



CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

Purpose Permit number:	CPS 7806/1
Permit Holder:	PMR Quarries Pty Ltd
Duration of Permit:	3 March 2018 to 3 March 2023

The Permit Holder is authorised to clear native vegetation subject to the following conditions of this Permit.

PART I – CLEARING AUTHORISED

1. Purpose for which clearing may be done

Clearing for the purpose of extractive industry.

2. Land on which clearing is to be done

Lot 2233 on Plan 119592, Muchea

Lot 2238 on Plan 121737, Muchea.

3. Area of Clearing

The Permit Holder must not clear more than 34.884 hectares of native vegetation within the area cross-hatched yellow on attached Plan 7806/1.

4. Application

This Permit allows the Permit Holder to authorise persons, including employees, contractors and agents of the Permit Holder, to clear native vegetation for the purposes of this Permit subject to compliance with the conditions of this Permit and approval from the Permit Holder.

PART II – MANAGEMENT CONDITIONS

5. Avoid, minimise and reduce the impacts and extent of clearing

In determining the amount of native vegetation to be cleared authorised under this Permit, the Permit Holder must have regard to the following principles, set out in order of preference:

- avoid the clearing of native vegetation;
- minimise the amount of native vegetation to be cleared; and
- reduce the impact of clearing on any environmental value.

6. Dieback and weed control

When undertaking any clearing or other activity authorised under this Permit, the Permit Holder must take the following steps to minimise the risk of the introduction and spread of *weeds* and *dieback*:

- clean earth-moving machinery of soil and vegetation prior to entering and leaving the area to be cleared;
- ensure that no *dieback* or *weed*-affected soil, *mulch*, *fill* or other material is brought into the area to be cleared; and
- restrict the movement of machines and other vehicles to the limits of the areas to be cleared.

PART III – RECORD KEEPING AND REPORTING

7. Records must be kept

The Permit Holder must maintain the following records for activities done pursuant to this Permit, in relation to the clearing of native vegetation authorised under this Permit:

- (a) the location where the clearing occurred, recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 1994 (GDA94), expressing the geographical coordinates in Eastings and Northings or decimal degrees;
- (b) the date that the area was cleared;
- (c) the size of the area cleared (in hectares); and
- (d) actions taken to avoid, minimise and reduce the impacts and extent of clearing in accordance with condition 5 of this Permit.

8. Reporting

- (a) The Permit Holder must provide to the CEO on or before 30 June of each year, a written report:
 - (i) of records required under condition 7 of this Permit; and
 - (ii) concerning activities done by the Permit Holder under this Permit between 1 January and 31 December of the preceding year.
- (b) If no clearing authorised under this Permit was undertaken between 1 January to 31 December of the preceding calendar year, a written report confirming that no clearing under this permit has been carried out, must be provided to the CEO on or before 30 June of each year.
- (c) Prior to 3 December 2022 the Permit Holder must provide to the CEO a written report of records required under condition 8 of this Permit where these records have not already been provided under condition 7(a) of this Permit.

DEFINITIONS

The following meanings are given to terms used in this Permit:

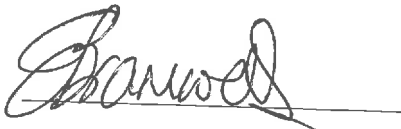
dieback means the effect of *Phytophthora* species on native vegetation;

fill means material used to increase the ground level, or fill a hollow;

mulch means the use of organic matter, wood chips or rocks to slow the movement of water across the soil surface and to reduce evaporation;

weed/s mean any plant -

- (a) that is a declared pest under section 22 of the *Biosecurity and Agriculture Management Act 2007*; or
- (b) published in a Department of Biodiversity, Conservation and Attractions species-led ecological impact and invasiveness ranking summary, regardless of ranking; or
- (c) not indigenous to the area concerned.

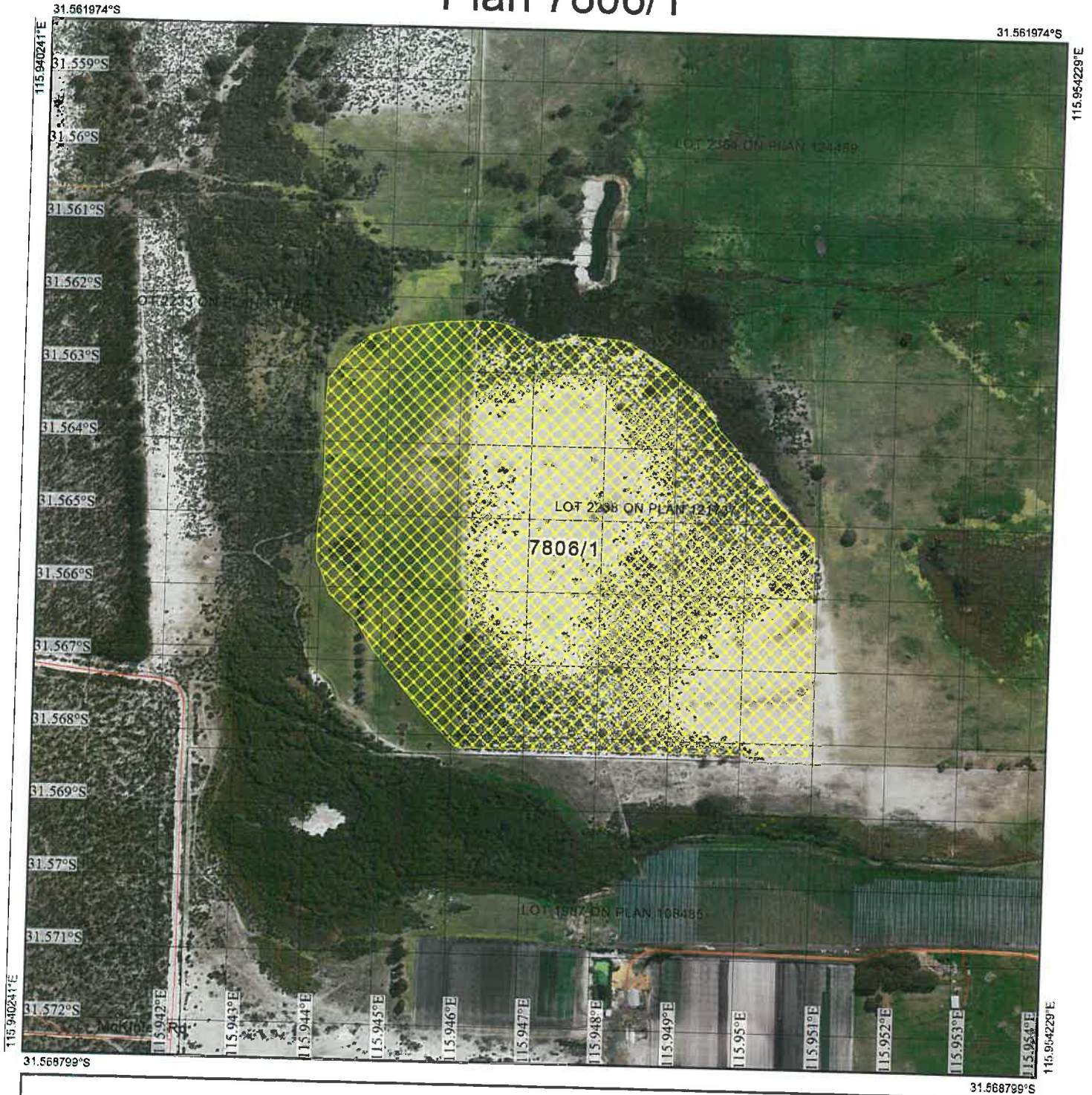


Emma Bramwell
A/ MANAGER
CLEARING REGULATION




*Officer delegated under Section 20
of the Environmental Protection Act 1986*

2 February 2018

Plan 7806/1



Legend

-  Imagery
-  Roads
-  Clearing Instruments Activities



1:7,034

(Approximate when reproduced at A4)

GDA 94 (Lat/Long)

Geocentric Datum of Australia 1994

E Bramwell Date 02/02/18
E BRAMWELL

Officer with delegated authority under Section 20 of the Environmental Protection Act 1986



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 WESTERN AUSTRALIA
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Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 7806/1
Permit type: Purpose Permit

1.2. Applicant details

Applicant's name: PMR Quarries Pty Ltd
Application received date: 12 October 2017

1.3. Property details

Property: Lot 2233 on Plan 119592
Lot 2238 on Plan 121737
Local Government Authority: Shire of Chittering
Localities: Muchea

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	Purpose category:
34.884 (as revised)		Mechanical Removal	Resource Extraction

1.5. Decision on application

Decision on Permit Application: Granted
Decision Date: 2 February 2018

Reasons for Decision: The clearing permit application was received on 12 October 2017, and has been assessed against the clearing principles, planning instruments and other matters in accordance with section 51O of the *Environmental Protection Act 1986* (EP Act). It has been concluded that the proposed clearing may be at variance to clearing principle (f) and is not likely to be at variance to any of the remaining clearing principles.

The Delegated Officer noted that the proposed clearing may impact on riparian vegetation growing in association with a wetland, however determined that the proposed clearing unlikely to have any significant environmental impacts. The Delegated Officer took into account that the proposed clearing may increase the risk of weeds and dieback being introduced or spread into adjacent remnant vegetation, in granting a clearing permit with a condition requiring the permit holder to undertake weed and dieback management.

2. Site Information

Clearing Description: The revised application is for the clearing of 34.884 hectares of native vegetation within Lot 2233 on Plan 119592 and Lot 2238 on Plan 121737, Muchea, to facilitate the extraction of sand resources in support of the construction of the new Great Northern Highway alignment.

Vegetation Description: The application area is mapped as Mattiske vegetation complex Yanga Complex, described as predominantly a closed scrub of *Melaleuca* species and low open forest of *Casuarina obesa* (swamp sheoak) on the flats subject to inundation; on drier sites the vegetation reflects the adjacent vegetation complexes of Bassendean and Coonambidgee (Mattiske and Havel 1998).

The applicant's Biodiversity Management and Closure Plan indicates that the vegetation within the application area was originally Mattiske vegetation complex Bassendean Complex – North, and is currently comprised of *Xanthorrhoea preissii* (grasstree) with occasional to isolated *Eucalyptus todtiana*, *Corymbia calophylla* (marri) and *Jacksonia furcellata* (grey stinkwood), and with a sparse understorey species including *Podrothea angustifolia* (sticky longheads), *Kunzea glabrescens* (spearwood), *Drosera barbigera* (sundew), *Drosera bulbosa* (red-leaved sundew), *Haemodorum spicatum* (mardja), *Stylidium piliferum* (common butterfly triggerplant), *Stylidium repens* (matted triggerplant) and exotic pasture species (Landform Research 2017).

A site inspection of the vegetation within the application area was undertaken by officers from the Department of Water and Environmental Regulation (DWER) in December 2017 (the site inspection). The site inspection identified that the vegetation in the application area is consistent with the findings in the applicant's Biodiversity Management and Closure Plan and is interspersed with areas devoid of native vegetation.

Vegetation Condition: Degraded: Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management (Keighery 1994).
To
Completely Degraded: The structure of the vegetation is no longer intact and the area is completely or almost completely without native species (Keighery 1994).

The condition of the vegetation within the application area was determined from the applicant's Biodiversity Management and Closure Plan (Landform Research 2017), and confirmed during the site inspection (DWER 2017).

Soil/Landform Type:

The application area intercepts four mapped land systems (Department of Primary Industry and Regional Development 2017):

- Yanga 8x Phase: flat plain with occasional low dunes; subject to seasonal inundation; deep white and pale yellow sands interspersed with swamp and generally underlain by siliceous / humic pans at depth;
- Yanga 14x Phase: sandy rises on flat to gently sloping plain with occasional low dunes. Pale sands overlying siliceous / humic pans, bog iron and clay;
- Bassendean, Jandakot Phase: low dunes; slopes <10% and generally more than 5 metres in relief; grey sand over pale yellow sands generally underlain by humic and iron podsols; and
- Yanga 9x Phase: flat plain with occasional low dunes; subject to seasonal inundation; humic and peaty sands, wet and semi-wet soils generally underlain by siliceous / humic pans at depth.

Comment:

The original application was to clear 57.4 hectares of native vegetation. During assessment of the application, the applicant requested that the application be revised to exclude a 22.6 hectares portion of the application area (which is the subject of separate application CPS 7948/1).

The local area referred to in the below assessment is defined as the area within a 10 kilometre radius of the application area.

Figure 1: Map of application area.



3. Assessment of application against clearing principles

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

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

As indicated in Figure 1, the application area is comprised of historically disturbed native vegetation on agricultural land.

As discussed in Section 2, the native vegetation within the application area is largely comprised of *Xanthorrhoea preissii* with infrequent occurrences of *Eucalyptus tottiana*, *Corymbia calophylla* and *Jacksonia furcellata* interspersed with areas devoid of native vegetation, and is in degraded (Keighery 1994) to completely degraded (Keighery 1994) condition.

As discussed under Principle (e), the local area retains approximately 60 per cent (approximately 20,271 hectares) native vegetation cover.

As discussed under Principle (h), the local area includes a number of conservation areas, and the application area is adjacent to riparian vegetation associated with 'Resource Enhancement' and 'Multiple Use' wetlands on both private land and unallocated Crown land, and is approximately 300 metres from a large extent of native vegetation on unallocated Crown land. Noting the distance between the application area and the conservation areas, and the condition of the vegetation within the application area, the application area is not likely to function as an ecological linkage between, or as a buffer to, remnants of native vegetation in the local area.

Eleven terrestrial fauna species of conservation significance have been recorded within the local area according to a review of available datasets (Department of Biodiversity, Conservation and Attractions 2007-). Noting the type and condition of the vegetation within the application area, the proposed clearing is not likely to significantly impact on these species. Habitat for indigenous fauna is discussed further under Principle (b).

According to available datasets, seven rare flora and 31 priority flora species occur within the local area (Department of Biodiversity, Conservation and Attractions 2007-; WA Herbarium 1998-). The priority flora species are associated with habitats that do not occur within the application area, including swamps, drainage lines, winter wet areas, peat soils, lateritic soils, clay soils, loam and gravel soils, aquatic communities, scree slopes, outcrops, hillsides, and native forest, scrubland, heathland and woodland habitats. Noting the condition of the vegetation within the application area, the application area is not likely to include or be necessary for the continued existence of priority flora species, and the proposed clearing is not likely to impact the conservation status of priority flora species. Rare flora species are discussed under Principle (c).

According to available datasets, three priority ecological communities (PEC) and four threatened ecological communities (TEC) occur within the local area (Department of Biodiversity, Conservation and Attractions 2007-). These PECs are:

- the Priority 3 'Banksia dominated woodlands of the Swan Coastal Plain IBRA region' PEC, situated approximately 300 metres from the application area;
- the Priority 2 'Wooded wetlands which support colonial waterbird nesting areas' PEC, situated approximately 6.4 kilometres from the application area; and
- the Priority 2 'Banksia woodland of the Gingin area restricted to soils dominated by yellow to orange sands' PEC, situated approximately 6.7 kilometres from the application area.

Noting the type and condition of the vegetation within the application area, the application area is not likely to support these PECs. TECs are discussed under Principle (d).

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

(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.

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

As discussed in Section 2, the native vegetation within the application area is largely comprised of *Xanthorrhoea preissii* with infrequent occurrences of *Eucalyptus todtiana*, *Corymbia calophylla* and *Jacksonia furcellata* interspersed with areas devoid of native vegetation, and is in degraded (Keighery 1994) to completely degraded (Keighery 1994) condition.

According to available datasets, eleven terrestrial conservation significant fauna species have been recorded within the local area (Department of Biodiversity, Conservation and Attractions 2007-). Of these, there is potential for habitat of the threatened Carnaby's Cockatoo (*Calyptorhynchus latirostris*) to be impacted by the proposed clearing.

The applicant's Biodiversity Management and Closure Plan states that the application area does not contain trees with hollows suitable as breeding habitat or Proteaceous feeding habitat for this species (Landform Research 2017). The site inspection identified that the application area has no consistent over-storey and occurrences of tree species within the application area are both limited and sporadic. No trees with hollows suitable as breeding habitat for Carnaby's Cockatoo were identified within the application area and limited foraging sources for this species were identified in the application area (DWER 2017).

Noting the vegetation within the application area, and the presence of a large extent of vegetation in similar or better condition on unallocated Crown land (contiguous with the Gngangara-Moore River State Forest) within 300 metres of the application area, the application area is not likely to comprise significant habitat for indigenous fauna, including species of conservation significance.

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

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

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

The applicant's Biodiversity Management and Closure Plan outlines a vegetation study which included a review of flora and vegetation databases and an on-site survey conducted on 31 August 2016 and 22 August 2017 (Landform Research 2017). It is noted that the methodology of the vegetation study differs from that outlined in the *Technical Guidance – Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA 2016). The applicant's Biodiversity Management and Closure Plan indicates that no rare flora species were identified during the vegetation study (Landform Research 2017).

According to available datasets, seven rare flora species have been recorded within the local area (Western Australian Herbarium 1998-). Five of these species are associated with habitats that do not occur within the application area, including seasonally wet areas, areas with peat, gravel and lateritic soils, hillsides, swamps and shrubland, low scrub, sedges, woodland and heathland environments. However two rare flora species were recorded from habitats similar to those found in the application area.

The closest recorded occurrence of the first species to the application area has been recorded approximately 1.4 kilometres from the application area. This species has been found to occur in sand, sand loam and peat soils in association with winter-wet heaths and open woodlands (Western Australian Herbarium 1998-). Of the 45 recorded occurrences of this species recorded to date, 10 have been recorded in degraded habitats (Western Australian Herbarium 1998-).

The closest recorded occurrence of the second species to the application area has been recorded approximately 8 kilometres from the application area (Western Australian Herbarium 1998-). Occurrences of this species have been recorded in sandy soils, sand clay soils, loam, grey peat sand over clay and limestone and dry soils in association with scrubland and shrubland, woodland and drainage line environments (Western Australian Herbarium 1998-). Of the 19 occurrences of this species recorded to date, 1 occurrence was recorded in cleared vegetation in association with invasive flora species and grass species (Western Australian Herbarium 1998-).

Both species are known to grow up to 2.5 metres in height and their foliage is distinctive (Western Australian Herbarium 1998-). These attributes would have facilitated the identification of occurrences of these species within the application area. Neither of these species were recorded within the application area in the Biodiversity Management and Closure Plan (Landform Research 2017) or during the site inspection (DWER 2017).

Noting the type and condition of the vegetation within the application area, the application area is not likely to include, or be necessary for the continued existence of, rare flora.

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

(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.

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

According to available datasets, four TECs occur within the local area (Department of Biodiversity, Conservation and Attractions 2007-). These TECs are:

- the critically endangered 'Communities of Tumulus Springs (Organic Mound Springs, Swan Coastal Plain)' TEC, situated approximately 2.4 kilometres from the application area;
- the critically endangered 'Shrublands and woodlands on Muchea Limestone' TEC, situated approximately 2.4 kilometres from the application area;
- the vulnerable 'Herb rich saline shrublands in clay pans' TEC, situated approximately 8.5 kilometres from the application area; and
- the endangered '*Banksia attenuata* woodlands over species rich dense shrublands' TEC, situated approximately 8.7 kilometres from the application area.

Noting the type and condition of the vegetation within the application area, the application area is not likely to comprise the whole or part of, or be necessary for the maintenance of, a TEC.

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

(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.

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

The national objectives and targets for biodiversity conservation in Australia have 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).

As indicated in Table 1, the Swan Coastal Plain Interim Biogeographic Regionalisation of Australia (IBRA) bioregion and the Shire of Chittering retain greater than 30 per cent of their pre-European extents, however the mapped vegetation complex is below the recommended 30 per cent representation threshold. The application area represents approximately 0.8 per cent of the current extent of the mapped vegetation complex.

The local area retains approximately 60 per cent (approximately 20,271 hectares) of native vegetation cover. The application area represents less than 0.2 per cent of this current extent.

Noting the type and condition of the vegetation within the application area, the vegetation is considered not to be representative of the mapped vegetation complex. As discussed under Principles (a), (b), (c) and (d), the application area is not likely to comprise a high level of biodiversity or significant habitat for indigenous fauna, and is not likely to include or comprise or be necessary for the continued existence or maintenance of rare flora or TECs.

Given the above, the application area is not likely to be significant as a remnant of native vegetation in an area that has been extensively cleared. The proposed clearing is not likely to be at variance to this clearing principle.

Table 1: Vegetation extents

	Pre-European extent	Current extent remaining		Current extent remaining in DBCA managed lands	
	(ha)	(ha)	(%)	(ha)	(%)
IBRA bioregion*					
Swan Coastal Plain	1,501,221.93	578,432.17	38.5	218,946	37.8
Local government authority*					
Shire of Chittering	121,834.96	46,477.41	38.15	4,619.85	9.94
Mattiske vegetation complex**					
Yanga Complex	26,176.45	4,249.65	16.23	520.68	1.99

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

Proposed clearing may be at variance to this Principle

According to available datasets, the application area is situated within an ephemeral damp land which is subject to inundation, portions of which are mapped as 'Resource Enhancement' and 'Multiple Use' wetlands. The application area is adjacent to riparian vegetation associated with 'Resource Enhancement' wetlands on both private land and unallocated Crown land. No watercourses occur within the application area.

Noting the composition of the vegetation within the application area, it is considered that the proposed clearing impacts typically terrestrial flora species that occur within a variety of habitats and are not reliant on the presence of wetlands or watercourses. Notwithstanding, the application area may contain some species that are considered to be growing in association with this wetland.

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

Noting the type and condition of the vegetation within the application area, the proposed clearing is unlikely to significantly impact on riparian vegetation or the environmental values of a watercourse or wetland.

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

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

As discussed in Section 2, the application area occurs within the mapped extents of the Yanga 8x, 9x and 14x Phase and the Bassendean Jandakot Phase land systems (Department of Primary Industry and Regional Development 2017). These land systems have a moderate to high risk of wind erosion, water logging, water repellence, subsurface acidification, phosphorous export and flooding, a moderate risk of soil salinity, a low to moderate risk of water erosion and a low risk of subsurface compaction (Department of Primary Industry and Regional Development 2017).

The site inspection did not identify land degradation impacts within the application area (DWER 2017).

Noting the condition of the vegetation within the application area, the presence of areas devoid of native vegetation, and the absence of existing land degradation impacts, it is unlikely that the proposed clearing will cause appreciable land degradation.

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

(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.

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

According to available datasets, the application area is situated approximately 2.5 kilometres to the north of an unnamed conservation reserve, approximately 4 kilometres to the east of the Gngara-Moore River State Forest (Bush Forever site 380), approximately 6.5 kilometres south south-west of the Chandala Nature Reserve, approximately 8.5 kilometres west south-west of the Barracca Nature Reserve, 8.5 kilometres north north-west of the Bullsbrook Nature Reserve, and approximately 9 kilometres north of the Neaves Road Nature Reserve. A number of privately-managed conservation areas also occur within the local area.

Noting the distance between the application area and these conservation areas and the condition of the vegetation within the application area, the application area is not likely to function as an ecological linkage between, or as a buffer to, remnants of native vegetation in the local area, and the proposed clearing is not likely to adversely impact on the environmental values of any conservation area.

The application area is adjacent to riparian vegetation associated with 'Resource Enhancement' and 'Multiple Use' wetlands on both private land and unallocated Crown land, and is approximately 300 metres from a large extent of vegetation in similar or better condition on unallocated Crown land (contiguous with the Gngara-Moore River State Forest). There is potential for these areas to be impacted by the proposed clearing through the spread of weeds and dieback. Weed and dieback management measures will assist in minimising any impacts to this vegetation as a result of the proposed clearing.

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

(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.

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

As discussed under Principle (f), no watercourses occur within the application area and the application area does not support any permanent wetlands.

As discussed under Principle (g), the application area intercepts four mapped land systems with a moderate to high risk of wind erosion, water logging, subsurface acidification and phosphorous export, a moderate risk of soil salinity, and a low to moderate risk of water erosion, all of which have the potential to contribute to changes in surface or underground water quality.

The application area is situated approximately one kilometre east of the Priority 2 Gngara Underground Water Pollution Control area.

Noting the condition of the vegetation within the application area and presence of areas devoid of native vegetation, it is considered that the proposed clearing is unlikely to cause deterioration in the quality of surface or underground water.

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

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

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

As discussed under Principle (g), the mapped land systems intercepted by the application area are identified as having a moderate to high risk of flooding.

The sandy soils within the application area are likely to be conducive to the infiltration of rainfall, reducing the potential for surface water flows to leave the application area. During the site inspection, no evidence of past surface water flows was evident (DWER 2017).

Noting the above, and the condition of the vegetation within the application area and presence of areas devoid of native vegetation, it is considered that the proposed clearing is not likely to result in increased surface water flows during rainfall events and is unlikely to cause or exacerbate the incidence or intensity of flooding.

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

Planning instruments and other relevant matters.

As discussed in Section 2, the original application was to clear 57.4 hectares of native vegetation. During assessment of the application, the applicant requested that the application be revised to exclude a 22.6 hectare portion of the application area (which is the subject of separate application CPS 7948/1).

The application area is identified as an 'Extraction Area' in Statement of Planning Policy No 2.4 Basic Raw Materials (WAPC 2000). This Policy states that Extraction Areas "are existing extractive industries operating under the *Mining Act 1978*, the *Local Government Act 1996*, a regional planning scheme or a town planning scheme" and "should be protected in the short term but will eventually be replaced by other uses or reserves" (WAPC 2000).

The applicant provided a copy of the 'Planning Consent Application – Extractive Industry', dated 28 June 2017, received from the Shire of Chittering (PMR Quarries Pty Ltd 2018). Condition 16 of this document states that the applicant "is to obtain a Clearing Permit from the Department of Environment and Regulation (now DWER) prior to an extractive industry licence being granted". The grant of a Clearing Permit does not absolve the applicant from the requirements of other laws administered by Local, State or Federal Government.

The applicant's Biodiversity Management and Closure Plan states "Sand will be removed in a sequence with vegetation cleared, topsoil pushed to the perimeter for later use and perimeter bunds formed from the small thickness of overburden. The end use of the site will be a return to productive pasture with belts of native vegetation on the batter slopes along the southern sides of the resource areas" (Landform Research 2017).

No Aboriginal sites of significance have been mapped within the application area.

The clearing permit application was advertised on the Department of Water and Environmental Regulation website on 8 November 2017 with a 21 day submission period. No public submissions have been received in relation to this application.

4. References

- Commonwealth of Australia (2001) National Objectives and Targets for Biodiversity Conservation 2001-2005, Canberra.
- Department of Biodiversity, Conservation and Attractions (2007-) NatureMap: Mapping Western Australia's Biodiversity. Department of Parks and Wildlife. URL: <http://naturemap.dpaw.wa.gov.au/>. Accessed January 2018.
- Department of Primary Industry and Regional Development (2017). NRInfo Digital Mapping. Department of Primary Industry and Regional Development. Government of Western Australia. URL: <https://maps.agric.wa.gov.au/nrm-info/> (accessed December 2017).
- Environmental Protection Authority (EPA (2016) Technical Guidance – Flora and Vegetation Surveys for Environmental Impact Assessment. December 2016. Environmental Protection Authority, Western Australia.
- *Government of Western Australia (2016) 2016 Statewide Vegetation Statistics incorporating the CAR Reserve Analysis (Full Report). Current as of October 2016. WA Department of Parks and Wildlife, Perth.
- **Government of Western Australia. (2017). 2016 South West Vegetation Complex Statistics. Current as of December 2016. WA Department of Parks and Wildlife, Perth
- Heddl, 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 (2017) Biodiversity Management and Closure Plan, Proposed Sand Excavation For Perth – Darwin Highway. Lots 2233 and 2238, Byrne Road, Muchea. Shire of Chittering. WA Limestone August 2017.
- PMR Quarries Pty Ltd (2018) Additional supporting information to the application – Shire of Chittering Planning Consent Application – Extractive Industry, dated 28 June 2017. Received 1 February 2018 (DWER ref. A1605693).

Western Australian Herbarium (1998-) FloraBase - The Western Australian Flora. Department of Biodiversity Conservation and Attractions. <http://florabase.dpaw.wa.gov.au/> (Accessed January 2018).

Western Australian Planning Commission (WAPC) 2000. Statement of Planning Policy No 2.4 Basic Raw Materials. Statement of Planning Policy made under section 5AA of the *Town Planning and Development Act 1928*. Western Australian Planning Commission.

GIS Datasets:

- Aboriginal Sites of Significance
- Department of Biodiversity Conservation and Attractions, Tenure
- Groundwater salinity
- Hydrography, linear
- Hydrography, hierarchy
- Land Degradation datasets
- Remnant vegetation
- SAC Biodatasets (accessed January 2018)
- Soils, Statewide
- Topographic contours