Government of Western Australia
Department of Environment Regulation

Bilateral Agreement Decision Report

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 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.:	6620/1
Permit type:	Purpose Permit

1.2. Applicant details

Applicant's name:	AMG (WA) Pty Ltd

1.3. Property details

Property:	LOT 3 ON DIAGRAM 35920, WAROONA
Colloquial name:	Jackson Block
Local Government Authority:	WAROONA, SHIRE OF
DER Region:	Greater Swan
DPaW District:	SWAN COASTAL
LCDC:	HARVEY RIVER
Localities:	WAROONA

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
20.8		Mechanical Removal	Extractive industry

1.5. Decision on application

Decision on Permit Application:	Refusal
Decision Date:	4 August 2016
Reason for Decision:	The clearing permit application received on 17 June 2015 has been assessed in accordance with the bilateral agreement made under section 45 of the EPBC Act (Cth) relating to environmental assessment and under the EP Act. It has been concluded that the proposed clearing is at variance to clearing principles (a), (b), (e) and (h), may be at variance to principles (f), (g) and (i) 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 loss of 20.8 hectares of vegetation that; contains high biodiversity, significant habitat for fauna, including foraging and potential breeding habitat for black cockatoos, forms part of a regionally significant ecological linkage and is a significant remnant in a highly cleared area. On 11 April 2016, applicant's representative provided a submission and an offset proposal. To counterbalance the significant residual impacts associated with the proposed clearing the applicant proposed an offset which consists of placing a conservation covenant over 39 hectares of native vegetation located to the west of the application area within Lot 3 Buller Road. The Delegated Officer had regard to the environmental values of the native vegetation outlined under principles (a) to (j), and planning instruments and other relevant matters outlined in this report, in making the decision on this application. These matters were taken into consideration by the Delegated Officer in the decision to refuse to grant a clearing permit.

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
The area under application has been mapped as the following vegetation types: Beard vegetation association 1000: Mosaic: Medium forest; jarrah-marri / Low woodland; banksia / Low forest; tea tree (*Melaleuca* spp.) (Shepherd et al. 2001). Heddle vegetation complex, Southern River Complex: open woodland: Open woodland of *Corymbia calophylla* (marri) - *Eucalyptus marginata* (jarrah) - banksia species with fringing woodland of *Eucalyptus rudis* (flooded gum) - *Melaleuca rhaphiophylla* (swamp paperbark) along creek beds (Heddle et al, 1980).	The application proposes to clear 20.8 hectares of native vegetation within Lot 3 on Diagram 35920, Waroona for the purpose of sand extraction.	Good: Structure significantly altered by multiple disturbance; retains basic structure/ability to regenerate (Keighery, 1994). To Very Good; Vegetation structure altered; obvious signs of disturbance (Keighery, 1994).	A Level 1 Flora and Vegetation survey of approximately 36.8 hectares on Lot 3 was undertaken in May 2015 by MBS Environmental (2015) identified the vegetation under application as 'Low Woodland of *Corymbia calophylla*, *Eucalyptus marginata*, *Banksia* spp. and *Allocasuarina fraseriana* over a low open shrubland dominated by *Hibbertia hypericoides* over a grassland of native and introduced species on very low relief sand dunes'. This report indicates that the application area is in a good to very good (Keighery, 1994) condition (MBS Environmental, 2015). A Level 2 Flora and Vegetation Assessment undertaken in September 2015 by Woodman Environmental identified the vegetation under application as 'Mid open woodland to open forest of *Allocasuarina fraseriana*, *Eucalyptus marginata* and *Corymbia calophylla* over low open woodland to woodland dominated by *Banksia attenuata*, *Banksia grandis* and *Banksia ilicifolia* over mid sparse to open shrubland dominated by *Xanthorrhoea preissii* over low to mid sparse shrubland to shrubland dominated by *Hibbertia hypericoides* over low sparse to open forbland dominated by *Dasypogon bromeliifolius* and *Desmocladus flexuosus* on grey sand on lower to upper slopes and flats'. This report indicates that the application area is in a good (Keighery, 1994) condition (Woodman Environmental, 2015). The vegetation description and condition was determined from a site visit conducted by Department of Environment Regulation (DER) officers on 17 July 2015 (DER, 2015) and from flora surveys conducted by MBS Environmental and Woodman Environmental.

Part 2: Assessment against matters of national environmental significance

3. Assessment of application against Matters of National Environmental Significance

Background

Comments

AMG (WA) Pty Ltd propose to clear 20.8 hectares of native vegetation within 'Jackson Block' at Lot 3 on Diagram 35920, Waroona for the purpose of sand extraction. Lot 3 is located approximately eight kilometres west of the town of Waroona, Western Australia.

Lot 3 is a 218 hectare property and Jackson Block covers approximately 36.8 hectares in the south east corner. Jackson Block contains 6.2 hectares of completely degraded (Keighery, 1994) vegetation, within a 13 hectare footprint area, where previous sand extraction activities have taken place. This 6.2 hectare area was approved to be cleared under a separate clearing permit application (CPS 6701/1) and was not be assessed under the Bilateral Agreement.

The property is freehold land and is owned by Stanley, Susan, Garry and Rosalind Meek. On 8 May 2015 AMG (WA) Pty Ltd entered into a ten year lease over Lot 3.

Sand will be extracted with bulldozers and front-end loaders, which load the sand into semi-tippers for removal from site. Screening of the sand will be conducted on site with screening equipment. The sand extraction operation is proposed to take place over approximately five years.

MBS Environmental (2015) identified two vegetation units within the application area, one covering most of the remnant vegetation and another covering a small section of fringing wetland in the northwest corner of the survey area.

The dominant Vegetation Unit 1 is described as 'Low woodland of *Corymbia calophylla*, *Eucalyptus marginata*, *Banksia* spp. and *Allocasuarina fraseriana* over a low open shrubland dominated by *Hibbertia hypericoides* over a grassland of native and introduced species on very low relief sand dunes'.

The minor Vegetation Unit 2 is described as 'Thicket of *Kunzea ericifolia*, *Melaleuca preissiana* and *Melaleuca rhaphiophylla*, over open low shrubland of *Astartea scoparia* and *Adenanthos meisneri* over bare ground in lower ground associated with a sumpland'.

In January 2016 the application area was burnt during the Waroona fires. On 11 March 2016 DER officers inspected the application area post fire and reported that the area was regenerating with evidence of understory species coppicing from underground root structures and re-sprouting. Epicormic growth was evident in a number of jarrah, marri and allocasuarina trees.

Description of controlling provision

Comments

On 10 July 2015 the proposal was determined to be a controlled action under the EPBC Act for the following controlling provisions: Listed Threatened Species and Communities. The proposed action is considered likely to have a significant impact on Carnaby's cockatoo (*Calyptorhynchus latirostris*) listed as endangered under the EPBC Act, on forest red-tailed black cockatoo (*Calyptorhynchus banksii naso*) listed as vulnerable under the EPBC Act and on Baudin's cockatoo (*Calyptorynchus baudinii*) listed as vulnerable under the EPBC Act. In addition, the proposed action may have a significant impact on *Caladenia huegelii* (king spider orchid) listed as endangered under the EPBC Act and on *Drakaea micrantha* (dwarf hammer orchid) 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 longicomis*), York gum (Eucalyptus loxophleba), tuart, 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 south-west humid and sub-humid zones of south west 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 are 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).

Baudin's cockatoo

Baudin's cockatoo is endemic to a 2,000 kilometre area of the humid and sub-humid zones of south-west 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 south-west of Western Australia (DEC, 2008).

This species has declined over more than 50 per cent of its range over the past 50 years. 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 Conservation advice for this species states that one of the main threats is habitat loss and nest hollow shortage (DEWHA, 2009).

***Caladenia huegelii* (king spider-orchid)**

Caladenia huegelii is a slender orchid, usually growing 30–70 centimetres high but occasionally up to one metre. It has one or two flowers characterised by a greenish-cream labellum (the largest, lower petal) with a maroon tip that curves backward (recurved) (DotE, 2016).

This species is currently known from 33 extant populations containing approximately 1,614 mature plants. Populations are distributed from just north of Perth down to the Busselton area, usually within 20 kilometres of the coast. Many populations are very small and occur in small disjunct remnants of natural vegetation on the Swan Coastal Plain, and are subject to development pressures. Threats to this species include urban development, degraded habitat, poor recruitment, weed invasion, roadworks, firebreak maintenance, inappropriate fire regimes, recreational activities and dumping of rubbish (DEC, 2009).

Caladenia huegelii occurs in areas of mixed woodland of jarrah (*Eucalyptus marginata*), candlestick banksia (*Banksia attenuata*), holly banksia (*B. ilicifolia*) and firewood banksia (*B. menziesii*) with scattered sheoak (*Allocasuarina fraseriana*) and marri (*Corymbia calophylla*) over dense shrubs of blueboy (*Stirlingia latifolia*), swan river myrtle (*Hypocalymma robustum*), yellow buttercups (*Hibbertia hypericoides*), buttercups (H. subvaginata), balga (*Xanthorrhoea preissii*), coastal jugflower (*Adenanthos cuneatus*) and conostylis species (DEC, 2009). Throughout its range the species tends to favour areas of dense undergrowth. Soil is usually deep grey-white sand usually associated with the Bassendean sand-dune system (DEC, 2009).

***Drakaea micrantha* (dwarf hammer-orchid)**

Drakaea micrantha is a tuberous, terrestrial herb which has a flower 1.2 to 2.5 centimetres long, on a stem up to 30 centimetres high. Its heart-shaped leaf is silvery-grey with prominent green veins (DSEWPC, 2008).

D. micrantha is known from 32 small scattered populations over a wide area from Perth to Albany. The species' total population size is estimated to be approximately 500 mature plants. However, this estimate is based on population monitoring from the 1990s and is therefore, likely to be inaccurate (DSEWPC, 2008).

This species is usually found in cleared fire breaks or open sandy patches that have been disturbed, and where competition from other plants has been removed (Brown et al., 1998). *D. micrantha* occurs in infertile grey sands, in banksia, jarrah (*Eucalyptus marginata*) and common sheoak (*Allocasuarina fraseriana*) woodland or forest. It is often found under thickets of spearwood (*Kunzea ericifolia*) with *Paracaleana nigrita* and other Drakaea species (Hoffman and Brown, 1992; Robinson and Coates, 1995; Brown et al., 1998).

The main identified threat to *D. micrantha* is fire between June and early October, when its above ground parts and replacement tuber are actively growing (Brown et al. 1998).

Methodology

References

Berry (2008)
Brown et al. (1998)
DEC (2008)
DEC (2009)
DEWHA (2009)
DSEWPC (2008)
DotE (2016)
Garnett et al. (2011)
Hoffman and Brown (1992)
Johnstone and Kirkby (1999)

Johnstone and Storr (1998)
Johnstone et al. (2011)
Keighery (1994)
MBS Environmental (2015)
Parks and Wildlife (2013)
Robinson and Coates (1995)
Saunders (1974)
Saunders (1980)
Saunders (1990)
Saunders and Ingram (1998)

Summary of Impacts

Comments

In May 2015, Terrestrial Ecosystems conducted a Level 1 Fauna Assessment over the Jackson Block of Lot 30 Buller Road, Waroona.

The fauna assessment identified that the clearing of vegetation will potentially impact on all three species of black cockatoo in a number of ways, including:

- death/injury of fauna during vegetation clearing and development;
- loss of habitat; and
- fragmentation of fauna habitat.

Besides the initial mortality of fauna during vegetation clearing and earthworks, there will also be an ongoing indirect impact, largely consisting of the loss and degradation of habitat resources, feeding areas and shelter sites for mobile species (Terrestrial Ecosystems, 2015).

One hundred and four eucalypts with a diameter at breast height of 50 centimetres or greater were recorded within the survey area. Sixteen of these trees were dead, 59 were jarrah and 39 were marri. Nineteen trees contained a hollow that could be suitable as a nesting site for black-cockatoos, however these trees were not climbed and hollows were not closely inspected, so it is likely many of these hollows on closer inspection would not be suitable as nesting sites for black cockatoos due to a burnt interior, inappropriate internal dimensions, jagged floor, etc (Terrestrial Ecosystems, 2015).

The proposed clearing will result in the loss of 20.8 hectares of foraging habitat for Carnaby's cockatoo.

Woodman Environmental (2015) undertook a Level 2 Flora and Vegetation Assessment from 22 to 25 September 2015. It is considered that this assessment was conducted in the most appropriate time to survey in the Swan Coastal Plain Bioregion, as the majority of the taxa in this region area in flower at this time (Woodman Environmental, 2015). This assessment consisted of a desktop assessment, a reconnaissance survey followed by a detailed field survey. This assessment covered an area of approximately 218 hectares which included the area under application. No rare flora species were recorded within the application area or within the larger survey area. Therefore, the proposed clearing is not likely to impact upon *Caladenia huegelii* or *Drakaea micrantha*.

Subsequent to the Level 2 Flora and Vegetation Assessment, the application area was burnt by the Waroona fires in January 2016. On 11 March 2016, DER officers inspected the application area post fire and reported that the area was regenerating with evidence of understory species coppicing from underground root structures and re-sprouting. Epicormic growth was evident in a number of jarrah, marri and allocasuarina trees. A number of the large habitat trees identified within the application area were severely burnt during the fires and at the time of inspection appeared to be dead. A number of the trees were observed to have dropped limbs, however none were observed to have fallen over. Nesting hollows are formed when tree trunks are snapped off or when the tree is damaged by fire. Although the fire may have caused the loss of some of the existing hollows it may also provide opportunities for the development of others.

Methodology

References:
Terrestrial Ecosystems (2015)
Woodman Environmental (2015)

Public consultation

Comments

The clearing application was advertised for public comment in *The West Australian* on 3 August 2015. The public comment period ended on 24 August 2015.

No public submissions were received during this comment period.

Methodology

Avoidance, mitigation and offset

Avoidance and Mitigation

The application area has been designed to exclude nearby wetlands that extend into Jackson Block.

The applicant has provided advice that where possible cockatoo breeding trees will be avoided.

No other on-site avoidance and mitigation measures were proposed.

Offset

The applicant has proposed an offset which consists of placing a conservation covenant over 39 hectares of native vegetation located to the west of the application area within Lot 3 Buller Road. The covenant area was proposed to be fenced and the applicant proposed to undertake weed management. The offset area consists of two vegetation types, one is the same vegetation type as the application area and the second is associated with a wetland and is described as 'mid closed forest of *Melaleuca pressiana* over mid sparse to open shrubland dominated by *Astartea scoparia* over low grassland of introduced species on grey sand on closed depressions and flats'. The proposed offset area contains 11 individuals of the P4 species *Acacia semitrullata*.

An assessment of the significant environmental impacts from clearing has determined that an offset is not appropriate to counterbalance the significant environmental impacts identified. In accordance the WA Environmental Offsets Policy, environmental offsets are used as a last resort after due consideration of avoidance and mitigation measures. Offsets will not be considered in the absence of these measures. Environmental offsets are also not appropriate for all projects and are not appropriate in all circumstances.

Other relevant considerations

The following information was included in the applicant's referral documentation provided to the Commonwealth.

Economic and Social Matters

KD.1 Pty Ltd (2016) has provided the following advice regarding the economic and social matters regarding this project:

The Perth and particularly the southern areas of Perth just as the Peel Region currently have a shortage of supply of housing / building sand. Department of the Premier and Cabinet are currently working on a future resource assessment for sand and limestone for Western Australia (WA) as they have acknowledged the shortage. With the lack of this resource, the identification of the resource in Jackson Block at Lot 3 Buller Rd, Waroona would provide a much needed relief for the supply of building sand to the regions to the south of Perth and support the building and housing industry.

The implementation of extraction of sand from Jackson Block will also provide community benefits with the plan to use local, young and Traditional Owner personnel, where possible, during the implementation phase.

There will also be broader community benefits through the support of the building industry which is a large employer of personnel in WA.

Applicant's Environmental History

The applicant has not previously submitted an EPBC Act referral.

The applicant holds a current clearing permit (CPS 6701/1).This permit was granted on 15 October 2016. To date no clearing in accordance with this permit has occurred.

On 15 April 2009, the applicant, on behalf of Mr William Duffy and Ms Laurel Schofield, applied to clear 40 hectares of native vegetation on Lot 2295 Higgins Road, Pinjar (Reference: CPS 3090/1). On 12 November 2009, this application was refused based on outstanding planning approvals.

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 is at variance to this Principle

The application proposes to clear 20.8 hectares of native vegetation within Lot 3 Buller Road, Waroona for the purpose of sand extraction.

In January 2016, the application area was burnt during the Waroona fires. Vegetation communities have the ability to regenerate following natural disturbance events such as fire and with time the environmental values of the application area are likely to return. Therefore, taking into consideration the site's ability to regenerate, the following assessment is based on its pre-fire condition.

On 11 March 2016, DER officers inspected the application area post-fire and reported that the area was regenerating with evidence of understory species coppicing from underground root structures and re-sprouting. Epicormic growth was evident in a number of jarrah, marri and allocasuarina trees. A number of the large habitat trees identified within the application area were severely burnt during the fires and at the time of inspection appeared to be dead. A number of the trees were observed to have dropped limbs, however none were observed to have fallen over.

A Level 1 Flora and Vegetation Survey of approximately 36.8 hectares on Lot 3 was undertaken in May 2015 by MBS Environmental. This survey consisted of a desktop assessment and reconnaissance site survey. This survey identified 83 vascular plant taxa, including 17 introduced taxa. MSB Environmental (2015) advise that this number is likely to be an underestimate due to the timing of the survey.

In September 2015, a Level 2 Flora and Vegetation Assessment was undertaken by Woodman Environmental. This assessment consisted of a desktop assessment, a reconnaissance survey followed by a detailed field survey. This assessment covered an area of approximately 218 hectares and identified a total of 192 discrete vascular flora taxa, including 144 native taxa (Woodman Environmental, 2015).

The combined results of the two above mentioned flora surveys recorded a total of 152 native species within the study area (Woodman Environmental, 2015).

Forty five priority and rare flora species have been recorded in the local area (10 kilometre radius). A review conducted by MBS Environmental (2015) of available habitat within the application area revealed that the application area contains suitable habitat for two rare flora species, one priority 2 species, one priority 3 species and three priority four species. The majority of remaining species were identified to have a marginal possibility of occurring within the surveyed area. Many of these species are associated with winter wet areas (MBS Environmental, 2015). The areas associated with wetlands on Lot 3 have been excluded from this application, reducing the chance of many of these species being identified.

The Department of Parks and Wildlife (Parks and Wildlife) has advised that there is potential for numerous threatened and priority taxa to occur within the application area and that the timing of MBS Environmental's survey was a major constraint in identifying many conservation significant taxa, especially orchid taxa (Parks and Wildlife, 2015a).

Woodman Environmental were commissioned by the applicant to undertake a spring flora survey of Lot 3. Woodman Environmental's assessment was undertaken from 22 to 25 September 2015. It is considered that this assessment was conducted at an appropriate time to survey the Swan Coastal Plain Bioregion, as the majority of the taxa in this region are in flower at this time (Woodman Environmental, 2015).

Woodman Environmental (2015) identified one significant flora taxa in the study area, being; *Acacia semitrullata* (Priority 4). A total of 11 individuals of *Acacia semitrullata* were recorded at five point locations within the study area (Woodman Environmental, 2015). None of these individuals were recorded within the application area. No other rare or priority flora were recorded within the application area or in the larger study area.

No threatened or priority ecological communities have been mapped over the application area. Woodman Environmental has classified the vegetation under application as Vegetation Type 1 (VT1). VT1 corresponds to vegetation generally consisting of *Allocasuarina fraseriana*, *Eucalyptus marginata* and *Corymbia calophylla* woodland over banksia woodland over taxon-rich shrubland on variable landforms from upperslopes to flats (Woodman Environmental, 2015). This vegetation type has similarities to SCP21c, which is listed as a priority 3 ecological community. Despite these similarities, Woodman Environmental (2015) concluded that this vegetation type more closely resembles SCP21a which is neither a threatened nor priority ecological community.

Six fauna species listed as rare or likely to become extinct under the *Wildlife Conservation Act 1950* (WC Act) have been recorded within the local area (10 kilometre radius), including Carnaby's cockatoo (*Calyptorhynchus latirostris*), forest red-tailed black cockatoo (*Calyptorhynchus banksii naso*), Baudin's cockatoo (*Calyptorynchus baudinii*), numbat (*Myrmecobius fasciatus*) and southern brush-tailed phascogale (*Phascogale tapoatafa subsp. tapoatafa*) (Parks and Wildlife, 2007-).

The area under application (pre-fire) contains significant foraging and potential breeding habitat for Carnaby's cockatoo (*Calyptorhynchus latirostris*), forest red-tailed black cockatoo (*Calyptorhynchus banksii naso*), and Baudin's cockatoo (*Calyptorynchus baudinii*). Habitat for brush-tailed phascogale and quenda was also observed within the application area.

An ecological linkage, defined by the South West Regional Ecological Linkage (SWREL) Report (Molloy et al., 2009) is mapped approximately 200 metres west of the application area connecting it to Buller Nature Reserve (240 metres south), Myalup State Forest (8.8 hectares west) and Hamel State forest (7.3 kilometres east).

The SWREL report (Molloy et al., 2009) defines an ecological linkage as "A series of (both contiguous and non-contiguous) patches of native vegetation which, by virtue of their proximity to each other, act as stepping stones of habitat which facilitate the maintenance of ecological processes and the movement of organisms within, and across, a landscape". As the application area is part of this ecological linkage it assists in the maintenance of the ecological process of conservation reserves within the local area. This value is heightened by the application area's high fauna habitat value that assists in the maintenance of these species within the connected reserves.

Glevan Consulting (2015) conducted an assessment of a 36.8 hectare area (the study area) of Lot 3 (including the application area) for the presence of phytophthora dieback. This assessment identified that 13.6 hectares of the study area was infected with phytophthora dieback. The January 2016, fire would have removed the dead and dying vegetation, which was affected by dieback. The fire may have the effect of hastening the progress to a post-epidemic assemblage of non-susceptible native plants and weeds (Parks and Wildlife, 2016). The uninfested areas are expected to recover normally from the effects of fire (Parks and Wildlife, 2016). The fire reduced visible disease expression, which will remain permanently muted in older parts of the infestation where the disease has already reached an endemic equilibrium, meanwhile a visible epidemic will eventually become obvious again in areas that had only been recently infested. The fire will not affect disease progression or the final impact of the disease (Parks and Wildlife, 2016).

The application area contains significant habitat for conservation significant fauna, vegetation in a good to very good (Keighery, 1994) condition and forms part of a significant ecological linkage. Therefore, the proposed clearing is at variance to this principle.

To counterbalance the significant residual impacts relating to biodiversity, the applicant proposed an offset which consists of placing a conservation covenant over 39 hectares of native vegetation located to the west of the application area within Lot 3 Buller Road. The covenant area was proposed to be fenced and the applicant proposed to undertake weed management.

An assessment of the significant environmental impacts from clearing has determined that an offset is not appropriate to counterbalance the significant environmental impacts identified. In accordance with the WA Environmental Offsets Policy, environmental offsets are used as a last resort after due consideration of avoidance and mitigation measures. Offsets will not be considered in the absence of these strategies. Environmental offsets are also not appropriate for all projects and are not appropriate in all circumstances.

Methodology

References:
Glevan Consulting (2015)
Keighery (1994)
MBS Environmental (2015)
Molloy et al. (2009)
Parks and Wildlife (2007-)
Parks and Wildlife (2015a)
Parks and Wildlife (2016)
Woodman Environmental (2015)

GIS Datasets:
Sac Bio Datasets - accessed July 2015

(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

Six fauna species listed as rare or likely to become extinct under the WC Act have been recorded within the local area (10 kilometre radius), including Carnaby's cockatoo (*Calyptorhynchus latirostris*), forest red-tailed black cockatoo (*Calyptorhynchus banksii naso*), Baudin's cockatoo (*Calyptorynchus baudinii*), numbat (*Myrmecobius fasciatus*) and southern brush-tailed phascogale (*Phascogale tapoatafa subsp. tapoatafa*) (Parks and Wildlife, 2007-).

A fauna survey conducted by Terrestrial Ecosystems in May 2015 identified three broad fauna habitat types in the project area. The first habitat type comprises *E. marginata*, *C. calophylla*, *A. fraseriana* and *Banksia* sp. woodland over sparsely vegetated shrubs over grasses and herbs on grey sands. The second habitat type comprises large cleared sections of native vegetation that were previously used for sand extraction on the eastern side and a disused mining area in the south-west corner that abuts regrowth vegetation in the power line corridor. The third habitat type comprises a small section west of the central point that comprises dense shrubs on white sands that extends to the track that runs north-south through the project area.

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). Clearing of feeding habitat on the Swan Coastal Plain poses a significant threat to the long term survival of Carnaby's cockatoos (Shah, 2006).

The fauna survey recorded 104 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). Six of these trees were dead, 59 were jarrah and 39 were marri (Terrestrial Ecosystems, 2015). Nineteen trees contained a hollow that could be suitable as a nesting site for black cockatoos. No evidence of nesting (e.g. chewed bark around hollow entrances) was observed (Terrestrial Ecosystems, 2015). It was noted however that the trees were not climbed and hollows were not closely inspected (Terrestrial Ecosystems, 2015).

On 11 March 2016, DER officers inspected the application area post-fire and reported that the area was regenerating with evidence of understory species coppicing from underground root structures and re-sprouting. Epicormic growth was evident in a number of jarrah, marri and allocasuarina trees. A number of the large habitat trees identified within the application area were severely burnt during the fires and at the time of inspection appeared to be dead. A number of the trees were observed to have dropped limbs, however none were observed to have fallen over. Nesting hollows are formed when tree trunks are snapped off or when the tree is damaged by fire. Although the fire may have caused the loss of some of the existing hollows it may also provide opportunities for the development of others.

The application area contains species know to be foraging species for Carnaby's cockatoo and there was evidence that banksia cones had been chewed by Carnaby's or Baudin's cockatoos and marri nuts chewed by either forest red-tailed back cockatoos or Carnaby's cockatoo (Terrestrial Ecosystems, 2015).

The Carnaby's cockatoo was once abundant in Western Australia. Since the late 1940s, the species has suffered a 30 per cent contraction in range, a 50 per cent decline in population, and between 1968 and 1990 disappeared from more than a third of its breeding range (Saunders, 1990; Johnstone and Storr, 1998; Saunders and Ingram 1998; Garnett et al. 2011). Basic ecological theory, expert opinion and recent evidence, suggests that the remaining native and pine plantation foraging habitat on the Swan Coastal Plain is just sufficient to support the current population of Carnaby's cockatoo. Therefore, any reduction in the amount of food source will result in a reduction in the carrying capacity of the region and therefore, a decline in the population of Carnaby's cockatoo.

The Recovery Plan for the Carnaby's cockatoo 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. Loss of breeding habitat, together with feeding areas and watering sites within 12 kilometres of breeding sites is one of the key threatening processes contributing towards the decline of the species. In particular, the loss or degradation of feeding habitat adjacent to breeding sites is considered to pose the greatest risk to Carnaby's cockatoos (Parks and Wildlife, 2013). The application area has been mapped within a 12 kilometre buffer of a known breeding site, contains potential breeding trees and is in close proximity to wetlands, therefore the application contains significant habitat for Carnaby's cockatoo.

The Recovery Plan for both the forest red-tailed black cockatoo and the 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). As the application area contains potential nest hollows for breeding and occurs within suitable foraging habitat for the forest red-tailed black cockatoo and the Baudin's cockatoo, the application area contains significant habitat for these species.

The southern brush-tailed phascogale is a small arboreal dasyurid. In south west Western Australia they have been observed in dry sclerphyll forests and open woodlands that contain hollow bearing trees. Habitat clearing, fragmentation, and alteration by logging and mining are the greatest threats to this species (DEC, 2012a). Terrestrial Ecosystems (2015) report that the size of the remnant patch of vegetation is large enough to sustain a population of brush-tailed phascogale and some of the habitat is suitable. The brush-tailed phascogale were identified in the vicinity of the project area, but were not caught during fauna surveys at the nearby mineral sand project (Terrestrial Ecosystems, 2015).

The numbat is listed as vulnerable under the EPBC Act. Numbats build nests in hollow logs or trees, or dig burrows. Only two isolated populations of this remain at Dryandra and Perup in the southwest of Western Australia, approximately 160 kilometres apart (DotE, 2014). The proposed clearing is not likely to impact upon these remaining populations.

Potential quenda (*Isoodon obesulus fusciventer*) diggings were observed during the fauna survey. The quenda is listed as a Priority 5 species under the WC Act. This species inhabits scrubby, often swampy, vegetation with dense cover up to one metre high, often feeds in adjacent forest and woodland that is burnt on a regular basis and in areas of pasture and cropland laying close to dense cover. Populations inhabiting jarrah and wandoo forests are usually associated with watercourses (DEC, 2012b).

Although, potential diggings were identified, Terrestrial Ecosystems (2015) advise that none were observed where it was obvious that a pointed nose had created a cone shape depression in the leaf letter or surface soils. The open understorey and presence of foxes in the project area would ensure numbers are maintained at a low level if they were present (Terrestrial Ecosystems, 2015).

The fauna survey of the application area identified evidence of brush-tailed possums and western grey kangaroos.

An ecological linkage, defined by the South West Regional Ecological Linkage (SWREL) Report (Molloy et al., 2009) is mapped approximately 200 metres west of the application area connecting it to Buller Nature Reserve (240 metres south), Myalup State Forest (8.8 hectares west) and Hamel State forest (7.3 kilometres east).

The SWREL report (Molloy et al.,2009) defines an ecological linkage as "A series of (both contiguous and non-contiguous) patches of native vegetation which, by virtue of their proximity to each other, act as stepping stones of habitat which facilitate the maintenance of ecological processes and the movement of organisms within, and across, a landscape". As the application area is part of this ecological linkage it assists in the maintenance of the ecological process of conservation reserves within the local area. This value is heightened by the application area's high fauna habitat value that assists in the maintenance of these species within the connected reserves.

The area under application contains significant habitat for black cockatoos, potential habitat for brush-tailed phascogale and quenda, and forms part of a significant ecological linkage. Therefore, the proposed clearing is at variance to this principle.

To counterbalance the significant residual impacts relating to biodiversity the applicant proposed an offset which consists of placing a conservation covenant over 39 hectares of native vegetation located to the west of the application area within Lot 3 Buller Road. The covenant area was proposed to be fenced and the applicant proposed to undertake weed management.

An assessment of the significant environmental impacts from clearing has determined that an offset is not appropriate to counterbalance the significant environmental impacts identified. In accordance the WA Environmental Offsets Policy, environmental offsets are used as a last resort after due consideration of avoidance and mitigation measures. Offsets will not be considered in the absence of these measures. Environmental offsets are also not appropriate for all projects and are not appropriate in all circumstances.

Methodology

References:
DEC (2008)
DEC (2012a)
DEC (2012b)
DotE (2014)
Garnett et al. (2011)
Johnstone and Storr (1998)
Molloy et al. (2009)
Parks and Wildlife (2007-)
Parks and Wildlife (2013)
Saunders (1990)
Saunders and Ingram (1998)
Shah (2006)
Terrestrial Ecosystems (2015)
Valentine and Stock (2008)

GIS Datasets:
Sac Bio Datasets - accessed July 2015

(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

Four rare flora species have been recorded in the local area (10 kilometre radius), being; *Caladenia huegelii*, *Drakaea micrantha*, *Diuris purdiei* and *Synaphea stenoloba*. The closest mapped rare flora species is *Caladenia huegelii* which has been recorded within approximately 1300 metres of the application area.

Caladenia huegelii occurs in areas of mixed woodland of jarrah (*Eucalyptus marginata*), candlestick banksia (*B. attenuata*), holly banksia (*B. ilicifolia*) and firewood banksia (*B. menziesii*) with scattered sheoak (*Allocasuarina fraseriana*) and marri (*Corymbia calophylla*) over dense shrubs of blueboy (*Stirlingia latifolia*), Swan River myrtle (*Hypocalymma robustum*), yellow buttercups (*Hibbertia hypericoides*), buttercups (*H.subvaginata*), balga (*Xanthorrhoea preissii*), coastal jugflower (*Adenanthos cuneatus*) and *Conostylis species* (DEC, 2009). Throughout its range the species tends to favour areas of dense undergrowth. Soil is usually deep grey-white sand usually associated with the Bassendean sand-dune system (DEC, 2009).

Drakaea micrantha is usually found in cleared fire breaks or open sandy patches that have been disturbed, and where competition from other plants has been removed (Brown et al., 1998). The Dwarf Hammer-orchid occurs in infertile grey sands, in banksia, jarrah (*Eucalyptus marginata*) and common sheoak (*Allocasuarina fraseriana*) woodland or forest. Suitable habitat for this species is located within the application area.

Diuris purdiei grows in sand to sandy clay soil amongst scattered shrub in areas subject to winter inundation (Brown et al., 1998). Suitable habitat for this species is likely to occur in the north west corner of the application area which is adjacent to mapped wetlands.

Synaphea stenoloba occurs on loamy soils in low lying areas that are occasionally inundated. Associated vegetation is generally swampy heath to one metre high (DotE, 2015). Suitable habitat for this species is likely to occur in the north west corner of the application area which is adjacent to mapped wetlands.

A level 1 reconnaissance survey of Jackson Block was undertaken by MBS Environmental on 5 May 2015. This survey did not identify any rare flora within the survey area (MBS Environmental, 2015). The timing of this survey in autumn was a significant constraint in identifying any conservation significant taxa, in particular orchid taxa (Parks and Wildlife, 2015a).

Woodman Environmental was commissioned by the applicant to undertake a spring flora survey of Lot 3. Woodman Environmental's assessment was undertaken from 22 to 25 September 2015. This visit was conducted at the most appropriate time to survey in the Swan Coastal Plain Bioregion, as the majority of the taxa in this region are in flower at this time (Woodman Environmental, 2015).

In addition to the four species listed above, a desktop assessment and literature review undertaken by Woodman Environmental (2015) identified an additional four rare flora species which may occur within the application area, being; *Diuris micrantha*, *Drakaea elastica*, *Eleocharis keigheryi* and *Synaphea* sp. Fairbridge Farm.

Woodman Environmental (2015) conducted an initial reconnaissance visit on 2 September 2015 with the main purpose being a targeted search for *Drakaea elastica*. The most appropriate time to survey for this species is July/August when the orchids leaves are most evident. Woodman Environmental provided advice that the leaves should still have been present in early September. The targeted search for this species did not record this species.

Woodman Environmental (2015) set up 16 quadrats within the survey area. It is noted that in addition to searches conducted around and between quadrats, specific, targeted searching for significant flora taxa in the survey area was undertaken.

No rare flora was recorded within the application area or within the larger survey area.

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

Methodology

References:
Brown et al. (1998)
DEC (2009)
DotE (2015)
MBS Environmental (2015)
Parks and Wildlife (2015a)
Woodman Environmental (2015)

GIS Datasets:
Sac Bio Datasets - accessed July 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

Thirteen Threatened Ecological Communities (TEC) have been recorded within the local area (10 kilometre radius). The closest TEC, 'Shrublands on dry clay flats' has been mapped approximately five kilometres west of the application area.

Neither of the flora surveys undertaken within the application area recorded any vegetation units consistent with TECs (MBS Environmental, 2015; Woodman Environmental, 2015).

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

Methodology References:
MBS Environmental (2015)
Woodman Environmental (2015)

GIS Datasets:
Sac Bio Datasets - accessed July 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 at variance to this Principle

The area under application is located within the Swan Coastal Plain Interim Biogeographic Regionalisation of Australia (IBRA) bioregion. This IBRA bioregion has approximately 39 per cent of its pre-European vegetation extent remaining (Government of Western Australia, 2014).

The application area is mapped as Beard vegetation association 1000. This vegetation association has approximately 27 per cent of its pre-European extent remaining in the Swan Coastal Plain bioregion (Government of Western Australia, 2014). Approximately 17 per cent of this vegetation association is held within conservation estate.

The application area has also been mapped as Heddle vegetation complex 'Open Woodland' which retains approximately 18 per cent of its pre-European extent. Approximately two per cent of this complex is held in conservation estate (Parks and Wildlife, 2015b).

Aerial imagery indicates that the local area (ten kilometre radius) retains approximately 15 per cent vegetation.

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).

The application area is mapped 200 metres west of an ecological linkage, defined by the South West Regional Ecological Linkage (SWREL) Report (Molloy et al., 2009). The SWREL report (Molloy et al.,2009) defines an ecological linkage as "A series of (both contiguous and non-contiguous) patches of native vegetation which, by virtue of their proximity to each other, act as stepping stones of habitat which facilitate the maintenance of ecological processes and the movement of organisms within, and across, a landscape".

On 11 March 2016, DER officers inspected the application area post-fire and reported that the area was regenerating with evidence of understory species coppicing from underground root structures and re-sprouting. Epicormic growth was evident in a number of jarrah, marri and allocasuarina trees. A number of the large habitat trees identified within the application area were severely burnt during the fires and at the time of inspection appeared to be dead. A number of the trees were observed to have dropped limbs, however none were observed to have fallen over. Nesting hollows are formed when tree trunks are snapped off or when the tree is damaged by fire. Although the fire may have caused the loss of some of the existing hollows it may also provide opportunities for the development of others. Therefore, it is anticipated that the application area will regenerate to contain high biodiversity, foraging and potential breeding habitat for black cockatoos and will continue to function as a significant ecological linkage.

Given the above, the application area is considered to be a significant remnant in an area which has been highly cleared. Therefore, the proposed clearing is at variance to this principle.

To counterbalance the significant residual impacts relating to biodiversity, the applicant proposed an offset which consists of placing a conservation covenant over 39 hectares of native vegetation located to the west of the application area within Lot 3 Buller Road. The covenant area was proposed to be fenced and the applicant proposed to undertake weed management.

An assessment of the significant environmental impacts from clearing has determined that an offset is not appropriate to counterbalance the significant environmental impacts identified. In accordance the WA Environmental Offsets Policy, environmental offsets are used as a last resort after due consideration of avoidance and mitigation measures. Offsets will not be considered in the absence of these measures. Environmental offsets are also not appropriate for all projects and are not appropriate in all circumstances.

	Pre-European (ha)	Current Extent (ha)	Remaining (%)	Extent in Parks and Wildlife Managed Lands (%)
IBRA Bioregion*				
Swan Coastal Plain	1 501 222	586 975	39	36
Shire*				
Shire of Waroona	41 481	35 380	50	79
Beard vegetation association in bioregion*				
1000	94 175	24 973	27	17
Heddle vegetation complex **				
Southern River Complex: open woodland	57 970	10 698	18	2

Methodology

References:
Commonwealth of Australia (2001)
*Government of Western Australia (2014)
Molloy et al. (2009)
**Parks and Wildlife (2015b)

GIS Databases
-Pre-European vegetation
-NLWRA, Current Extent of Native 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 may be at variance to this Principle

No wetlands or watercourses are located within the application area. However, Lot 3 Buller Road comprises various wetland areas including resource enhancement category, conservation category and multiple use wetlands.

Conservation category wetlands support a high level of ecological attributes and functions. The objective for these wetlands is preservation of wetland attributes and functions through various mechanisms (Water and Rivers Commission, 2001).

Resource enhanced category wetlands are considered priority wetlands which may have been partially modified but still retain substantial ecological attributes and functions. The ultimate objective is for management, restoration and protection towards improving their conservation value (Water and Rivers Commission, 2001).

Multiple use category wetlands are wetlands with few important ecological attributes and functions remaining. Use, development and management should be considered in the context of ecologically sustainable development and best management practice catchment planning through landcare (Water and Rivers Commission, 2001).

The wetland areas closest to the application area are:

- UFI 5004 multiple use sumpland (seasonally inundated basin) – 15 metres north
- UFI 4807 conservation category sumpland – 144 metres west
- UFI 4363 conservation category sumpland – 390 metres west

Surrounding these three wetlands is an area of sumpland (UFIs 4801 and 4646) that has been mapped but not evaluated into a management category (i.e. Not Assessed). Department of Parks and Wildlife has advised that it is not clear whether the wetland areas are part of one larger sumpland system or are discrete wetlands, however the proximity of the wetland areas may indicate hydrological connectivity (Parks and Wildlife, 2015c).

Multiple use wetland UFI 5004 is located approximately 15 metres north of the application area and the vegetation condition within the eastern section of the wetland has been described as very good to good (Keighery, 1994) (MBS Environmental, 2015).

Aerial imagery indicates that the native vegetation within wetland UFI 5004 has successfully regenerated since clearing of the power line corridor (Parks and Wildlife, 2015c). The vegetation condition of wetland UFI 5004 suggests that the wetland area may be commensurate with conservation category, however the management category cannot be confirmed with the information provided (Parks and Wildlife, 2015c).

The vegetation and flora survey conducted by MBS Environmental (2015) identified one vegetation unit associated with sumplands (UFIs 4801 and 4646). This vegetation unit is described as 'Thicket of Kunzea ericifolia, *Melaleuca preissiana* and *Melaleuca rhaphiophylla*, over open low shrubland of *Astartea scoparia* and *Adenanthos meisneri* over bare ground in lower ground associated with a sumpland' (MBS Environmental, 2015). This vegetation unit covered approximately 0.5 hectares of the surveyed area. This sumpland area has been omitted from the application area however, some vegetation within this mapped unit may still be located within the application area.

The applicant submitted the following additional advice in respect to this Principle:

- While the proposed clearing is adjacent to a buffer area around a wetland it is not considered that the proposed clearing may be at variance to this principle as the proposed clearing avoids the wetland buffer area and given the sand extraction batter required for safety this will ensure no impact to the wetland area; and
- Sand extraction will not be conducted within two metres of the water table.

This advice is acknowledged. However given the proximity of the mapped wetland it is considered that application area may contain vegetation growing in association with this wetland.

Given the above the proosed clearing may be at variance to this principle.

Methodology

References:
Keighery (1994)
MBS Environmental (2015)
Parks and Wildlife (2015c)
Water and Rivers Commission (2001)

GIS Databases
-Hydrography, linear
- Geomorphic Wetlands (Mgt Categories), Swan Coastal Plain

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

Comments

Proposed clearing may be at variance to this Principle

Soils in the application area have been mapped as soil type Cb38 which Northcote et al. (1960-68) describes as sandy dunes with intervening sandy and clayey swamp flats comprising leached sands.

The main land degradation risk associated with the removal of vegetation on-site is wind erosion. The wind erosion potential is due to the sandy nature of the soil and without appropriate vegetation cover, windbreaks or adequate dust suppression on exposed surfaces, the proposed clearing is likely to result in appreciable land degradation.

Given the porous nature of the soils within the application area water erosion is unlikely to occur.

Groundwater salinity in the application area is mapped in the range of 500-1000 mg/L total dissolved solids. This range is considered to be marginal. The proposed clearing of 20.8 hectares within a larger remnant (whole of Lot 3) of approximately 220 hectares is not likely to increase ground water salinity causing land degradation.

The applicant has advised that as part of any extractive industry licence, management of dust and potential erosion is a requirement and management plans are/will be developed to manage this potential impact. Noting the applicant's advice regarding management plans it is considered that land degradation associated with the proposed land use may be able to be managed through the implementation of appropriate management strategies (i.e. bituminising roads and hardstands, staged clearing followed by rehabilitation and retaining vegetated buffers).

The applicant also provided advice that as part of any future sand extraction licence, monitoring bores (subject to Department of Water approval, if required) will be placed on Lot 3 to monitor groundwater and ensure no impacts. However, as noted above the proposed clearing is not likely to impact on groundwater quality.

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

Methodology

References:
Northcote et al. (1960-68)

GIS Databases
-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 is at variance to this Principle

The application area is located approximately 240 metres north west of Buller Nature Reserve. Myalup State Forest is located approximately 8.8 kilometres west and Hamel State Forest is located approximately 7.3 kilometres east.

An ecological linkage, defined by the South West Regional Ecological Linkage (SWREL) Report (Molloy et al., 2009) is mapped approximately 200 metres west of the application area connecting it to Buller Nature Reserve, Myalup State Forest and Hamel State Forest.

The SWREL report (Molloy et al., 2009) defines an ecological linkage as "A series of (both contiguous and non-contiguous) patches of native vegetation which, by virtue of their proximity to each other, act as stepping stones of habitat which facilitate the maintenance of ecological processes and the movement of organisms within, and across, a landscape". As the application area is part of this ecological linkage it assists in the maintenance of the ecological process of conservation reserves within the local area. This value is heightened by the application area's high fauna habitat value that assists in the maintenance of these species within the connected reserves.

A phytophthora dieback occurrence assessment for Lot 3 reports that the study area has previously been used for sand mining, and no records or evidence of hygiene practices for this operation were identified during the assessment. This is supported by the presence of infested areas in the surrounding vegetation, where the evidence suggests that the pathogen has spread from the operational area into the vegetation (Glevan Consulting, 2015). The disturbance caused by the proposed clearing is likely to further spread dieback to Lot 3 and surrounding areas. Therefore, the proposed clearing has the potential to introduce/spread dieback into Buller Nature Reserve.

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

To counterbalance the significant residual impacts relating to biodiversity the applicant proposed an offset which consists of placing a conservation covenant over 39 hectares of native vegetation located to the west of the application area within Lot 3 Buller Road. The covenant area was proposed to be fenced and the applicant proposed to undertake weed management.

An assessment of the significant environmental impacts from clearing has determined that an offset is not appropriate to counterbalance the significant environmental impacts identified. In accordance the WA Environmental Offsets Policy, environmental offsets are used as a last resort after due consideration of avoidance and mitigation measures. Offsets will not be considered in the absence of these measures. Environmental offsets are also not appropriate for all projects and are not appropriate in all circumstances.

Methodology

References:
Glevan Consulting (2015)
Molloy et al. (2009)

GIS Databases
-Parks and Wildlife Land

(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 may be at variance to this Principle

Lot 3 Buller Road comprises various wetland areas including resource enhancement category, conservation category and multiple use wetlands. The wetland areas closest to the application area are:

- UFI 5004 multiple use sumpland (seasonally inundated basin) – 15 metres north
- UFI 4807 conservation category sumpland – 144 metres west
- UFI 4363 conservation category sumpland – 390 metres west

Surrounding these three wetlands is an area of sumpland (UFIs 4801 and 4646) that has been mapped but not evaluated into a management category (i.e. Not Assessed). Parks and Wildlife (2015c) has advised that it is not clear whether the wetland areas are part of one larger sumpland system or are discrete wetlands, however, the proximity of the wetland areas may indicate hydrological connectivity.

Multiple use wetland UFI 5004 is located approximately 15 metres north of the application area and the vegetation condition within the eastern section of the wetland has been described as very good to good (Keighery, 1994) (MBS Environmental, 2015). The vegetation condition of wetland UFI 5004 suggests that the wetland area may be commensurate with conservation category (Parks and Wildlife, 2015c).

The clearing of vegetation within Lot 3 may result in sedimentation and erosion processes affecting the adjacent wetlands and subsequently a modification to the water quality.

The sand excavation also has the potential to impact on wetland values through changes to local hydrology.

It is understood that sand excavation will not occur within two metres of groundwater, however the sand excavation will significantly alter the landform of Lot 3 and subsequently the local catchment flows will be modified (Parks and Wildlife, 2015c). In general, Parks and Wildlife supports the Environmental Protection Authority's (EPA) recommendation of a minimum 50 metre buffer from wetlands that are to be protected. The mitigation of hydrological impacts in this instance may require a larger wetland buffer, however no site specific pre or post development hydrological information has been provided to indicate the predicted level of change (Parks and Wildlife, 2015c).

It is acknowledged that the potential changes to local hydrology are linked to the end land use, however the proposed clearing may cause deterioration in the quality of surface water through sedimentation and erosion processes.

The applicant submitted the following additional advice in respect to this Principle:

- As part of any extractive industries licence appropriate management plans are/will be developed to manage groundwater impacts;
- No sand extraction will be conducted within two metres of the water table and therefore it is considered that groundwater will not be impacted; and
- As part of any future sand extraction licence, monitoring bores (subject to Department of Water approval, if required) will be placed on Lot 3 to monitor groundwater and ensure no impacts.

The applicant's advice in respect to groundwater is acknowledged. However surface water quality impacts were not addressed.

Therefore, the proposed clearing may be at variance to this clearing principle.

Methodology

References:
Keighery (1994)
Parks and Wildlife (2015c)

GIS Databases
-Hydrography, linear
- Geomorphic Wetlands (Mgt Categories), Swan Coastal Plain
-Groundwater Salinity

(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 chief soil in the application area is leached sands (Northcote et al. 1960-68). Given the sandy nature of the soils within the application area the proposed clearing is unlikely to cause, or exacerbate, the incidence or intensity of flooding.

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

Methodology

References:
Northcote et al. (1960-68)

GIS Databases
-Soils, statewide

Planning instrument, Native Title, Previous EPA decision or other matter.

Comments

<u>History</u>

In 1998, a 'Notice of Intent' (NOI) to clear was lodged with the Department of Agriculture, Western Australia, to progressively clear vegetation in 6x1 hectare blocks within Lot 3 Buller Road. The Inter Agency Working Group found issues with rare and priority flora, low representation of species in the area, and the need for rehabilitation and wetland buffers. The NOI was referred to the EPA for further assessment, after which the application was withdrawn.

In 2000, a NOI was lodged to clear 25 hectares within the same lot. The NOI was referred to the EPA, after which a site visit was conducted by EPA Service Unit to investigate the flora and fauna values of the proposed clearing area. The EPA subsequently found that the proposal did not meet its objectives for conservation of biodiversity and advised in correspondence dated 11 October 2001 that the level of assessment would likely to be set as 'Proposal Unlikely to be Environmentally Acceptable'.

The EPA then consulted with the proponent to discuss the development of an environmental management plan and a conservation covenant, and decided to allow an interim arrangement to clear 2.7 hectares of the original 25 hectare proposal.

In December 2002, the EPA informed the proponents that prior to consideration of future clearing proposals for an additional 3.2 hectares on the property, it would "need to be satisfied that some appropriate mechanism is in place to protect the areas of greatest conservation significance".

The EPA advised the proponents that they would either need to enter into a conservation covenant for the remainder of Lot 3 Buller Road, or transfer the ownership of the remainder Lot 3 Buller Road to the former Department of Conservation and Land Management (CALM), and also develop a rehabilitation and conservation plan for the entire property. The EPA also advised the proponent that future proposals would need to take into account the success of rehabilitation. A site inspection on 27 February 2006 could not identify areas that were being actively or effectively revegetated with regrowth being observed as limited to sparse *Acacia puchella*, *Kunzea glabrescens* and some sedge species.

On 26 July 2005, a clearing permit application (CPS 805/1) was submitted to the former Department of Environment (DoE) to clear 38.8 hectares. The assessment of this application noted that the area under application may contain habitat for fauna and rare flora, is a significant remnant in an area that has been extensively cleared and contains vegetation that is growing in association with a wetland.

CPS 805/1 was refused on 11 August 2006, advising that based on the EPA decision and advice, DoE therefore, could not approve any clearing application greater than 3.2 hectares of vegetation (identified by the EPA) unless the proposal is re-submitted to the EPA for assessment, as this would constitute a substantial change. It was considered that if the proponent was willing to reduce the area under application to 3.2 hectares, the proponents would either need to enter into a conservation covenant on the remainder Lot 3 Buller Road or transfer ownership of the remainder of Lot 3 Buller Road to CALM. This would then satisfy the previous requirements outlined by the EPA. In addition, an appropriately timed flora and fauna survey would be required to ensure that the proposal to clear 3.2 hectares would not impact on any rare flora or fauna.

In September 2006, the decision to refuse CPS 805/1 was appealed. On 30 March 2007, the Minister for the Environment; Climate Change dismissed the appeal.

In February 2007, it was noted that clearing was being undertaken on Lot 3. A site inspection was undertaken by the former DEC officers who were advised that the clearing was undertaken so that the existing pit could be rehabilitated in accordance with a Shire recommendation. An Environmental Field Notice was served. In September 2007, it was observed that approximately 1.6 hectares of vegetation had been cleared from the southern and western pit edges. A Vegetation Conservation Notice (VCN) (CPS 2124/1) was subsequently served on 27 September 2007 requiring that no further unlawful clearing takes place on Lot 3 Buller Road. A further site inspection in November 2007 confirmed that another small area of vegetation had been removed. A second VCN (CPS 2215/1) was given in September 2008 requiring the 1.6 hectares area to be revegetated. Since this VCN was given, revegetation activities have been unsuccessful in re-establishing native vegetation and further works were required. Direct seeding of 1.65 kilograms of seed was conducted in 2010 with limited success. The limited success was attributed to low rainfall and predation by kangaroos. Further revegetation works were conducted in 2013 which involved the planting of 500 seedlings. This attempt resulted in a 50 per cent survival rate.

In May 2016, DER revoked VCNs 2124 and 2215, noting that revegetation to date had not been successful and that the area was burnt in the January fires. A Delegated Officer of DER granted a clearing permit (CPS 6701/1) over an adjacent degraded 6.2 hectare area and it was determined that clearing this area may indirectly impact on any future revegetation efforts.

Other Relevant Matters

In January 2016, the application area was burnt during the Waroona fires. Vegetation communities have the ability to regenerate following natural disturbance events such as fire and with time the environmental values of the application area are likely to return.

This clearing permit application was initially for 33.84 hectares of native vegetation and contained areas in a degraded to completely degraded (Keighery, 1994) condition. In August 2015 the applicant removed the areas containing degraded to completely degraded (Keighery, 1994) condition (6.2 hectares of native vegetation within a 13.1 hectare footprint) from this application and applied for this area separately under clearing permit application CPS 6701/1. On 15 October 2015, clearing permit CPS 6701/1 was granted. Clearing permit application CPS 6620/1 was consequently amended to 20.8 hectares.

AMG (WA) Pty Ltd holds a ten year lease over a portion of Lot 3 Buller Road. The current lease expires on 31 April 2025 and has the possibility of extension for another ten years.

The area under application falls within the area subject to the Environmental Protection (Peel Inlet-Harvey Estuary) Policy 1992 (EPP). The purpose of this policy is to set out the environmental quality objectives for the Peel Inlet and Harvey River and outlines the means by which these objectives are to be achieved and maintained. The EPP environmental quality objectives relate to limiting the median load (mass) of total phosphorous flowing into the Estuary so that excessive growth of algae can be prevented (EPA, 2013).

Achievement and maintenance of the environmental quality objectives are primarily through the planning process. To this end, Statement of Planning Policy 2.1 (SPP 2.1) was gazetted in 2003. SPP 2.1 contains specific policy provisions that relate to different land uses, including a requirement that SPP 2.1 shall be implemented through the local planning schemes operating within the Peel-Harvey Coastal Plain Catchment (EPA, 2013).

On 31 July 2015, a direct interest letter was sent to the Peel Harvey Catchment Council (PHCC) as the proposed clearing falls within their area of interest. A response to the direct interest letter was received on 28 August 2015. The PHCC (2015) provided a comprehensive response outlining a number of environmental concerns with the proposed clearing and end land use, including;

- Lot 3 supports a significant area of native vegetation of high ecological value;
- The vegetation is likely to be part of the Southern River Complex, of which over 80 per cent has already been cleared;
- Any further extractive use of Lot 3 must be assessed with consideration to the long term protection of biodiversity and water quality in the Peel-Harvey Catchment and the Perth and Peel Regions;
- The loss of native vegetation and perennial vegetation cover in the coastal catchment of the Peel-Harvey Estuary is not acceptable, and previous WA Ministers of the Environment have enforced a moratorium on further clearing. Further loss of native vegetation (and sand) increases water runoff to local watercourses and the risk of increase sediment and nutrient movement to downstream ecosystems;
- The flora survey was not undertaken in accordance with EPA's Guidance Statement 51;
- Negative impacts on Matters of National Environmental Significance, specifically Carnaby's cockatoo and *Drakaea elastica*;
- This proposal needs to be considered in the full context of the current Strategic Assessment of the Perth and Peel Regions; and
- The site's vegetation is locally significant, forming an important part of local and regional ecological linkage. The contiguous vegetation in both private and public land is also identified as a significant regional patch for connectivity in the landscape under the Harvey River Restoration Taskforce Strategic Directions. Buller is one of the six top priority projects to emerge from community consultation and technical reviews which identified it as "a major ecological corridor linking the scarp to Buller Road Reserve and the lower Harvey River".

The concerns outlined above have been addressed within the assessment of the ten clearing principles or within the assessment of planning and other matters.

On 29 September 2015, the Shire of Waroona (2015) issued an extractive industry licence (EIL) to the owners of Lot 3. Condition 1 of the EIL states 'The Extractive Industry hereby approved shall operate in accordance with the approved Site Management Plan to the satisfaction of the Shire of Waroona'. The Site Management Plan identifies a 13.1 hectares extraction area which is consistent with the area granted under clearing permit CPS 6701/1. To date, the Shire of Waroona has not received an application for an EIL for the 20.8 hectares area currently under application.

DER has not received an application for a works approval for this project. Works approvals (WA) and licences granted under Part V, Division 3 of the EP Act regulate emissions and discharges that originate from the proposed activities that fall within the description of the relevant category in the EP Regulations. In the case of Category 12 (screening, washing, crushing, grinding or milling, sizing or separating of material extracted from the ground), the WA and licence can regulate noise, dust and potentially contaminated wastewater or stormwater that originate from any comminution or beneficiation activities that occur after material has been extracted from the ground but would not address impacts from the act of extracting the material or from transporting the material from site.

The draft Perth and Peel Green Growth Plan for 3.5 million (Green Growth Plan) has identified Lot 3 Buller Road as a site considered for retention in some form of formal conservation protection because:

- It is adjacent to Buller Nature Reserve;
- It is one of the very few large and intact areas of vegetation in the Peel;
- It is identified as a Peel regionally significant natural area;
- EPA biodiversity 1 (PRSNA) and 3 = poorly retained vegetation complex;
- It is likely to contain similar values to what is in Buller Nature Reserve, which are SCP21c(P3), *Caladenia huegelii*, several priority flora, brush wallaby, quenda etc.; and
- It contains feeding habitat for black cockatoos.

(Parks and Wildlife, 2015d)

The Green Growth Plan is a draft and therefore, has no statutory basis at this time and is therefore not a consideration in this application.

The application area is mapped within the Murray groundwater area which is an area proclaimed under the *Rights in Water and Irrigation Act 1914* (RIWI Act). Under the RIWI Act, if a bore is to be drilled and water taken for the purposes other than the exemption criteria, a licence application must be made to the Department of Water (DoW). The DoW has advised that its records indicate that there are no current groundwater licences or applications pending with relation to the Lot 3 Buller Road (DoW, 2015).

The application area is not within a priority resource location or a key extraction area within the Basic Raw Materials Statement of Planning Policy No. 2.4 (SPP2.4) (WAPC, 2000). State Planning Policy 2.4 identifies the location and extent of known basic raw material resources, protects priority resource locations, ensures that the use of development of land for the extraction of basic raw materials does not adversely affect the environment or amenity and provides a consistent planning approval process for extractive industry proposals.

Neither the Peel Regional Scheme nor the Greater Bunbury Regional Scheme Strategic Mineral and Basic Raw Material Policy maps the application area as a key resource area.

On 9 February 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 11 April 2016 proposing an offset which consists of placing a conservation covenant over 39 hectares of native vegetation located to the west of the application area within Lot 3 Buller Road. The covenant area was proposed to be fenced and the applicant proposed to undertake weed management. The offset was proposed to address issues relating to biodiversity, fauna, highly cleared landscape and conservation reserves.

The applicant's representative also provided advice stating that issues relating to land degradation, surface and groundwater quality will be managed through requirements of an extractive industry licence, wetland buffers and a monitoring bore (subject to DoW approval, if required).

An assessment of the significant environmental impacts from clearing has determined that an offset is not appropriate to counterbalance the significant environmental impacts identified. In accordance the WA Environmental Offsets Policy, environmental offsets are used as a last resort after due consideration of avoidance and mitigation measures. Offsets will not be considered in the absence of these measures. Environmental offsets are also not appropriate for all projects and are not appropriate in all circumstances.

Methodology

References:
DoW (2015)
EPA (2013)
Keighery (1994)
Parks and Wildlife (2015d)
Peel Harvey Catchment Council (2015)
Shire of Waroona (2015)
WAPC (2000)

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