing the geographical coordinates in Eastings and Northings; and (i) actions taken in order to monitor and maintain the installed artificial nest hollow in accordance with condition 8(i).
3.	In relation to the <i>revegetation</i> of areas pursuant to condition 9	<ul style="list-style-type: none"> (a) the size of the area <i>revegetated</i>; (b) the date(s) on which the area <i>revegetation</i> was undertaken; (c) the boundaries of the area <i>revegetated</i> (recorded digitally as a <i>shapefile</i>). (d) a description of the <i>revegetation</i> activities undertaken; (e) a copy of the <i>environmental specialist's</i> monitoring report and determination; and (f) a description of remedial actions undertaken.

11. Reporting

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

DEFINITIONS

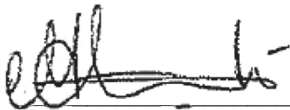
In this permit, the terms in Table 2 have the meanings defined.

Table 2: 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 <i>black cockatoo species</i> .
black cockatoo species	means one or more of the following species: (a) <i>Zanda latirostris</i> (Carnaby's cockatoo); and (b) <i>Calyptorhynchus banksii naso</i> (forest red-tailed black cockatoo).
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.
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.
dieback	means the effect of <i>Phytophthora</i> species on native vegetation.
direct seeding	means a method of re-establishing vegetation through the establishment of a seed bed and the introduction of seeds of the desired plant species.
EP Act	<i>Environmental Protection Act 1986</i> (WA)
environmental specialist	means a person who holds a tertiary qualification in environmental science or equivalent and has a minimum of 2 years work experience relevant to the type of environmental advice that environmental specialist is required to provide under this permit, or who is approved by the CEO as a suitable environmental specialist.
evidence	evidence means showing chew marks or scratchings on the habitat tree representative of the species being surveyed, the presence of the species entering or leaving the habitat tree, and/or the presence of chicks/young
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.
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.

Term	Definition
Planting/ed	means the re-establishment of vegetation by creating soil conditions and planting seedlings of the desired species.
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 Attractions species-led ecological impact and invasiveness ranking summary, regardless of ranking; or (c) not indigenous to the area concerned.

END OF CONDITIONS



Meenu Vitarana
Manager

NATIVE VEGETATION REGULATION

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

24 November 2022

Schedule 1

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

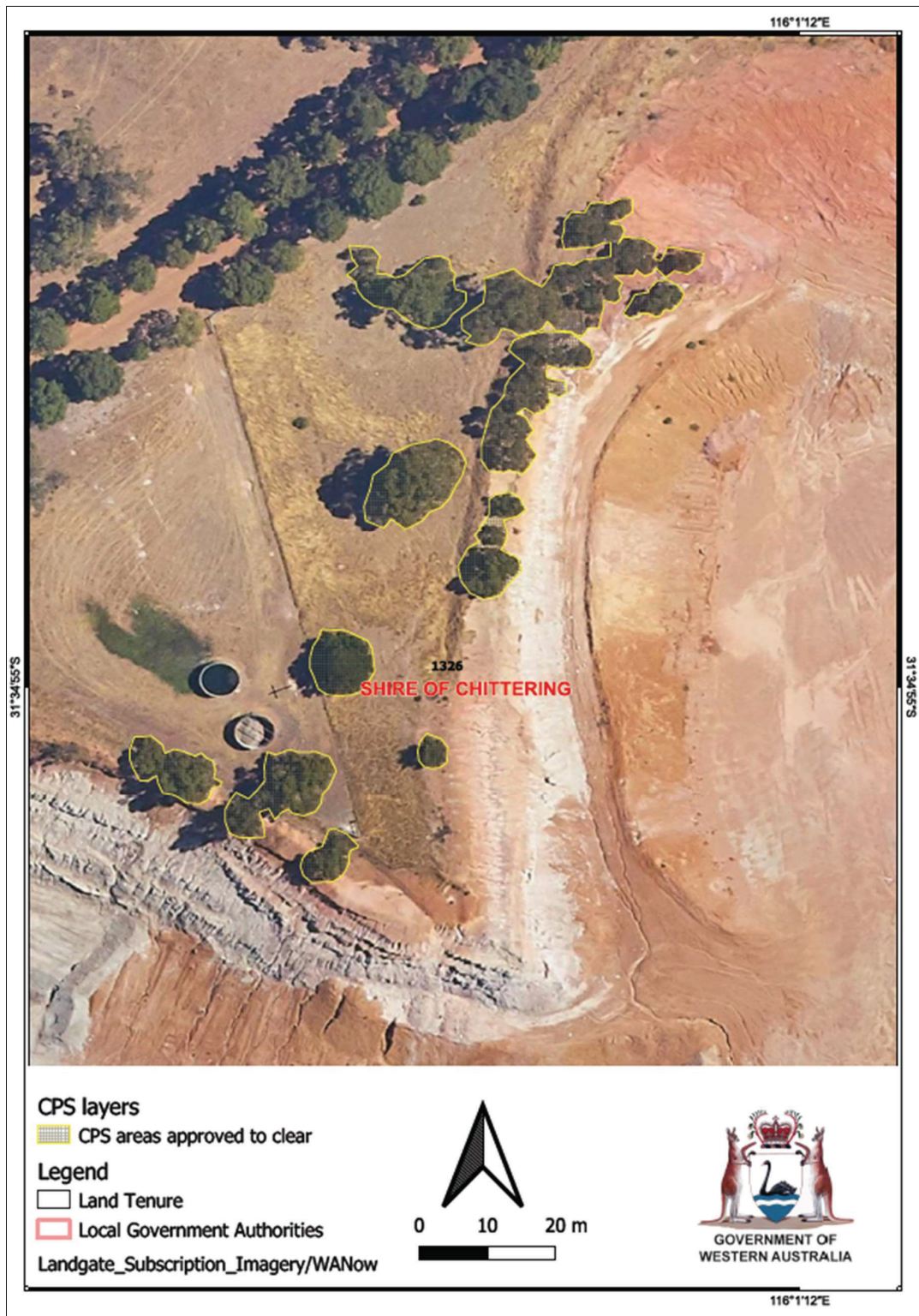


Figure 1: Map of the boundary of the area within which clearing may occur

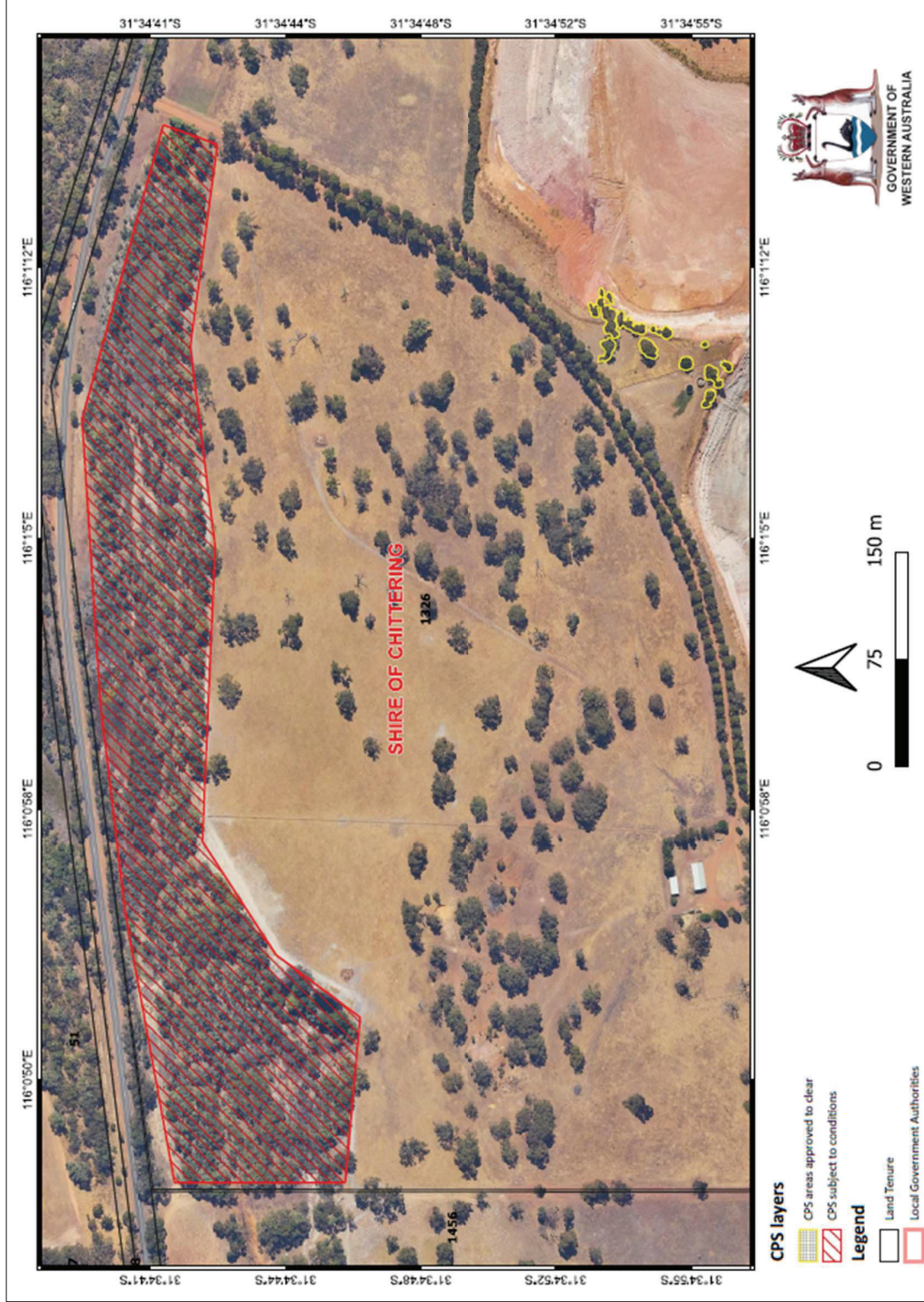


Figure 2: Map of the boundary of area subject to condition

Schedule 2 – how to design and place artificial hollows for Carnaby’s cockatoo



How to design and place artificial hollows for Carnaby's cockatoo

Artificial hollows can be used to help conserve the threatened Carnaby's cockatoo by enabling the cockatoos to breed in areas where natural hollows are limited.

A wide variety of artificial hollow designs have been used with mixed success. Evidence suggests that, while the hollow 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. Before using this information sheet to construct or install an artificial hollow, you should refer to the criteria listed in the separate information sheet; *When to use artificial hollows for Carnaby's cockatoo*.

This information sheet contains broad guidelines for the design and placement of artificial hollows for Carnaby's cockatoo.

Below are three examples of successful artificial hollows used by Carnaby's cockatoo for nesting. Artificial hollows made from a natural log with cut side entrance (left), white industrial pipe with top entrance (centre) and natural log with natural side entrance (right).



Photos by Christine Groom (left and right) and Rick Dawson (centre)

Walls

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

- Durable enough to withstand exposure to elements for an extended period of time (i.e. 20+ years).
- Able to simulate the thermal properties of a natural tree hollow.
- Not less than 380 mm in internal diameter.
- Preferably 1.2 m deep overall and 1m deep to top of substrate/nesting material.

Successful artificial hollows have been constructed from sections of salvaged natural hollow, black and white industrial pipe. When using non-natural materials care must be taken to ensure there are no toxic residues and that the materials are safe to ingest.

Base

The base of the artificial hollow must be;

- Able to support the adult and nestling(s).
- Durable enough to last the life of the nest.
- Free draining.
- At least 380 mm in diameter.
- Covered with 200 mm of sterile, dry, free draining 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. Zinalume ®), thick hardwood timber slab or marine ply (not chipboard or MDF). The base material must be cut to size to fit internally with sharp or rough edges ground away or curled inwards and fixed securely to the walls.



Carnaby's cockatoo eggs in an artificial hollow.
Photo by Rick Dawson

Entrance

The entrance of the artificial hollow must;

- Have a diameter of at least 270 mm).
- Preferably be top entry which will minimise use by non-target species.

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

Ladder

For artificial hollows made of non-natural materials, or of processed boards, it is necessary to provide a ladder to enable the birds to climb in and out of the hollow easily.

The ladder must be;

- Securely mounted to the inside of the hollow.
- Made from an open heavy wire mesh such as WeldMesh™ with mesh size of 30 - 50 mm, or heavy chain.

Do not use:

- A material that the birds can chew.
- Galvanized because the birds may grip or chew the ladder and ingest harmful compounds.

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.

Sacrificial chewing posts

For artificial hollows made of non-natural materials, or of processed boards, it is necessary to provide sacrificial chewing posts. The birds chew material to prepare a dry base on which to lay their egg(s).

The sacrificial chewing posts must:

- Be made of untreated hardwood such as jarrah, marri or wandoo
- Be thick enough to satisfy the birds' needs between maintenance visits.
- Extend beyond the top of the hollow as an aid to see whether the nest is being used.
- Be placed on the inside of the hollow.
- Be attached in such a way that they are easy to replace e.g. 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 two posts are provided. Posts 70 x 50 mm have been used, but require replacing at least every second breeding season when the nest is active. Birds do vary in their chewing habits and therefore the frequency at which the chewing posts require replacement will also vary.



Bottom of an artificial hollow showing ladder that is fixed to the wall and a chewed sacrificial post which is 200 mm from the floor.

Photo by Rick Dawson

Mountings

The artificial hollows must be mounted such that:

- The fixings used will last the duration of the nest e.g. galvanized bracket or chain fixed with galvanized coach screws.
 - It is secured by more than one anchor for security and stability.
 - It is positioned vertically or near vertically.
-

Placement

Sites should be chosen within current breeding areas and where they can be monitored, but preferably not conspicuous to the general public. It is important that artificial hollows are placed where they will be accessible for future monitoring and maintenance. For more detail refer to the separate information sheet; *When to use artificial hollows for Carnaby's cockatoo*.

The height at which artificial hollows should be placed is variable. The average height of natural hollows in dominant tree species in the area is a good guide. Natural hollows used by Carnaby's cockatoos have been recorded as low as 2 m above the ground. If located on private property the hollows can be placed lower to the ground so they are accessible by ladder or a rope and pulley system can be used. Where public access is possible artificial hollows should be placed at least 7 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.

Carnaby's cockatoo 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

If necessary, artificial hollows may be placed on poles, but this may result in excessive exposure to sun during very hot weather. When erected on poles there should be"

- A hinge at the bottom of the pole that can be secured when the pole is in the upright position.
- Access for a vehicle to assist raising the pole.

Safety

Care needs to be taken when placing artificial hollows to ensure safety is considered at all times. Artificial hollows are heavy and require lifting and manoeuvring into position up to 7 m above the ground.

Maintenance and monitoring

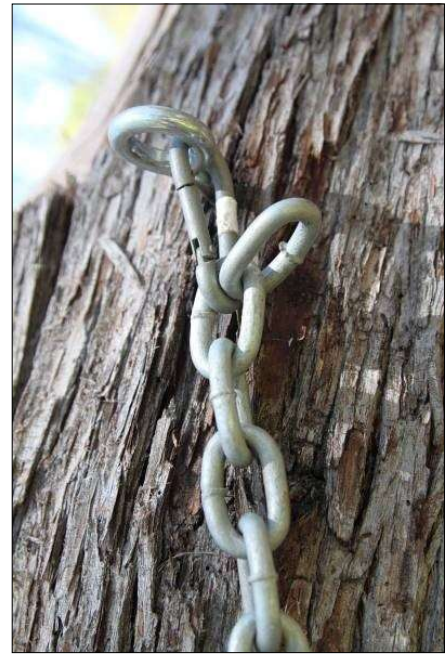
Once artificial hollows have been placed they require monitoring and maintenance to ensure they continue to be useful for nesting by Carnaby's cockatoo. It is important to monitor artificial hollows to determine use by Carnaby's cockatoo, other native species as well as pest species. By undertaking monitoring the success of the design and placement of artificial hollows can be determined and areas for improvement identified for future placement of artificial hollows.

Monitoring can also assess whether any maintenance is required. Without regular maintenance artificial hollows are unlikely to achieve their objective (that is, they will fail to provide nesting opportunities for threatened cockatoos). Therefore it is important to continue a regime of regular maintenance while the artificial hollow is required. It may be several (to many) decades until a natural replacement hollow is available.

For further advice on monitoring and maintenance of artificial hollows please refer to the separate information sheet; *How to monitor and maintain artificial hollows for Carnaby's cockatoo*.



Carnaby's cockatoo female prospecting an artificial hollow.
Photo by Rick Dawson



Example fixing for artificial hollow
Photo by Christine Groom

Acknowledgements

This information sheet is a joint initiative of Birdlife Australia, the Western Australian Museum and the Department of Parks and Wildlife. Many individuals have contributed to its preparation. Special acknowledgement is made for the contributions of Ron Johnstone from the WA Museum, Alan Elliott from the Serpentine-Jarrahdale Land care Centre and Denis Saunders. This updated version was compiled by Rick Dawson Department of Parks and Wildlife).

Other information sheets in the series: Artificial hollows for Carnaby's cockatoo

- *How to design and place artificial hollows for Carnaby's cockatoo*
- *How to monitor and maintain artificial hollows for Carnaby's cockatoo*

Information sheets available on the *Saving Carnaby's cockatoo* webpage:

<http://www.dpaw.wa.gov.au/plants-and-animals/threatened-species-and-communities/threatened-animals/208-saving-carnaby-s-cockatoo>

Schedule 3 – how to monitor and maintain artificial hollows for Carnaby’s cockatoo

Artificial hollows for Carnaby's cockatoo



How to monitor and maintain artificial hollows for Carnaby's cockatoo

It is important to monitor and maintain artificial hollows after they have been erected. Monitoring ensures that the effectiveness of the artificial hollow can be determined. It also means that problems with pest species or any maintenance requirements can be identified and resolved.

Without regular maintenance, artificial hollows are likely to fail to achieve their objective (that is, they will fail to provide nesting opportunities for threatened cockatoos). Therefore it is important to continue a regime of regular maintenance while the artificial hollow is required. It may be several (to many) decades until a natural replacement hollow is available.

Monitoring should be undertaken in order to detect:

- Use by Carnaby's cockatoo
- Maintenance requirements
- Use by other native species
- Use by pest species (e.g. feral bees, galahs, corellas etc.)



Carnaby's cockatoo female prospecting an artificial hollow.
Photo by Rick Dawson

How do I monitor artificial hollows?

Before undertaking monitoring of artificial hollows for Carnaby's cockatoo it is recommended that you seek advice from BirdLife Australia, the WA Museum or the Department of Parks and Wildlife. It is also important to contact Parks and Wildlife, Wildlife Licensing Section, to determine if a scientific licence is required (wildlifelicencing@dpaw.wa.gov.au).

Monitoring artificial hollows requires keen observation and naturalist skills. It is often not possible to observe evidence of breeding directly (i.e. nestlings or eggs) and inferences must be made based on observation. There are many techniques available to monitor artificial hollows. A combination of several is likely to achieve the best results.

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 the hollow

The behaviour of parent birds around a hollow will indicate an approximate age of young in the nest.

Parent behaviour	Approximate age/stage 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) have hatched (> 3 - 4 weeks)

Observing feeding flocks

Flocks of all male birds indicate that the 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

When females are sitting on eggs they will usually respond to tapping at the base of their tree (or pole) by appearing at the entrance or flying from the hollow opening. This is not a guarantee of breeding activity, but an indication that it is possibly occurring in the hollow.

Observing insect activity around nest

The faecal matter produced by nestlings in a nest attracts insects, especially flies and ants. The type and number of these insects will help 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 a nest usually indicate that a death has occurred.

Listening for nestlings

With experience it is possible to determine if one or two nestlings are present and a broad estimate of age based on the type and loudness of noises they make.

Looking inside the 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 organise. 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 options to reach nests to undertake observations.

How often should 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 used and frequency.

How do I maintain artificial hollows?

Artificial hollows require maintenance to ensure they continue to have the greatest chance of them being used by Carnaby's cockatoos. Periodic maintenance checks should be undertaken at least every two years, preferably annually. These checks should be undertaken prior to the breeding season which is between July and January with breeding occurring later in this period in southern areas. It is important to maintain a regime of regular maintenance as long as the artificial hollow is required. It may take several (to many) decades until a natural replacement hollow is available.

Maintenance checks should assess the following as a minimum:

- Condition of chewing posts (if present)
- Condition of attachment points
- Condition of hollow bases
- Stability of tree or pole used to mount the artificial hollow



Artificial hollow base needing repair.
Photo by Christine Groom

Repairing hollows

Any problems identified during maintenance checks should be addressed, and any repairs required done, as soon as possible. If breeding is currently occurring, maintenance may need to be delayed if it is likely to disturb the parents or nestling. Likely maintenance needs include replacement of chewing posts (frequently) or nest bases (occasionally) and repairing of any cracks (infrequently). 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.

For artificial hollows known to be used, spare chewing posts should be taken into the field when undertaking maintenance checks.

Monitoring of artificial hollows:

Monitoring aim	Frequency of visits	Monitoring techniques
To determine possible use by Carnaby's cockatoo	At least once during peak breeding season (i.e. between September and December)	<ul style="list-style-type: none"> • Observing behaviour of adults around hollow • Tapping to see if female will flush from hollow (best undertaken between 10am and 3pm when females most likely to be sitting) • Listening for nestlings • Looking for evidence of chewing • Looking inside nest
To confirm use by Carnaby's cockatoo	At least two visits during peak breeding season (i.e. between September and December)	<p>To observe at least two of the following:</p> <ul style="list-style-type: none"> • Breeding behaviour of adults around hollow or evidence of chewing • Female flushed from hollow • Noises from nestlings in hollow <p>Or to observe:</p> <ul style="list-style-type: none"> • Nestlings or eggs in nest
To determine nesting success by Carnaby's cockatoo	The more visits, the better. Preferably fortnightly visits between July and December. As a minimum, at least 3 visits spread throughout breeding season.	<ul style="list-style-type: none"> • Looking inside nest to observe eggs or nestlings.
To determine use by any species	As often as possible.	<ul style="list-style-type: none"> • Inspection from ground as a minimum. • Looking inside nest for detailed observations.
To determine maintenance requirements	At least every two years and preferably annually if hollow fitted with sacrificial chewing posts, can be longer if without.	<ul style="list-style-type: none"> • A basic maintenance check can be undertaken from the ground. A ladder or elevated work platform will be required for a comprehensive check and to replace sacrificial chewing posts

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Clearing Permit Decision Report

1 Application details and outcome

1.1. Permit application details

Permit number:	CPS 9863/1
Permit type:	Purpose permit
Applicant name:	Midland Brick Pty Ltd
Application received:	12 August 2022
Application area:	0.14 hectares of native vegetation
Purpose of clearing:	Clay extraction
Method of clearing:	Mechanical
Property:	Lot M 1326 on Diagram 5449
Location (LGA area/s):	Shire of Chittering
Localities (suburb/s):	Muchea

1.2. Description of clearing activities

The vegetation proposed to be cleared is distributed across small patches within Lot M 1326 on Diagram 5449, Muchea, adjacent to an existing clay pit within the same lot (see Figure 1, Section 1.5). The application is to clear 0.14 hectares of native vegetation for clay extraction. The proposed clearing includes some marri trees, two mature and some juvenile wandoo trees, a few flooded gum and pine trees (planted by the landowner).

1.3. Decision on application

Decision:	Granted
Decision date:	24 November 2022
Decision area:	0.14 hectares of native vegetation, as depicted in Section 1.5, below.

1.4. Reasons for decision

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

In making this decision, the Delegated Officer had regard for the site characteristics (see Appendix B), relevant datasets (see Appendix HH.1), the findings of the biodiversity survey (Mattiske Consulting, 2022) and a site inspection (see Appendix E and DWER, 2022), the clearing principles set out in Schedule 5 of the EP Act (see Appendix C), relevant planning instruments and any other matters considered relevant to the assessment (see Section 3).

The assessment identified that the proposed clearing will result in:

- potential loss of habitat trees for black cockatoos *Zanda latirostris* (Carnaby's cockatoo) and *Calyptorhynchus banksii naso* (forest red-tailed black cockatoo),

- the potential introduction and spread of weeds into adjacent vegetation, and
- the potential of wind erosion causing land degradation.

After consideration of the available information, as well as the applicant's minimisation and mitigation measures (see Section 3.1), the Delegated Officer determined the proposed clearing is unlikely have long-term adverse impacts on black cockatoo species, the adjacent vegetation or land degradation and can be minimised and managed to be unlikely to lead to an unacceptable risk to environmental values via permit conditions.

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

- avoid, minimise to reduce the impacts and extent of clearing,
- take hygiene steps to minimise the risk of the introduction and spread of weeds and dieback,
- revegetate and rehabilitate the extracted areas,
- undertake staged clearing to minimise wind erosion, and
- fauna management conditions to inspect trees for black cockatoo breeding activity and the installation of artificial nest hollows for each suitable hollow cleared.

1.5. Site map

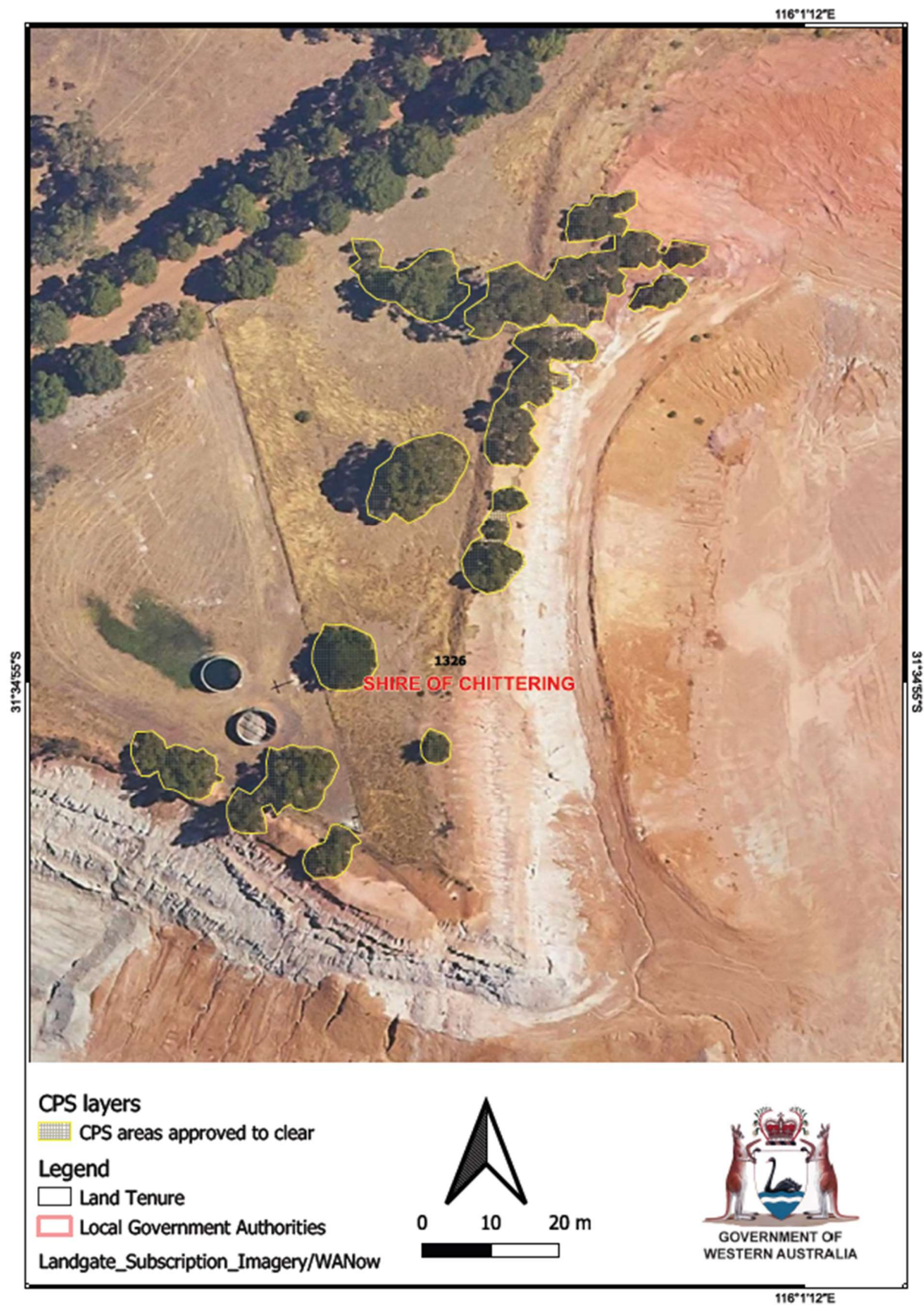


Figure 1 Map of the application area

The areas crosshatched yellow indicate the areas authorised to be cleared under the granted clearing permit. The area hashed red indicates area within which specific conditions apply.



Figure 2 Map of the area where specific conditions apply

2 Legislative context

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

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

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

Other legislation of relevance for this assessment include:

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

The key guidance documents which inform this assessment are:

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

3 Detailed assessment of application

3.1. Avoidance and mitigation measures

Evidence was submitted by the applicant, demonstrating that extraction stages have been carefully planned to avoid clearing on the property where possible.

In addition, the applicants Revegetation and Maintenance Plan has specifically stated that the application area will be revegetated with grasses and legumes with some clusters of native trees. Areas to be planted will also be sprayed for weeds to give seedlings a greater chance of survival. The final rehabilitation will be monitored for a period of three years to ensure revegetation meets the completion criteria.

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

3.2. Assessment of impacts on environmental values

In assessing the application, the Delegated Officer has had regard for the site characteristics (see Appendix 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 (fauna) and environmental values (land degradation). 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.

1.2.1 Biological values (Fauna) - Clearing Principle (b)

Assessment

Available data sources indicate several avian fauna species located within the local area which have habitat preferences likely to be represented within the application area. It is considered the following species may occur:

- Carnaby's cockatoo (*Zanda latirostris* - previously *Calyptorhynchus latirostris*) - Threatened
- Forest red-tailed black cockatoo (*Calyptorhynchus banksii naso*)- Threatened

The application area is within the core habitat for forest red-tailed black cockatoo and the known breeding distribution of Carnaby's cockatoo. The application area may contain hollow bearing trees (breeding habitat) and night roosting habitat for these species.

Foraging habitat

Foraging habitat for black cockatoo species includes foraging material that is within an approximate 6–12-kilometre radius of a nesting site and within 6 kilometres of a night roosting site. The preferred foraging habitat for each of the species is described below:

- Carnaby's cockatoo – Native shrubland, kwongan heathland and woodland dominated by proteaceous plant species such as *Banksia* spp, *Hakea* spp. And *Grevillea* spp. The species also forages in pine plantations and eucalypt woodland.
- Forest red-tailed black cockatoo – jarrah and marri woodlands and forest, edges of karri forests including wandoo and blackbutt within the range of the species

Photographs provided by the applicant (Mattiske Consulting, 2022) and the DWER site inspection report (see Appendix E and DWER, 2022), show the vegetation within the application area consists of scattered and sparse occurrences of *Eucalyptus wandoo* (wandoo), *Corymbia calophylla* (marri), *Eucalyptus rudis* (flooded gum) and *Eucalyptus accedens* (powderbark wandoo). Most trees are small and immature except two wandoos and one marri tree. There may be potential for occasional foraging. Overall, the vegetation comprises of trees over pasture weeds in a completely degraded (Keighery, 1994) condition. A site inspection of the application area did not find any evidence of foraging (DWER, 2022).

Breeding habitat

'Breeding habitat' for species of black cockatoos is defined within the referral guidelines as trees of a species known to support breeding within the range of the species which either have a suitable nest hollow or are suitable diameter at breast height (DBH) to develop a nest hollow (Commonwealth of Australia, 2022).

A survey of the application area found three large hollows in a wandoo tree but no evidence of usage (Mattiske Consulting, 2022). The DWER site inspection also noted that there were no signs of nesting or usage of hollows within the application area (DWER, 2022).

Night Roosting

Night roosting habitat is common between the three species of black cockatoos with flocks of cockatoos using multiple sites during the year as they move across the landscape foraging. Night roost sites are normally associated within foraging habitat and is normally associated with a water source and within the tallest trees within an area.

For Carnaby's cockatoos, any tall trees may provide roosting habitat, but particularly flat-topped Yate (*E. occidentalis*), salmon gum, wandoo, marri, karri, blackbutt, tuart, introduced eucalypts and introduced pines. As for red-tailed black cockatoos, any tall trees may provide roosting habitat, but particularly tall jarrah, marri, blackbutt, tuart and introduced eucalypt trees or large trees on the edges of forests (Commonwealth of Australia, 2022). Some of the trees within the application area may be considered as night roosting habitat for cockatoos.

However noting the site inspection did not observe any signs of foraging, the application area is likely to provide limited night roosting habitat for black cockatoos.

Conclusion

Based on the above assessment, the proposed clearing may result in the loss of habitat for black cockatoo species, in particular breeding trees if the hollows area suitable.

Conditions

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

- Inspection of tree hollows immediately prior to the clearing to determine the presence of black cockatoo breeding activity and the installation of artificial hollows if suitable hollows are found (see Figure 2).

1.2.2 Environmental values (Land degradation) - Clearing Principle (g)

Assessment

The application area is located within the Reagan 12 Subsystem which is described as loamy sands overlying sandy loams to sandy clay loam. The risk of subsurface acidification is also mapped as high. Waterlogging, flooding, and salinity has been assessed to be low (Appendix B.3.). Wind erosion risk has been assessed to be high for this soil type (DPIRD 2019).

Conclusion

For the reasons set out above, it is considered that the potential impacts of the proposed clearing on land degradation in the form of wind erosion can be minimised by requiring to undertake the proposed works within three months of the clearing.

Conditions

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

- To minimise the risk of wind erosion, the applicant will be required commence the extraction of materials within three months of the date of clearing, which will prevent the prolonged exposure of bare sandy loam soils.

3.3. Relevant planning instruments and other matters

Other relevant authorisations required for the proposed land use include:

- Development approval under the *Planning and Development Act 2005* (issued by the Shire of Chittering)
- Extractive Industry Licence (issued by the Shire of Chittering)
- Licence issued under Part V Division 3 of the EP Act.

The Shire of Chittering advised DWER that local government approvals are required, and that the proposed clearing is consistent with the Shire's Local Planning Scheme. The Shire has provided the applicant a Development Approval until 30 June 2024 and advice the applicant that an extension of the approval; for a further period of two years may be applied for. The Extractive Industry licence issued to the applicant is valid until 30 June 2024.

The Chittering Valley Land Conservation District Committee was given an opportunity to comment on the application. No comments were received.

Acid sulphate soils are common in this locality. Applicant has an existing Acid Sulphate Soil Management Plan to address this issue, and annual reports are provided to the Shire of Chittering (Midland Brick, 2022a).

An Aboriginal site of significance (Ellen Brook: Upper Swan) has 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.

End

Appendix A. Additional information provided by applicant

Summary of comments	Consideration of comment
Copy of the Rehabilitation Plan provided by the applicant on 21 October 2022. (Midland Brick, 2022a)	DWER has considered the Rehabilitation plan during the assessment of the environmental values: land degradation, Principle (g), and during the consideration of the revegetation condition on the clearing permit.

Appendix B. Site characteristics

B.1. Site characteristics

Characteristic	Details
Local context	<p>The area proposed to be cleared consists of small, isolated patches of native vegetation in a highly cleared agricultural landscape located in the intensive land use zone of Western Australia. It is surrounded by clay extraction pits to the east and south and is located approximately 0.5 kilometres from the Muchea East Road.</p> <p>Aerial imagery indicates the local area (10-kilometre radius from the centre of the area proposed to be cleared) retains approximately 38.12 per cent of the original native vegetation cover.</p>
Ecological linkage	There are no mapped formal ecological linkages found within the application area and is not considered likely to form any informal linkage due to the area consisting of mostly isolated trees.
Conservation areas	No conservation areas are found within the application area. The closest conservation area is approximately 2.5 kilometres north of the proposed area to be cleared.
Vegetation description	<p>Photographs supplied by the applicant and DWER site inspection indicate the vegetation within the proposed clearing area consists of few wandoo trees, small flooded gum trees, powderbark wandoo and marri trees over weeds and grasses. The site has been historically cleared for farmland and remaining vegetation across the application area comprises parkland cleared vegetation. Representative photos are available in Appendix E.</p> <p>This is inconsistent with the Swan Coastal Plain (SCP) Vegetation complex mapped vegetation types:</p> <ul style="list-style-type: none"> • <u>Mogumber Complex-South</u>, which is described as 'Open woodland of <i>Eucalyptus calophylla</i> (marri), with some admixture of <i>Eucalyptus marginata</i> (jarrah) and a second storey of <i>Eucalyptus tottiana</i> (pricklybark) - <i>Banksia attenuata</i> - <i>Banksia menziesii</i> (firewood Banksia) - <i>Banksia ilicifolia</i> (holly-leaved Banksia)'. • <u>Reagan Complex</u>, which is described as 'Low open woodland of Banksia species <i>Eucalyptus tottiana</i> (pricklybark) to closed heath depending on the depth of soil'.
Vegetation condition	<p>Photographs supplied by the applicant and DWER site inspection indicate the vegetation within the proposed clearing area is in a completely degraded (Keighery, 1994) condition, described as:</p> <ul style="list-style-type: none"> • 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

Characteristic	Details
	species with isolated native trees or shrubs. The full Keighery (1994) condition rating scale is provided in Appendix D. Representative photos are available in Appendix E.
Climate and landform	Mean annual rainfall: 676.9 millimetres Landform: Gentle slopes from the Dandaragan plateau to the Pinjarra plain
Soil description	The soil is mapped as 'Loamy sands overlying sandy loams to sandy clay loam at approximately 1 metre'.
Land degradation risk	The application area has medium to high risk of wind erosion and subsurface acidification.
Waterbodies	The desktop assessment and aerial imagery indicated that the closest conservation category Dampland is approximately 300 metres from the application area. No watercourses transect the area proposed to be cleared.
Hydrogeography	The application area falls within the Gingin Groundwater Area and the Swan River System Surface Water Area, as proclaimed under the <i>Rights in Water and Irrigation Act 1914</i> (RIWI Act).
Flora	There are 27 flora records found in the local area. There are records of 19 priority flora within 10 kilometres, three of which are found on the same soil and vegetation type as the application area. Eight threatened species have been recorded locally, with the nearest record at 3.4 kilometres from the application area (<i>Thelymitra stellata</i>). The application area is completely degraded and parkland cleared.
Ecological communities	Banksia Dominated Woodlands of the Swan Coastal Plain IBRA Region (Banksia Woodlands) is a priority three ecological community (PEC) situated approximately 300 metres from the application area.
Fauna	There are records of 18 fauna of conservation significance within the local area and a known black cockatoo roost site 4 kilometres away. Ten known breeding sites have been recorded within the local area. During the biodiversity survey within the application area, a cockatoo specialist on site confirmed that no trees showed signs of nesting activity or foraging by black cockatoos (Mattiske Consulting, 2022).

B.2. Vegetation extent

	Pre-European extent (ha)	Current extent (ha)	Extent remaining (%)	Current extent in all DBCA managed land (ha)	Current proportion (%) of pre-European extent in all DBCA managed land
IBRA bioregion*					
Swan Coastal Plain (1020-vegetation association)	5,295.68	1,500.42	28.33	98.75	1.90
Vegetation complex**					
Mogumber Complex-South	14,821.71	5,720.70	38.60	1,029.42	6.95
Reagan Complex	9,180.69	3,106.85	33.84	605.91	6.60

	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 (10km radius)	317403113.1	121001832.8	38.12	-	-

*Government of Western Australia (2019b)

**Government of Western Australia (2019a)

B.3. Land degradation risk table

Risk categories	Land Unit 1
Wind erosion	H1: 50-70% of map unit has a high to extreme wind erosion risk
Water erosion	L1: <3% of map unit has a high to extreme water erosion risk
Salinity	L1: 30-50% of map unit has a moderate to high salinity risk or is presently saline
Subsurface Acidification	H2: >70% of map unit has a high subsurface acidification risk or is presently acid
Flood risk	L1: <3% of the map unit has a moderate to high flood risk
Water logging	L1: <3% of map unit has a moderate to very high waterlogging risk
Phosphorus export risk	L1: <3% of map unit has a high to extreme phosphorus export risk

Appendix C. Assessment against the clearing principles

Assessment against the clearing principles	Variance level	Is further consideration required?
Environmental value: biological values		
<p><u>Principle (a):</u> "Native vegetation should not be cleared if it comprises a high level of biodiversity."</p> <p><u>Assessment:</u></p> <p>The area proposed to be cleared does not contain locally significant flora, fauna habitats or assemblages of plants. Although the application area comprises of potential foraging and breeding habitat for conservation significant fauna, considering that the application area is parkland cleared, lacks ecological linkages, and is dominated by weeds, it is unlikely for the application area to comprise a high level of biodiversity.</p>	Not likely to be at variance	No
<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 is likely to have potential foraging, roosting, and breeding habitat for conservation significant fauna.</p>	May be at variance	Yes Refer to Section 3.2.1, above.
<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>The area proposed to be cleared is unlikely to contain habitat for flora species listed under the BC Act. Noting the completely degraded vegetation</p>	Not likely to be at variance	No

Assessment against the clearing principles	Variance level	Is further consideration required?
condition, highly disturbed agricultural land dominated by weeds and surrounded by clay extraction pits, it is unlikely for the vegetation in the application area to contribute to the existence of threatened flora.		
<p><u>Principle (d):</u> <i>“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.”</i></p> <p><u>Assessment:</u> The area proposed to be cleared does not contain species that can indicate a threatened ecological community.</p>	Not likely to be at variance	No
Environmental value: significant remnant vegetation and conservation areas		
<p><u>Principle (e):</u> <i>“Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.”</i></p> <p><u>Assessment:</u> The extent of the mapped vegetation type is consistent with the national objectives and targets for biodiversity conservation in Australia. The vegetation proposed to be cleared is not considered to be part of a significant ecological linkage in the local area.</p>	Not likely to be at variance	No
<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> Given the distance to the nearest conservation area, the proposed clearing is not likely to have an impact on the environmental values of or nearby conservation areas.</p>	Not likely to be at variance	No
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> Given no water courses or wetlands are recorded within the application area, the proposed clearing is unlikely to impact on- or off-site hydrology and water quality.</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> The mapped soils are susceptible to wind erosion and subsurface acidification. Noting the location of the application area and the condition of the vegetation, the proposed clearing is likely to have an appreciable impact on land degradation.</p>	May be at variance	Yes Refer to Section 3.2.2, above.
<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> Given no water courses or wetlands are recorded within the application area, the proposed clearing is unlikely to impact surface or ground water quality.</p>	Not likely to be at variance	No

Assessment against the clearing principles	Variance level	Is further consideration required?
<p><u>Principle (j):</u> “Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.”</p> <p><u>Assessment:</u></p> <p>The mapped soils and topographic contours in the surrounding area are porous in nature and 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. DWER site inspection



Figure E-1: Areas marked in green are part of the application area. Numbers and arrows indicate the points where photographs were taken.



Figure E-2: Wandoo tree with no hollows or signs of usage



Figure E-3: Planted pine trees, weedy understorey



Figure E-4: Close up of planted non-native pine trees (planted)



Figure E-5: Wandoo tree with three hollows but no signs of usage



Figure E-6: Close-up of flooded gum trees



Figure E-7: small marri trees (planted), weedy understorey

Appendix H. Sources of information

H.1. GIS databases

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

- 10 Metre Contours (DPIRD-073)
- Aboriginal Heritage Places (DPLH-001)
- Aboriginal Heritage Places (DPLH-001)
- Cadastre (LGATE-218)
- Cadastre Address (LGATE-002)
- Contours (DPIRD-073)
- DBCA – Lands of Interest (DBCA-012)
- DBCA Legislated Lands and Waters (DBCA-011)
- Flood Risk (DPIRD-007)

- Groundwater Salinity Statewide (DWER-026)
- IBRA Vegetation Statistics
- Imagery
- Local Planning Scheme – Zones and Reserves (DPLH-071)
- Native Title (ILUA) (LGATE-067)
- Pre-European Vegetation Statistics
- 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

H.2. References

Commonwealth of Australia (2001) *National Objectives and Targets for Biodiversity Conservation 2001-2005*, Canberra.

Commonwealth of Australia (2022) *Referral guidelines for three WA threatened black cockatoo species. Carnaby's Cockatoo (Zanda latirostris), Baudin's Cockatoo (Zanda baudinii) and the Forest Red-tailed Black-cockatoo (Calyptorhynchus banksii naso)*. Available from: <https://www.dcceew.gov.au/sites/default/files/documents/referral-guideline-3-wa-threatened-black-cockatoo-species-2022.pdf>

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