



1. Application details

1.1. Permit application details

Permit application No.: 1959/2
 Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: CEMEX Australia Pty Ltd

1.3. Property details

Property: LOT 806 ON PLAN 38251 (KARNUP 6176)
 Local Government Area: City Of Rockingham
 Colloquial name:

1.4. Application

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

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
Hedde Vegetation Complex: Cottesloe Complex - Central and South - Mosaic of woodland of E. gomphocephala and open forest of E. gomphocephala - E. marginata - E. calophylla; closed heath on the Limestone outcrops.	The proposal is to clear 20.75 hectares of native vegetation for the purpose of expanding the existing limestone quarry. Mattiske Consulting (2007) identified 9 plant communities within the area under application and described them as heath, thicket, scrub, rehabilitated and disturbed communities.	Excellent: Vegetation structure intact; disturbance affecting individual species, weeds non-aggressive (Keighery 1994)	Vegetation clearing description based on a site visit by DEC officers on 9 August 2007 and vegetation surveys conducted by Mattiske Consulting in January and September/October 2007. A Black-cockatoo and Quenda fauna assessment was also conducted by Bamford Consulting Ecologists (2007) within the area under application.
Karrakatta Complex - Central and South - Predominantly open forest of E. gomphocephala - E. marginata - E. calophylla and woodland of E. marginata - Banksia species.	The heath communities make up a mosaic across the applied area, sharing numerous species including Hakea trifurcata, Melaleuca systema, Olearia axillaris and Hibbertia hypericoides, but differing in their dominants (Mattiske Consulting 2007).		
Quindalup Complex - Coastal dune complex consisting mainly of two alliances - the strand and the fore-dune alliance and the mobile and stable dune alliance. Local variations include the low closed forest of M. lanceolata - Callitris preissii and the closed scrub of Acacia rostellifera.	The thicket communities are found in the western and northern sections of the applied area and comprise Acacia rostellifera shrublands and Melaleuca huegelii shrublands.		
Beard Vegetation Associations: 1001 - Medium very sparse woodland; jarrah, with low woodland; banksia and casuarina. 998 - Medium woodland; tuart.	The scrub community was restricted to the eastern side of the applied area and includes Eucalyptus gomphocephala - Agonis flexuosa woodlands. The rehabilitated community is located in the		

(Shepherd 2006) north-eastern section of the applied area and comprises planted *E. gomphocephala*, *Acacia cyclops* and introduced species such as *Melaleuca nesophila*.

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 is considered to be in very good to excellent condition, and 150 (43 non-native) taxa were identified during the flora survey, which included the area under application (Mattiske Consulting 2008).

Mattiske Consulting (2008) identified the heath and shrub communities on site to best represent variations of Floristic Community Type (FCT) 24 - Northern Spearwood scrublands and woodlands, with influences of FCT 29a - Coastal shrublands on shallow sands. Some areas were also similar to the FCT 25 - *Eucalyptus gomphocephala* - *Agonis flexuosa* woodlands. The thickets located in swales within the area under application were identified to be most representative of FCT 29b - *Acacia* shrublands on taller dunes. FCTs 24, 25, 29a and 29b have been identified as Priority 3 Ecological Communities.

In addition a portion of the vegetation under application has been identified as potentially comprising the FCT 26a, which is a Threatened Ecological Community.

No Declared Rare Flora species were observed during the flora surveys; however two Priority listed flora species, *Conostylis pauciflora* subsp. *pauciflora* (Priority 4) and *Jacksonia sericea* (Priority 4) were identified within Lot 806. *C. pauciflora* subsp. *pauciflora* has previously only been recorded south of Dawesville, approximately 30km to the south-west of the applied area, and north-east of Yanchep (Mattiske Consulting 2008).

The Priority species on Lot 806 were opportunistically surveyed within plots placed by Mattiske Consulting (2008), however the extent of the populations within the area under application and the wider survey area have not been identified through a targeted search. During a site inspection DEC Species and Communities Branch (2008) identified *J. sericea* within the area under application and it is considered that *C. pauciflora* subsp. *pauciflora* may also be present within the area under application.

Species listed as Priority 4 under the Wildlife Conservation Act 1950 are 'adequately survey and, whilst being rare, are not currently threatened by any identifiable factors' (Department of Environment and Conservation 2008).

Given that the vegetation under application comprises FCTs that are listed as either a Threatened Ecological Community or a Priority Ecological Community; and includes Priority listed flora species, it is considered that the vegetation under application comprises a high level of biodiversity.

Methodology DEC site visit 9/8/07
Department of Environment and Conservation (2008)
Mattiske Consulting (2008)

(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 may be at variance to this Principle**

During the fauna survey of the area under application Bamford Consulting Ecologists (2007) recorded 14 indigenous fauna species including 12 bird species and two mammal species.

Recent Quenda diggings were observed within the area under application, however Bamford (2007) advised that the outcropping limestone on site is poorly suited to Quenda foraging, and the open, scrubby nature of the vegetation offers limited cover and protection. Bamford (2007) concluded that in general the area under application is poorly suited to Quenda and the adjacent Paganoni Swamp Reserve is likely to provide more suitable habitat.

Habitat within the area under application was assessed by Bamford (2007) to be moderately to poorly suited to Black Cockatoos such as Carnaby's Black Cockatoo due to the lack of *Eucalyptus* spp. and trees hollows. Some *Eucalyptus gomphocephala* are present within the area under application however no hollows were observed and the trees were not considered to be of hollow-bearing age (Bamford 2007). The vegetation under application also includes some proteaceous shrubs that may provide some feeding habitat for Black Cockatoos, however this is not considered likely to be significant feeding habitat for these species.

The vegetation under application is part of a large vegetated remnant that includes Bush Forever site 395 and the Rockingham Lakes Regional Park, and forms part of an ecological link for the north-south movement of fauna on the west side of the rail reserve. The removal of the vegetation under application, especially from the northern section of the site will reduce the width and effectiveness of this corridor.

Given that the vegetation under application comprises a low, open shrubland it is not considered likely to comprise significant habitat for ground-dwelling species such as Quenda, or species that utilise tree hollows such as Black Cockatoos. The area under application is however located adjacent to the Regional Park and Bush Forever site that is likely to be considered significant fauna habitat in the local area. Notwithstanding this, the vegetation under application forms part of an ecological link providing for movement of fauna to the west of the railway, and it is therefore considered that the proposed clearing may be at variance to this Principle.

Methodology Bamford Consulting Ecologists (2007)
DEC site visit 9/8/07

(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

Within the local area (5km radius) there are 2 known populations of the Declared Rare Flora (DRF) *Drakaea elastica*, the closest of which is located approximately 1.5km to the southeast of the area under application.

There are also 13 known populations of Priority listed flora within the local area, with the closest being *Lasiopetalum membranaceum* (P3) located 130m to the east of the applied area.

During the spring flora surveys conducted by Matiske Consulting (2008) no DRF species were observed within the area under application. It is therefore not considered likely that the vegetation under application comprises, or is necessary for the continued existence of, rare flora.

Methodology Matiske Consulting (2008)
Western Australian Herbarium (1998-)
GIS Databases:
SAC Bio datasets accessed 29/08/07

(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 may be at variance to this Principle

Within the local area (5km radius) there are 13 known occurrences of Threatened Ecological Communities (TEC), with the closest being located approximately 1.8km to the north of the area under application. These TEC have been identified as SCP 19a (Sedgeland in Holocene dune swales of the southern Swan Coastal Plain) and SCP 19b (Woodlands over sedgeland in Holocene dune swales of the southern Swan Coastal Plain).

The Bush Forever study identified the TEC associated with the Spearwood Dune System to be 26a - *Melaleuca huegelii* - *Melaleuca systema* on Limestone ridges (Government of Western Australia 2000).

During the flora survey Matiske Consulting (2008) identified a portion of the vegetation under application to the north of the existing pit (Community T2) to be similar to the TEC 26a. Matiske Consulting (2008) advised that 'this interpretation was based on the dominance of the keystone species rather than the similarity of species'. FCT 26a is considered an endangered TEC as it 'has been adequately surveyed and is not critically endangered but is facing a very high risk of total destruction in the near future' (EPA 2005). More specifically the current distribution of FCT 26a is limited, with most occurrences being 'small and/or isolated and very vulnerable to known threatening processes' (Matiske Consulting 2008).

DEC Species and Communities Branch conducted an additional floristic community analysis and has advised that the FCT of the T2 Community as defined by Matiske Consulting (2008) is most likely to be either 24 or 26a.

Given that there is the potential for a portion of the vegetation under application to comprise the 26a TEC, it is considered that the vegetation under application may comprise, or be necessary for the maintenance of, a TEC.

As part of an offset proposal Rinker has committed to retaining the 26a community with a 50m buffer. If the permit is granted this area will be excluded from the approved area.

Methodology DEC site visit 9/8/07
EPA (2005)
Government of Western Australia (2000)
Matiske Consulting (2008)

(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

Mattiske Consulting (2007) advised that the vegetation under application corresponds to vegetation in the 'Cottesloe complex - central and south', 'Karrakatta Complex - central and south' and 'Quindalup Complex' as defined by Heddle et al. (1980). These vegetation complexes have 41.1%, 29.5% and 47.1% respectively of pre-European vegetation remaining (EPA 2006).

The vegetation under application has also been identified as Beard associations 1001 and 998, of which there is 26.5% and 41.5% respectively of pre-European extent remaining (Shepherd 2006).

The State Government is committed to the National Objectives Targets for Biodiversity Conservation which includes a target that prevents clearance of ecological communities with an extent below 30% of that present pre-1750 (Commonwealth of Australia 2001).

Karrakatta Complex and Beard vegetation association 1001 have less than the recommended 30% minimum of Pre-European extent remaining, however the applied area is considered to be within a constrained area. The EPA (2003) recognises the Perth Metropolitan Region as a 'constrained area', providing for the variation of the minimum % of vegetation complexes remaining to 10% of the pre-European extent. Therefore the proposal is not considered likely to be at variance to this Principle.

	Pre-European (ha)	Current (ha)	Remaining %	% in DEC managed lands
Swan Coastal Plain	1,501,456	571,758	38.1**	10.4**
City of Rockingham	24,326	8,534	35.1*	
Heddle vegetation complexes***				
Cottesloe Complex - Central and South	44,995	18,474	41.1	8.8
Karrakatta Complex - Central and south,	49,912	14,729	29.5	2.5
Quindalup Complex	38,238	18,000	47.1	5.2
Beard vegetation associations **				
1001	57,412	15,241	26.5	4.5
998	51,017	21,178	41.5	17.3

* (Shepherd et al. 2001)

** (Shepherd 2006)

***(EPA, 2006)

Methodology Commonwealth of Australia (2001)
 EPA (2000)
 EPA (2006)
 Heddle et al. (1980)
 Shepherd et al. (2001)
 GIS Databases:
 Heddle Vegetation Complexes - DEP 21/06/95
 Pre-European Vegetation - DA 01/01

(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 likely to be at variance to this Principle

The southern portion of the area under application is located approximately 170m to the west of Paganoni Swamp, which is a Conservation Category Wetland (CCW) and an EPP Lake. The Serpentine River is located 3.2km to the east of the area under application.

The minimum buffer to a CCW is 50m (Water and Rivers Commission 2001) and it is therefore considered that 170m is an adequate buffer between a wetland and extractive industry, especially since the buffer includes a rail corridor.

Given the distance to the nearest wetland, and that no winter-wet depressions were observed during the site

visit, it is not considered likely that the vegetation under application is growing in, or association with, an environment associated with a watercourse or wetland.

Methodology DEC Site visit 9/8/07
Water and Rivers Commission (2001)
GIS Databases:
Geomorphic Wetlands (Classification), Swan Coastal Plain - DEC
Hydrography, linear (hierarchy) - DOW

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

Comments **Proposal may be at variance to this Principle**
Soils within the applied area are part of the Spearwood S1a Phase, comprising 'dune ridges with shallow to moderately deep siliceous yellow-brown sands, very common limestone outcrop and slopes up to 15%' (State of Western Australia 2005). These soils have a high phosphorus export risk, a high water erosion risk and a very high wind erosion risk (State of Western Australia 2005).

There is a low to nil salinity risk within the area under application, and no know risk of acid sulphate soils.

The removal of vegetation as proposed will the expose soils and has the potential to result in appreciable land degradation in the form of wind or water erosion.

Given that there is the potential for the proposed clearing to result in wind erosion, it is considered that the proposal may be at variance to this Principle.

In order to minimise the risk of wind erosion and a condition has been placed on the permit requiring clearing in stages.

Methodology State of Western Australia (2005)
GIS Databases:
Acid Sulfate Soil Risk Map, Swan Coastal Plain - DEC
Salinity Risk LM 25m - DOLA 00
To be assessed.

(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 is at variance to this Principle**
The area under application is located approximately 20m to the north of Bush Forever Site 395 and the Rockingham Lakes Regional Park, which includes Paganoni Swamp Wetland Reserve.

Given the 20m buffer between the applied area, the Bush Forever site and Regional Park, it is not considered likely that the clearing would directly impact on their environmental values. However the buffer distance to Bush Forever sites as recommended by the Bush Forever office is 50-100m, and it is considered that clearing inside this buffer would be likely to result in indirect impacts on the environmental values of the Bush Forever site through edge effects such as weeds.

In addition, the vegetation under application is part of a continuous vegetated remnant that forms a north-south ecological corridor for the movement of fauna on the west side of the rail reserve. The proposed clearing will reduce the width of this corridor, especially in the northern portion of the lot, which would reduce its effectiveness, and therefore may impact on the environmental values of the adjacent Bush Forever site and Regional Park.

Given that buffer of 20m is proposed, and that vegetation under application forms part of a vegetated remnant linking the Bush Forever site and Regional Park to the north and south of the applied area, it is considered that the proposed clearing will indirectly impact the environmental values of these conservation areas. The proposal therefore is considered to be at variance to this Principle.

If a permit is granted a 50m buffer to the Bush Forever site would be required in accordance with the standard requirements of Bush Forever.

Methodology GIS Databases:
Bushforever - MFP 07/01
CALM Managed Lands and Waters - CALM 1/07/05
CALM Regional Parks - CALM 12/04/02
Geomorphic Wetlands (Classification), Swan Coastal Plain - DEC

(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

A Conservation Category Wetland (CCW) is located approximately 170m to the east of the southern portion of the applied area. Due to the high infiltration rates of the sandy soils identified within the area under application, and the distance to the wetland it is not considered likely that the proposed clearing would cause water erosion resulting in a deterioration in surface water quality.

The area under application has no known risk of acid sulphate soils and a low to nil salinity risk and it is not considered likely that the proposed clearing would result in a deterioration in groundwater quality through salinity or acid sulphate soils.

Methodology State of Western Australia (2005)
GIS Databases:
Acid Sulfate Soil Risk Map, Swan Coastal Plain - DEC
Geomorphic Wetlands (Classification), Swan Coastal Plain - DEC
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 area under application is located at an elevation of 10-30 metres and the sandy soils identified on site have a low risk of water logging (State of Western Australia 2005).

Due to the high infiltration rates associated with the sandy soils and the gradients within the area under application, the proposed clearing of vegetation is not likely to cause or exacerbate the incidence of flooding.

Methodology DEC Site visit 9/8/07
State of Western Australia (2005)
GIS Databases:
Topographic Contours, Statewide - DOLA 12/09/02

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

Comments

The land proposed to be cleared is part of a Native Title Claim however, since it is privately owned the Native Title has been extinguished under the Native Title Act. Therefore the clearing as proposed should not fall under the future acts process of the Native Title Act 1993.

Lot 806 is zoned 'Urban' under the Metropolitan Region Scheme.

Rinker Australia has a current Development Approval and Extractive Industries Licence for the site that expires on 31 December 2011, and this has been extended to include the pit expansion.

In a submission, the City of Rockingham queried whether an appropriately timed flora survey has been conducted. The City recommends a rehabilitation plan site be developed to the satisfaction of the City incorporating habitat reconstruction, weed control, species diversity and selection. The City also recommends that the proponent should provide an up to date flora survey and measures of protection for key flora species.

The City of Rockingham requires a buffer distance of 20m between lot boundaries and extraction activities. The retention of vegetation is recommended by the City in these buffers and will be conditioned on the extraction licence when it is renewed this year.

In 2001, a land-swap agreement between Readymix (formerly CSR Limited) and the Western Australian Planning Commission (WAPC) was reached regarding Bush Forever site 395. In the agreement, the southern and eastern portions of Lot 4 were exchanged for Lot 1 to the north of Lot 4. The southern portion of Lot 4 (now Lot 807) was added to Bush Forever site 395 for conservation purposes as it was identified that the southern portion of Lot 4 had unique floristic attributes association with the underlying limestone ridge not present in Bush Forever site 395. In addition, the site was selected to consolidate the Rockingham Lakes Regional park. The eastern portion, (now Lot 808) was transferred to WAPC for use for the Perth to Mandurah railway. Readymix was granted ownership of Lot 1 (now Lot 805), with the intention to expand existing quarry operations to the north to reclaim available limestone resources. The exchange of land was effected in 2004.

A flora and vegetation offsets package is proposed by Readmix and includes the following:

- reserve the T2 Community that has the potential to be the Threatened Ecological Community (TEC) 26a, imposing a 50m buffer surrounding the community;
- reserve the H5 Community and S6 Community that are similar to the Priority Ecological Community (PEC) 25, imposing a 20m buffer surrounding the communities. The S6 Community will not be quarried as it does not

contain any limestone.

- no disturbance of the Priority 4 species *Conostylis pauciflora* subsp. *pauciflora* as the plants identified were all located outside the proposal area, except for one occurrence that will be protected in the buffer to the T2 Community, which will be expanded to 60m in that area;
- no disturbance to the P4 *Jacksonia sericea* as the plants identified were found outside the proposal area.

Methodology

4. Assessor's comments

Comment

The assessable criteria have been addressed, and the proposed clearing is at variance to Principle a and h, and may be at variance to Principles b, d and g.

5. References

- Bamford Consulting Ecologists (2007) Black-Cockatoo and Quenda Fauna Assessment Singleton Quarry. DEC TRIM ref. DOC29313.
- Commonwealth of Australia (2001) National Targets and Objectives for Biodiversity Conservation 2001-2005, AGPS, Canberra.
- Department of Environment and Conservation (2008) Florabase. Department of Environment and Conservation (<http://www.dec.wa.gov.au>)
- 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.
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- 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.
- Keighery, B.J. (1994) Bushland Plant Survey: A Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc). Nedlands, Western Australia.
- Mattiske Consulting (2007a) Flora and vegetation survey of Singleton Quarry Expansion Area. February 2007. DEC TRIM ref. DOC29313.
- Mattiske Consulting (2007b) Flora and Vegetation survey of Singleton Quarry Expansion Area. November 2007. DEC TRIM ref. DOC41091.
- Mattiske Consulting (2008) Flora and vegetation survey of Singleton Quarry Expansion Area. January 2008. DEC TRIM ref. DOC44636.
- Mattiske, E.M. and Havel, J.J. (1998) Vegetation Complexes of the South-west Forest Region of Western Australia. Maps and report prepared as part of the Regional Forest Agreement, Western Australia for the Department of Conservation and Land Management and Environment Australia.
- 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. Includes subsequent updates for 2006 from Vegetation Extent dataset ANZWA1050000124.
- Shepherd, D.P., Beeston, G.R. and Hopkins, A.J.M. (2001) Native Vegetation in Western Australia, Extent, Type and Status. Resource Management Technical Report 249. Department of Agriculture, Western Australia.
- Site Visit 07/08/07, Department of Environment and Conservation (DEC), Western Australia. TRIM ref DOC32673.
- Water and Rivers Commission (2001). Position Statement: Wetlands, Water and Rivers Commission, Perth.

6. 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)

