



## 1. Application details

### 1.1. Permit application details

Permit application No.: 1814/1  
 Permit type: Area Permit

### 1.2. Proponent details

Proponent's name: PMR Quarries P/L

### 1.3. Property details

Property: LOT 2170 ON PLAN 211650 (MILLAR RD, BALDIVIS 6171)  
 Local Government Area: City Of Rockingham  
 Colloquial name:

### 1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
22		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
Beard Vegetation Associations: 1001 - Medium very sparse woodland; jarrah, with low woodland; banksia & casuarina 998 - Medium woodland: Tuart.	The proposal includes the clearing of 22 hectares of native vegetation for extractive industry purposes.	Good: Structure significantly altered by multiple disturbance; retains basic structure/ability to regenerate (Keighery 1994)	The description of the vegetation under application was obtained from a site visit to the property on 12 May 2005 (DEC Trim ref: HD24067).
Heddle Vegetation Complexes: Cottesloe Complex - Central and South: Mosaic of woodland of E. gomphocephala and open forest of E. gomphocephala, E. marginata, C. calophylla; closed heath on Limestone outcrops.	The vegetation under application includes Macrozamia riedlei, Eucalyptus marginata, E. gomphocephala, Corymbia calophylla, Allocasuarina fraseriana, Banksia grandis, B. attenuata, Hakea sp., Hibbertia sp., and various sedges. The understorey is intact with moderate weed invasion of various species.		
Karrakatta Complex - Central and South: Predominantly open forest of E. gomphocephala, E. marginata, C. calophylla and woodland of E. marginata, Banksia species.			

## 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 may be at variance to this Principle**

The vegetation under application includes *Macrozamia riedlei*, *Eucalyptus marginata*, *E. gomphocephala*, *Corymbia calophylla*, *Allocasuarina fraseriana*, *Banksia grandis*, *B. attenuata*, *Hakea sp.*, *Hibbertia sp.*, and various sedges. The understorey is intact with moderate weed invasion of various species. The vegetation has an average condition rating of good and is not likely to include DRF, priority flora or a Threatened Ecological Community (TEC).

The vegetation under application is considered to form part of a large vegetated remnant that provides significant habitat for fauna and is important as a buffer to protect and maintain the biodiversity of the adjacent Leda Nature Reserve.

A flora survey conducted in early November 2007 identified 85 native flora species and 35 exotic flora species in the area under application (Landform Research 2008).

Given that the vegetation under application is in good condition, has relatively high flora species diversity and has the potential to provide significant habitat for a range of fauna species, it is considered that the vegetation under application may represent an area of high biological diversity.

**Methodology**    **References:**  
-DEC (2005)  
-DEC Site visit 5/9/05  
-Landform Research (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 is at variance to this Principle**

Within the local area (5km radius) there are 13 recorded occurrences of the following significant fauna species:

- Burhinus grallarius Bush Stonecurlew (P4);
- Charadrius rubricollis Hooded Plover (P4);
- Ixobrychus minutus Little Bittern (P4);
- Macropus irma Western Brush Wallaby (P4);
- Numenius madagascariensis Eastern Curlew (P4);
- Isoodon obesulus fusciventer Quenda (P5).

Of these species the Western Brush Wallaby and the Quenda have the potential to occur within the area under application, while the recorded bird species generally frequent wetland areas.

During the 2007 site visit DEC officers identified Quenda and Echidna diggings. The vegetation under application includes dense understorey that would provide suitable habitat for the Quenda, which is a Priority 5 species. Priority 5 species are considered 'conservation dependent', with the main threat to their survival being the clearing of suitable habitat.

Western Wildlife (2006) conducted a Level 1 fauna assessment (desk-top study and site visit) for all the vegetation on Lot 2170 and concluded that the vegetation within Lot 2170 is expected to support a range of fauna including up to 6 species of amphibian, 37 species of reptile, 88 bird species and 20 mammal species. Of the species potentially occurring on site 42 are of conservation significance, and 21 were observed during the fauna survey (Western Wildlife 2006).

During the fauna survey, 21 bird species were observed, including five Bush Forever Decreaser bird species, one migratory bird species, and one Priority fauna species (Western Wildlife 2006). Western Wildlife (2006) advised that the EPBC listed migratory Rainbow Bee-eater (Merops ornatus) is likely to be a common breeding visitor to the site, nesting in burrows dug into sandy ground or banks, however no active burrows were observed. Western Wildlife (2006) also advised that Carnaby's Black Cockatoo (EPBC Act Endangered) is highly likely to forage within the applied area and there are mature Tuart trees on site that contain potential nesting hollows suitable for this species. Baudin's Black Cockatoo (EPBC Act Vulnerable), and the Fork-tailed Swift (EPBC Act Migratory) are also likely to visit the area for foraging. The hollows present on site could also provide suitable habitat for mammalian species potentially occurring on-site including the Western False Pipistrelle, Honey Possum and Brush Tailed Possum (Western Wildlife 2006).

The vegetation under application forms part of a large vegetated remnant that includes a Bush Forever site to the north and has the potential to provide an ecological corridor to facilitate fauna movement between areas of vegetation to the north and south. The effectiveness of this corridor is likely to be limited by Millar Road to the north and sparse vegetation in the southern portion of the property.

Given that the vegetation under application forms part of a large vegetated remnant including a Bush Forever site, and contains habitat that has the potential to support a range of native fauna, including the potential for hollows to be utilised by the Carnaby's Cockatoo, it is considered that the vegetation under application comprises part of significant habitat for fauna in the local area.

A fauna management condition was placed on the permit to mitigate the potential impacts of clearing on fauna.

**Methodology**    **References:**  
-Western Wildlife (2006)  
-DEC Site visit 5/9/05  
**GIS Databases:**  
-SAC Bio datasets accessed 4/10/07

**(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 is one known population of the Declared Rare Flora (DRF) Diuris micrantha and three populations of the priority listed flora species Dodonaea hackettiana, Aotus cordifolia and

Aponogeton hexatepalus.

D. micrantha is generally found in winter-wet swamps, in shallow water and is therefore not considered likely to be present within the area under application, which is located on a sandy rise (Western Australian Herbarium 1998).

The DRF Caladenia huegelii occurs in grey or brown sand and clay loam (Western Australian Herbarium 1998) and as such, also has the potential to occur in the area under application. However, a flora survey specifically to search for this species was carried out in early October 2008 and established that this species did not occur in the area under application (Landform Research 2008). No other DRF or Priority flora species were identified during the flora survey.

Given that no DRF or priority flora were identified on site during the flora survey, it is not considered likely that the vegetation under application includes, or be necessary for the maintenance of, rare flora.

**Methodology**    **References:**  
-DEC (2005)  
-Landform Research (2006)  
-Landform Research (2008)  
-DEC Site visit 5/9/05  
-Western Australian Herbarium (1998-)  
**GIS Databases:**  
-SAC Bio datasets accessed 4/10/07

**(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 is not likely to be at variance to this Principle**  
Within the local area (5km radius) there are 5 known occurrences of Threatened Ecological Community (TEC) Type 19b: Woodlands over sedgeland in Holocene dune swales of the southern Swan Coastal Plain (Critically Endangered). The nearest occurrence of this TEC is located approximately 2.5 kilometres from the area under application.

The geological, regolith and geomorphological conditions of the area under application are not suitable for the TEC Type 19b to occur on site (Landform Research 2008). In addition, the area under application was previously contained within the boundary of Bushplan site number 349, in which the Floristic Community Types (FCT) are 17, 21a, 25 and 28 (CALM 2005). These FCTs are not identified as Threatened Ecological Communities.

Given that the area under application is located on a sandy rise, and that the FCT previously identified on site are not TECs, it is therefore not considered likely that the vegetation under application includes, or is necessary for the maintenance of a TEC.

**Methodology**    **Reference:**  
-CALM (2005)  
-DEC Site Visit 5/9/05  
-Landform Research (2008)  
**GIS Databases:**  
-SAC Bio datasets accessed 4/10/07  
-Topographic Contours, Metropolitan Area - DLI

**(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 vegetation under application is defined by Hedde et al. (1980) as 'Cottesloe Complex - Central and South' and 'Karrakatta Complex - Central and South', of which there is 41.1% and 29.5% respectively of pre-European extent remaining (EPA 2006).

The vegetation under application is also defined as Beard vegetation associations 1001 and 998, of which there is 25.3% and 41.6% respectively remaining (Shepherd 2007).

The identified vegetation complexes 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 (2006) recognises the Perth Metropolitan Region as a 'constrained area', providing for the reduction of vegetation complexes remaining to a minimum of 10% of the pre-European extent. In addition the area under application is not considered a significant remnant given vegetation remain in the local area and given the proposed clearing is located adjacent to the Leda Nature Reserve which is part of bush forever site 349, a 959 hectare remnant.

Therefore, the proposal is not likely to be at variance to this Principle.

	Pre-European (ha)	Current (ha)	Remaining %	Reserves %
status****				
Swan Coastal Plain	1,501,456	571,758	38.1**	
City of Rockingham	24,326	8,531	35.1*	
Local Area (~10km radius)	26,000	8,500	~32%	
Hedde vegetation complex				
Cottesloe Complex ? Central and South	44,995	18,474***	41.1	
Karrakatta Complex - Central and South	49,912	14,729***	29.5	
Beard vegetation associations				
1001	57,410	14,546	25.3**	5.1
998	51,015	21,255	41.6**	38.10

\* (Shepherd et al. 2001)

\*\* (Shepherd 2007)

\*\*\* (EPA, 2006)

**Methodology** References:  
 -EPA (2006)  
 -Hedde et al. (1980)  
 -Shepherd (2007)  
 -Shepherd et al. (2001)

**(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 area under application is located approximately 830m east of a Conservation Category Wetland (CCW) and the nearest watercourse is the Peel Main Drain which is located approximately 1.2km to the east.  
 Given the distance to the nearest watercourse or wetland, and that no wetland dependent vegetation was observed on site, the vegetation under application is not considered likely to be growing in association with a watercourse or wetland.

**Methodology** References:  
 -DEC site visit 5/9/05  
 GIS Databases:  
 -Hydrography, linear (hierarchy) - DOE 13/4/05  
 -Geomorphic Wetlands (Management 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** **Proposal may be at variance to this Principle**  
 The soils on site are part of the Spearwood Dune System and comprise yellow brown sands or pale sands that have a high risk of wind erosion (Department of Agriculture 2005) following the clearing of native vegetation. The high erosion potential is due to the sandy nature of the topsoil and without appropriate ground cover, windbreaks or adequate dust suppression on exposed surfaces the proposal would be likely to cause land degradation.  
 The proposed land use of area under application is a sand and limestone mine; therefore the above mentioned issues should be addressed and managed through the extractive industries licence. The Department of Agriculture and Food (2007) advise that wind erosion is not likely to occur if the land clearing and sand extraction is completed in a progressive fashion over a period of time, and subsequent rehabilitation is completed. The proposal therefore may be at variance to this Principle. A condition has been placed on the permit requiring that clearing not occur unless actively mining the area to be cleared within six months of the clearing.

**Methodology** References:  
 -Department of Agriculture and Food (2007)  
 - Department of Agriculture (2005)

**(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 not likely to be at variance to this Principle**

The area under application is located approximately 60m south of Bush Forever site 349 and 240m south of Leda Nature Reserve. A Conservation Category Wetland, which has also been identified under the Environmental Protection (Swan Coastal Plain Lakes) Policy 1992, is located approximately 720m west of the area under application within Leda Nature Reserve.

Other conservation areas within the local area (5km radius) include:

- Two registered DEC Nature Conservation Covenants, the nearest of which is located approximately 4km from the applied area,
- Three registered DEC Land for Wildlife sites, the nearest of which is located approximately 2.8km from the applied area, and
- Six other Bush Forever sites (CALM 2005).

The vegetation on Lot 2170, including the vegetation under application, has been identified in the Perth Biodiversity Project (Del Marco et al. 2004) as a 'significant ecological linkage' (linkage # 75 and # 67), with the retention and protection of these linkages recognised as important in the local Rockingham Greening Plan (City of Rockingham 2002). The vegetation under application has the potential to provide an ecological corridor to facilitate fauna movement between areas of vegetation to the north and south, including the Bush Forever site and Leda Nature Reserve. However, the effectiveness of this corridor is likely to be limited by Millar Road to the north and sparse vegetation in the southern portion of the property.

Given that the area under application is located across the road from the Bush Forever site and Leda Nature Reserve it is not considered likely that the proposed clearing would have a direct impact on the environmental values of these conservation areas. In addition, it is not considered likely that the proposed clearing would indirectly impact the nearby conservation reserve through limiting fauna movement.

**Methodology**

**References:**

- CALM(2005)
  - Del Marco et al. (2004)
  - City of Rockingham (2002)
- GIS Databases:**
- Bushforever - MFP 07/01
  - CALM Managed Lands and Waters - CALM 1/07/05
  - 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**

The area under application is not within a Public Drinking Water Source Area and there is a low to nil risk of salinity and acid sulphate soils. It is therefore not considered likely that the proposed clearing would cause deterioration in the quality of groundwater through salinity or acid sulphate soils.

Watercourses in the area include a Conservation Category Wetland (CCW) and EPP Lake located 830m to the west, and the Peel Main Drain located 1.2km to the east. CALM (2005) previously advised that the original proposed clearing of 39 hectares may result in increased surface water runoff, siltation, altered hydrology, and possibly eutrophication of the nearby EPP Lake, however the current application of 22 hectares is likely to have less impact on surface water flows.

Given the distance to the nearest wetland, that the sandy soils within the area under application have high infiltration rates (Department of Agriculture 2005) and that the proposed clearing is for sand extraction, the proposed clearing is not considered likely to cause deterioration in the quality of surface water through run off and sedimentation.

**Methodology**

**References:**

- CALM (2005)
  - DEC site visit 5/9/05
  - Department of Agriculture (2005)
- GIS Databases:**
- Acid Sulphate Soil Risk Map, Swan Coastal Plain - DEC
  - Hydrography, linear (hierarchy) - DOE 13/4/05
  - Geomorphic Wetlands (Management Categories), Swan Coastal Plain
  - Public Drinking Water Source Areas (PDWSAs) - DOW
  - 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 approximately 830m east of a Conservation Category Wetland (CCW) and the nearest watercourse is the Peel Main Drain located approximately 1.2km to the east.

Due to the distance to the nearest watercourse or wetland, and the location of the site on a sandy rise, is not considered likely that the proposed clearing would cause or exacerbate the incidence of flooding.

**Methodology References:**

-DEC site visit 5/9/05

GIS Databases:

-Hydrography, linear (hierarchy) - DOE 13/4/05

-Geomorphic Wetlands (Management Categories), Swan Coastal Plain

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

**Comments**

The proponent undertakes the screening of sand extracted from the site then a licence under Part V of the Environmental Protection Act 1986 would be required.

In a submission the City of Rockingham (2007) queries whether a flora survey has been conducted and advises that sufficient vegetated buffers should be provided, specifically a 30m buffer between the clearing and Lots 1 and 2 Baldivis Road, setbacks of at least 40m to Millar Road and 20m on the eastern boundary. These areas required as buffers by the City of Rockingham are not part of the area under application.

Submissions were received in relation to the vegetation complexes being under-represented, the ecological corridors that the remnant provides as a whole, the potential for DRF, TEC and fauna habitat on site. These concerns have been taken into account during assessment of the principles and have been addressed through conditions placed on the permit.

If the proponent undertakes the screening of sand extracted from the site then a licence under Part V of the Environmental Protection Act 1986 would be required.

The area under application is identified as a priority resource area under the Basic Raw Materials State Planning Policy 2.4.

**Methodology References**

-City of Rockingham (2007)

**4. Assessor's comments**

**Comment**

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

**5. References**

Department of Agriculture and Food (2007) Advice received for CPS 1814, TRIM Ref DOC31619

CALM (2005) Clearing Assessment Unit's biodiversity advice for land clearing application. Advice to A/Director General, Department of Environment and Conservation (DEC), Western Australia. TRIM ref IN24589.

City of Rockingham (2002) Rockingham Greening Plan.

City of Rockingham (2007) Direct Interest Submission. TRIM. Ref DOC26020

Del Marco, A., Miles, C., Taylor, R., Clarke, K. and Savage, K. (2004) Local Government Biodiversity Planning Guidelines for the Perth Metropolitan Region - Edition 1. Western Australian Local Government Association, West Perth.

Department of Agriculture (2005) AgMaps Land Manager CD-rom for the Shires of Serpentine-Jarrahdale, Kwinana, Rockingham, Mandurah, Murray, Boddington, Waroona and Harvey. Department of Agriculture, Western Australia. ISSN: 1448-235X.

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.

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.

Landform Research (2006) Flora and vegetation survey - Location 2170 Millar Road Baldvis.

Landform Research (2008) Vegetation Assessment - Limestone and Sand Resource Area Location 2170 Millar Road Baldvis.

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 19/8/05, Department of Environment and Conservation (DEC), Western Australia. TRIM ref 2005O/791.

Western Australian Herbarium (1998-). FloraBase - The Western Australian Flora. Department of Environment and Conservation. <http://florabase.calm.wa.gov.au/> Accessed on Thursday, 4 October 2007.

Western Wildlife (2006) Millar Rd Quarry Extension: A Fauna Assessment. DEC TRIM ref. DOC9647.

## 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)

