



CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

Purpose Permit number:	CPS 8482/1
Permit Holder:	Morning Glory Enterprises Pty Ltd
Duration of Permit:	19 February 2020 – 19 February 2030

The Permit Holder is authorised to clear native vegetation subject to the following conditions of this Permit.

PART I – CLEARING AUTHORISED

1. Purpose for which clearing may be done

Clearing for the purpose of horticulture, livestock grazing, weed control and dam construction.

2. Land on which clearing is to be done

Lot 12140 on Deposited Plan 203044, Yanmah

Lot 9477 on Deposited Plan 203007, Yanmah

3. Area of Clearing

The Permit Holder must not clear more than 47.94 hectares of native vegetation within the area hatched yellow on attached Plan 8482/1.

4. Application

This Permit allows the Permit Holder to authorise persons, including employees, contractors and agents of the Permit Holder, to clear native vegetation for the purposes of this Permit subject to compliance with the conditions of this Permit and approval from the Permit Holder.

PART II – MANAGEMENT CONDITIONS

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

In determining the amount of native vegetation to be cleared authorised under this Permit, the Permit Holder must have regard to the following principles, set out in 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. Dieback and weed control

When undertaking any clearing or other activity authorised under this Permit, the Permit Holder must take the following steps to minimise the risk of the introduction and spread of *weeds* and *dieback*:

- clean earth-moving machinery of soil and vegetation prior to entering and leaving the area to be cleared;
- ensure that no known *dieback* or *weed*-affected soil, *mulch*, *fill* or other material is brought into the area to be cleared;
- restrict the movement of machines and other vehicles to the limits of the areas to be cleared;

7. Fauna management - black cockatoo nesting trees

- (a) Immediately prior to undertaking any clearing authorised under this Permit:
 - (i) the area cross-hatched yellow on attached Plan 8482/1 shall be inspected by a *fauna specialist* who shall identify *black cockatoo nesting trees*; and
 - (ii) each *black cockatoo nesting tree* identified shall be inspected by a *fauna specialist* for evidence of current or past breeding use by *black cockatoos*.
- (b) Where a *black cockatoo nesting tree(s)* with evidence of current breeding use by *black cockatoos* is identified and cannot be avoided, that tree(s) shall be monitored by a *fauna specialist* to determine when it is no longer in use for that *breeding season*.
- (c) Any *black cockatoo nesting tree(s)* with evidence of current breeding use by *black cockatoos* shall not be cleared while it is in use as determined by the *fauna specialist* under condition 7(b) of this Permit.
- (d) Where a *black cockatoo nesting tree(s)* with evidence of past breeding use by *black cockatoos* is identified and cannot be avoided, that tree(s) shall only be cleared:
 - (ii) later the same day of the inspection required under condition 7(a)(ii) of this Permit if that inspection does not identify evidence of current breeding use; or
 - (iii) later the same day of a repeat inspection undertaken by a *fauna specialist* if that inspection does not identify evidence of current breeding use.

8. Fauna management – artificial black cockatoo nest hollows

- (a) Within six months of clearing of *black cockatoo nesting trees* identified under Condition 7, and before the following *breeding season*, the Permit Holder shall install at least one artificial black cockatoo nest hollows for every *black cockatoo nesting tree(s)* cleared, identified under Condition 7;
- (b) The Permit Holder shall install at least two artificial black cockatoo nest hollows;
- (c) The design and placement of the artificial black cockatoo nest hollows must be determined based on the guidelines provided in Schedule 1 and must be installed within the area hatched red on attached Plan 8482/1;
- (d) The Permit Holder must monitor and maintain the installed artificial black cockatoo nest hollows for a period of at least ten years; and
- (e) Monitoring and maintenance must be undertaken in accordance with the guidelines provided in Schedule 2.

9. Direction of Clearing

The Permit Holder shall conduct clearing in a slow, progressive manner towards remnant vegetation to allow fauna to move into adjacent native vegetation ahead of the clearing activity.

PART III - RECORD KEEPING AND REPORTING

10. Records must be kept

The Permit Holder must maintain the following records for activities done pursuant to this Permit:

- (a) In relation to the clearing of native vegetation authorised under this Permit:
 - (i) the location where the clearing occurred, recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 1994 (GDA94), expressing the geographical coordinates in Eastings and Northings;
 - (ii) the date that the area was cleared;
 - (iii) the size of the area cleared (in hectares);
 - (iv) the direction of the clearing;
 - (v) actions taken to avoid, minimise and reduce the impacts and extent of clearing ;in accordance with condition 5 of the Permit; and
 - (vi) actions taken to minimise the risk of the introduction and spread of *weeds* and *dieback* in accordance with condition 6 of the Permit.
- (b) In relation to fauna management pursuant to condition 7 of this Permit:
 - (i) the time(s) and date(s) of inspection(s) by the *fauna specialist*;
 - (ii) a description of the *fauna specialist* inspection methods employed;

- (iii) the location of each *black cockatoo nesting tree* identified, recorded using a GPS unit set to GDA94, expressing the geographical coordinates in Eastings and Northings or decimal degrees;
 - (iv) a description of the evidence of current or past breeding use observed for each *black cockatoo nesting tree* identified;
 - (v) a photo of each *black cockatoo nesting tree* with evidence of current or past breeding use identified;
 - (vi) for each *black cockatoo nesting tree* with evidence of current breeding use:
 - (1) the time and date it was determined to no longer be in use for that breeding season; and
 - (2) the evidence by which it was determined to no longer be in use for that breeding season.
 - (vii) the time and date each *black cockatoo nesting tree* with evidence of current or past breeding use was cleared.
- (c) In relation to the installation of artificial black cockatoo nest hollows pursuant to condition 8 of this Permit:
- (i) the date that each artificial black cockatoo nest hollow was installed;
 - (ii) the location where each artificial black cockatoo nest hollow was installed recorded using a GPS unit set to GDA94, expressing the geographical coordinates in Eastings and Northings or decimal degrees;
 - (iii) a photo of each installed artificial black cockatoo nest hollow;
 - (iv) the dates each artificial *black cockatoo* nest hollow installed was monitored;
 - (v) a description of the monitoring methods employed for each artificial *black cockatoo* nest hollow installed;
 - (vi) a description of the monitoring observations for each artificial *black cockatoo* nest hollow installed;
 - (vii) the date(s) each artificial *black cockatoo* nest hollow installed was maintained;
 - (viii) a description of the maintenance activities undertaken for each artificial *black cockatoo* nest hollow installed; and
 - (ix) the total number of artificial hollows installed.

11. Reporting

- (a) The Permit Holder must provide to the *CEO* on or before 30 June of each year, a written report:
 - (i) of records required under condition 10 of this Permit; and
 - (ii) concerning activities done by the Permit Holder under this Permit between 1 January to 31 December of the preceding calendar year.
- (b) If no clearing authorised under this Permit was undertaken between 1 January to 31 December of the preceding calendar, a written report confirming that no clearing under this permit has been carried out, must be provided to the *CEO* on or before 30 June of each year.
- (c) Prior to 19 November 2029, the Permit Holder must provide to the *CEO* a written report of records required under condition 10 of this Permit where these records have not already been provided under condition 11(a) of this Permit.

DEFINITIONS

The following meanings are given to terms used in this Permit:

black cockatoo(s) means Carnaby's cockatoo (*Calyptorhynchus latirostris*), Baudin's cockatoo (*Calyptorhynchus baudinii*) and forest red-tailed black cockatoo (*Calyptorhynchus banksii naso*);

black cockatoo nesting tree/s means trees that have a diameter, measured at 1.5 metres from the base of the tree, of 50 centimetres or greater (or 30 centimetres or greater for *Euclayptus salmonophloia* or *Eucalyptus wandoo*) that contain hollows suitable for nesting by Carnaby's cockatoo, Baudin's cockatoo or forest red-tailed black cockatoo;

breeding season means the period from 1 June to 29 February of any given year;

CEO means the Chief Executive Officer of the Department responsible for administering the clearing provisions contained within the *Environmental Protection Act 1986*;

fauna specialist means a person who holds a tertiary qualification specialising in environmental science or equivalent, and has a minimum of two 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 *Biodiversity Conservation Act 2016*.

fill means material used to increase the ground level, or fill a hollow;

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;

weed/s means any plant -

- (a) that is a declared pest under section 22 of the *Biosecurity and Agriculture Management Act 2007*;
or
- (b) published in a Department of Biodiversity, Conservation and Attractions Regional Weed Rankings Summary, regardless of ranking; or
- (c) not indigenous to the area concerned.



Mathew Gannaway
MANAGER
NATIVE VEGETATION REGULATION

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

20 January 2020

Schedule 1

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

Artificial hollows for Carnaby's cockatoo



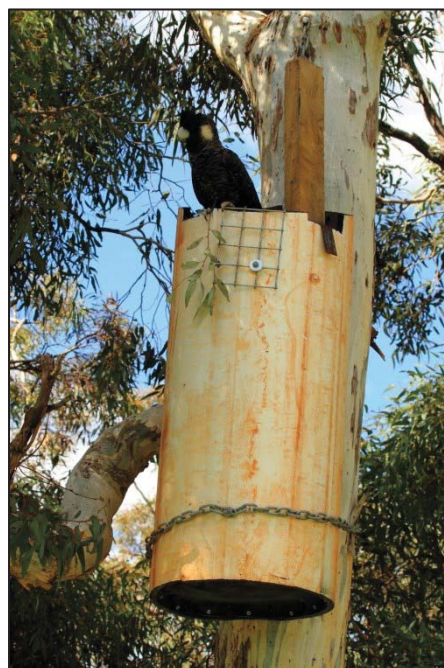
How to design and place artificial hollows for Carnaby's cockatoo

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 2

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

Acknowledgements

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Plan 8482/1

34.177728°S

34.177728°S

115.994375°E

116.020711°E







115.994375°E

116.020711°E

34.193643°S

34.193643°S

Legend

-  Clearing Instruments Conditions
-  Imagery
-  Clearing Instruments Activities
-  Local Government Authority



(Approximate when reproduced at A4)

GDA 94 (Lat/Long)

Geocentric Datum of Australia 1994

 Date 20/01/2020
Mathew Gannaway

Officer with delegated authority under Section 20 of the
Environmental Protection Act 1986



GOVERNMENT OF
WESTERN AUSTRALIA
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1. Application details

1.1. Permit application details

Permit application No.: 8482/1
Permit type: Purpose Permit

1.2. Applicant details

Applicant's name: Morning Glory Enterprises Pty Ltd
Application received date: 02 May 2019

1.3. Property details

Property: Lot 9477 on Deposited Plan 203007, Yanmah
Lot 12140 on Deposited Plan 203044, Yanmah
Local Government Authority: Manjimup, Shire of
Localities: Yanmah

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	Purpose category:
47.94		Mechanical Removal	

1.5. Decision on application

Decision on Permit Application: Grant
Decision Date: 20 January 2020

Reasons for Decision: The clearing permit application was received on 2 May 2019 and has been assessed against the clearing principles, planning instruments and other matters in accordance with section 51O of the *Environmental Protection Act 1986* (EP Act). It has been determined that the proposed clearing is at variance with principle (f), may be at variance with principles (b) and (h) and is not likely to be at variance with any of the remaining clearing principles.

Through the assessment, the Delegated Officer determined that the proposed clearing will impact on vegetation growing in association with a watercourse. The Delegated Officer noted the impacts to vegetation via the existing dams and farming practices, the degraded (Keighery, 1994) condition of riparian vegetation and the small area of riparian vegetation proposed for clearing. It is considered that impacts to riparian habitat is considered to be minimal.

The Delegated Officer determined that the proposed clearing may cause the spread of weeds and dieback into adjacent areas of remnant vegetation and the adjacent North Donnelly State Forest. To mitigate potential impacts to adjacent vegetation, a weed and dieback management condition has been placed on the permit. The weed management condition requires earth-moving machinery to be clean of weeds when entering and exiting the clearing area, ensure that no known weed-affected soil, mulch, fill or other material is brought into the area to be cleared and restrict the movement of machines and other vehicles to the limits of the area to be cleared.

Through assessment it has been determined that the application area contains suitable nesting habitat for Carnaby's cockatoo (*Calyptorhynchus latirostris*), forest red-tailed black cockatoo (*Calyptorhynchus banksii naso*) and Baudin's cockatoo (*Calyptorhynchus baudinii*) (collectively referred to as black cockatoos) including two trees containing hollows suitable for nesting by black cockatoos. The Delegated Officer determined that the proposed clearing may impact upon significant habitat for these species. To mitigate impacts associated with the loss of two nesting trees the applicant will be required to install two artificial nesting hollows within Lot 12140.

To mitigate the potential impacts to ground dwelling fauna individuals present at the time of clearing, the applicant will be required to undertake clearing in a slow, progressive and directional (i.e. east to west) manner.

Given the above, the Delegated Officer decided to grant a clearing permit subject to weed and dieback management and fauna management conditions.

In determining to grant a clearing permit subject to the above management conditions, the Delegated Officer found that the proposed clearing is not likely to lead to an unacceptable risk to the environment.

2. Site Information

Clearing Description

The application is to clear 47.94 hectares of native vegetation within Lot 9477 on Deposited Plan 203007 and Lot 12140 on Deposited Plan 203044, Yanmah, for the purpose of horticulture production, livestock grazing, weed control and dam construction (Figure 1).

Vegetation Description

Four South West Forests vegetation complexes are mapped within the application area (Mattiske and Havel, 1998), described as:

- **BE1:** Tall open forest of *Corymbia calophylla-Eucalyptus marginata* subsp. *marginata* on uplands in perhumid and humid zones.
- **WH1:** Tall open forest of *Eucalyptus diversicolor-Corymbia calophylla* on slopes and tall open forest of *Eucalyptus patens* on valley floor in perhumid and humid zones.
- **YN1:** Mixture of tall open forest of *Eucalyptus diversicolor* and tall open forest of *Corymbia calophylla-Eucalyptus patens-Eucalyptus marginata* subsp. *marginata* over *Agonis flexuosa* and *Agonis juniperina* on valleys in perhumid and humid zones.
- **CL1:** Mosaic of open forest of *Eucalyptus marginata* subsp. *marginata-Banksia* spp. on well drained sites, with some *Eucalyptus decipiens* on lower slopes in southern areas, woodland of *Eucalyptus rudis-Melaleuca preissiana-Banksia littoralis* on depressions in perhumid and humid zones.

A site inspection undertaken by officers of the Department of Water and Environmental Regulation (DWER) identified two distinct areas of vegetation comprising of:

- Area 'A' (Figure 1) predominantly comprises of *Corymbia calophylla* and *Eucalyptus marginata*. The north western portion of Area A includes some large *Eucalyptus diversicolor* (Karri). Mid and understorey species included juvenile jarrah and marri trees, *Xanthorrhoea preissii*, *Pteridium esculentum*, *Banksia grandis*, *Acacia pulchella*, and *Hakea prostrata*. The age of trees varied markedly, with several large mature trees present amongst a younger profile forest. Signs of historical fire were present (DWER, 2019a).
- Area 'B' (Figure 1) is predominantly comprised of *Melaleuca* sp., and *Kunzea* sp. woodland over *Pteridium esculentum*. Sedges, exotic blackberry and pasture grasses are found within the understorey (DWER, 2019a).

A vegetation survey undertaken within the application area described the vegetation within Area A and B as:

- Area A: The whole of this site had been burnt by a prescribed fire about three years previously and vegetation has recovered and would be at the peak in species richness. The area was mixed jarrah and marri forest, which has been modified by previous harvesting operations. The stand contained immature trees, which may be in the region of 50-60 years old based on stem diameter. There were occasional over mature remnant trees from the original stand, but many of these were already dead (about 30-40%) and the remainder in poor condition. Many trees had already fallen and littered the forest floor. The vegetation appeared to be similar throughout the site with a narrow strip of riparian vegetation along a drainage line; and
- Area B: This area was a moisture gaining site subject to inundation annually. It had been totally cleared in the past as part of farm development and converted to pasture. However, the site had some regeneration of *Taxandria linearifolia*, which had developed into a thicket and was retained as a refuge for sheep and cattle. Inundation by water annually and the continued grazing by livestock modified the site such that very few native plant species appeared to be present. The thicket of *T. linearifolia* appeared to be mostly interspersed with weed species and blackberry thickets (Ward, 2019).

Vegetation Condition

The condition and structure of the vegetation within the application area was determined via the site inspection (DWER, 2019a) and a targeted flora and vegetation survey undertaken within the application area (Ward, 2019). The vegetation within the application area was identified as being in a degraded to very good (Keighery, 1994) condition described as:

Vegetation condition ratings are defined as follows:

- Very Good: Vegetation structure altered; obvious signs of disturbance (Keighery, 1994).
- Good: Vegetation structure significantly altered by very obvious signs of multiple disturbance; retains basic structure or ability to regenerate (Keighery 1994).
- Degraded: Basic vegetation structure severely impacted by disturbance; scope for regeneration but not to a state approaching Good condition without intensive management (Keighery 1994).

The condition of the vegetation within Area 'A' ranges from degraded to very good (Keighery, 1994), with historical evidence of logging and livestock grazing. The majority of the eastern portion of Area A is in a good to very good condition and the western portion is largely in a good condition, with minor degraded areas occurring as a result of edge effects associated with agriculture activities (DWER, 2019a).

The condition of the vegetation within Areas 'B' ranges from good to degraded (Keighery, 1994), with evidence of stock use and presence of exotic species (DWER, 2019a).

Soil type

Four land subsystems are mapped within the application area (Schoknecht et al.,2004), described as:

- Corbalup Subsystem (Manjimup) (254MpCL) which is described as gently undulating rises over sedimentary deposits, relief 5-15 m, slopes 1-5%. Soils are loamy gravels and sandy gravels;
- Yanmah Subsystem (Manjimup) (254MpYN) which is described as shallow (5-20 m) minor valleys, usually u-shaped with gentle sideslopes (3-10%) and broad swampy floors. Soils are loamy gravels, sandy gravels and deep sands with non-saline wet soils on the valley floors;
- Bevan Subsystem (Manjimup) (254MpBE) which is described as broad, gently sloping (3-15%) divides on laterite, soils are sandy gravels and loamy gravels; and
- Wheatley Subsystem (Dwalganup) (254MpCL) which is described as shallow (20-40 m) minor valleys with low sideslopes (5-20%). and narrow swampy floors with a slightly incise stream channel. Soils are loamy gravels, sandy gravels and loamy earths.

Comments

The local area referred to in this assessment is defined as the area within a 10 kilometre radius of the application area. Aerial imagery indicates that the local area retains approximately 75 per cent native vegetation cover.

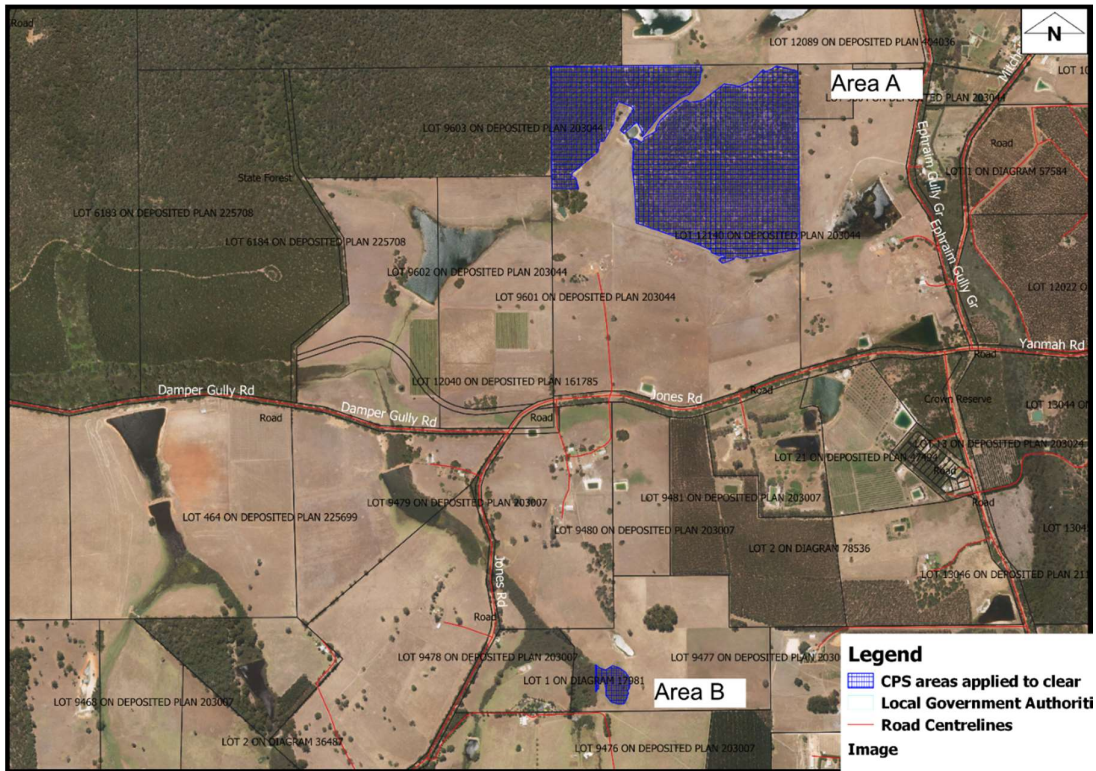


Figure 1: Application Area

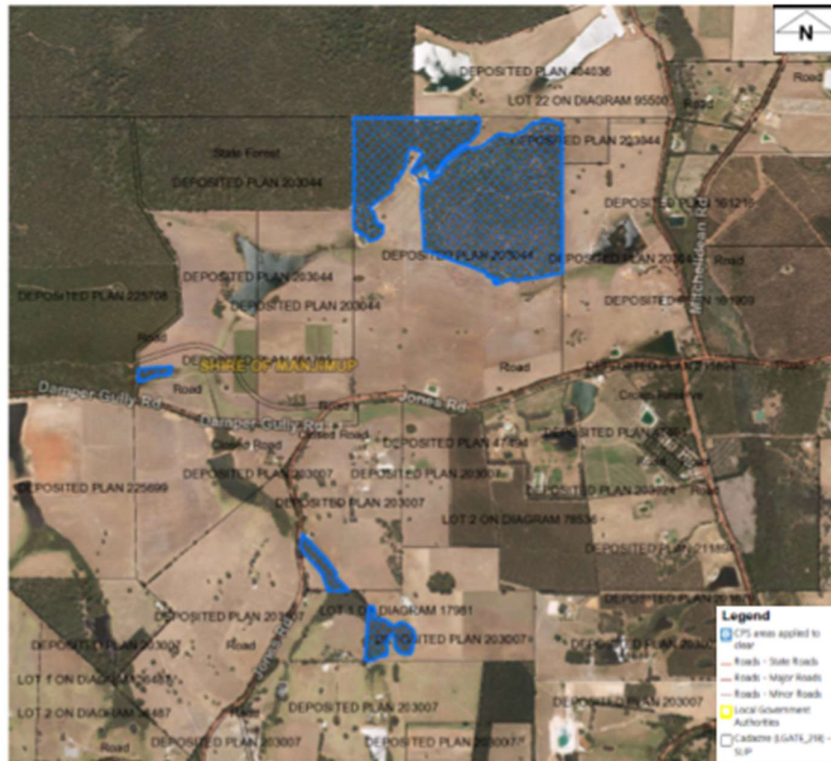


Figure 2: Original Application Area

3. Minimisation and mitigation measures

The applicant removed three areas that were located adjacent to the creekline that runs through the property (Figure 2). A site inspection undertaken by the office of the Deputy Commissioner of Soil and Land Conservation (DCSLC) (2019a) identified the areas removed as being prone to erosion and advised that the removal of vegetation within these areas may result in significant disturbance to the channel with sediments moving offsite during major rainfall events. The risk of eutrophication was identified as being high in the permanently wet or waterlogged areas (DCSLC, 2019a).

The applicant amended the application area as a result of the DCSLC advice and reduced the clearing area from 52.45 hectares to 47.94 hectares (Figure 2). This amended application area is the subject of this Decision Report.

The applicant has undertaken flora and fauna surveys to determine the presence of threatened and priority flora and significant habitat for fauna indigenous to Western Australia.

The fauna survey identified two trees containing hollows suitable for nesting by the black cockatoos. To mitigate impacts associated with the loss of two nesting trees, the applicant has advised that they will install two artificial nesting hollows within Lot 12140 (Morning Glory Enterprises Pty Ltd, 2020).

4. Assessment of application against clearing principles

(a) Native vegetation should not be cleared if it comprises a high level of biodiversity.

Proposed clearing is not likely to be at variance with this Principle

As described within Section 2 of this report, the condition of the vegetation within the application area is in a degraded to very good (Keighery, 1994) condition (DWER, 2019a).

According to available databases, one threatened flora and eight priority flora species have been recorded within the local area. A flora survey undertaken within the application area did not identify any threatened or priority flora species located within the application area (Ward, 2019). The application area is not likely to comprise any threatened or priority flora species.

According to available databases, no threatened ecological communities (TEC) or priority ecological communities (PEC) have been recorded within the local area. Noting the vegetation types present, the application area is not considered to be representative of any other TECs or PECs.

As discussed under Principle (b), a black cockatoo habitat tree assessment identified two trees within the application area that contain hollows of suitable size to provide nesting habitat for black cockatoos. Therefore, the application area may comprise of significant habitat for these species. The application area may also provide habitat for additional fauna species indigenous to Western Australia. However, given the application area is surrounded by extensive vegetation including the adjacent North Donnelly State Forest, the application area is not likely to provide significant habitat for these species. The applicant will be required to install two artificial black cockatoo nest hollows within their property to mitigate impacts to black cockatoo nesting habitat.

The application area may contain significant nesting habitat for the black cockatoo species, however the local area retains approximately 75 per cent vegetation cover, is not likely to contain threatened or priority flora or be representative of a PEC or TEC. Therefore, the application area is not likely to comprise a high level of biodiversity. The proposed clearing is not likely to be at variance with this Principle.

(b) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna.

Proposed clearing may be at variance with this Principle

According to available database, seven fauna species listed as threatened under the *Biodiversity Conservation Act 2016* (BC Act) have been recorded within the local area, including the Forest Red-tailed Black Cockatoo, Baudin's Cockatoo, Carnaby's Cockatoo, *Dasyurus geoffroyi* (Chuditch) *Myrmecobius fasciatus* (Numbat), *Pseudocheirus occidentalis* (Western Ringtail Possum) and *Setonix brachyurus* (Quokka) have been recorded within the local area. Furthermore six priority fauna and one other specially protected fauna have been recorded within the local area (DFCA, 2007-).

Carnaby's cockatoos nest in large hollows of eucalyptus trees and forage on the seeds, nuts and flowers of a large variety of plants including proteaceous species (*Banksia*, *Hakea*, *Grevillea*), as well as *Allocasuarina* and *Eucalyptus* species, *Corymbia calophylla* and a range of introduced species, especially seeds from cones of *Pinus* species (Shah, 2006; Valentine and Stock, 2008). The Recovery Plan for Baudin's cockatoo and forest Red-tailed black-cockatoo states that critical habitat for the survival of important populations of these species comprises all marri, karri and jarrah forests, woodlands and remnants in the south-west of Western Australia receiving more than 600 millimetres of annual average rainfall (Commonwealth of Australia, 2012).

Noting the vegetation types present within the application area, the application area contains suitable foraging habitat for black cockatoos. However, given the extent of vegetation in the local area and the North Donnelly State Forest is located adjacent to the application area, the proposed clearing is not likely to impact upon significant foraging habitat for these species.

Potential nesting trees for black cockatoos are defined as "trees of species known to support breeding within the range of the species which either have a suitable nest hollow or are of a suitable diameter at breast height (DBH) to develop a nest hollow. For most tree species, suitable DBH is 500 millimetres". A site inspection of the application area conducted by DWER observed several large mature trees present within Area 'A'.

A black cockatoo habitat tree assessment identified that the vast majority of trees present within the application area were relatively young and therefore do not contain hollows, or if present only small hollows that would not be suitable for black cockatoos to use for nesting purposes (Harewood, 2019).

No conclusive evidence of black cockatoo nesting activity was observed in any trees within the application area. Two trees were identified within the application area with hollows of suitable size to provide nesting habitat for the black cockatoo species. One of the identified hollows showed some evidence of use in the form of chew marks, however it was inconclusive on which avian

fauna species this was from (Harewood, 2019). Given the above the proposed clearing is likely to impact upon nesting habitat for the black cockatoo species.

Chuditch are present in approximately five per cent of their former range, with most chuditch now found in varying densities in jarrah forests and woodlands in the south west corner of Western Australia, in woodlands, mallee shrublands and heaths along the south coast, east to the Ravensthorpe area, and at lower densities in drier woodland and mallee shrubland in the Wheatbelt and Goldfield regions (Department of Environment and Conservation, 2012).

The numbat is commonly found in sites that have the presence of eucalyptus species that provide logs and hollows for refuge from predators and possibly higher termite densities for foraging (Department of Parks and Wildlife, 2017a). Noting that suitable habitat in the form of eucalyptus species and several fallen hollow logs were identified during the site inspection (DWER, 2019a), the application area is likely to provide suitable habitat for this species.

The quokka's current distribution on the mainland on Western Australia is within high rainfall areas. In the Jarrah, Marri and Karri forests, they occupy a range of forest, woodland and wetland habitats that generally have thick understorey, are nearby swamps and are close to more open, recently burnt vegetation. On the south coast, they occupy a wide range of vegetation types including swamps, riparian areas, gullies and dense coastal heath (DBCA, 2017).

Suitable habitat for the chuditch, numbat and quokka may be located within the application area. However, noting that the application area is surrounded by extensive vegetation including the adjacent North Donnelly State Forest that will provide habitat for this species, the proposed clearing is not likely to impact upon significant habitat for this species. Slow, progressive and directional clearing (i.e. from east to west) will assist in mitigating potential impacts to individuals residing within the application area at the time of clearing.

The western ringtail possum has a preference for habitat dominated by *Agonis flexuosa* (peppermint) near coastal areas, swamps, watercourses or floodplains (Department of Parks and Wildlife, 2017b). The vegetation type within the application area is not the western ringtails preferred habitat and therefore the application area is not likely to comprise of significant habitat for this species.

Of the six priority fauna and one other specially protected fauna species that have been recorded within the local area, only two species may be found within the application area due to habitat recorded, being the *Phascogale tapoatafa* subsp. *wambenger* (South-western Brush-tailed Phascogale) and *Isoodon fusciventer* (Quenda). Directional clearing will assist in mitigating impacts to these species.

Given the above the application area contains two trees that contain hollows suitable for black cockatoos and therefore the application area may be considered to contain significant nesting habitat for the threatened black cockatoo species. The proposed clearing may be at variance to this Principle.

To mitigate impacts to black cockatoo nesting habitat, the applicant will be required to install two artificial black cockatoo nest hollows within their property.

(c) Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora.

Proposed clearing is not likely to be at variance with this Principle

According to the Department of Biodiversity, Conservation and Attractions (DBCA) threatened flora database, one threatened flora species, *Caladenia harringtoniae* has been recorded within the local area.

Caladenia harringtoniae (listed as Vulnerable under the BC Act) is a tuberous perennial herb that grows to between 0.2 and 0.4 metres high that produces pink flowers between October and November. This species grows within sandy loams on winter-wet flats, the margins of lakes, creeklines, and on granite outcrops. Noting the habitat requirements of this species, suitable habitat for this species may be located within the area inundated with water within 'Area B' of the application area.

A flora survey undertaken within the application area did not identify any threatened flora within the application area (Ward, 2019).

Given the above the application area is not likely to include or be necessary for the continued existence of threatened flora. The proposed clearing is not likely to be at variance with this Principle.

(d) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of a threatened ecological community.

Proposed clearing is not likely to be at variance with this Principle

According to available datasets, there are no state listed TEC's mapped within the local area.

Noting the vegetation types present, the application area is not considered to be representative of any other state listed TEC, or be necessary for the maintenance of a state listed TEC.

The proposed clearing is not likely to be at variance with this Principle.

(e) Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.

Proposed clearing is not likely to be at variance with this Principle

The national objectives and targets for biodiversity conservation in Australia has a target to prevent clearance of ecological communities with an extent below 30 per cent of that present pre-1750, below which species loss appears to accelerate exponentially at an ecosystem level (Commonwealth of Australia, 2001).

As indicated in the table below, the mapped South West Forests vegetation complexes retain more than 30 per cent of their pre-European extents (Government of Western Australia, 2018). The local area (10 kilometre radius) retains approximately 75 per cent native vegetation cover.

Table 1. Vegetation extent remaining statistics (Government of Western Australia, 2019)

	Pre-European (ha)	Current Extent (ha)	Remaining (%)	Current extent in all DBCA managed lands (ha)	Extent remaining in all DBCA managed lands (proportion of Pre-European extent) (%)
IBRA Bioregion*					
Jarrah Forest	4,506,660	2,399,838	53	1,673,614	37
Warren	833,986	659,432	79	558,485	67
South West vegetation complex*					
Yanmah, YN1	23,494	19,230	82	18,180	77
Corbalup, CL1	15,179	10,614	70	10,006	66
Bevan 1, BE1	76,782	62,802	82	59,259	77
Wheatley, WH1	20,321	16,400	81	14,951	74

The application area may contain significant nesting habitat for the black cockatoo species. However, the application area does not contain threatened or priority flora, any PECs or TECs and therefore is not considered to be a significant remnant of native vegetation.

Given the vegetation representations outlined above, the application area is not considered to be located within an extensively cleared area. The proposed clearing is not likely to be at variance with this Principle.

(f) Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.

Proposed clearing is at variance with this Principle

According to available databases, a minor watercourse is located adjacent to 'Area A', with a minor watercourse mapped approximately 50 metres from 'Area B'.

A site inspection undertaken by DWER identified riparian vegetation and standing water within 'Area B' (DWER, 2019a).

Given the presence of a watercourse adjacent to 'Area A' and the presence of riparian vegetation within 'Area B', the application is considered to be growing in association with a watercourse. The proposed clearing is at variance with this Principle.

The watercourse adjacent to 'Area A' has been significantly altered and cleared due the surrounding areas farming practices and dam construction. The vegetation located within 'Area B' is predominantly degraded (Keighery, 1994) and therefore the clearing of riparian vegetation is not likely cause a significant impact on the environmental values of the identified watercourses.

(g) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.

Proposed clearing is not likely to be variance with this Principle

As described within Section 2, the primary soils within the application area are mapped by the Department of Primary Industries and Regional Development (DPIRD) and comprise of the Wheatley Subsystem (Dwalganup) (254DwWH), Yanmah Subsystem (Manjimup) (254MpYN), Corbalup Subsystem (Manjimup) (254MpCL) and Bevan Subsystem (Manjimup) (254MpBE) (Schoknecht et al.,2004).

A land degradation assessment of the application area undertaken by DPIRD identified that the risk of salinity, wind erosion, waterlogging and flooding causing land degradation as a result of the proposed clearing is low (DCSLC, 2019a).

The DCSLC advised that the vegetation along the stream banks and in the waterway near 'Area B' will remain intact and therefore there is no risk of channel erosion during major rainfall events. There are no potential land degradation risks associated with the proposed clearing (DCSLC, 2019b).

Given the above, the proposed clearing is not likely to cause appreciable land degradation and is not likely to be at variance with this Principle.

(h) Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.

Proposed clearing may be at variance with this Principle

The application area is located adjacent to North Donnelly State Forest. The proposed clearing may indirectly impact this conservation area through the spread of weeds and dieback. Weed and dieback management practices will help mitigate this risk.

The vegetation proposed to be cleared does not form an ecological linkage and the proposed clearing is not likely to have an impact upon fauna movement between conservation areas.

Given the above, the proposed clearing may be at variance with this Principle.

(i) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.

Proposed clearing is not likely to be at variance with this Principle

As discussed under principle (f), a minor watercourse is located adjacent to 'Area A', with a minor watercourse mapped approximately 50 metres from 'Area B'.

The watercourse located adjacent to 'Area A' has been significantly altered and cleared due farming practices and dam construction occurring within the properties. The vegetation located within 'Area B' is in a degraded (Keighery, 1994) condition and is located approximately 50 metres from this watercourse. The proposed clearing may impact surface water quality through increased sedimentation and runoff. However, impacts are likely to be minimal and short term and the proposed clearing is not likely to have a significant impact upon the quality of surface water.

Groundwater salinity within the application area is mapped as 500 – 1000 milligrams per litre total dissolved solids, which is considered marginal. A site inspection of the application area did not identify any evidence of salinity (DWER, 2019 and DCSLC, 2019a). Given this and noting the advice from DCSLC, which identifies that the risk of salinity causing land degradation is low, the proposed clearing is not likely to deteriorate the quality of surface and underground water via increased salinity.

The proposed clearing is not likely to be at variance with this Principle.

(j) Native vegetation should not be cleared if clearing the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.

Proposed clearing is not likely to be at variance with this Principle

As discussed under Principle (g), a land degradation assessment undertaken by DPIRD identified that the risk of flooding and waterlogging causing land degradation as a result of the proposed clearing is low (DCSLC, 2019a).

Given the above the proposed clearing is not likely to be at variance with this Principle.

Planning instruments and other relevant matters.

The Shire of Manjimup has advised that they have no objection and there are no planning or other matters which would affect the proposal. The Shire of Manjimup advised that the land is zoned by the Local Planning Scheme No. 4 as 'Priority Agriculture' and planning approval for clearing of vegetation is not required. It is noted that the purpose of the clearing is for horticultural, livestock grazing and weed control. These purposes do not require local government planning approval (Shire of Manjimup, 2019a).

The Shire of Manjimup provided additional advice for the additional purpose of dam construction. The Shire of Manjimup advised that the proposal is for an off stream dam where native vegetation clearing will be undertaken. As the proposed dam is on a Priority Agriculture zone, if all parts of the dam are setback further than 20 metres from the external boundaries, the development is exempt from the need to obtain the Shires prior Development Approval. Clearing for this purpose is exempt from Development Approval, provided that DWER approval is obtained (Shire of Manjimup, 2019b).

The DCSLC has advised that the application area has a moderate to high capability for the proposed landuse (DCSLC, 2019a).

No Aboriginal sites of significance have been mapped within the application area.

The clearing permit application was advertised on the DWER website on 26 June 2019 with a 21 day submission period. No public submissions have been received in relation to this application.

5. Applicant's Submissions

On 19 November 2019, the applicant amended the application area and reduced the proposed clearing from 53 hectares to 47.9 hectares and removed three areas that were located adjacent to a watercourse. The applicant included the additional purpose of dam construction.

On 3 December 2019, DWER wrote to the applicant and requested further information to verify the impacts of the proposed clearing including:

- A targeted flora survey to determine the presence of threatened and priority flora within the application area; and
- A black cockatoo habitat tree assessment (DWER, 2019b).

On 10 December 2019, the applicant provided a flora survey undertaken by Bruce Ward (2019). The flora survey appears to have been undertaken in accordance with Environmental Protection Authority's Technical Guidance: Flora and Vegetation Surveys for Environmental Impact Assessment (December 2016) and DWER has determined the survey adequate to determine the presence of threatened or priority flora within the application area.

On 24 December 2019, the applicant provided a Black Cockatoo Habitat Tree Assessment undertaken by Greg Harewood (2019). The black cockatoo habitat tree assessment has been undertaken by a fauna specialist and appears adequate to determine the present of black cockatoo nesting trees within the application area.

The Black Cockatoo Habitat Tree Assessment identified two trees within the application area that contain hollows suitable for nesting by black cockatoos. On 9 January 2020, the applicant advised that they will install two artificial black cockatoo nest hollows within Lot 12140 to mitigate impacts to black cockatoo nesting habitat (Morning Glory Enterprises Pty Ltd, 2020).

6. References

- Bruce Ward (2019) Vegetation survey Eatts property Manjimup – Clearing Permit: CPS 8482/1 – Application to Clear. Western Australia. DWER Ref: A1851819
- Commonwealth of Australia (2012) EPBC Act referral guidelines for three threatened black cockatoo species. Department of Sustainability, Environment, Water, Populations and Communities, Canberra.
- Department of Biodiversity, Conservation and Attractions (DBCA) (2007-) NatureMap: Mapping Western Australia's Biodiversity. Department of Parks and Wildlife. URL: <http://naturemap.dpaw.wa.gov.au/>. Accessed April 2017.
- Department of Biodiversity, Conservation and Attractions. (2017). Fauna Profile - Quokka *Setonix brachyurus*. Retrieved from <http://www.dbca.wa.gov.au/>
- Department of Environment and Conservation (2012) Chuditch (*Dasyurus geoffroii*) Recovery Plan. Wildlife Management Program No. 54. Department of Environment and Conservation, Perth, Western Australia.
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- Department of Parks and Wildlife (2017B). Western Ringtail Possum (*Pseudocheirus occidentalis*) Recovery Plan. Wildlife Management Program No. 58. Department of Parks and Wildlife, Perth, WA.
- Department of Water and Environmental Regulation (2019a) Site Inspection Report for Clearing Permit Application CPS 8482/1. Site inspection undertaken 10 July 2019. Department of Water and Environmental Regulation, Western Australia (DWER Ref A1857493).
- Department of Water and Environmental Regulation (2019b) Request for further information. Western Australia (DWER Ref: A1847314)
- Deputy Commissioner of Soil and Land Conservation (2019a) Advice request for CPS 8482/1. Western Australia. (DWER Ref: A1847798)
- Deputy Commissioner of Soil and Land Conservation (2019b) Additional Advice request for CPS 8482/1. Western Australia. (DWER Ref: A1857296)
- Government of Western Australia (2019). 2018 South West Vegetation Complex Statistics. Current as of December 2019. WA Department of Biodiversity, Conservation and Attractions, Perth.
- Greg Harewood (2019) Black Cockatoo Habitat Tree Assessment CPS 8482/1 – Lot 12140 Jones Road Yanmah. December 2019. Western Australia. DWER Ref: A1856662
- Mattiske, E.M. and Havel J.J. (1998) Vegetation Complexes of the South-west Forest Region of Western Australia. Maps and report prepared as part of the Regional Forest Agreement, Western Australia for the Department of Conservation and Land Management and Environment Australia.
- Morning Glory Enterprises Pty Ltd (2020) Supporting information for clearing permit application CPS 8482/1 (DWER Ref: A1859327)
- Schoknecht, N., Tille, P. and Purdie, B. (2004) Soil-landscape mapping in South-Western Australia – Overview of Methodology and outputs' Resource Management Technical Report No. 280. Department of Agriculture.
- Shah, B. (2006) Conservation of Carnaby's Black-Cockatoo on the Swan Coastal Plain, Western Australia. December 2006. Carnaby's Black-Cockatoo Recovery Project. Birds Australia, Western Australia.
- Shire of Manjimup (2019a) Application to clear native vegetation – Lot 9062 Damper Gully road, Lot 9480, Lot 9477 and Lot 12140 Jones Road Yanmah. Western Australia. DWER Ref: A1802990
- Shire of Manjimup (2019b) Comment on amendment application to clear native vegetation under the Environmental Protection Act 1986 – CPS 8482/1, Lot 9477 on Plan 203007, Yanmah.
- Valentine, L.E. and Stock, W. (2008) Food Resources of Carnaby's Black Cockatoo (*Calyptorhynchus latirostris*) in the Gnaragar Sustainability Strategy Study Area. Edith Cowan University and Department of Environment and Conservation. December 2008.

GIS Databases:

- Aboriginal Sites of Significance
- DBCA Managed Estate
- Directory of Important Wetlands
- Geomorphic Wetlands Swan Coastal Plain
- Groundwater salinity
- Hydrography, hierarchy
- Hydrography, linear

- Land Degradation datasets
- SAC Bio Datasets
- Soils, Statewide
- Topographic contours
- Vegetation Complexes Swan Coastal Plain