



1. Application details

1.1. Permit application details

Permit application No.: 4931/1
Permit type: Area Permit

1.2. Proponent details

Proponent's name: KB Riley and Sons Pty Ltd ATF The Riley Family Trust

1.3. Property details

Property: LOT 34 ON PLAN 45371 (Lot No. 34 SAPPERS KARAKIN 6044)
Local Government Area: Shire of Gingin
Colloquial name: Lancelin Sands

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 October 2012

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
<p>Beard Vegetation Association: 949 - Low woodland; Banksia. (Shepherd et al., 2001)</p> <p>Hedde Vegetation Complex: Karrakatta Complex North - Predominantly low open forest and low woodland of Banksia species E- Eucalyptus tottiana (Pricklybark), less consistently open forest of Eucalyptus gomphocephala (Tuart) - Eucalyptus tottiana (Pricklybark) - Banksia species (Hedde et al, 1980).</p> <p>A flora and vegetation survey conducted in November 2009 described two vegetation units within the application area (Bennett Environmental Consulting Pty Ltd, 2010):</p> <p>- Open Low Woodland of Banksia attenuata, B. menziesii and Eucalyptus tottiana over Low Scrub B dominated by Acacia pulchella var. glaberrima, Calothamnus quadrifidus, B sessilis var. cygnorum, Jacksonia calvicola and Melaleuca systema over Low Heath of mixed taxa dominated by Hibbertia hypericoides over Low Open Sedges dominated by Mesomelaena pseudostygia;</p> <p>- Thicket of Heath of Xanthorrhoea preissii, Banksia sessilis ver. Cygnorum and Hakea trifurcata over Dense Low Heath dominated by Acacia pulchella var. pulchella, B leptophylla var. melletica, Conospermum canaliculatum</p>	<p>The application is to clear 20.8 hectares of native vegetation from Lot 34 on Deposited Plan 45371 (Sappers Road), Karakin for the purpose of sand extraction.</p> <p>The vegetation under application consists of Banksia woodlands (Banksia attenuata, Banksia menziesii, Banksia prionotes and Banksia sessilis) with scattered Eucalyptus tottiana (mallee form), Eucalyptus sp. and Nuytsia floribunda. The understorey to midstorey is very dense and highly diverse including Xanthorrhoea preissii, Jacksonia sp., Allocasuarina humilis, Melaleuca systema, Acacia pulchella, Banksia leptophylla var. melletica, Hakea sp., Hibbertia sp., Mesomelaena sp., Gompholobium tomentosum, Conospermum sp. Macrozamia riedlei, Calothamnus quadrifidus, Stirlingia latifolia, Conostylis sp., Alexgeorgea sp., Petrophile macrostachya, Petrophile linearis and Banksia dallanneyi (DEC, 2009; DEC, 2010; DEC, 2012).</p> <p>An access track and test pit site were recorded during site visits (DEC, 2010; DEC 2012). The edges of the track and test pit area are in good (Keighery, 1994) condition and the cleared areas associated with the track and pit are completely degraded (Keighery, 1994), as they are cleared (DEC, 2012).</p> <p>The rest of the vegetation within the application area is in excellent to very good (Keighery, 1994) condition (DEC, 2012).</p>	<p>Excellent: Vegetation structure intact; disturbance affecting individual species, weeds non-aggressive (Keighery, 1994)</p> <p>To</p> <p>Completely Degraded: No longer intact; completely/almost completely without native species (Keighery, 1994)</p>	<p>The vegetation description and condition was determined by Department of Environment and Conservation site inspections (DEC, 2009; DEC, 2010; DEC, 2012) and the flora and vegetation survey undertaken by Bennett Environmental Consulting Pty Ltd (2010).</p>

subsp. canaliculatum, Hemiandra glabra subsp. chimera, Hibbertia hypericoides, Jacksonia calcicola, Melaleuca ciliosa and M. Systena over Open Tall Sedges dominated by Mesomelaena pseudostygia. This vegetation type was recorded from the crest of the dunes. (Bennett Environmental Consulting Pty Ltd, 2010).

3. Assessment of application against clearing principles

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

Comments

Proposal is at variance to this Principle

The vegetation under application comprises 20.8 hectares of native vegetation, with the majority in excellent to very good (Keighery, 1994) condition (DEC, 2012). The vegetation has a dense understorey and a high diversity of plant species throughout the applied area (DEC, 2012).

A flora and vegetation survey of the property undertaken in November 2009 included the application area and recorded 153 taxa, including 18 weed species (Bennett Environmental Consulting Pty Ltd, 2010).

Carnaby's cockatoo (*Calyptorhynchus latirostris*) is listed as Rare or Likely to Become Extinct under the State Wildlife Conservation Act 1950 and Endangered under the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 and is known from the local area (10 kilometre radius) (DEC, 2007-). A significant portion of its diet is made up of "seeds of hakeas, banksias, grevilleas and eucalypts" (Burbidge, 2004). The vegetation under application is a Banksia and heath woodland and signs of Carnaby's cockatoo having foraged on cones of Banksia trees were recorded within the application area during a site visit by the Department of Environment and Conservation on 20 April 2012 (DEC, 2012).

The understorey vegetation is dense (DEC, 2009; DEC, 2012) and is likely to provide excellent habitat for ground-dwelling indigenous fauna including but not limited to black striped snake (*Neelaps calanotos*, Priority 3), quenda (*Isodon obesulus fusciventer*, Priority 5) and western brush wallaby (*Macropus irma*, Priority 4) which have been recorded within the local area. Given the dense understorey, the condition of the vegetation under application and that the vegetation is a component of a linkage of vegetation between conservation areas, the applied clearing area is considered to provide significant habitat for indigenous fauna.

There are records of eight priority flora species mapped within the local area. Of these, *Banksia dallanneyi* subsp. *pollostata* (Priority 3), *Leucopogon* sp. *Yanchep* (Priority 3) and *Grevillea thelemanniana* (Priority 4) have been recorded within similar vegetation types, soil types and/or topography as the application area. *Banksia dallanneyi* subsp. *pollostata* was recorded throughout the application area in a flora and vegetation survey undertaken in November 2009 (Bennett Environmental Consulting Pty Ltd, 2010), however the clearing as proposed is not likely to impact upon the conservation status of this species, or other priority flora that may occur onsite.

The vegetation under application is part of a corridor of remnant vegetation that links Nilgen Nature Reserve to South Mimegarra Nature Reserve and beyond to unallocated Crown land and the Moore River. This corridor includes vegetation within and adjacent to the Sappers Road reserve. A survey undertaken by Keighery, Keighery and Longman of the Sappers and Cowalla Road reserves, between the Nilgen Nature Reserve and the Moore River, concluded that the stretch of contiguous vegetation within the road reserve has "significant natural value" as it supports a range of plant communities, a subtle diversity of Banksia Woodlands, over 210 native plant species, contains a diverse series of habitats and forms a linkage between the conservation reserve and the river (Keighery, Keighery & Longman, 2003). The application area is approximately 130 metres south of the Sappers Road reserve and, apart from a firebreak around the perimeter of the property, the vegetation under application is continuous with the road reserve vegetation. Therefore it is likely to assist in maintaining the ecological processes associated with this linkage. The proposed clearing will reduce the width of the vegetated corridor on the south of Sappers Road in this location from 700 to 470 metres at the western end and from 550 to 240 metres at the eastern end of the application area.

The proposed clearing retains vegetated buffers of approximately 40 metres to cleared agricultural land south of the property and 130 metres to the vegetation within the Sappers Road reserve north of the property. The application area is in a relatively high (700 millimetre) rainfall area, where soil disturbance while undertaking clearing activities poses a high risk of introducing or spreading dieback and weeds to the surrounding environment, which may also impact the vegetation of the Sappers Road reserve corridor. It is noted that the clearing is proposed to be undertaken in 2 hectare stages and progressively rehabilitated and that weed control and eventually eradication, in particular for four high impact weed species identified by Bennett Environmental Consulting Pty Ltd (2010), will be a priority of a Vegetation Management Plan (Riley, 2012) that is intended to be developed for the property.

Given the above, the vegetation under application supports high biological diversity and the proposed clearing of 20.8 hectares is at variance to this principle.

The proponent has advised of their willingness to place the remaining 52 hectares of native vegetation on the

property under conservation covenant (Riley, 2012). While this would provide a degree of protection for local biodiversity values, it would not result in an overall benefit or offset for the loss of the vegetation under application.

Methodology

References:

- Bennett Environmental Consulting Pty Ltd (2010)
 - Burbidge (2004)
 - DEC (2007-)
 - DEC (2009)
 - DEC (2012)
 - EPA (2000)
 - Keighery (1994)
 - Keighery, Keighery & Longman (2003)
 - Riley (2012)
- ##### GIS Databases:
- Ledge Point 50cm Orthomosaic - Landgate 2008
 - Pre-European vegetation - DA 01/01
 - SAC Bio datasets - Accessed 03/12

(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

Proposal is at variance to this Principle

There are records of three fauna species of conservation significance within the local area (10 kilometre radius): Carnaby's cockatoo (*Calyptorhynchus latirostris*), western brush wallaby (*Macropus irma*) and hooded plover (*Charadrius rubricollis*) (DEC, 2007-).

A flora and vegetation survey undertaken in November 2009 (Bennett Environmental Consulting Pty Ltd, 2010) recorded two vegetation units across the property and within the application area:

- Open Low Woodland of *Banksia attenuata*, *Banksia menziesii* and *Eucalyptus todtiana* over Low Scrub dominated by *Acacia pulchella* var. *glaberrima*, *Calothamnus quadrifidus*, *Banksia sessilis* var. *cygnorum*, *Jacksonia calcicola* and *Melaleuca systema* over Low Heath of mixed taxa dominated by *Hibbertia hypericoides* over Open Low Sedges dominated by *Mesomelaena pseudostygia*.
- Thicket of Heath of *Xanthorrhoea preissii*, *Banksia sessilis* var. *cygnorum* and *Hakea trifurcata* over Dense Low Heath dominated by *Acacia pulchella* var. *pulchella*, *Banksia leptophylla* var. *melletica*, *Conospermum canaliculatum* subsp. *canaliculatum*, *Hemiandra glabra* subsp. *chimera*, *Hibbertia hypericoides*, *Jacksonia calcicola*, *Melaleuca ciliosa* and *Melaleuca systema* over Open Tall Sedges dominated by *Mesomelaena pseudostygia*.

The Carnaby's cockatoo population has declined by at least 50 per cent over the past 45 years (Cale, 2003). This species is listed as Rare or Likely to Become Extinct under the State Wildlife Conservation Act 1950 and Endangered under the Commonwealth Environment Protection and Biodiversity Conservation Act 1999. Carnaby's cockatoo nests in large hollows of eucalyptus trees and forages 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).

Carnaby's cockatoo has been reported foraging Canola (*Brassica rapa* subsp. *silvestris*), however, the impact of this on the crop is negligible (DSEWPAC, 2012). Jackson (2009) showed that an average 0.003 per cent of each farmer's crop was damaged and suggested that future damage is unlikely to be a significant problem for canola growers in the future. Galahs (*Eolophus roseicapillus*), Corellas (*Cacatua*) and Australian Ringnecks (*Barnardius zonarius*) were shown to cause a far greater level of damage to Canola (Jackson, 2009).

Surveys of Carnaby's cockatoo populations and their feeding and roosting habits showed that this species uses the entire landscape of the Swan Coastal Plain, with a significant preference for large tracts of native vegetation and pine plantations, and that the Northern Region (in which the application area occurs) appears to be an important area throughout the season (Shah, 2006). One of the major threats to Carnaby's cockatoo is the accumulative clearing of feeding habitat on the Swan Coastal Plain (Cale, 2003). Given this, all feeding habitat within the Swan Coastal Plain is considered significant. Any clearing of cockatoo feeding habitat on the Swan Coastal Plain habitat will contribute to the cumulative loss and fragmentation of habitat that is occurring on the Swan Coastal Plain and poses a significant threat to the long term survival of Carnaby's cockatoo. The vegetation under application includes preferred feeding habitat for Carnaby's cockatoo and signs of foraging on cones of *Banksia* trees was recorded within the application area during a site visit by the Department of Environment and Conservation (DEC) on 20 April 2012 (DEC, 2012).

While it is noted that the clearing is proposed to be undertaken in 2 hectare stages and progressively rehabilitated, considering the lag time associated with restoring environmental values and the risk of failure, this will not mitigate the significant impacts to Carnaby's cockatoo habitat.

The understorey vegetation is dense (DEC, 2009; DEC, 2012) and therefore is likely to provide excellent habitat for ground-dwelling indigenous fauna such as, but not limited to, the black-striped snake (*Neelaps calonotos*, Priority 3), western brush wallaby (*Macropus irma*, Priority 4) and quenda (*Isodon obesulus*

fusciventer, Priority 5). It was also noted by Keighery, Keighery & Longman 2003 that nine species of Banksia were found within the area along Sappers and Cowalla Road Reserves (five of which were confirmed on the property during the DEC site visit in 2009) all of which have different flowering times. The diversity of the Banksia species within the area would be important in that it provides an ongoing food source for nectar feeding birds and insects (Keighery, Keighery & Longman, 2003).

The site is also considered likely to support the specially protected carpet python (*Morelia spilota*).

Western grey kangaroos were observed within the applied clearing area during a site inspection (DEC, 2009).

The vegetation is a component of a corridor of high quality vegetation including Sappers Road reserve which links two conservation areas and existing unallocated Crown land leading to the Moore River. The removal of this vegetation will impact upon the corridor which is significant for indigenous fauna movement through the local area.

Given the above and the excellent to very good (Keighery, 1994) condition (DEC, 2012) of the vegetation across a large area (20.8 hectares), the vegetation under application is considered to be significant habitat for indigenous fauna and the proposed clearing is at variance to this principle.

The proponent has advised of willingness to place the remaining 52 hectares of native vegetation on the property under conservation covenant (Riley, 2012). While this would provide a degree of protection for local biodiversity values, it would not result in an overall benefit or offset for the loss of the vegetation under application.

Methodology

References:

- Cale (2003)
- DEC (2007-)
- DEC (2009)
- DEC (2012)
- DSEWPAC (2012)
- Jackson (2009)
- Keighery (1994)
- Keighery, Keighery & Longman (2003)
- Riley (2012)
- Shah (2006)
- Valentine and Stock (2008)

GIS Databases:

- DEC tenure
- Ledge Point 50cm Orthomosaic - Landgate 2008
- Pre-European vegetation - DA 01/01
- SAC Bio datasets - Accessed 03/12

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

Comments

Proposal is not likely to be at variance to this Principle

There are no records of rare flora in the local area (10 kilometre radius).

The closest rare flora record is *Eleocharis keigheryi*, approximately 15 kilometres north of the applied clearing area. *Eleocharis keigheryi* inhabits winter-wet claypans generally on the Swan Coastal Plain (Brown et al., 1998). This type of soil is not indicative of the soils noted within the applied clearing area (DEC, 2009; DEC, 2010).

A flora survey of Lot 34 Sappers Road, Karakin was undertaken in November 2009 and no rare flora species were identified during this survey (Bennett Environmental Consulting Pty Ltd, 2010).

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

Methodology

References:

- Bennett Environmental Consulting Pty Ltd (2010)
- Brown et al. (1998)
- DEC (2009)
- DEC (2010)

GIS Databases:

- SAC Bio datasets - Accessed 03/12
- Soils, Statewide - DA 11/99

(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 **Proposal is not likely to be at variance to this Principle**
 There are no occurrences of threatened ecological communities (TEC) mapped within the local area (10 kilometre radius). The closest is approximately 28 kilometres from the application area and has been identified as the floristic community type SCP07 - Herb rich saline shrublands in claypans.

Given the distance of the closest TEC to the applied clearing area and that this TEC is of a different floristic community and soil type to the applied clearing area (DEC, 2009; DEC, 2010), it is not likely that the proposed clearing area comprises the whole or a part of, or is necessary for the maintenance of a TEC.

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

Methodology **References:**
 - DEC (2009)
 - DEC (2010)
GIS Databases:
 - SAC Bio datasets - Accessed 03/12
 - Soils, Statewide - DA 11/99

(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 **Proposal is not likely to be at variance to this Principle**
 The local area (10 kilometre radius) is approximately 40 per cent vegetated, with the majority of this vegetation occurring to the west, along the coastline. The landscape to the north, south and east of the application area is predominantly cleared for agriculture.

The vegetation has been mapped as the Beard Vegetation Association 949 - Low woodland; Banksia, of which there is approximately 57 per cent of the pre-European extent remaining (Government of Western Australia, 2011). The area under application also comprises the Heddle Vegetation Complex - Karrakatta Complex North (DEC, 2009; Heddle et al., 1980). This vegetation complex has approximately 44 per cent of the pre-European extent remaining (Shepherd, 2007).

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 20.8 hectares of native vegetation in excellent to very good (Keighery, 1994) condition (DEC, 2012) that supports high biological diversity, priority flora and habitat for a range of indigenous fauna, including species of conservation significance. It is also a component of a large remnant of native vegetation and contributes to an ecological linkage between nearby conservation reserves.

The application area is within the agricultural area defined in the Environmental Protection Authority (EPA) Position Statement No. 2, where significant clearing of native vegetation has already occurred, leading to a reduction in biodiversity (EPA, 2000).

While the vegetation under application is a significant remnant, it is not within a highly cleared area. Therefore, the proposed clearing is not likely to be at variance to this principle.

	Pre-European (ha)	Current Extent (ha)	Remaining (%)	Extent in DEC Managed Lands (%)
IBRA Bioregion*				
Swan Coastal Plain	1,501,209	587,833	39	35
Shire*				
Shire of Gingin	319,671	177,340	55	43
Beard Vegetation Association in Bioregion* 949	209,983	121,248	57	52 (62,606ha)
Heddle Vegetation Complex **				
Karrakatta Complex -North	44,273	19,296	44	25 (11,179ha)

* Government of Western Australia, 2011
 ** Shepherd, 2007

Methodology **References:**
 - Commonwealth of Australia (2001)
 - DEC (2009)
 - DEC (2012)

- EPA (2000)
- Heddle et al (1980)
- Keighery (1994)
- Government of Western Australia (2011)
- Shepherd (2007)
- GIS Databases:
 - Heddle Vegetation Complexes
 - Interim Biogeographic Regionalisation of Australia - EA 10/00
 - NLWRA, Current Extent of Native Vegetation - 08/11
 - Pre-European Vegetation - DA 01/01
 - SAC Bio datasets - Accessed 03/12

(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 Proposal is not at variance to this Principle

The local area (10 kilometre radius) has a number of wetlands including Karakin Lakes (conservation category wetland) approximately 3.9 kilometres southeast, Ducater Swamp (resource enhancement wetland) approximately 8.7 kilometres northeast and Doopiter Swamp (conservation category wetland) approximately 9.0 kilometres east of the application area.

The closest watercourse to the proposed clearing area is Karakin Brook, a tributary of the Moore River approximately 7.3 kilometres southeast.

The vegetation under application is an upland vegetation community ranging in elevation from 115 - 140 metres AHD with no visible watercourses or wetlands on site (DEC, 2009; DEC, 2012).

Given the distance of the applied clearing area to the watercourses and wetlands in the local area, the clearing is not considered to be at variance to this principle as the vegetation is not growing in, or in association with, any watercourses or wetlands.

Methodology

References:

- DEC (2009)
- DEC (2012)

GIS Databases:

- Geomorphic wetlands (Mgmt Categories), Swan Coastal Plain - DEC
- Hydrography, linear - DoW 02/04
- Hydrography, Linear (Hierarchy) - DoW 06/06

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

Comments Proposal is at variance to this Principle

The vegetation under application occurs on the Spearwood Dunes. The soils are mapped as being associated with an undulating dune landscape overlying deep aeolianite with chief soils of brown and leached sands (Northcote et al., 1960-1968). They have also been described as yellowish brown sands and brown siliceous soils (CSLC, 2012).

The location of the proposed clearing area is high in the landscape, ranging in elevation from 115 - 140 metres AHD.

A site visit to the application area by the office of the Commissioner of Soil and Land Conservation (CSLC) was not conducted for the previous applications for a clearing permit on this property (CSLC, 2010).

The office of the CSLC conducted a site visit on 27 March 2012 and advised that, while these soils are suitable for agriculture and horticultural purposes, they are inherently highly prone to wind erosion due to their sandy nature (CSLC, 2012). This risk is exacerbated by the topography, as the proposed land clearing is located on a mid to upper slope, which increases exposure to winds from almost any direction (CSLC, 2012).

The CSLC advised the proposed clearing is at variance to this principle, for soil erosion following clearing, but also advised that the risk of soil erosion will be greatly minimised by staged mining and progressive rehabilitation by direct return of top soil (CSLC, 2012).

The proponent has advised that the significant winds are from the west during the 'sea breeze' experienced almost daily throughout summer, that the remaining bush will act as a wind protection and that the only neighbour exposed is to the south where the land is fully cleared and exposed to wind erosion far greater than that likely to be generated from the proposed sand pit (Riley, 2012).

The proponent has previously advised that measures will be implemented to reduce dust related impacts at the site and, should conditions increase that will further exacerbate dust off-site, further measures will be

implemented such as stabilising areas with hydromulch, other stabiliser or temporary landscape measure, erecting wind fences or ceasing work until dust stabilises or weather conditions become more appropriate (Riley, 2008).

The proponent has also committed to the following wind erosion management:

- Progressive vegetation clearing and rehabilitation so that the area that is exposed to wind erosion is limited to the active area only;
- Implementation of a best practice native vegetation restoration program;
- Height limitation of stockpiles to reduce exposure to wind;
- Use of polymer based crusting agents to prevent sand lift-off, if required; and
- The use of water for dust suppression

(Riley, 2012).

Given that a site visit by the office of the CSLC was not conducted for the previous clearing permit applications on this property and a current assessment by the CSLC following a recent site visit found the proposed clearing to be at variance to this principle (CSLC, 2012), the proposed clearing is now considered to be at variance to this principle. However it is considered that the land degradation impacts can be managed.

Methodology

References:

- CSLC (2010)
- CSLC (2012)
- Northcote et al. (1960 - 68)
- Riley (2008)
- Riley (2012)

GIS Databases:

- Soils, Statewide - DA 11/99
- Topographic Contours, Statewide - DOLA 09/02

(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

Proposal may be at variance to this Principle

Three areas reserved for conservation purposes are within the local area (10 kilometre radius). The closest conservation area to the applied clearing area is the Nilgen Nature Reserve, approximately 2.5 kilometres northwest.

The ability of a patch of remnant vegetation to persist as a functional ecological assemblage is largely influenced by its size, proximity to other patches and the quality of the linkage between them (Molloy et al., 2009).

Apart from a firebreak around the perimeter of the property, the vegetation under application is continuous with the Sappers Road reserve vegetation, which has been recognised as having significant natural value and is an ecological linkage from Nilgen Nature Reserve to South Mimetarra Nature Reserve (Keighery, Keighery & Longman, 2003). This same linkage also leads to unallocated Crown land and to the Moore River. The vegetation under application supports this linkage and is likely to assist in maintaining the ecological processes associated with this linkage. The proposed clearing will increase the edge effects on the vegetation adjacent to and within the Sappers Road reserve and may impact upon the ecological function of the linkage.

Considering the above, the proposed clearing may impact upon the environmental values of nearby conservation areas and adjacent vegetation in excellent (Keighery, 1994) condition and may be at variance to this principle.

It is noted that the clearing is proposed to be undertaken in 2 hectare stages and progressively rehabilitated and that weed control and eventually eradication, in particular for four high impact weed species identified by Bennett Environmental Consulting Pty Ltd (2010), will be a priority of a Vegetation Management Plan (Riley, 2012) that is intended to be developed for the property.

Methodology

References:

- Bennett Environmental Consulting Pty Ltd (2010)
- Keighery (1994)
- Keighery, Keighery & Longman (2003)
- Molloy et al. (2009)

GIS Databases:

- DEC Tenure - DEC 06/11

(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

Proposal is not likely to be at variance to this Principle

The application area is approximately 840 metres east-northeast of the Seaview Park Water Reserve (Priority 2) Public Drinking Water Source Area. Given that a large buffer of native vegetation (approximately 840

metres in width) will be retained between the application area and the Public Drinking Water Source Area, it is unlikely that the proposed clearing will impact upon this water source.

The mapped groundwater salinity for the area is between 500-1000 mg/L total dissolved solids and the salinity risk for this location is low. The application area is too small to be of significance in terms of additional recharge for any salinity issues (CSLC, 2010).

It is therefore concluded that the clearing of native vegetation from this site is not likely to cause deterioration in the quality of surface or underground water.

- Methodology** References:
- CSLC (2010)
- GIS Databases:
- Groundwater Salinity, Statewide - DoW 02/00
 - Public Drinking Water Source Areas - DoW 02/06
 - Salinity Risk LM 25m - DOLA 00

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

Comments Proposal is not likely to be at variance to this Principle

The application area is in an area with an evaporation rate of approximately 2000 millimetres and a mean annual rainfall of 700 millimetres.

The closest wetland to the applied clearing area is a conservation category wetland, Karakin Lakes, approximately 3.9 kilometres southeast. The closest watercourse to the applied clearing area is Karakin Brook, a tributary of the Moore River, approximately 7.3 kilometres southeast.

The siliceous sands within the applied clearing area are highly permeable and therefore it is highly unlikely that there will be any waterlogging or subsequent flooding associated with the clearing of the native vegetation within the immediate area.

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

- Methodology** GIS Databases:
- Evaporation Isoleths - WRC
 - Geomorphic Wetlands (Mgmt Categories), Swan Coastal Plain - DEC
 - Hydrography, linear - DoW 02/04
 - Rainfall, Mean Annual - BOM
 - Soils, Statewide - DA 11/99
 - Topographic Contours, Statewide - DOLA 12/09/02

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

Comments

A Notice of Intent to Clear was submitted to the Department of Agriculture (Soil and Land Conservation) in May 1998 for 900 hectares for Swan Location 7807 (which includes the current application area). This was referred to the Environmental Protection Authority (EPA) for a Section 38 assessment (Soil and Land Conservation, 2009). In February 1998 an application for a Town Planning Scheme amendment from Rural to Horticulture was submitted by the Shire for 2000 hectares of this region. It was decided by the EPA to formally assess both these applications under Section 48A and deemed an Environmental Review was required. The EPA decided to formally assess as the Environmental Significance was deemed to be high, based on the following environmental factors:

- vegetation / plant communities
- potential declared rare flora; loss of biodiversity
- high potential for threatened fauna; loss of threatened species
- nutrients - nutrient contamination / lowering of watertable
- wetlands and Lake Karakin (EPASU, 2009).

Subsequently, the review did not take place as the Shire decided to discontinue the amendment to the scheme and the landowner advised of their wish to amend the rezoning of the proposal area which would require a new amendment application (Shire of Gingin, 2001).

The proponent is the current owner of the property at Lot 34 Sappers Road, and has made two previous applications to clear native vegetation from the property for the purpose of sand extraction.

- In February 2009, 20.3 hectares on the eastern side of the property was applied for (CPS 2982/1). The proponent withdrew this application 4 June 2009, pending professional advice after the Department of Environment and Conservation's (DEC) preliminary assessment identified the following issues:
 - The native vegetation is considered to be a component of a significant local ecological linkage for fauna movement and may provide significant fauna habitat for several fauna species of state and commonwealth conservation significance including the Carnaby's cockatoo (Endangered), the black-striped snake, the western brush wallaby, the quenda, the carpet

- python and peregrine falcon.
- The vegetation proposed to be cleared is part of a larger remnant that is in excellent condition and represents an area of high biological diversity. The area is may contain flora of conservation significance including a number of priority flora species Banksia dallanneyi subsp. pollostata (P3), Leucopogon sp Yanchep (P3) and Grevillea thelemanniana (P4).
- The proposal to clear 20.3 hectares of vegetation may lead to appreciable land degradation in the form of wind erosion.
- In May 2010 an application to clear 20.8 hectares was made (CPS 3765/1). The applicant relocated the area proposed to be cleared into the centre of the property, in order to reduce edge effect impacts to the Sappers Road reserve by moving the clearing further away and to mitigate wind erosion impacts by not occupying the high ground associated with the hill in the western portion of the property (Riley, 2010). Supporting documentation also provided a flora and vegetation survey (Bennett Environmental Consulting Pty Ltd, 2010) addressing the conservation significance and presence of priority flora species. The applicant provided a proposal to place under conservation covenant the remaining 52 hectares on the property as an offset, in recognition of the comments made by DEC regarding the quality of vegetation and its role as habitat for several native species including Carnaby's cockatoo. DEC considered that the conservation of 52 hectares, while providing a degree of protection for local biodiversity values, would not result in an overall benefit or offset for the loss of the vegetation under application. The applicant withdrew the application 16 September 2010.

The current application seeks a permit with a duration of 10 years. The applicant advised that the current application has been made given the increased demand for sand that meets building industry specifications and the on-going development of the business (Riley, 2012). The current application (Riley, 2012) also included comment in relation to DEC's previous assessment of CPS 3765/1, advising that:

- Clearing will be done in ten 2 hectare stages to reduce the area exposed to the strong westerly breeze that is a significant environmental feature of the area;
- The excavation areas will be progressively rehabilitated, with the time interval between clearing and rehabilitation expected to be a minimum of 2 years, but more likely to be 5 years;
- After the proposed clearing, the remnant bush on the property will remain several hundred metres wide;
- Weed control and eventually eradication, in particular for four high impact weed species identified by Bennett Environmental Consulting (2010), will be a priority of a Vegetation Management Plan that is intended to be developed for the property;
- Carnaby's cockatoos have adapted to new food sources from horticulture and general broad acre farming to the point that they have arguably replaced the food previously sourced from the native remnant bush. The other threat to the Carnaby's cockatoo appears to be competition for nesting sites with the native White Corellas who have invaded the natural ranges of the Carnaby's cockatoo and pose the most significant threat to the species, yet the government does little to combat this serious threat. Placing the responsibility solely on the landowner with remnant bush seems inconsistent;
- The demand for building grade sand for industry is increasing and is expected to continue to increase locally and north of Perth and there are several existing areas of activity in the district and one major subdivision under construction. The sand within the application area has been tested and meets the technical quality required for construction building sand;
- The limited clearing does not impact significantly on the conservation values in the area especially given the Sappers Road corridor and the two reserves east and west of the property;
- The nature reserves west and east of the sand pit site are self sustaining remnants;
- The clearing will not impact on the effective width of the road reserve bush corridor and therefore will have no impact at all;
- The proponent plans to work with DEC to minimise the impacts of the clearing and commit to the highest standard of rehabilitation works to restore the vegetation and habitat;
- The remaining bush will act as wind protection and the only neighbour exposed is to the south, on fully cleared that is exposed to wind erosion far greater than that likely to be generated from the sand pit.

The proponent (Riley, 2012) has also committed to the following wind erosion management:

- Progressive vegetation clearing and rehabilitation so that the area that is exposed to wind erosion is limited to the active area only;
- Implementation of a best practice native vegetation restoration program;
- Height limitation of stockpiles to reduce exposure to wind;
- Use of polymer based crusting agents to prevent sand lift-off, if required; and
- The use of water for dust suppression

While it is noted that the clearing is proposed to be undertaken in 2 hectare stages and progressively rehabilitated, considering the lag time associated with restoring environmental values and the risk of failure, this will not mitigate the significant impacts to Carnaby's cockatoo habitat.

DEC wrote to the proponent on 23 May 2012, providing the opportunity to respond to the impacts identified in the preliminary assessment report. The proponent responded in a letter dated 20 August 2012. Where appropriate, the assessment against the clearing principles has been updated to address the items raised in the proponent's response.

The proponent (Riley, 2012) has advised that clearing will also be required for a residential dwelling on the property and truck access to the sand pit area. While the supporting information in the application states that "access to the pit will be from Sappers Road for both entry and egress" (Riley, 2012), the proponent's consultant verbally advised that access is planned to be via Sappers Road in the north for entry only and exit will be south

to the cleared firebreak on the southern boundary of the property which exits onto KW Road, so as to avoid the need for a turning area and reducing disturbance (DEC, 2012). The application does not include clearing for these purposes.

The area under application is within the policy area of the State Planning Policy 2.4 Basic Raw Materials (SPP). One of the objectives of the SPP is to ensure that the use and development of land for the extraction of basic raw materials does not adversely affect the environment or amenity in the locality of the operation during or after extraction (WAPC, 2000). The SPP directs that the commission and/or local government should consider as appropriate the effect of the proposed extractive industry on any native flora and fauna, the natural landscape, groundwater quality, quantity and use, surface drainage and surface water quality, and sites of cultural and historic significance on and near the land (WAPC, 2000). The SPP has not identified the application area as an Extraction Area, Priority Resource Location or Key Extraction Area (WAPC, 2000).

The Shire of Gingin advised, in relation to the previous application CPS 2982/1, that the application for Planning Consent for an Extractive Industry (Sand) and an Extractive Industry Licence on this property was considered by Council at its Meeting on the 20 January 2009 (Shire of Gingin, 2009). As a consequence of Council's deliberations at this Meeting, Resolution 09.0017 materialised. The resolution included that the area be limited to Stage One including a 40 metre vegetation buffer along the Sappers Road reserve and, provided the proponent amend the area required to be cleared to approximately 21 hectares as per an attached plan (eastern portion of the property) and obtain in-principle support from the Department of Environment and Conservation, the Shire raised no objections to the resolution (Shire of Gingin, 2009).

The application area has since been moved from what was delineated as Stage One as per Condition (ii) of the Resolution 09.0017. In a letter dated 16 June 2010, the Shire of Gingin referred to the resolution and stated that Planning Consent was not issued, pending a decision from DEC regarding the application to clear native vegetation (Shire of Gingin, 2010). The Shire of Gingin has advised that Resolution 09.0017 still stands and there are no changes to the status of the application for planning consent, it is still pending (Shire of Gingin, 2012).

The area under application is within the agricultural area defined in the EPA's Position Statement No. 2 (EPA, 2000). EPA Position Statement No. 2 (EPA, 2000) states that significant clearing of native vegetation has already occurred on agricultural land, leading to a reduction in biodiversity and increase in land salinisation, and therefore any further reduction in native vegetation through clearing for agriculture cannot be supported. While the proposed clearing is not for agricultural purposes, the EPA (2000) recommends that all existing native vegetation be protected from passive clearing through, for example, grazing by stock or clearing by other means.

The application area lies within the Gingin Groundwater Area proclaimed under the Rights in Water and Irrigation Act 1914. The Department of Water (DoW) previously advised that, in this area, any extraction of groundwater will require a licence from DoW, and that the allocation in this area has reached its sustainable limit, there being no guarantee that any request for additional allocation will be approved, if it is required (DoW, 2010). The proponent has advised that water will be used for dust suppression (Riley, 2012), however a water licence has not been obtained. The DoW advised it has no comment to make in relation to the current application (DoW, 2012).

The Seaview Park Water Reserve, which is managed for Priority 2 source protection to ensure that there is no increase in risk of pollution to the water source, is located 520 metres southwest of the application area (DoW, 2010). Given the buffer of native vegetation between the application area and the Seaview Park Water Reserve, it is not likely that the proposal will impact on the water reserve.

Two public submissions were received in relation to the application, opposing the proposed clearing. The issues raised in these submissions have been considered and addressed where appropriate within the relevant clearing principles in this report. The submissions raised the following concerns:

- The Shire of Gingin and DEC previously indicated that this property would not be cleared and the submitter is concerned that the proponent was able to purchase the property for a very low price as other prospective buyers were informed that the property could not be cleared (Submission, 2012a). If the permit and extraction licence were to go ahead one rate payer would profit from the very inconsistent rulings and misinformation of the local shire (Submission, 2012a).
- This is one of the small areas of natural vegetation left amongst farmland, it is teeming with wildlife and an environmental report found the property to be a nesting place for black cockatoo (Submission, 2012a). Impacts to biodiversity, fauna and remnant vegetation are considered addressed in Principles (a), (b) and (e).
- The guidelines to protect native flora and fauna are being pushed aside for commercial enterprise and the need to make a profit (Submission, 2012a).
- There is no need for a further extraction site in the area and there are thousands of cleared acres suitable for this purpose (Submission, 2012a). The proponent could have purchased the cleared property across the road on the same day as he purchased Lot 34 (Submission, 2012a).
- If wetting down is required, has a water licence been approved? (Submission, 2012b). Water licence requirements have been considered above.
- This property is the highest point in this area and the prevailing winds would cause a lot of sand erosion (Submission, 2012b). Land degradation impacts are addressed in Principle (g).

An Aboriginal Site of Significance is mapped over the western portion of the applied clearing area. The proponent is advised to contact the Department of Indigenous Affairs to seek advice on responsibilities under

the Aboriginal Heritage Act 1972.

Methodology

References:

- Bennett Environmental Consulting Pty Ltd (2010)
 - DEC (2010)
 - DEC (2012)
 - DoW (2010)
 - DoW (2012)
 - EPASU (2009)
 - Riley (2010)
 - Riley (2012)
 - Shire of Gingin (2001)
 - Shire of Gingin (2009)
 - Shire of Gingin (2010)
 - Shire of Gingin (2012)
 - Soil and Land Conservation (2009)
 - Submission (2012a)
 - Submission (2012b)
 - WAPC (2000)
- GIS Databases:
- Aboriginal Sites of Significance - DIA 02/12
 - EPA Position Statement No. 2 Agricultural Region - DEP 08/00
 - RIWI Act, Groundwater areas - DoW 04/02
 - RIWI Act, Surface water areas - DoW 04/02
 - Town Planning Scheme Zones - MFP 08/98

4. References

- Bennett Environmental Consulting Pty Ltd (2010) Flora and Vegetation Lot 34 Karakin Lancelin. Prepared for K.B. Riley Lancelin Sands. January 2010. Bennett Environmental Consulting Pty Ltd, Kalamunda, Western Australia. DEC Ref: A305605
- Brown A., Thomson-Dans C. and Marchant N.(1998). Western Australia's Threatened Flora, Department of Conservation and Land Management, Western Australia.
- Burbidge, A. (2004) Threatened Animals of Western Australia, Department of Conservation and Land Management, Perth, Western Australia.
- Cale, B. (2003) Carnaby's Black Cockatoo (*Calyptorhynchus latirostris*) Recovery Plan 2002- 2012. Department of Environment and Conservation. Wanneroo WA.
- CSLC (2010) Land Degradation Advice for Application for Clearing Permit CPS 3765/1. Received 13/07/2010. Commissioner of Soil and Land Conservation, Western Australia. DEC Ref: A317376
- CSLC (2012) Land Degradation Advice for Application for Clearing Permit CPS 4931/1. Received 11/04/2012. Commissioner of Soil and Land Conservation, Western Australia. DEC Ref: A492077
- Commonwealth of Australia (2001) National Objectives and Targets for Biodiversity Conservation 2001-2005, Canberra.
- DEC (2007-) NatureMap: Mapping Western Australia's Biodiversity. Department of Environment and Conservation. URL: <http://naturemap.dec.wa.gov.au/>. Accessed 20/03/2012
- DEC (2009) Site Inspection Report for Clearing Permit Application CPS2982/1, Lot 34 Sappers Road, Karakin. Site inspection undertaken 5/03/2009. Department of Environment and Conservation, Western Australia (TRIM ref DOC79361).
- DEC (2010) Site Inspection Report for Clearing Permit Application CPS3765/1, Lot 34 Sappers Road, Karakin. Site inspection undertaken 01/07/2010. Department of Environment and Conservation, Western Australia. DEC Ref: A494602
- DEC (2012) Site Inspection Report for Clearing Permit Application CPS 4931/1, Lot 34 Sappers Road, Karakin. Site inspection undertaken 20/04/2012. Department of Environment and Conservation, Western Australia. DEC Ref: A501081
- DoW (2010) Direct Interest Submission for Clearing Permit Application CPS 3765/1, Lot 34 Sappers Road, Karakin. Dated 12 July 2010. Department of Water, Western Australia. DEC Ref: A317721
- DoW (2012) Direct Interest Submission for Clearing Permit Application CPS 4931/1, Lot 34 Sappers Road, Karakin. Received 30/03/2012. Department of Water, Western Australia (DEC Ref: A488912)
- DSEWPAC (2012) *Calyptorhynchus latirostris* in Species Profile and Threats Database. Department of Sustainability, Environment, Water, Population and Communities, Canberra. Available from: <http://www.environment.gov.au/sprat>. Accessed 28/09/2012.
- EPA (2000) Environmental protection of native vegetation in Western Australia. Clearing of native vegetation, with particular reference to the agricultural area. Position Statement No. 2. December 2000. Environmental Protection Authority, Western Australia.
- EPA (2006) Guidance for the Assessment of Environmental Factors - Level of Assessment for Proposals Affecting Natural Areas Within the System 6 Region and Swan Coastal Plain Portion of the System 1 Region. Guidance Statement No 10. Environmental Protection Authority, Western Australia.
- EPASU (2009) Email advice of EPA assessments for clearing and rezoning - Swan Location 7807, Shire of Gingin. Department of Environment and Conservation, Perth (TRIM ref DOC80533).
- Government of Western Australia. (2011). 2011 Statewide Vegetation Statistics incorporating the CAR Reserve Analysis (Full Report). WA Department of Environment and Conservation, Perth.
- Hedde, E. M., Loneragan, O. W., and Havel, J. J. (1980) Vegetation Complexes of the Darling System, Western Australia. In Department of Conservation and Environment, Atlas of Natural Resources, Darling System, Western Australia.
- Jackson, C. (2009) Assessing and Quantifying Canola Crop Damage by Carnaby's Black-Cockatoo *Calyptorhynchus latirostris*

in the south-west of Western Australia. Unpublished Thesis. The University of Sydney, NSW. Available from: <http://www.birdsaustralia.com.au/images/stories/current-projects/cbc/CJ-Canola-Masters-Thesis-sm.pdf>. Accessed 28/09/2012

- Keighery, B.J. (1994) Bushland Plant Survey: A Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc). Nedlands, Western Australia.
- Keighery, B.J., Keighery G.J. and Longman V.M. (2003) Vegetation and Flora of Sappers and Cowalla Road between Nilgen Nature Reserve and the Moore River, A Report for the Wildflower Society of Western Australia (Inc) and WA Landskills Inc. Wildflower Society of Western Australia (Inc.), Nedlands.
- Molloy, S., Wood, J., Hall, S., Wallrodt, S. and Whisson, G. (2009) South West Regional Ecological Linkages Technical Report, Western Australian Local Government Association and Department of Environment and Conservation, Perth.
- Northcote, K. H. with Beckmann G G, Bettenay E., Churchward H. M., van Dijk D. C., Dimmock G. M., Hubble G. D., Isbell R. F., McArthur W. M., Murtha G. G., Nicolls K. D., Paton T. R., Thompson C. H., Webb A. A. and Wright M. J. (1960-68): 'Atlas of Australian Soils, Sheets 1 to 10, with explanatory data'. CSIRO and Melbourne University Press: Melbourne.
- Riley (2008) Lancelin Sands Project Management Plan: Appendix 7 of Extractive Industry Licence Application - Lot 34 KW Road, Lancelin. Lancelin Sands, Lancelin (TRIM ref DOC 75966).
- Riley (2010) Clearing Permit Application CPS 3765/1 and Supporting Documentation. Received 21/05/2010. DEC Ref: A305605
- Riley (2012) Clearing Permit Application CPS 4931/1 and Supporting Documentation. Received 08/03/2012. DEC Ref: A481521
- Shah, B. (2006) Conservation of Carnaby's Black-Cockatoo on the Swan Coastal Plain, Western Australia. December 2006. Carnaby's Black-Cockatoo Recovery Project. Birds Australia, Western Australia.
- Shepherd, D.P. (2007) Adapted from: Shepherd, D.P., Beeston, G.R., and Hopkins, A.J.M. (2001), Native Vegetation in Western Australia. Technical Report 249. Department of Agriculture Western Australia, South Perth.
- Shire of Gingin (2001) Ordinary Meeting Minutes of the Gingin Shire Council, Tuesday 15 May 2001. Resolution 01.0094 - Town Planning Scheme No.8 - Amendment 60 Rezoning from Rural to Horticulture Swan Location 7807 Sappers Road, Nilgen (TRIM ref DOC81044).
- Shire of Gingin (2009) Direct Interest Submission for CPS 2892/1 and Council Resolution 09.0017. Dated 23/02/2009. DEC Ref: A502869
- Shire of Gingin (2010) Direct Interest Submission for CPS 3765/1. Received 21/06/2010. DEC Ref: A311696
- Shire of Gingin (2012) Direct Interest Submission for CPS 4931/1. Received 10/05/2012. DEC Ref: A502785
- Soil and Land Conservation (2009) Email advice: Submission of Notice of Intent to Clear Application, Swan Location 7807. Department of Agriculture, Bentley (TRIM ref DOC78569).
- Submission (2012a) Public Submission for Clearing Permit Application CPS 4931/1. Dated 19/04/2012. DEC Ref: A495317
- Submission (2012b) Public Submission for Clearing Permit Application CPS 4931/1. Dated 20/04/2012. DEC Ref: A495659
- Valentine, L.E. and Stock, W. (2008) Food Resources of Carnaby's Black Cockatoo (*Calyptorhynchus latirostris*) in the Ngarara Sustainability Strategy Study Area. Edith Cowan University and Department of Environment and Conservation. December 2008.
- WAPC (2000) Statement of Planning Policy No. 2.4 - Basic Raw Materials. Western Australian Planning Commission. Available from www.planning.wa.gov.au/ Accessed 08/05/2012

5. Glossary

Term	Meaning
BCS	Biodiversity Coordination Section of DEC
CALM	Department of Conservation and Land Management (now BCS)
DAFWA	Department of Agriculture and Food
DEC	Department of Environment and Conservation
DEP	Department of Environmental Protection (now DEC)
DoE	Department of Environment
DoIR	Department of Industry and Resources
DRF	Declared Rare Flora
EPP	Environmental Protection Policy
GIS	Geographical Information System
ha	Hectare (10,000 square metres)
TEC	Threatened Ecological Community
WRC	Water and Rivers Commission (now DEC)