



This report has been prepared to fulfil the requirements of an accredited environmental assessment process between the Commonwealth and State governments, pursuant to a bilateral agreement established under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

This report is set out in three parts:

- Part 1: Application and site details;
- Part 2: Assessment against matters of national environmental significance (pursuant to the EPBC Act); and
- Part 3: Assessment against the clearing principles (pursuant to the *Environmental Protection Act 1986* (EP Act)). Appeal rights pursuant to section 101A of the EP Act are relevant to this section of the report.

Part 1: Application and site details

1. Application details

1.1. Permit application details

Permit application No.: CPS 6926/1
Permit type: Area Permit

1.2. Applicant details

Applicant's name: Mr Garrie Vincenti, Ms Giuliana Vincenti, Mr Anthony Vincenti, Ms Anna Vincenti and Mr John Vincenti (Weemala Orchard).

1.3. Property details

Property: Lot 400 on Diagram 87691, Carmel
Colloquial name:
Local Government Authority: Shire of Kalamunda
DER Region: Swan Region
DPaW District: Perth Hills district
LCDC:
Localities: Carmel

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
16.8		Mechanical Removal	Orchard expansion

1.5. Decision on application

Decision on Permit Application: Refusal

Decision Date: 20 December 2016

Reason for Decision: The clearing permit application received on 4 February 2016 has been assessed in accordance with the bilateral agreement made under section 45 of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) relating to environmental assessment and under the *Environmental Protection Act 1986* (EP Act). It has been concluded that the proposed clearing is at variance to clearing principle (b), may be at variance to principles (a) and (h), and is not likely to be at variance to the remaining clearing principles.

The Delegated Officer determined that the proposed clearing will result in the clearing of 16.8 hectares of native vegetation that contains significant habitat for indigenous fauna, including foraging and potential breeding habitat for black cockatoos.

On 5 August 2016, the Delegated Officer wrote to the applicant's representative outlining the environmental impacts associated with the proposed clearing and inviting the applicant to address the issues and provide information on how the impacts would be avoided or minimised and how residual impacts would be counterbalanced with an offset. On 25 August 2016 and 18 October 2016, the applicant's representative provided a response, however the response did not identify steps to avoid or minimise the impacts of the proposed clearing, nor provide an offset to counterbalance significant residual environmental impacts after avoidance.

The Delegated Officer had regard to the environmental values of the native vegetation outlined under clearing principles (a) to (j), and planning instruments and other relevant matters outlined in this report, in making the decision on this application.

In determining to refuse to grant the clearing permit the Delegated Officer considers that the clearing of 16.8 hectares of significant habitat for black cockatoos will lead to an unacceptable risk to the environment.

2. Site Information

2.1. Existing environment and information

2.1.1. Description of the native vegetation under application

Vegetation Description	Clearing Description	Vegetation Condition	Comment
There is one Beard vegetation association, one Hedde vegetation complex and one Mattiske vegetation complex mapped over the application area. Mapped Beard vegetation association 3 is described as medium forest; jarrah-marri (Shepherd et al. 2001); Hedde vegetation Dwellingup complex in Medium\To High Rainfall is described as comprising of open forest of <i>Eucalyptus marginata</i> (Jarrah) - <i>Corymbia calophylla</i> (Marri). (Hedde et al. 1980); and Mattiske vegetation D2 complex is described as open forest of <i>Eucalyptus marginata</i> subsp. <i>marginata</i> - <i>Corymbia calophylla</i> on lateritic uplands in subhumid and semiarid zones (Mattiske and Havel 1998).	The application is for the clearing of 16.8 hectares of native vegetation within Lot 400 on Diagram 87691, Carmel for the purpose of orchard expansion.	Excellent; Vegetation structure intact; disturbance affecting individual species, weeds non-aggressive (Keighery 1994) To Completely Degraded: No longer intact; completely/almost completely without native species (Keighery 1994).	The vegetation description and condition was determined from a site visit conducted by Department of Environment Regulation (DER) officers on 27 April 2016 and from a Flora and Vegetation Survey conducted by Mattiske (2015). The vegetation is predominantly jarrah-marri woodland with scattered laterite over grey brown sandy loam soil, with a dominant understorey of <i>patersonia</i> (Parks and Wildlife 2016b). Six vegetation types representative of Havel's site-vegetation types for the northern jarrah forest region (Havel 1975) were defined and mapped for the survey area during the flora and vegetation survey by Mattiske Consulting (Mattiske 2015).

Part 2: Assessment against matters of national environmental significance

3. Assessment of application against Matters of National Environmental Significance

Background

On 24 December 2015, DER received a clearing permit application from Mr Garrie Vincenti, Ms Giuliana Vincenti, Mr Anthony Vincenti, Ms Anna Vincenti and Mr John Vincenti (the applicant) to clear 16.8 hectares of native vegetation on Lot 400 on Diagram 87691, Carmel for the purpose of orchard expansion (CPS 6892/1). This application was withdrawn on 14 January 2016 as a controlled action decision by the Commonwealth had not been determined.

On 16 March 2016, the application was determined to be a controlled action under the EPBC Act for the following controlling provisions: Listed Threatened Species and Communities (DotE 2016). The controlled action is considered likely to have a significant impact on Carnaby's cockatoo (*Calyptorhynchus latirostris*) listed as endangered under the EPBC Act, forest red-tailed black cockatoo (*Calyptorhynchus banksii* subsp. *naso*) listed as vulnerable under the EPBC Act and Baudin's cockatoo (*Calyptorhynchus baudinii*) listed as vulnerable under the EPBC Act.

On 4 February 2016, the applicant reapplied for a clearing permit to clear 16.8 hectares of native vegetation on Lot 400 on Diagram 87691, Carmel for the purpose of orchard expansion. The application was formally accepted by DER on 7 April 2016.

The referral to the Commonwealth (Mattiske 2016d) advised the proposed orchard expansion is within an area that interfaces public land managed for forestry and water catchment. The orchard abuts a large orchard operation to the north and native forest to the west, south and east which is managed by the Shire of Kalamunda (east), Water Corporation (east) and Department of Parks and Wildlife (Parks and Wildlife) (south and west). The property has been used for cattle yards and previous agricultural activities and has had a range of introduced gums and pines, planted in sections of the property (Mattiske 2016d).

A flora and vegetation survey (Mattiske 2015, 2016a) identified six vegetation types within the application area which are representative of Havel's site-vegetation types for the northern jarrah forest region (Havel 1975):

- H - Open forest of *Eucalyptus marginata* with less *Corymbia calophylla*, *Allocasuarina fraseriana* and *Banksia grandis* over a mixed understorey of *Mesomelaena tetragona*, *Stirlingia latifolia* and *Styphelia tenuiflora* on sands and sandy gravels. This site type is equivalent to the site-vegetation type H as defined by Havel (1975). This type occurs within the Dwellingup and Dwellingup-Hester complexes as defined by Hedde et al. (1980). This site-vegetation type occurs on the lower and middle mildly undulating landscapes in the northern and eastern areas of the northern jarrah forest.
- P - Open Forest of *Allocasuarina fraseriana* - *Eucalyptus marginata* - *Corymbia calophylla* with scattered understorey, including *Adenanthos barbiger*, *Grevillea wilsonii*, *Lechenaultia biloba* and a range of low herbs and sedges on sandy gravels. This site type is equivalent to the site-vegetation type P as defined by Havel (1975). This type occurs within the Dwellingup and Dwellingup-Hester complexes as defined by Hedde et al. (1980). This site-vegetation type occurs on the mid to upper slopes with sandier soils on the undulating hills on the Darling Ranges. This site-vegetation type tends to support less shrubs in the understorey and a range of low sedges and herbs. The key indicators are the *Allocasuarina fraseriana*, *Adenanthos barbiger* and *Grevillea wilsonii*. The composition of the P type differs from the PS and PW as a result of the different tolerances of the plant species on the drier sands and sandy gravels.

- PS - Open Forest of *Allocasuarina fraseriana* - *Eucalyptus marginata* - *Corymbia calophylla* – *Banksia grandis* with scattered understorey, including *Adenanthos barbiger* and *Leucopogon capitellatus* on gravels and sandy gravels. This site type is a variant of the site-vegetation types P and S as defined by Havel (1975). This type occurs within the Dwellingup and Dwellingup-Hester complexes as defined by Heddle et al. (1980). This site-vegetation type occurs on the mid to upper slopes of the undulating hills on the Darling Ranges. This site-vegetation type tends to be dominated by specific shrub species which dominate the sandy-gravelly slopes of the Darling Ranges (e.g. *Allocasuarina fraseriana*, *Adenanthos barbiger* and *Banksia grandis* of site-vegetation types P and S) but which lack some of the key indicators of the P type (e.g. *Grevillea wilsonii*) and includes species which occur on the gravelly soils (*Hovea chorizemifolia* and *Leucopogon capitellatus*).
- PW - Open forest of *Allocasuarina fraseriana* - *Eucalyptus marginata* - *Corymbia calophylla* with scattered understorey, including *Grevillea wilsonii*, *Adenanthos barbiger* and *Babingtonia camphorosmae* on sandy gravels. This type is a variant of site-vegetation types P and W as defined by Havel (1975) due to the presence of moisture indicators such as *Babingtonia camphorosmae*. This type occurs within the Dwellingup, Dwellingup-Hester and Yarragil complexes as defined by Heddle et al. (1980). This site-vegetation type occurs on the lower slopes and less commonly the mid slopes of the undulating hills on the Darling Ranges. This site-vegetation type appears to be reflecting a change in the local plant communities within the survey area as the moisture indicators are occurring in sandier soils and higher up in the landscape. This site-vegetation type tends to be dominated by specific shrub species which dominate the sandy gravelly slopes and moist soil conditions of the Darling Ranges (e.g. *Leschenaultia biloba*, *Allocasuarina fraseriana* (formerly *Casuarina fraseriana*), *Adenanthos barbiger* and *Banksia grandis* of site-vegetation type P and *Babingtonia camphorosmae* of the site-vegetation type which dominates moister soils in the nearby forest areas).
- S - Open forest of *Eucalyptus marginata* - *Banksia grandis* – *Allocasuarina fraseriana* with scattered understorey, including *Adenanthos barbiger*, *Leucopogon capitellatus* and *Styphelia tenuiflora* on gravels and sandy-gravels. This type is equivalent to the site-vegetation type S as defined by Havel (1975). This type occurs within the Dwellingup and Dwellingup-Hester complexes as defined by Heddle et al. (1980) and Mattiske and Havel (1998). This site-vegetation type occurs on the upper slopes, and to a lesser degree mid slopes, of the undulating hills on the Darling Ranges. This site-vegetation type tends to be dominated by specific shrub species which dominate the gravelly slopes of the Darling Ranges (e.g. *Adenanthos barbiger*, *Styphelia tenuiflora*, *Leucopogon capitellatus*, *Banksia grandis* and *Hovea chorizemifolia*).
- ST - Open forest of *Eucalyptus marginata* - *Corymbia calophylla* with scattered understorey, including *Leucopogon capitellatus*, *Leucopogon verticillatus*, *Pteridium esculentum*, *Clematis pubescens* and *Styphelia tenuiflora* on sandy-gravelly soils. This type is a variant of site-vegetation types S and T as defined by Havel (1975). This type occurs within the Dwellingup and Dwellingup-Hester complexes as defined by Heddle et al. (1980) and Mattiske and Havel (1998). This site-vegetation type occurs on the upper slopes, and to a lesser degree mid slopes, of the undulating hills on the Darling Ranges. This site-vegetation type tends to be dominated by specific species which dominate the loamy gravelly slopes of the Darling Ranges (e.g. *Bossiaea aquifolium*, *Styphelia tenuiflora*, *Leucopogon capitellatus*, *Pteridium esculentum*, *Clematis pubescens* and *Hovea chorizemifolia*).

None of these communities (or site-vegetation types) are listed at threatened ecological communities or priority ecological communities (Mattiske 2016a).

All vegetation types are relatively widespread in distribution within the northern jarrah forest and are well represented in the conservation estate and vegetation type PW types is also well represented in State forest area (Mattiske 2016a).

Description of controlling provision

On 16 March 2016, the application was determined to be a controlled action under the EPBC Act for the following controlling provisions: Listed Threatened Species and Communities (DotE 2016). The controlled action is considered likely to have a significant impact on Carnaby's cockatoo (*Calyptorhynchus latirostris*) listed as endangered under the EPBC Act, forest red-tailed black cockatoo (*Calyptorhynchus banksii* subsp. *naso*) listed as vulnerable under the EPBC Act and Baudin's cockatoo (*Calyptorhynchus baudinii*) listed as vulnerable under the EPBC Act.

Carnaby's cockatoo

Currently, the overall population trend for the Carnaby's cockatoo is one of decline due to the loss and fragmentation of habitat as a result of clearing of native vegetation (Saunders 1990; Johnstone and Storr 1998; Saunders and Ingram 1998; Garnett et al. 2011). Carnaby's cockatoo is endemic to the south-west of Western Australia. Breeding takes place between late July and December and occurs mostly in the inland wheatbelt region of its distribution, in areas receiving between 300 and 750 millimetres of annual average rainfall (Saunders 1974). During the non-breeding season (January to July) the majority of the birds move to the higher rainfall coastal regions of their range including the midwest coast, Swan Coastal Plain and south coast (Saunders 1980, 1990; Berry 2008; Johnstone et al. 2011). There has been an apparent expansion in the breeding range to include areas further west and south since the middle of last century with a more rapid increase into the Jarrah (*Eucalyptus marginata*) and Marri (*Corymbia calophylla*) forests of the south west (Johnstone and Storr 1998; Johnstone et al. 2011). This expansion in breeding range is due to threatening processes such as clearing of breeding habitat and competition for suitable breeding hollows.

Carnaby's cockatoo preferred habitat is remnant native eucalypt woodlands, especially those of salmon gum (*Eucalyptus salmonophloia*) and wandoo (*Eucalyptus wandoo*), and in shrubland or kwongan heathland dominated by plants of the Proteaceae family. It also occurs in forests containing marri, jarrah, karri (*Eucalyptus diversicolor*) and tuart (*Eucalyptus gomphocephala*) (Parks and Wildlife 2013).

Carnaby's cockatoo nests in large hollows in tall, living or dead eucalypts. It nests most commonly in smooth-barked wandoo and salmon gum, but have also been recorded breeding in red morrell (*Eucalyptus longicornis*), York gum (*Eucalyptus loxophleba*), tuart (*Eucalyptus gomphocephala*), flooded gum (*Eucalyptus rudis*), swamp yate (*Eucalyptus occidentalis*), gimlet (*Eucalyptus salubris*) and marri, and are said to nest in any species of eucalypt with a suitable hollow (Parks and Wildlife 2013).

The Carnaby's Cockatoo Recovery Plan (Parks and Wildlife 2013) summarises habitat critical to the survival of Carnaby's cockatoos as:

- the eucalypt woodlands that provide nest hollows used for breeding, together with nearby vegetation that provides feeding, roosting and watering habitat that supports successful breeding;
- woodland sites known to have supported breeding in the past and which could be used in the future, provided adequate nearby food and/or water resources are available or are re-established; and
- in the non-breeding season the vegetation that provides food resources as well as the sites for nearby watering and night roosting that enable the cockatoos to effectively utilise the available food resources.

The recovery plan also states that success in breeding is dependent on the quality and proximity of feeding habitat within 12 kilometres of nesting sites (Parks and Wildlife 2013). Along with the trees that provide nest hollows, the protection, management and increase of this feeding habitat that supports the breeding of Carnaby's cockatoo is a critical requirement for the conservation of the species (Parks and Wildlife 2013).

Forest red-tailed black cockatoo

The forest red-tailed black cockatoo is endemic to the southwest humid and sub-humid zones of southwest Western Australia and inhabits jarrah, karri and marri forests receiving more than 600 millimetres of annual average rainfall (DEC 2008).

The forest red-tailed black cockatoo occurs in one population of approximately 15,000 individuals and is known to nest in the large hollows of marri, jarrah and karri (Johnstone and Kirkby 1999).

The main identified threats to the forest red-tailed black cockatoo are illegal shooting, habitat loss through land clearing, nest hollow shortage and competition from other species (DEC 2008; DEWHA 2009).

Forest red-tailed black cockatoo is listed as fauna that is rare or likely to become extinct under Western Australia's *Wildlife Conservation Act 1950* (WC Act) and currently has a ranking of vulnerable (Parks and Wildlife 2014a).

Baudin's cockatoo

Baudin's cockatoo is endemic to a 2,000 kilometre area of the humid and sub-humid zones of southwest Western Australia and is generally contained within the 750 millimetre isohyet of average annual rainfall. This species is locally resident, but at the end of the breeding season (January), the birds move away from the breeding area and form flocks that move in response to changing food resources (DEC 2008).

Baudin's cockatoo mainly feeds on the seeds of marri and nest in mature trees such as marri, karri, jarrah and Wandoo in the lower southwest of Western Australia (DEC 2008).

The range of this species has declined by more than 50 per cent over the past 50 years (Garnett and Crowley 2000). The principal cause of the decline in range was clearing of the eastern margins of the forests for agriculture and the current primary threat to the population is illegal shooting (DEC 2008). The main identified threats to the Baudin's cockatoo are illegal shooting, habitat loss through land clearing, nest hollow shortage and competition from other species (DEC 2008).

Baudin's cockatoo is listed as fauna that is rare or likely to become extinct under Western Australia's WC Act and currently has a ranking of endangered (Parks and Wildlife 2014).

Methodology References:
Berry (2008)
DEC (2008)
DEWHA (2009)
DotE (2016)
Garnett and Crowley (2000)
Garnett et al. (2011)
Johnstone and Kirkby (1999)
Johnstone and Storr (1998)
Johnstone et al. (2011)
Parks and Wildlife (2013)
Parks and Wildlife (2014)
Saunders (1974)
Saunders (1980)
Saunders (1990)
Saunders and Ingram (1998)

Summary of Impacts

Black cockatoos

According to the Commonwealth Department of the Environment and Energy's (DotEE) EPBC Act referral guidelines for Western Australia's three threatened black cockatoo species, the application area falls within the known breeding range for Carnaby's cockatoo and the forest red-tailed black cockatoo (DSEWPaC 2012).

Black cockatoos generally forage within six kilometres of a night roost site and, while nesting, within a 12 kilometre radius of their nest site (DSEWPaC 2012). The application area is within a confirmed breeding area, a mapped feeding area and within 2.5 kilometres from a confirmed roost site for Carnaby's cockatoo. There is an unconfirmed roost site mapped approximately seven kilometres south-southeast. The targeted black cockatoo survey by Western Wildlife (2016) advised that the application area is within the known or predicted range of both the forest red-tailed black cockatoo and Carnaby's cockatoo. Baudin's cockatoo does not breed in the area, as it only breeds as far north as Serpentine (Western Wildlife 2016).

A targeted black cockatoo survey was undertaken by Western Wildlife (2016) and included a foraging assessment and a habitat tree survey for Carnaby's cockatoo, Baudin's cockatoo and forest red-tailed black cockatoo. The survey identified that the application area contains 16.8 hectares of foraging habitat and 13 potential breeding trees (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. For salmon gum and wandoo, suitable DBH is 300 millimetres).

The survey by Western Wildlife (2016) advised the study area represents potential breeding habitat for the forest red-tailed black cockatoo and Carnaby's cockatoo, as it contains jarrah and marri trees with a DBH of 50 centimetres or more. Twenty seven trees with potential hollows were recorded within the study area, of which 13 are within the application area. The survey (Western Wildlife 2016) advised that no evidence of nesting was noted during the site visit, although nesting hollows are not always visible from a ground level inspection.

Foraging evidence by black cockatoos in the form of chewed banksia and jarrah fruits was located within the application area (Western Wildlife 2016, DER 2016) and was relatively common. Western Wildlife (2016) deemed the value of the foraging habitat to be moderate to high given the presence of several species of banksia and jarrah trees, all of which are utilised by at least one of the three species of black cockatoo as a food source. Western Wildlife (2016) reported that the foraging value of some areas has been negatively impacted by past land-uses including logging and clearing for a cattle yard, and current tree deaths which is likely a result of grazing camels in the application area (DER 2016).

On 29 August 2016, Parks and Wildlife (2016c) Director Science and Conservation, advised that "the application area is considered to include critical habitat for threatened Carnaby's, Baudin's and forest red-tailed black cockatoos. The application site contains eucalypt woodland with both Jarrah and marri trees, some of which contain hollows potentially suitable for nesting". The Director Science and Conservation "noted that the survey undertaken by Western Wildlife in the application area and surrounds identified a number of large trees with hollows potentially suitable for nesting by Carnaby's and forest red-tailed cockatoos, and feeding and roosting habitat for all three species for black cockatoo. Forest red-tailed black cockatoos were observed feeding during the survey. Clearing habitat trees in the application area, without mitigation or offset, is likely to have a detrimental impact on the cockatoos, but it is difficult to determine the significance of this impact (Parks and Wildlife 2016c).

Black cockatoos generally roost in the tallest trees in an area, usually close to an important water source and within an area of quality foraging habitat (DSEWPaC 2012). Black cockatoos may use several different night roosts throughout the year and due to changing patterns in food and water availability, a flock of black cockatoos requires a range of roost options whereby not all night roosts will be used every year (DSEWPaC 2012). The application area is approximately one kilometre from a wetland that holds surface water all year. While no active roost sites were observed during the cockatoo survey (Western Wildlife 2016), given the vegetation type, location in the landscape and proximity to water sources, the vegetation within the application area is considered to represent suitable roosting habitat for black cockatoos.

The Carnaby's Cockatoo Recovery Plan notes that there are multiple reasons for the decline of Carnaby's cockatoo, however the decline to-date has primarily been brought about by the extensive clearing of nesting and feeding habitat (Parks and Wildlife 2013). Loss of nesting habitat, together with foraging areas and watering sites within foraging distance of breeding sites is one of the key threatening processes contributing towards the decline of the species. A further significant threat is the clearing, fragmentation and degradation of foraging and night roosting habitat in the non-breeding parts of Carnaby's cockatoo range in the southwest of Western Australia and particularly on the Swan Coastal Plain (Parks and Wildlife 2013). The long-term survival of Carnaby's cockatoo depends on the availability of suitable breeding habitat and foraging habitat capable of providing enough food to sustain the population (Parks and Wildlife 2013).

The Recovery Plan for forest red-tailed black cockatoo and Baudin's 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 (DEC 2008). The Recovery Plan also states that two of the main threats is habitat loss through land clearing and nest hollow shortage (DEC 2008). As the application area contains suitable foraging habitat for the forest red-tailed black cockatoo and Baudin's cockatoo, and may provide nest hollows for breeding, the application area contains important habitat for these species.

Given the application area contains 16.8 hectares of foraging habitat, 13 potential nesting trees and is located within a confirmed breeding area and 2.5 kilometres from a confirmed roost site, it is considered that the application contains critical habitat for black cockatoos.

Methodology DEC (2008)
 DER (2016)
 Parks and Wildlife (2013)
 Parks and Wildlife (2016c)
 DSEWPaC (2012)
 Western Wildlife (2016)

 GIS Databases:
 - SAC Biodatasets (April 2016)

Public consultation

The clearing application was advertised for public comment in *The West Australian* on 4 April 2016. The public comment period ended on 25 April 2016. No public submissions were received during this comment period.

Avoidance, mitigation and offset

Avoidance and Mitigation

The referral to the Commonwealth (Mattiske 2016d) advised that alternative actions were considered. The balance between clearing for the orchard, fire management needs and keeping some remnant areas was considered and taken into account.

The applicant advised (Mattiske 2016b) that the application area identified for orchard development and fire management has already been reduced and remaining native vegetation outside of the application area will be maintained. These vegetated areas provide both potential breeding and foraging habitat for black cockatoos (Mattiske 2016b).

The applicant advised that the proposed netting activities associated with the orchard development should minimize the need for bird control during harvesting activities and associated seasonal activities (Mattiske 2016a).

The consultant advised (Mattiske 2016b) that the landowners will maintain access tracks suitable for fire management activities at all times. A fire management plan for Lot 400, Canning Road, Carmel is underway for the property to address local government needs (Mattiske 2016b). The applicant advised that mitigation measures include improving the management of the remnant vegetation to avoid severe and intense fires that may impact the condition of the native vegetation and black cockatoos (Mattiske 2016b).

On 18 October 2016, the applicant's representative advised that "it is difficult to minimise the impacts or offer offsets for the proposed orchard development. The 16.8ha is needed to establish a viable operation, to enable coverage of the proposed orchard with a protective net and also to act as a buffer to protect the proposed orchard and associated netting from wildfires that may occur from the south in particular (Vincenti family 2016b).

The applicant's representative advised "as indicated in the original report it is intended that we [Vincenti family] establish netting over the proposed new orchard operation. This proposed netting will reduce the need to control bird species (in particular the Carnaby's Cockatoo which tends to pose the greatest threat during the fruit growing period). As a leader, trend setter in the local fruit growing community, we [Vincenti family] are keen to set a precedent for developing high industry standards in the district (so as to set an example to other fruit growers) The concept of netting has been long recognised in such to control bird and bat problems in other states" (Vincenti family 2016b).

Offset

On 18 October 2016, the applicant's representative advised that they "do not have the resources to address large offset measures like a mining company or real estate developer". The applicant's representative advised "it is difficult to minimise the impacts or offer offsets for the proposed orchard development. The 16.8ha is needed to establish a viable operation, to enable coverage of the proposed orchard with a protective net and also to act as a buffer to protect the proposed orchard and associated netting from wildfires that may occur from the south in particular. Whilst the fire risk has been reduced in recent months by a control burn undertaken by the Department of Parks and Wildlife to the south there remains an ongoing risk as fuel loads build up in the forest to the south" (Vincenti family 2016b).

The applicant's responses provided on 25 August 2016 and 18 October 2016, did not identify steps to avoid or minimise the impacts of the proposed clearing, nor provide an offset to counterbalance significant residual environmental impacts after avoidance. The Delegated Officer has found that in the absence of information on how the applicant will avoid and minimise impacts to habitat for black cockatoos, the clearing of the native vegetation will lead to an unacceptable risk to the environment.

Methodology References:
 Mattiske (2016b)
 Vincenti family (2016b)

Other relevant considerations

The following advice has been provided by the applicant in the referral documentation (Mattiske 2016d) provided to the Commonwealth and in a letter to DER on 29 April 2016 (Mattiske 2016b).

Economic and Social Matters

The applicant advised that the application area occurs on the fringes of an orchard precinct and that currently the orchard industry in Carmel, Pickering Brook and Karragullen is under ever-increasing pressure and many orchardists are finding the increasing government regulation a massive burden. As such, some are leaving the industry as they cannot cope with this increasing pressure and associated costs. This is devastating to the local community at a time when youth employment and adult employment is under massive impact from the global financial crisis. The Commonwealth and Western Australian Governments are trying to encourage small businesses to be innovative and shift from the mining industries towards food and agriculture. The social and economic costs of this increased pressure is impacting all orchardists (Mattiske 2016b).

The applicant advised they are trying to maintain a commercially viable business at the same time as supplying good quality ready available fruit to the markets (Mattiske 2016b). The applicant advised that this is becoming increasingly harder when barriers are continually placed in the way in terms of using seasonal workers to assist in fruit picking as well as trying to develop a small extension to orchards for new plantings. The applicant has been operating for four generations and as such has provided many opportunities for employment in the local community. This support for employment and jobs will be ongoing during the proposed expansion to Lot 400, Canning Road, Carmel (Mattiske 2016b).

The applicant advised that the capital investment to date has included the purchase of the land, the installation of a powerline, tracks, fencing and weed control measures (Mattiske 2016b). The ongoing value of the development is assisting ongoing employment of family members, subcontractors, equipment, drillers (water supplies) and potential seasonal workers during peak seasons in the production phases (Mattiske 2016b).

On 5 August 2016, a letter was sent to the applicant's representative outlining the significant residual impacts associated with the proposed clearing and inviting a response within 30 days of the date of the letter. A response was received on 25 August 2016 which did not identify steps to avoid, minimise or offset the proposed clearing impacts (Vincenti family 2016a). The response questioned several key matters raised in the letter of 5 August 2016 (Vincenti family 2016a), including economic and social issues. The response advised:

- The application area abuts historical orchards that have been established for multiple generations. The Vincenti family are fully committed to developing their business in the district to remain viable;
- The application area abuts extensive forested areas to the south and east that pose risk from wildfires. The Vincenti family have undertaken substantial efforts to ensure the protection of Lot 400, which included extensive fire breaks and fencing of these boundaries, at the cost of the applicant;
- The proposed netting of the orchard on Lot 400 will be vulnerable to fires, although it would have the advantage of reducing the need for bird control measures during harvesting times; and
- The Vincenti family has made effort to cover costs to save the local and state agencies in their fire management and fencing needs in the adjoining lands and requests this should be considered in making a decision on the application.

On 18 October 2016, the applicant's representative advised that the Vincenti family intended to establish "netting over the proposed new orchard operation. This proposed netting will reduce the need to control bird species (in particular the Carnaby's Cockatoo which tends to pose the greatest threat during the fruit growing period). As a leader, trend setter in the local fruit growing community, we [Vincenti family] are keen to set a precedent for developing high industry standards in the district (so as to set an example to other fruit growers) The concept of netting has been long recognised in such to control bird and bat problems in other states" (Vincenti family 2016b).

The applicant's representative advised "We [Vincenti family] would have thought the DER and DotE representatives would have welcomed our initiatives to fit in and work around a problem that is effecting fruit growers in the hills area. We [Vincenti family] are dismayed that there was no compromise by the DER or DotE" (Vincenti family 2016b).

The applicant's representative also advised that they "do not have the resources to address large offset measures like a mining company or real estate developer". The applicant's representative advised "it is difficult to minimise the impacts or offer offsets for the proposed orchard development. The 16.8ha is needed to establish a viable operation, to enable coverage of the proposed orchard with a protective net and also to act as a buffer to protect the proposed orchard and associated netting from wildfires that may occur from the south in particular (Vincenti family 2016b).

It is noted that some of the matters raised are not considered to be relevant to the assessment of the impacts of the proposed clearing, and that the response did not identify steps to avoid, minimise or offset the impacts of the proposed clearing.

Applicant's Environmental History

The applicant has not previously submitted an EPBC Act referral. The applicant was granted clearing permit CPS 6473/1 on 14 May 2015 to clear no more than eight hectares within Lot 400 on Diagram 87691, Carmel for the purpose of establishing an orchard.

A DER site inspection identified potential unauthorised clearing within the application area (DER 2016). This clearing is the matter of a separate investigation (ICMS 40886).

Methodology References:
DER (2016)
Mattiske (2016b)
Vincenti family (2016a)
Vincenti family (2016b)

Part 3: Assessment against the clearing principles

4. Assessment of application against clearing principles

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

Comments **Proposed clearing may be at variance to this Principle**
The applicant proposes to clear 16.8 hectares of native vegetation on Lot 400 on Diagram 87691, Carmel for the purpose of orchard expansion.

The vegetation within the application area consists of jarrah - marri open woodland over open shrub and herb layer dominated by *Patersonia occidentalis*; *Banksia grandis* open woodland; open jarrah marri woodland; and open *Allocasuarina fraseriana* and *Banksia grandis* woodland over sandy soils (Parks and Wildlife 2016b).

A flora and vegetation survey (Mattiske 2015; 2016a) identified six vegetation types within the application area which are representative of Havel's site-vegetation types for the Northern Jarrah Forest Region (Havel 1975):

- H - Open forest of *Eucalyptus marginata* with less *Corymbia calophylla*, *Allocasuarina fraseriana* and *Banksia grandis* over a mixed understorey of *Mesomelaena tetragona*, *Stirlingia latifolia* and *Styphelia tenuiflora* on sands and sandy gravels.
- P - Open Forest of *Allocasuarina fraseriana* - *Eucalyptus marginata* - *Corymbia calophylla* with scattered understorey, including *Adenanthos barbiger*, *Grevillea wilsonii*, *Lechenaultia biloba* and a range of low herbs and sedges on sandy gravels.
- PS - Open Forest of *Allocasuarina fraseriana* - *Eucalyptus marginata* - *Corymbia calophylla* - *Banksia grandis* with scattered understorey, including *Adenanthos barbiger*, *Leucopogon capitellatus* on gravels and sandy gravels.
- PW - Open forest of *Allocasuarina fraseriana* - *Eucalyptus marginata* - *Corymbia calophylla* with scattered understorey, including *Grevillea wilsonii*, *Adenanthos barbiger* and *Babingtonia camphorosmae* on sandy gravels.
- S - Open forest of *Eucalyptus marginata* - *Banksia grandis* - *Allocasuarina fraseriana* with scattered understorey, including *Adenanthos barbiger*, *Leucopogon capitellatus* and *Styphelia tenuiflora* on gravels and sandy-gravels.
- ST - Open forest of *Eucalyptus marginata* - *Corymbia calophylla* with scattered understorey, including *Leucopogon capitellatus*, *Leucopogon verticillatus*, *Pteridium esculentum*, *Clematis pubescens* and *Styphelia tenuiflora* on sandy-gravelly soils.

None of six communities (or site-vegetation types) are listed at threatened ecological communities or priority ecological communities (Mattiske 2016a).

A DER site inspection identified areas that were in a degraded to completely degraded (Keighery 1994) condition, which is likely a result of historical activities. However, the majority of the application area is in a very good (Keighery 1994) condition, with the eastern section of the application area in an excellent (Keighery 1994) condition (DER 2016). Aerial imagery indicates that the local area (10 kilometre radius) retains approximately 75 per cent native vegetation. The application area has a history of logging, grazing by cattle and other activities.

The DER site inspection also identified that approximately 50 per cent of the application area was being grazed by camels (DER 2016). The camels have severely damaged the native vegetation and degraded the condition of the vegetation by removing most of the mid and under storey vegetation. A response was received on 25 August 2016 from the applicant that advised the camels were brought into control Blackberry and Cotton Bush and reduce the fuel load (Vincenti family 2016a). Serious impacts on vegetation are evident where camels occur at densities of more than two camels per kilometre squared (Dörger and Heucke 2003).

A flora and vegetation survey was undertaken by Mattiske Consulting (Mattiske 2015). It was further clarified that the surveys were undertaken in May, June, July, August and September 2015 (Mattiske 2016c). The survey identified a total of 168 vascular plant taxa from 39 plant families and 99 genera on Lot 400 Canning Road, Carmel (Mattiske 2015). Of these, nine taxa were introduced plant taxa. Dominant families include Fabaceae (24 taxa), Proteaceae (15 taxa), Myrtaceae (9 taxa), Asteraceae (8 taxa), Asparagaceae (11 taxa), Cyperaceae (9 taxa), Orchidaceae (7 taxa) and Stylidiaceae (7 taxa).

Sixty three priority flora species have been recorded in the local area. The flora and vegetation survey undertaken by Mattiske (2015) did not identify any conservation significant flora species within the application area. Parks and Wildlife (2016b) advised the application area was visited on 16 March 2015 to determine the vegetation communities present. Parks and Wildlife (2016b) advised that one declared rare flora, along with priority 1 species *Boronia humifusa* and priority 2 species *Andersonia* sp. *Blepharifolia* may occur in the application area however, given the sandy soil types found within the application area it is unlikely that the two priority flora species occur within the application area.

On 25 August 2015, Parks and Wildlife undertook a survey along the fence line of Lot 400 Canning road to identify conservation significant flora likely to occur in the area and to identify habitat trees to retain. No rare or priority flora were identified during this survey (Parks and Wildlife 2016b).

On 29 August 2016, Parks and Wildlife advised that the flora surveys were conducted at times of the year appropriate to identify most of the listed taxa that could potentially be present in the area (Parks and Wildlife 2016c).

On 6 October 2016, the applicant's consultant provided additional information clarifying the targeted flora survey effort undertaken for threatened and priority flora (Mattiske 2016e).

A search of NatureMap identified eight fauna species listed as rare or likely to become extinct under the WC Act within the local area, including the woylie (*Bettongia penicillata* subsp. *ogilbyi*), forest red-tailed black cockatoo (*Calyptorhynchus banksii* subsp. *naso*), Baudin's cockatoo (*Calyptorhynchus baudinii*), Carnaby's cockatoo (*Calyptorhynchus latirostris*), southern brush-tailed phascogale (*Phascogale tapoatafa* subsp. *tapoatafa*), quokka (*Setonix brachyurus*) and chuditch (*Dasyurus geoffroyi*) (Parks and Wildlife 2007-). A site inspection undertaken by DER identified foraging by black cockatoos and large trees within the application area that may contain potential hollows that could potentially be suitable or have the potential to develop hollows suitable for breeding by the black cockatoo species (DER 2016).

A targeted black cockatoo survey by Western Wildlife included a foraging assessment and a habitat tree survey for Carnaby's cockatoo, Baudin's cockatoo and forest red-tailed black cockatoo (Western Wildlife 2016). The survey identified that the application area contains 16.8 hectares of foraging habitat and 13 potential breeding trees (Western Wildlife 2016).

On 29 August 2016, Parks and Wildlife advised that "the application area is considered to include critical habitat for threatened Carnaby's, Baudin's and forest red-tailed black cockatoos. The application site contains eucalypt woodland with both Jarrah and marri trees, some of which contain hollows potentially suitable for nesting", and noted "that the survey undertaken by Western Wildlife in the application area and surrounds identified a number of large trees with hollows potentially suitable for nesting by Carnaby's and forest red-tailed cockatoos, and feeding and roosting habitat for all three species for black cockatoo. Forest red-tailed black cockatoos were observed feeding during the survey. The clearing of habitat trees within the application area, without mitigation or offsets, is likely to have a detrimental impact on the cockatoos, but it is difficult to determine the significance of this impact" (Parks and Wildlife 2016c).

The application area contains significant habitat for black cockatoo's and contains vegetation in an excellent (Keighery 1994) condition. Given the presence of vegetation in better condition nearby, it is considered that the application area may comprise a high level of biological diversity.

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

Methodology

References:

DER (2016)
Havel (1975)
Keighery (1994)
Mattiske (2015)
Mattiske (2016a)
Mattiske (2016c)
Mattiske (2016e)
Parks and Wildlife (2007-)
Parks and Wildlife (2016b)
Parks and Wildlife (2016c)
Vincenti family (2016a)
Western Wildlife (2016)

GIS Datasets:

- SAC Bio Datasets – accessed April 2016

(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 indigenous to Western Australia.

Comments

Proposed clearing is at variance to this Principle

The vegetation within the application area consists of jarrah-marri open woodland over open shrub and herb layer dominated by *Patersonia occidentalis*; *Banksia grandis* open woodland; open jarrah marri woodland; and open *Allocasuarina fraseriana* and *Banksia grandis* woodland over sandy soils (Parks and Wildlife 2016b; DER 2016).

A search of NatureMap identified eight fauna species listed as rare or likely to become extinct under the WC Act within the local area (10 kilometre radius), including the woylie (*Bettongia penicillata* subsp. *ogilbyi*), forest red-tailed black cockatoo (*Calyptorhynchus banksii* subsp. *naso*), Baudin's cockatoo (*Calyptorhynchus baudinii*), Carnaby's cockatoo (*Calyptorhynchus latirostris*), southern brush-tailed phascogale (*Phascogale tapoatafa* subsp. *tapoatafa*), quokka (*Setonix brachyurus*) and chuditch (*Dasyurus geoffroyi*) (Parks and Wildlife 2007-).

Carnaby's cockatoo (*Calyptorhynchus latirostris*) is listed as endangered under the Commonwealth's EPBC Act, forest red-tailed black cockatoo (*Calyptorhynchus banksii* subsp. *naso*) listed as vulnerable under the EPBC Act and Baudin's cockatoo (*Calyptorhynchus baudinii*) listed as vulnerable under the EPBC Act.

According to the Commonwealth DotEE's EPBC Act referral guidelines for Western Australia's three threatened black cockatoo species the application area is located within the distribution range of Carnaby's cockatoo, Baudin's cockatoo and forest red-tailed cockatoo (black cockatoos). Black cockatoos have a preference for feeding habitat that includes jarrah and marri woodlands and forest heathland and woodland dominated by proteaceous plant species such as *Banksia* sp., *Hakea* sp. and *Grevillea* sp. (DSEWPac 2012).

A targeted black cockatoo survey by Western Wildlife included a foraging assessment and a habitat tree survey for Carnaby's cockatoo, Baudin's cockatoo and forest red-tailed black cockatoo (Western Wildlife 2016). The survey identified that the application area contains 16.8 hectares of foraging habitat and 13 potential breeding trees (Western Wildlife 2016).

The survey by Western Wildlife advised the study area represents potential breeding habitat for the forest red-tailed black cockatoo and Carnaby's cockatoo, as it contains jarrah and marri trees with a DBH of 50 centimetres or more (Western Wildlife 2016). Across the property, 27 trees with large potential hollows were recorded of which 13 are within the application area (Western Wildlife 2016). The survey advised that no evidence of nesting was noted during the site visit, although nesting hollows are not always visible from a ground level inspection (Western Wildlife 2016).

On 29 August 2016, Parks and Wildlife advised that "the application area is considered to include critical habitat for threatened Carnaby's, Baudin's and forest red-tailed black cockatoos. The application site contains eucalypt woodland with both Jarrah and marri trees, some of which contain hollows potentially suitable for nesting", and noted "that the survey undertaken by Western Wildlife in the application area and surrounds identified a number of large trees with hollows potentially suitable for nesting by Carnaby's and forest red-tailed cockatoos, and feeding and roosting habitat for all three species for black cockatoo. Forest red-tailed black cockatoos were observed feeding during the survey. Clearing habitat trees in the application area, without mitigation or offset, is likely to have a detrimental impact on the cockatoos, but it is difficult to determine the significance of this impact" (Parks and Wildlife 2016c).

Carnaby's cockatoo feed on seeds, nuts and flowers of a large variety of plants including Proteaceous species (e.g. *Banksia*, *Dryandra* and *Grevillea*), *Corymbia calophylla* nuts, and a range of introduced species, notably seeds from cones of *Pinus* spp. The application area supports species such as the marri and *Allocasuarina fraseriana* that are amongst species used for foraging by black cockatoos (Mattiske 2016b). Foraging evidence by black cockatoos in the form of chewed banksia and jarrah fruits was located within the application area (Western Wildlife 2016; DER 2016) and was relatively common. Western Wildlife deemed the value of the foraging habitat to be moderate to high given the presence of several species of banksia and jarrah trees, all of which are utilised by at least one of the three species of black cockatoo as a food source (Western Wildlife 2016). Western Wildlife reported that the foraging value of some areas has been negatively impacted by past land-uses including logging and clearing for a cattle yard, and current tree deaths which is likely a result of grazing camels in the application area (Western Wildlife 2016; DER 2016).

Given the application area is within a confirmed breeding area, it is considered that the foraging and breeding habitat within the application area is important for the long term protection of black cockatoos. In addition, as the vegetation within the application area may include suitable nest hollows for breeding, it is considered that the application area is likely to include critical habitat for the three black cockatoos.

The chuditch have disappeared from approximately 95 per cent of their former range in the last 200 years. The primary causes of this reduction were habitat removal, the spread of introduced predators and active persecution by humans. Most chuditch are now found in varying densities throughout the jarrah forest and south coast of Western Australia (DEC 2012b). The most dense populations have been found in riparian jarrah forest. Chuditch require adequate numbers of suitable den and refuge sites (horizontal hollow logs or earth burrows) and sufficient prey biomass (large invertebrates, reptiles and small mammals) to survive. They are capable of travelling long distances and have large home ranges, and even at their most abundant, chuditch are generally present in low numbers. For this reason they require habitats that are of a suitable size and not excessively fragmented (DEC 2012b). A DER site inspection identified horizontal hollow logs throughout the application area. Given the application contains suitable habitat and the application area is of suitable size and not fragmented, it may comprise of suitable habitat for the Chuditch (DER 2016).

The southern brush-tailed phascogale inhabits in dry sclerophyll forests and open woodlands that contain hollow-bearing trees (DEC 2012a). Noting the vegetation types present within the application area, the application area may include suitable habitat for this species.

The Quokka occurs on two offshore islands (Rottneest Island and Bald Island) and a number of mainland sites in south-west Western Australia, ranging from just south of Perth to the Hunter River. The distribution of this species is severely fragmented and there is little to no migration between populations (DEC 2013). Noting the vegetation types present within the application area, the application area may include suitable habitat for this species.

It is therefore found that the application area includes significant habitat for black cockatoos and clearing will lead to an unacceptable impact to the environment and black cockatoos. The application area may also contain habitat for ground dwelling fauna.

Given the above, the proposed clearing is at variance to this Principle.

On 18 October 2016, the applicant's representative advised that they "do not have the resources to address large offset measures like a mining company or real estate developer". The applicant's representative advised "it is difficult to minimise the impacts or offer offsets for the proposed orchard development. The 16.8ha is needed to establish a viable operation, to enable coverage of the proposed orchard with a protective net and also to act as a buffer to protect the proposed orchard and associated netting from wildfires that may occur from the south in particular. Whilst the fire risk has been reduced in recent months by a control burn undertaken by Parks and Wildlife to the south there remains an ongoing risk as fuel loads build up in the forest to the south" (Vincenti family 2016b).

The applicant's representative advised "as indicated in the original report it is intended that [the Vincenti family] establish netting over the proposed new orchard operation. This proposed netting will reduce the need to control bird species (in particular the Carnaby's Cockatoo which tends to pose the greatest threat during the fruit growing period). As a leader, trend setter in the local fruit growing community, [the Vincenti family] are keen to set a precedent for developing high industry standards in the district (so as to set an example to other fruit growers) The concept of netting has been long recognised in such to control bird and bat problems in other states (Vincenti family 2016b).

The proposed netting does not minimise the impacts on significant habitat for black cockatoos nor does it represent an offset to counterbalance the significant residual environmental impacts.

Methodology

References:

Cockerill et al. (2013)
DEC (2008)
DEC (2012a)
DEC (2012b)
DEC (2013)
DER (2016)
DSEWPaC (2012)
Mattiske (2016b)
Parks and Wildlife (2007-)
Parks and Wildlife (2016c)
Vincenti family (2016b)
Western Wildlife (2016)
Yeatman and Groom (2012)

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

Comments

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

According to available databases, 15 rare flora species have been recorded within the local area (10 kilometre radius).

A flora and vegetation survey undertaken by Mattiske did not identify any conservation significant flora species within the application area (Mattiske 2015). Parks and Wildlife advised the application area was visited on 16 March 2015 to determine the vegetation communities present (Parks and Wildlife 2016b). Parks and Wildlife advised that one declared rare flora species may occur in the application area and a targeted flora survey during its flowering period was required to determine its presence (Parks and Wildlife 2016b). The closest record of this rare flora species is located 275 metres from the application area, with another 20 records in the local area.

The rare flora species is listed as vulnerable under the WC Act and the federal EPBC Act. This species occurs on the eastern slopes of the Darling Range, east of Perth, where it is confined to shallow grey sands over laterite. In the few locations where it grows, it is entangled amongst other low shrubs in a low open woodland of jarrah, wandoo and marri, over heath dominated by grevilleas, dryandra, hakeas and acacias (Brown et al. 1998).

A DER site inspection identified that approximately 50 per cent of the application area was being grazed by camels (DER 2016). The camels have severely damaged the native vegetation and degraded the condition of the vegetation by removing most of the mid and under storey vegetation. Serious impacts on vegetation are evident where camels occur at densities of more than two camels per kilometre squared (Dörge and Heucke 2003). A response was received on 25 August 2016 from the applicant that advised the camels were brought into control Blackberry and Cotton Bush and reduce the fuel load (Vincenti family 2016a).

On 25 August 2015, Parks and Wildlife undertook a survey along the fence line of Lot 400 Canning Road to identify conservation significant flora likely to occur in the area and to identify habitat trees to retain (Parks and Wildlife 2016b). No rare flora were identified during this survey (Parks and Wildlife 2016b). Parks and Wildlife advised that the flora and vegetation surveys provided with the application did not contain information to determine whether a targeted search for conservation significant species was undertaken at the appropriate time of the year (Parks and Wildlife 2016b). Therefore, additional information was requested to determine whether the proposed clearing will impact on *Acacia anomala*.

On 29 August 2016, Parks and Wildlife advised that the flora surveys were conducted at times of the year appropriate to identify most of the listed taxa that could potentially be present in the area (Parks and Wildlife 2016c).

On 6 October 2016, the applicant's consultant provided additional information clarifying the targeted flora survey effort undertaken for threatened and priority flora (Mattiske 2016e).

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

Methodology References:
Brown et al. (1998)
DER (2016)
Döriges & Heucke (2003).
Mattiske (2015)
Mattiske (2016e)
Parks and Wildlife (2016b)
Parks and Wildlife (2016c)
Vincenti family (2016a)

GIS Datasets:
- SAC Bio Datasets - accessed October 2015

(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.

Comments **Proposed clearing is not likely to be at variance to this Principle**
According to available databases, ten threatened ecological communities (TEC) have been mapped within the local area (10 kilometre radius). The nearest TEC to the application area is floristic community type (FCT) 3b, described as '*Eucalyptus calophylla-Eucalyptus marginata* woodlands on sandy clay soils of the southern Swan Coastal Plain', which is located more than five kilometres north of the application area.

The vegetation within the application area consists of jarrah marri open woodland over open shrub and herb layer dominated by *Patersonia occidentalis*. Sandy loam; *Banksia grandis* open woodland; Open jarrah marri woodland; and open *Allocasuarina fraseriana* and *Banksia grandis* woodland over sandy soils (Parks and Wildlife 2016b, DER 2016).

The vegetation within the application area is not consistent or contiguous with the above TEC and given the degree of separation and distance to the TEC the application area is unlikely to be necessary for the maintenance of this TEC.

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

Methodology References:
DER (2016)
Parks and Wildlife (2016b)

GIS Datasets:
- SAC Bio Datasets - accessed October 2015

(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.

Comments **Proposed clearing is not likely to be at variance to this Principle**
The application area is located within the Jarrah Forrest Interim Biogeographic Regionalisation of Australia (IBRA) bioregion. This IBRA bioregion has approximately 54 per cent of its pre-European vegetation extent remaining (Government of Western Australia 2015).

The application area is mapped as Beard vegetation association 3, which has approximately 32 per cent of its pre-European extents remaining within the Jarrah Forrest IBRA bioregion (Government of Western Australia 2015). It is also mapped as Heddlé vegetation complex Dwellingup Complex in Medium\To High Rainfall and Mattiske Vegetation complex D2 which retain approximately 68 and 69 per cent of their pre-European extent respectively (Parks and Wildlife 2015).

The Shire of Kalamunda retains approximately 86 per cent of its pre-European extents of native vegetation cover.

Digital aerial imagery indicates that the local area (10 kilometre radius) retains approximately 75 per cent of its pre-European native vegetation cover.

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). Noting that the remaining pre-European extents of the mapped Beard vegetation association and Hedde vegetation complexes are more than the threshold of 30 per cent, it is considered that the vegetation within the application area is not located within an extensively cleared area.

The application area contains significant habitat for black cockatoos and therefore the application area is significant as a remnant, however, it is not in an extensively cleared area.

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

	Pre-European (ha)	Current Extent (ha)	Remaining (%)	Extent in Parks and Wildlife Managed Lands (%)
IBRA Bioregion *				
Jarrah Forest	4,506,660	2,422,783	54	69
Local government *				
Shire of Kalamunda	32,395	23,396	72	86
Beard Vegetation Association in Bioregion *				
3	2,390,591	1,611,061	67	32
Hedde Vegetation Complex **				
Dwellingup Complex in Medium\To High Rainfall	83,659	68,868	82	68
Mattiske Vegetation Complex **				
D2 Complex	86,128	71,243	83	69

Methodology References:
Commonwealth of Australia (2001)
*Government of Western Australia (2015)
**Parks and Wildlife (2015)

GIS Datasets:
- Pre European Vegetation

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

Comments **Proposed clearing is not likely to be at variance to this Principle**
According to available datasets, no wetlands or watercourses are mapped within the application area. The northern portion of Lot 400 and adjacent properties are identified in the Geomorphic Wetlands Swan Coastal Plain dataset as a multiple use wetland (MUW) (palusplain), approximately 100 metres north of the application area. The majority of the mapped wetland has been cleared and now supports agriculture and a plantation.

MUWs have few remaining important attributes and functions. The protection of these wetlands is the lowest priority, however it should be considered in the context of ecologically sustainable development and best management practices through land care (Water and Rivers Commission 2001).

The application area has been designed to retain a buffer to the MUW, with a minimum width of 90 metres.

Given that the applicant has allowed for the minimum 90 metre buffer between the application area and the mapped wetland area, it is unlikely that the application area contains vegetation growing in, or in association with the wetlands.

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

Methodology References:
Water and Rivers Commission (2001)

GIS Datasets:
- Hydrography linear
- Geomorphic Wetlands (Classification), Swan Coastal Plain
- Topographic contours statewide

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

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

The soils within the application area have been mapped as soil types JZ1 and Mw31 (Northcote et al. 1960-68). These soil types are described as:

- JZ1: Dissected plateau having a strongly undulating relief, and with some moderately incised valleys. The unit comprises much of the western part of the Darling Range south of the Swan River. It is characterized by lateritic gravels and block laterite. The chief soils are ironstone gravels with sandy and earthy matrices. They overlie duricrusts comprising recemented ironstone gravels, and/or vesicular laterite, and/or mottled-zone and/or pallid-zone material. Some soils containing ironstone gravels in the surface horizons may occur on some of the steeper slopes.
- Mw31: Hilly terrain on sandstones, limestones, and siltstones: chief soils are probably acid red earths on the gentler mid slopes. Associated are lower slopes of yellow earths; slope fans and valley floors of leached yellow earths; and upper slopes and crests of shallow sandy loam soils.

The Commissioner of Soil and Land Conservation (CSLC) advised that the application area was inspected on 29 April 2016 (CSLC 2016). The CSLC advised the application area is located on the mid slope of the landscape and was determined to be a mixture of two soil types: Dwellingup 2 Phase, Map Unit 255DW2 and Yarragil 1 Phase, Map Unit 255DpYG1 (CSLC 2016).

The CSLC described Dwellingup 2 Phase as very gentle to gentle undulating terrain with well drained deep gravelly brownish sands, pale brown sands and earthy sands overlaying a lateritic duricrust (CSLC 2016). Yarragil 1 Phase was described as having moderately inclined side slopes with well drained yellow duplex soils and brown massive earth (CSLC 2016).

The CSLC advised that the application area is in a good to very good condition and varies from jarrah and marri woodlands on the Dwellingup Phase to a jarrah-wandoo woodland on the Yarragil Phase with *Casuarina* in some areas (CSLC 2016).

The CSLC advised that the risk of land degradation in the form of salinity, eutrophication, wind erosion and water erosion is low (CSLC 2016).

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

Methodology

References:

CSLC (2016)

Northcote et al. (1960-68)

GIS Datasets:

- Soils, Statewide

- Salinity Risk

(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.

Comments Proposed clearing may be at variance to this Principle

Twelve conservation areas are located within the local area (10 kilometre radius). The closest is Korung National Park (R47881) which is located adjacent to the southern boundary of the application area.

Soil disturbance and removal of native vegetation increases the risk of weeds and pathogens. The proposed clearing may lead to the introduction of weeds and pathogens which may cause deterioration of the vegetation within Korung National Park. On this basis, the proposed clearing may have an impact on the environmental values of adjacent conservation area.

Noting the adjacent conservation area and the connectivity between the application area and nearby conservation areas, the proposed clearing may have an impact on the environmental values of nearby conservation areas.

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

Methodology

GIS Datasets:

- Parks and Wildlife Tenure

(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.

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

According to available datasets, no wetlands or watercourses are mapped within the application area. The northern portion of Lot 400 and adjacent properties are identified in the Geomorphic Wetlands Swan Coastal Plain dataset as a MUW (palusplain), approximately 100 metres north of the application area. The majority of the mapped wetland has been cleared and now supports agriculture and a plantation. The application area has been designed to retain a buffer to the MUW, with a minimum width of 90 metres.

The CSLC advised that the application area was inspected on 29 April 2016 (CSLC 2016). The CSLC advised the application area is located on the mid slope of the landscape and was determined to be a mixture of two soil types; Dwellingup 2 Phase, Map Unit 255DW2 and Yarragil 1 Phase, Map Unit 255DpYG1 (CSLC 2016).

The CSLC described Dwellingup 2 Phase as very gentle to gentle undulating terrain with well drained deep gravelly brownish sands, pale brown sands and earthy sands overlaying a lateritic duricrust (CSLC 2016). Yarragil 1 Phase was described as having moderately inclined side slopes with well drained yellow duplex soils and brown massive earth (CSLC 2016).

The CSLC advised that no salinity was observed onsite or in the general area and the proposed clearing would have a low risk of salinity and that given the soil types present the risk of eutrophication and waterlogging is low (CSLC 2016).

Given the above, the proposed clearing is unlikely to cause deterioration in the quality of surface or underground water in the form of salinity, eutrophication and waterlogging.

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

Methodology References
CSLC (2016)

GIS Datasets:
- Hydrography linear
- Geomorphic Wetlands (Classification), Swan Coastal Plain
- Groundwater Salinity, Statewide
- Topographic contours, Statewide

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

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

The application is located in an area an average rainfall of 1,100 millimetres per year.

The CSLC advised that the proposed clearing is unlikely to increase surface runoff, which could contribute to stream flows and therefore the risk of flooding causing land degradation is low (CSLC 2016).

Based on the medium rainfall and the nature of the clearing, it is considered that the proposed clearing is unlikely to cause, or exacerbate the incidence or intensity of flooding.

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

Methodology References
CSLC (2016)

GIS Datasets:
- Rainfall, Statewide

Planning instruments and other relevant matters.

Comments On 17 February 2015, a clearing permit application was received from the applicant to clear eight hectares of native vegetation on Lot 400 on Diagram 87691, Carmel, for the purpose of establishing an orchard (CPS 6473/1). Clearing Permit CPS 6473/1 was granted on 14 May 2015 with a dieback and weed control condition. The Delegated Officer noted that the application area contained vegetation in a completely degraded (Keighery 1994) condition as the vegetation had been previously cleared and mostly consisted of plantation with scattered regrowth of marri and blackbutt (*Eucalyptus patens*). The assessment found that the proposed clearing was not likely to be at variance to any of the clearing principles.

On 24 December 2015, a clearing permit application was received from the applicant to clear 16.8 hectares of native vegetation on Lot 400 on Diagram 87691, Carmel, for the purpose of orchard expansion (CPS 6892/1). This application was withdrawn on 14 January 2016 as a decision by the former Department of the Environment (DotE) under the EPBC Act had not been made.

On 16 March 2016, the application was determined to be a controlled action under the EPBC Act for the following controlling provisions: Listed Threatened Species and Communities (DotE 2016). The controlled action is considered likely to have a significant impact on Carnaby's cockatoo (*Calyptorhynchus latirostris*) listed as endangered under the EPBC Act, forest red-tailed black cockatoo (*Calyptorhynchus banksii* subsp. *naso*) listed as vulnerable under the EPBC Act and Baudin's cockatoo (*Calyptorhynchus baudinii*) listed as vulnerable under the EPBC Act.

The current application was received by DER on 4 February 2016, and was accepted on 7 April 2016.

The application was advertised in *The West Australian* newspaper on 4 April 2016 with a 21 day submission period. No public submissions were received in relation to this project.

The application area occurs within a Priority 1 zone of the Bickley Brook Catchment Area, a Public Drinking Water Source Area. Most land uses are incompatible within this zoning (DoE 2004). The Department of Water assessed the application and had no comments to provide (DoW 2016).

The application area does not intersect any Aboriginal Sites of Significance.

The application area is zoned 'rural conservation' under the Town Planning Scheme.

The environmental impacts of the intended end land use, horticulture, have not been considered in this assessment however DER recommends that the application of nutrients to this system is discussed with the Department of Agriculture and Food WA and Parks and Wildlife to ensure no environmental impacts result from the end land use, if clearing is authorised in the future.

A direct interest letter was sent to the Shire of Kalamunda on 7 April 2016. No response was received.

A DER site inspection identified alleged unauthorised clearing within the application area (DER 2016). This clearing is the matter of a separate investigation (ICMS 40886).

On 5 August 2016, a DER Delegated Officer wrote to the applicant's representative outlining the environmental impacts associated with the proposed clearing and inviting a response within 30 days of the date of the letter. A response was received on 25 August 2016, which questioned several key matters raised in the Delegated Officer's letter of 5 August 2016, including previous history of the application area, previous clearing permits and adjacent conservation areas (Vincenti family 2016a).

The applicant's representative also provided additional information clarifying the targeted flora survey effort undertaken for threatened and priority flora (Mattiske 2016e).

On 18 October 2016, the applicant's representative advised that they "do not have the resources to address large offset measures like a mining company or real estate developer". The applicant's representative advised "it is difficult to minimise the impacts or offer offsets for the proposed orchard development. The 16.8ha is needed to establish a viable operation, to enable coverage of the proposed orchard with a protective net and also to act as a buffer to protect the proposed orchard and associated netting from wildfires that may occur from the south in particular. Whilst the fire risk has been reduced in recent months by a control burn undertaken by the Department of Parks and Wildlife to the south there remains an ongoing risk as fuel loads build up in the forest to the south" (Vincenti family 2016b).

The applicant's representative advised "as indicated in the original report it is intended that we [Vincenti family] establish netting over the proposed new orchard operation. This proposed netting will reduce the need to control bird species (in particular the Carnaby's Cockatoo which tends to pose the greatest threat during the fruit growing period). As a leader, trend setter in the local fruit growing community, we [Vincenti family] are keen to set a precedent for developing high industry standards in the district (so as to set an example to other fruit growers) The concept of netting has been long recognised in such to control bird and bat problems in other states (Vincenti family 2016b).

Insofar as they are relevant to the assessment of this application, the matters raised in the applicant's representative's correspondence have been considered under the relevant clearing principles. It is noted that some of the matters raised cannot be considered in the assessment of the application, and that the response did not identify steps to avoid, minimise the impacts of the proposed clearing nor outline any offset to counterbalance significant residual environmental impacts after avoidance measures.

Methodology References
DER (2016)
DoE (2004)
DoW (2016)
Mattiske (2016e)
Vincenti family (2016a)
Vincenti family (2016b)

GIS Datasets:
- Aboriginal Sites of Significance
- RIWI, Surface Water Area
- Local Government Authority

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