



Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 2937/1
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: Westdeen Holdings Pty Ltd

1.3. Property details

Property: Mining Lease 70/308
Local Government Area: Shire Of Dandaragan
Colloquial name: Cervantes Limesand Pit

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
6.5		Mechanical Removal	Mineral Production

2. Site Information

2.1. Existing environment and information

2.1.1. Description of the native vegetation under application

Vegetation Description

Beard Vegetation Associations have been mapped at a 1:250,000 scale for the whole of Western Australia. One Beard Vegetation Association has been mapped within the application area:

Beard Vegetation Association 1026: Mosaic: Shrublands; *Acacia rostellifera*, *A. cyclops* (in the South) & *Melaleuca cardiophylla* (in the North) thicket (GIS Database; Shepherd et al., 2001).

A flora survey of the Cervantes limesand mine was conducted by ENV Australia Pty Ltd (ENV) on 30 October 2008. A total of 8 quadrats were established within areas comprising both undisturbed remnant vegetation, as well as rehabilitation varying in age from 2 to 20 years (ENV, 2009). The following vegetation descriptions were compiled by ENV (2009) based on sampled quadrats:

Low dune (1) - shrubland of *Acacia rostellifera*, *Scaevola thesioides* subsp. *thesioides*, *Acacia lasiocarpa* var. *lasiocarpa*, *Templetonia retusa*, *Olex benthamiana*, *Conostylis candicans* subsp. *callicola* and *Cassytha ?racemosa*;

Low dune (2) - open Scrub of *Acacia rostellifera*, *Acacia lasiocarpa* var. *lasiocarpa*, *Scaevola nitida* and *Templetonia retusa*;

Dune top - open Scrub of *Acacia rostellifera*, *Austrostipa elegantissima* and *Clematis pubescens*;

Dune - open Shrubland of *Acacia rostellifera*, *Acacia lasiocarpa* var. *lasiocarpa*, *Olearia axillaris*, *Scaevola nitida*, *Hibbertia subvaginata* and *Conostylis candicans* subsp. *callicola*;

Twenty year old rehabilitation - low shrubland of *Acacia rostellifera*, *Melaleuca systema*, *Acacia lasiocarpa* var. *lasiocarpa*, *Olearia axillaris*, *Conostylis candicans* subsp. *callicola* and *Cassytha ?racemosa*;

Ten year old rehabilitation - tall open Shrubland of *Acacia rostellifera*, *Spyridium globulosum*, *Olearia axillaris*, *Austrostipa elegantissima*, **Euphorbia terracina*, *Hardenbergia comptoniana* and *Cassytha ?racemosa*;

Clearing Description

Westdeen Holdings Pty Ltd (trading as Aglime of Australia) have applied for a purpose permit to clear up to 6.5 hectares of native vegetation for the purpose of mining limesand at Cervantes. Approximately 0.5 -1 hectare(s) will be cleared annually to allow for the extraction of limesand, with topsoil and vegetation to be stripped and retained for use in rehabilitation (Westdeen Holdings Pty Ltd, 2008).

Vegetation Condition

Very Good: Vegetation structure altered; obvious signs of disturbance (Keighery, 1994).

To

Completely Degraded: No longer intact; completely/almost completely without native species (Keighery, 1994).

Comment

Mining of limesand on Mining Lease 70/308 has been ongoing since the late 1980's (Westdeen Holdings Pty Ltd, 2008).

A number of weed species have been recorded within Mining Lease 70/308. These weeds are most prevalent within areas that have been previously disturbed and subsequently rehabilitated (ENV, 2009).

The condition of the vegetation has been derived from the flora survey conducted by ENV Australia Pty Ltd (ENV, 2009).

The area applied to clear under this proposal falls within the footprint of the area assessed under application CPS 1894/1, which was withdrawn on 11 July 2008.

Five year old rehabilitation - open shrubland of *Acacia lasiocarpa* var. *lasiocarpa*, *Spyridium globulosum*, *Olearia axillaris*, **Euphorbia terracina* and *Senecio pinnatifolius* var. *maritimus*;

Two year old rehabilitation - scattered tall *Anthocercis littorea*, *Senecio pinnatifolius* var. *maritimus*, **Euphorbia terracina* and *Austrodanthonia caespitosa*.

* denotes weed 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 is not likely to be at variance to this Principle

The proposed clearing area is located within the Swan Coastal Plain 2 Interim Bioregionalisation of Australia (IBRA) subregion (GIS Database). This subregion is part of the South West Botanical Province which has a very high degree of species diversity (Mitchell et al., 2002). Within the subregion there are areas of relatively high ecosystem or species diversity, notably on the eastern side of the coastal plain (Mitchell et al., 2002).

No wetlands of national significance, or ecosystems at risk as described by Mitchell et al., (2002) are located within or near the application area, and therefore will not be impacted by the proposed clearing activities.

The application area is wholly located within the boundaries of the 'C' class Southern Beekeepers Nature Reserve, with the southern portion of the application area also located within the proposed extension to the Nambung National Park, which is on the Register of National Estate (GIS Database). The Nambung National Park covers an area of approximately 18,319 hectares (CALM, 1998) and is listed on the Register of National Estate in recognition of its significance for conservation. The area is significant for its dune systems, limestone pinnacles and caves associated with the Nambung River. It also has high aesthetic value from its range of landforms, particularly The Pinnacles (DEWHA, 2009).

Hart, Simpson and Associates (1999) conducted an ecological survey of the proposed clearing area and did not identify any landforms, vegetation units or fauna habitat of high conservation value within Mining Lease 70/308. The vegetation types recorded on the site are well represented in the region, including within surrounding conservation reserves (Westdeen Holdings Pty Ltd, 2008).

ENV Australia Pty Ltd conducted a flora and vegetation survey of the application area in October 2008 and recorded a total of 53 taxa from 27 families and 44 genera within the project area, including four introduced species (ENV, 2009). The number of species recorded within the project area is considered a typical level of species richness for the local area, and is consistent with the findings of Hart, Simpson and Associates (1999) whereby similar flora species richness (45 species) was recorded during their ecological survey (ENV, 2009). No Declared Rare Flora (DRF), Priority Flora or locally significant flora species were located within the survey area (ENV, 2009). Consequently, there is no evidence to suggest that the proposed clearing area contains a significantly higher level of biological diversity than any other areas within the surrounding conservation estate.

Previous disturbance within and adjacent to the application area from previous mining activities, vehicle tracks and firebreaks has impacted on the biodiversity values of the application area. ENV (2009) identified four weed species within the survey area: *Arctotheca calendula*; *Carpobrotus edulis*; *Centaurium tenuiflorum* and *Euphorbia terracina*. Weeds have the potential to alter the biodiversity of an area, competing with native vegetation for available resources and making areas more fire prone. This in turn can lead to greater rates of infestation and further loss of biodiversity if the area is subject to repeated fires. ENV (2009) advise that none of these species are listed as a 'Declared Plant' species under the *Agriculture and Related Resources Protection Act 1976* by the Department of Agriculture and Food (DAFWA). Should the permit be granted, it is recommended that appropriate conditions be imposed on the permit for the purpose of weed management.

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

Methodology

CALM (1998).
DEWHA (2009).
ENV (2009).
Hart, Simpson and Associates (1999).
Mitchell et al (2002).
Westdeen Holdings Pty Ltd (2008).
GIS Databases:
- CALM Managed Lands and Waters.
- Interim Biogeographic Regionalisation of Australia (subregions).
- Register of National Estate.

(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 not likely to be at variance to this Principle

According to available databases, no declared threatened fauna species occur within the application area (GIS Database).

The assessing officer conducted a search of the Western Australian Museum's online fauna database between the co-ordinates 115.39°E, 30.87°S and 114.78°E, 30.13°S, representing an approximate radius of 50 kilometres around the application area.

This search identified 8 Amphibian, 52 Avian, 26 Mammalian and 60 Reptilian fauna species that may potentially occur within the application area (Western Australian Museum, 2009). Of these, the following species of conservation significance have previously been recorded within the search area: Dibbler (*Parantechinus apicalis*), Western Brush Wallaby (*Macropus irma*), Australian Sea Lion (*Neophoca cinerea*), Peregrine Falcon (*Falco peregrinus*), Malleefowl (*Leipoa ocellata*), Southern Giant Petrel (*Macronectes giganteus*), Carpet Python (*Morelia spilota imbricata*) and Leatherback Turtle (*Dermochelys coriacea*).

Hart, Simpson and Associates also conducted an ecological survey of the application area in February 1999. The main purpose of the survey was to identify any rare species which might be present on the basis of the habitats present (Hart, Simpson and Associates, 1999). This was achieved by completing a search of the former Department of Conservation and Land Management's priority species database and a subsequent ground survey (Hart, Simpson and Associates, 1999).

As a result of the database search there were several species of conservation significance which were considered to potentially occur within the application area (Hart, Simpson and Associates, 1999). These include the Lancelin Island Skink (*Ctenotus lanceolin*), Carpet Python (*Morelia spilota imbricata*), Peregrine Falcon (*Falco peregrinus*), *Cyclodomorphus branchialis*, Square-tailed Kite (*Lophoictinia isura*) and the Western Brush Wallaby (*Macropus irma*). It should be noted that the Square-tailed Kite no longer has 'priority' status in accordance with the Department of Environment and Conservation's priority fauna list (DEC, 2009b).

Of all the species listed above, the most likely to be found within the proposed clearing area based on habitat preferences would be the Carpet Python, Peregrine Falcon and the Western Brush Wallaby.

The Carpet Python (Schedule 4 - Other specially protected fauna, Wildlife Conservation (Specially Protected Fauna) Notice, 2008) occupies a range of habitats from semi-arid coastal and inland habitats, Banksia woodland, Eucalypt woodlands and grasslands (Burbidge, 2004). Its range includes most of the south-west of Western Australia (Burbidge, 2004). Although this species may be found within the application area, the vegetation within the application area is well represented both locally and regionally and represents a small fraction of the Carpet Python's home range. Consequently, it is not likely that the vegetation within the application area is significant habitat for this species.

The Peregrine Falcon (Schedule 4 - Other specially protected fauna, Wildlife Conservation (Specially Protected Fauna) Notice, 2008) is widespread across Australia including some continental islands but absent from most deserts and the Nullarbor Plain (Johnstone and Storr, 1998). Its habitat consists of areas such as cliffs along coasts, rivers and ranges, and near wooded watercourses and lakes (Johnstone and Storr, 1998). The Peregrine Falcon may potentially utilise the application area for feeding, however, there are large amounts of similar feeding habitat that the Peregrine Falcon could utilise within the local area. Consequently, it is not likely that the vegetation within the application area is significant habitat for this species.

The Western Brush Wallaby (P4 - DEC Priority Fauna List) was very common in the early days of settlement, however their range has been severely reduced and fragmented due to clearing for agriculture (DEC, 2009a). The optimum habitat for this species is open forest or woodland, particularly open seasonally wet flats with low grasses and open scrubby thickets (DEC, 2009a). The vegetation within the application area may provide suitable habitat for this species. However, the vegetation types recorded on the site are well represented in the region, including within surrounding conservation reserves. Consequently, it is unlikely that the application area provides significant habitat for this species.

Hart, Simpson and Associates (1999) state that no sightings of any of the above species were made during the ground survey. Hart, Simpson and Associates (1999) further advise that a range of introduced mammals including the mouse, cat, rabbit and fox are likely to occur within the application area and collectively these would have a severe impact on native fauna. The native fauna habitat within the application area was classified by Hart, Simpson and Associates (1999) as being common both locally and regionally, hence, it is unlikely that any native fauna species of the local area would be solely dependent on the vegetation found within the application area for habitat. In consideration of the above and given the relatively small scale of clearing proposed (6.5 hectares), it is unlikely there would be any impacts on significant fauna habitat as a result of the proposal.

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

Methodology Burbidge (2004).
DEC (2009a).
DEC (2009b).

Hart, Simpson and Associates (1999).
Johnstone and Storr (1998).
Western Australian Museum (2009).
GIS Database:
- Threatened Fauna.

(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

According to available databases, no Declared Rare or Priority flora species occur within the application area (GIS Database).

A flora and vegetation assessment of Aglime's Cervantes limesand operations was conducted by ENV Australia (ENV) in October 2008. This assessment comprised of both a desktop review and field survey, with the desktop component involving a search of the Department of Environment and Conservation's (DEC) Threatened (Declared Rare) Flora database within the coordinates; 315101mE, 6631553mN to 326071mE to 6620658mN (GDA94) (ENV, 2009). A review of a previous ecological survey report by Hart, Simpson and Associates Pty Ltd (1999) was also conducted as part of the desktop review (ENV, 2009).

On 30 October 2008, botanists from ENV Australia Pty Ltd conducted a vegetation survey on Mining Lease 70/308. Four survey plots were executed within undisturbed, 'control' areas of the site and a further four were established within the rehabilitated areas (ENV, 2009). Plots were placed in different aged rehabilitation and sampling intensity was selected in consideration of the landforms, habitat, vegetation structure, diversity and seasonality (ENV, 2009). Two of the plots were established within the application area, specifically within the 'Dune' and 'Dune top' landform types.

As a result of the field survey, a total of 53 flora taxa from 27 families and 44 genera were recorded within the project area, including four introduced species (ENV, 2009). The number of species recorded within the project area is considered a typical level of species richness, as Hart, Simpson and Associates (1999) recorded similar flora species richness (45 species) during their ecological survey (ENV, 2009). The plant families most frequently recorded from the survey were as follows (ENV, 2009):

- Poaceae - five species;
- Mimosaceae - four species; and
- Asteraceae four species.

No Declared Rare Flora (DRF), Priority Flora or locally significant flora species were located within the survey area (ENV, 2009).

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

Methodology ENV (2009).
Hart, Simpson and Associates (1999).
GIS Database:
- Declared Rare and Priority Flora List.

(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 known Threatened Ecological Communities (TEC) found within the application area (GIS Database). The nearest TEC to the application area is Lake Thetis which is located approximately 1.6 kilometres to the south-west (GIS Database). This lake is listed as a Wetland of National Significance (DIWA Listing) and is part of a stromatolite community of stratified hypersaline coastal lakes (Mitchell et al. 2002).

Nonetheless, given the distance between the application area and Lake Thetis, it is unlikely that the proposed clearing would contribute to any adverse impacts on this TEC.

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

Methodology Mitchell et al. (2002)
GIS Databases:
- Pre-European Vegetation.
- Threatened Ecological Communities.

(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 area applied to clear falls within the Interim Biogeographic Regionalisation for Australia (IBRA) Swan Coastal Plain 2 subregion (GIS Database). This subregion has experienced significant clearing for purposes

including; agriculture, horticulture and forestry, as well as urban and industrial development. Consequently, there is approximately 41.2% of the pre-European vegetation extent remaining within the Swan Coastal Plain 2 subregion and the bioregional conservation status is therefore considered to be "depleted" – see table (Shepherd et al, 2001a).

The vegetation of the application area has been classified as Beard Vegetation Association 1026: Mosaic: Shrublands; *Acacia rostellifera*, *A. cyclops* (in the south) & *Melaleuca cardiophylla* (in the north) thicket / Shrublands; *Acacia lasiocarpa* & *Melaleuca acerosa* heath. According to Shepherd et al. (2001a), approximately 90.8% of Beard Vegetation Association 1026 remains uncleared at the subregional level and the bioregional conservation status is therefore considered to be of "least concern" – see table (Department of Natural Resources and Environment, 2002).

The proposed clearing of 6.5 hectares represents 0.01% of the current extent of Beard Vegetation Association 1026 that remains within the Swan Coastal Plain 2 subregion. Previous disturbances within and adjacent to the application area, combined with weed infestations have impacted on the condition of the vegetation within the application area, hence it is not considered to be a significant remnant of native vegetation within either a local or regional context. Furthermore, the benchmark of 15% representation in conservation reserves has been met for Beard Vegetation Association 1026 with 52.6% found within IUCN class I to IV reserves at both the bioregional and subregional levels – see table (Shepherd et al, 2001a). The removal of 6.5 hectares of vegetation is unlikely to affect the conservation status of this vegetation type.

	Pre-European area (ha)*	Current extent (ha)*	Remaining %*	Conservation Status**	Pre-European % in IUCN Class I-IV Reserves (and current %)
IBRA Bioregion – Swan Coastal Plain	1,501,457	571,759	~38.1	Depleted	10.4 (24.2)
IBRA subregion – Swan Coastal Plain 2	1,117,991	460,919	~41.2	Depleted	11.5 (24.1)
Shire of Dandaragan	668,507	326,283	~48.8	Depleted	N/A
Beard veg assoc. – State					
1026	70,705	63,069	~89.2	Least Concern	50.3 (52.4)
Beard veg assoc. – Bioregion					
1026	58,407	53,013	~90.8	Least Concern	51.5 (52.6)
Beard veg assoc. – Subregion					
1026	58,407	53,013	~90.8	Least Concern	51.5 (52.6)

Options to select from: Bioregional Conservation Status of Ecological Vegetation Classes (Department of Natural Resources and Environment 2002)

Presumed extinct Probably no longer present in the bioregion
 Endangered* <10% of pre-European extent remains
 Vulnerable* 10-30% of pre-European extent exists
 Depleted* >30% and up to 50% of pre-European extent exists
 Least concern >50% pre-European extent exists and subject to little or no degradation over a majority of this area

* or a combination of depletion, loss of quality, current threats and rarity gives a comparable status

* Shepherd et al. (2001) updated 2005

** Department of Natural Resources and Environment (2002)

*** Area within the Intensive Landuse Zone

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

Methodology Department of Natural Resources and Environment (2002).
 Shepherd et al. (2001a).

GIS Databases:

- Interim Biogeographic Regionalisation of Australia (subregions).
- Interim Biogeographic Regionalisation of Australia.

(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

There are no watercourses or wetlands within the application area (GIS Database). The closest wetland to the application area is Lake Thetis, located approximately 1.6 kilometres to the south-west (GIS Database).

The area proposed to be cleared is adjacent to areas that have been previously mined and subsequently rehabilitated. More intact vegetation can be found within the Nambung National Park and this effectively provides a buffer between Lake Thetis and the application area. It is unlikely that there would be any impacts to vegetation associated with watercourses or wetlands as a result of the clearing associated with this proposal.

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

Methodology GIS Databases:

- Hydrography, Lakes (medium scale, 250k GA).
- Hydrography, linear (medium scale, 250k GA).

(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 application area falls within the Quindalup Dune System, which typically comprises a layer of grey or white calcareous sand with poor structure in low dunes over a truncated surface of older Tamala limestone (Westdeen Holdings Pty Ltd, 2008). The limestone is naturally exposed in areas.

The topography of the local area is relatively flat with scattered sand dunes arranged perpendicular to the coast (Hart, Simpson and Associates, 1999). Westdeen Holdings Pty Ltd (2008) advise that the area proposed to be mined consists of taller dunes of loose calcareous sand which has been wind blown from the surrounding plain. The dunes are semi-stabilised but moving slowly in response to prevailing weather and wind conditions. They form part of a series of dunes blown inland until they finally stabilise.

The proposed clearing would allow for the progressive mining of a semi-stabilised dune system over a 10 year period. Sectors of between 0.5 and 1 hectare(s) would be cleared annually, with the mining schedule designed to minimise the area open at one time which would effectively minimise the potential for wind erosion (Westdeen Holdings Pty Ltd, 2008). In addition, the operational area will be restricted to one mine face at any one time (Westdeen Holdings Pty Ltd, 2008) which will further mitigate the potential for wind erosion.

The mining operation as proposed would involve the removal of limesand down to the level of the natural soil surface, and consequently there would be no disturbance to either the topsoil or underlying soil profile as a result of the mining operations (Westdeen Holdings Pty Ltd, 2009a). Westdeen Holdings Pty Ltd (2008) advise that progressive rehabilitation will be carried out and this is considered critical to ensure that a stable and sustainable landform is created post-mining.

On 20 June 2008, a site visit of the proposed clearing area was conducted by the assessing officer and other stakeholders, including representatives from DEC and Aglime. During the visit, both the application area and previously mined areas were inspected. The areas that were previously mined had undergone rehabilitation, although rehabilitation success was found to be variable across the site. Various weed species were also found to be prevalent within areas that had been previously rehabilitated. The 20 year old rehabilitation was found to have a higher representation of dominant species similar to that found within undisturbed areas, whilst also containing a much reduced density of weeds when compared to the 2 and 5 year old rehabilitation sites. Furthermore, it was noted that there was little topsoil remaining within the 2 and 5 year old rehabilitation sites, and species diversity and density was also poor within these sites.

A flora survey and rehabilitation assessment of the site was conducted by ENV Australia Pty Ltd on 30 October 2008, during which a high variation in the standard of rehabilitation was similarly recorded. Survey plots were established within several undisturbed 'control' sites, as well as within 20, 10, 5 and 2 year old rehabilitation sites respectively (ENV, 2009). Consequently it was found that there was a 70% return of dominant species within the 20 year old rehabilitation, a 50% return within the 10 year old rehabilitation, a 30% return within the 5 year old rehabilitation and a 0% return of dominant species within the 2 year old rehabilitation (ENV, 2009). Sand depth of the limestone hardpan was also found to be less than 300 millimetres in the 2 and 5 year old rehabilitation sites (ENV, 2009). Factors considered to have impaired the success of rehabilitation at the site include erosion of soil, wind, lack of dominant species, weed invasion and a topsoil depth and soil profile which is inconsistent with the local natural conditions (ENV, 2009).

Advice was previously provided by the Department of Agriculture and Food regarding the potential for land degradation associated with the proposal. DAFWA (2007) stated that "it is clear that the applicant had failed to rehabilitate adequately the site of their previous mining operation in the adjacent area, and if they were to repeat that operation, unacceptable land degradation would result". DAFWA (2007) further advised that the application should not be approved unless the applicants agree to undertake further rehabilitation of the previous site and rehabilitate the new site including measures to prevent wind erosion".

Westdeen Holdings Pty Ltd, in consultation with the Department of Environment and Conservation (DEC) and

Department of Mines and Petroleum (DMP), have developed an Environmental Management and Rehabilitation Plan (EMRP) which details the rehabilitation techniques proposed to be used to maximise rehabilitation success, whilst mitigating the potential for wind erosion within the proposed clearing area, as well as the adjacent previously mined areas. The EMRP will form part of the Mining Proposal, which if approved, will be imposed as a tenement condition on Mining Lease 70/308.

The EMRP has been endorsed by DEC, which is the lead agency responsible for the management of the Southern Beekeepers Nature Reserve. DEC (2009c) state that "DEC acknowledges that the proponent has consulted with the Department regarding the Environmental Management and Rehabilitation Plan and the Offset Proposal. Based on the information provided within the documents, Environmental Management Branch (EMB) is of the view that the documents provide an adequate level of detail and therefore address the previous advice provided by DEC and gives a level of confidence that the programs/processes will be appropriate for the future conservation land use and are acceptable to the DEC".

The listing of species recorded from the ENV (2009) flora survey has been used within the EMRP to define the completion criteria against which the success of rehabilitation will be assessed. Species composition for the purposes of rehabilitation will principally comprise of dominant species recorded during the flora survey, with a return target of 60% species diversity relative to undisturbed sites being the completion criteria (Westdeen Holdings Pty Ltd, 2008).

Westdeen Holdings Pty Ltd (2008) state that the following procedures will be implemented with respect to the rehabilitation of the proposed clearing area, as well as the adjacent previously mined areas:

- return of topsoil/limesand to a minimum depth of 300 millimetres;
- where appropriate, deep ripping or cultivating the surface to remove compaction from trafficking and produce an uneven surface to reduce wind speed;
- spreading vegetation recovered from previous mining or direct placement from current operations to provide seed and root material for propagation and additional protection of the surface from prevailing winds;
- the collection, treatment (where necessary) and spreading of seed from key colonising species where larger areas are being rehabilitated and the quantity of vegetation material is limited. Seed will be sourced from the immediate area surrounding mining operations;
- introduction of local provenance seed of target species to ensure biodiversity in the rehabilitation reflects surrounding undisturbed vegetation;
- regular monitoring will be undertaken of surface stability, plant density, species diversity, vegetation growth and the presence of weeds, to measure rehabilitation performance. Monitoring will be undertaken using a combination of botanical surveys to identify species diversity and Ecosystem Function Analysis (EFA) to measure the development of landform stability and ecosystem function over time;
- active weed management will be undertaken to control weeds when identified in new rehabilitation and maintain the existing weed control program across the site;
- where monitoring shows that revegetation success from rehabilitation has not been adequate or is slow to establish Westdeen will investigate the cause and, in consultation with DEC Regional staff, develop a remediation program;
- Westdeen will report on the performance of the rehabilitation and present monitoring results to government in Annual Environmental Reports.

Despite the risk of land degradation in the form of wind erosion, it is considered that the proposal will not contribute to further erosion on site, and will effectively mitigate the potential for land degradation provided that the commitments and procedures detailed within the EMRP are adhered to by the proponent. Should the permit be granted, it is recommended that appropriate conditions be imposed on the permit for the purposes of weed management and rehabilitation.

Based on the above, the proposed clearing is at variance to this Principle.

Methodology ENV (2009).
DAFWA (2007).
DEC (2009c).
Hart, Simpson & Associates (1999).
Westdeen Holdings Pty Ltd (2008).
Westdeen Holdings Pty Ltd (2009a).

(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 clearing application area lies within the 'C' class Southern Beekeepers Nature Reserve (GIS Database). This Nature Reserve covers an area of approximately 10,841 hectares and has a diverse flora of several hundred species (CALM, 1998). Low exposed heaths of mainly acacia and myrtles dominate the landscape, with tuart woodlands occurring in the valleys (CALM, 1998).

The southern portion of the application area is also located within the proposed extension to the Nambung National Park, which is on the Register of National Estate (GIS Database). The Nambung National Park covers an area of approximately 18,319 hectares (CALM, 1998) and is listed on the Register of National Estate in recognition of its significance for conservation. The area is significant for its dune systems, limestone pinnacles and caves associated with the Nambung River. It also has high aesthetic value from its range of landforms, particularly The Pinnacles (DEWHA, 2009).

The proposed clearing (6.5 hectares) would result in the incremental removal of a vegetated, semi-stabilised dune system over a 10 year life-of-mine period. In comparison to areas immediately adjacent to the application area that have been degraded from past mining, the vegetation within the application area is considered to have a greater conservation value. Notwithstanding, the vegetation type (Beard Vegetation Association 1026) is well represented both locally and regionally, with approximately 90.8% of this Beard Vegetation Association remaining uncleared at the sub-regional level (Shepherd et al, 2001a). In terms of bioregional conservation status, the proposed clearing is considered to be of "least concern" (Department of Natural Resources and Environment, 2002).

It should be acknowledged that as the application area falls within the Southern Beekeepers Nature Reserve, Cabinet decision 5.08 is applied to this proposal. This Cabinet decision "allows for mineral and petroleum exploration and production, subject to environmental assessment, in nature reserves and conservation parks not of a class A, subject to production projects delivering a net environmental benefit".

Should the clearing permit be granted, it is recommended that a condition be imposed which requires that an offset proposal be submitted and approved by DEC (or DMP as the delegate) before the clearing of native vegetation can commence on Mining Lease 70/308.

Westdeen Holdings Pty Ltd have submitted a clearing offset proposal to DEC which will require that they rehabilitate a disused borrow pit that was used to provide fill material for the construction of Pinnacles Drive in 2003 (Westdeen Holdings Pty Ltd, 2009b). This proposal has been endorsed by the Environmental Management Branch (EMB) within DEC, who advise that "DEC acknowledges that the proponent has consulted with the Department regarding the Environmental Management and Rehabilitation Plan and the Offset Proposal. Based on the information provided within the documents, EMB is of the view that the documents provide an adequate level of detail and therefore address the previous advice provided by DEC and gives a level of confidence that the programs/processes will be appropriate for the future conservation land use and are acceptable to the DEC" (DEC, 2009c).

Based on the above, the proposed clearing is at variance to this Principle.

Methodology CALM (1998).
DEC (2009c).
Department of Natural Resources and Environment (2002).
DEWHA (2009).
Shepherd et al. (2001a).
Westdeen Holdings Pty Ltd (2009b).
GIS Database:
- CALM Managed Lands and Waters.

(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

There are no wetlands, watercourses or significant hydrological features located within the mining lease (GIS Database).

Large, shallow groundwater resources occur in the superficial sands and limestone between Gingin and Cervantes (CALM, 1998). Fresh groundwater occurs in deep aquifers along the coast from Guilderton north to the Lancelin-Wedge Island area, but farther north the deep groundwater along the coast is saline (CALM, 1998). The area of the mid-west coastal plain within which the application area lies is characterised by a relatively shallow water table (2 to 5 metres) below the interdunal valley floors (Westdeen Holdings Pty Ltd, 2009a).

The mining operation as proposed would involve the removal of limesand down to the level of the natural soil surface, and consequently there would be no direct contact with the groundwater table (Westdeen Holdings Pty Ltd, 2009a). Impacts to the quality of groundwater are unlikely given that no hydrocarbons are stored on the

lease, and industrial wastes and tailings are not generated through the mining process (Westdeen Holdings Pty Ltd, 2009a).

Given the size of the area proposed to be cleared (6.5 hectares) relative to the size of the Perth Groundwater Province (4,660,026 hectares) (GIS Database), it is unlikely that the depth of groundwater will be affected as a direct result of the proposed clearing.

The application area borders the Cervantes Water Reserve which is a Public Drinking Water Source Area (PDWSA) (GIS Database). Water in this reserve is contained in the Tamala Limestone, which is an unconfined aquifer (Water and Rivers Commission, 1999). The Cervantes Water Reserve covers an area above ground that recharges the aquifer. This area is classed as a Priority 1 area and is protected under the Cervantes Water Reserve Water Source Protection Plan (Water and Rivers Commission, 1999).

The Department of Water (DoW) previously provided advice in relation to clearing application CPS 1894/1 and this advice is considered relevant in the context of this proposal. DoW (2007) advised that "the issuing of a water licence will depend on land use compatibility with the Cervantes Water Reserve Water Source Protection Plan, Water and Rivers Commission Report WRP8". DoW (2007) further advised that "the mining tenement 70/308 is located within the Jurien Groundwater Area as proclaimed under the Rights in Water and Irrigation (RIWI) Act 1914. Under sections 5C and 26D of the RIWI Act 1914, construction of wells or abstraction of groundwater will be subject to licensing by the Department of Water". The proponent is advised to liaise with the Department of Water for advice in relation to this matter.

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

Methodology CALM (1998).
DoW (2007).
Water and Rivers Commission (1999).
Westdeen Holdings Pty Ltd (2009a).
GIS Databases:
- Geodata, Lakes.
- Groundwater Provinces.
- Hydrography, linear.
- Public Drinking Water Source Areas (PDWSAs).

(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 located on sandy soils overlying Tamala limestone. The area proposed to be cleared is small (6.5 hectares) and the sandy limestone base in these areas is relatively free draining (Westdeen Holdings Pty Ltd, 2009a). Any runoff during periods of heavy precipitation will drain quickly via adjacent sandy areas (Westdeen Holdings Pty Ltd, 2009a).

The Cervantes area is subject to a Mediterranean environment characterised by hot dry summers and cool wet winters typical of the mid west coastal area (Westdeen Holdings Pty Ltd, 2009a). Annual average rainfall is approximately 600 millimetres, some 70% of which falls between May and October (Westdeen Holdings Pty Ltd, 2009a). The annual evaporation rate of the area is approximately 2,200 millimetres (GIS Database). Consequently, runoff during normal rainfall events is unlikely to collect and flood, as it will likely move through the sandy soils to the groundwater below, or be evaporated quickly.

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

Methodology Westdeen Holdings Pty Ltd (2009a).
GIS Databases:
- Evapotranspiration, Point Potential.
- Hydrography, Lakes (medium scale, 250k GA).
- Hydrography, linear (medium scale, 250k GA).

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

Comments

The clearing permit application was advertised on the 12 January 2009, inviting submissions from the public.

A submission was received from the Shire of Dandaragan whereby concerns were expressed regarding the extent of un-rehabilitated land on Mining lease 70/308. The Shire recommended that no further clearing be approved until such time that a rehabilitation plan is prepared and approved.

Westdeen Holdings Pty Ltd, in consultation with the Department of Environment and Conservation (DEC) and Department of Mines and Petroleum (DMP), have developed an Environmental Management and Rehabilitation Plan (EMRP). The EMRP has been reviewed and endorsed by both agencies as part of the assessment of this proposal.

The assessing officer contacted the Deputy Chief Executive Officer of the Shire of Dandaragan on 23 February 2009 and advised that the issues raised by the Shire had also been identified through the assessment of the proposal, and that these had since been addressed by the proponent. Consequently, the Shire cited no further objections in relation to the proposal.

There is one native title claim (WC97/071) over the area under application (GIS Database). This claim has been registered with the National Native Title Tribunal on behalf of the claimant group. However, the tenement has been granted in accordance with the future act regime of the *Native Title Act 1993* and the nature of the act (i.e. the proposed clearing activity) has been provided for in that process, therefore the granting of a clearing permit is not a future act under the *Native Title Act 1993*.

There are no known Aboriginal Sites of Significance within the vicinity of the application area (GIS Database). It is the proponent's responsibility to comply with the *Aboriginal Heritage Act 1972* and ensure that no Sites of Aboriginal Significance are damaged through the clearing process.

It is the proponent's responsibility to liaise with the Department of Environment and Conservation and the Department of Water to determine whether a Works Approval, Water Licence, Bed and Banks Permit, or any other licences or approvals are required for the proposed works.

Given that the application area is located within the Southern Beekeepers Nature Reserve, Cabinet decision 5.08 applies to this proposal. This Cabinet decision "allows for mineral and petroleum exploration and production, subject to environmental assessment, in nature reserves and conservation parks not of a class A, subject to production projects delivering a net environmental benefit". Accordingly, Westdeen Holdings Pty Ltd have submitted an offset proposal to DEC which states that they will commit to the rehabilitation of a disused borrow pit that was used to provide fill material for the construction of Pinnacles Drive in 2003 (Westdeen Holdings Pty Ltd, 2009b).

On 11 June 2007, Westdeen Holdings Pty Ltd lodged an application to clear 7.5 hectares of native vegetation on Mining Lease 70/308 (CPS 1894/1). The amount of vegetation applied to clear was later modified to 2.84 hectares. On 4 April 2008, an inspection of the area under assessment was conducted by officers from the Department of Industry and Resources (now Department of Mines and Petroleum), during which it was observed that clearing had commenced without approval. A Vegetation Conservation Notice was subsequently issued to Westdeen Holdings Pty Ltd in accordance with Section 70(2) of the *Environmental Protection Act 1986*. This notice has the effect of preventing further unlawful clearing of native vegetation on Mining Lease 70/308.

Methodology GIS Databases:
- Aboriginal Sites of Significance.
- Native Title Claims.

4. Assessor's comments

Comment

The proposal has been assessed against the Clearing Principles, and the proposal is at variance to Principles (g) and (h) and is not likely to be at variance to Principles (a), (b), (c), (d), (e), (f), (i) and (j).

It is recommended that should a permit be granted, conditions be imposed on the permit with regards to weed management, rehabilitation, environmental offsets, record keeping and permit reporting.

5. References

- Burbidge, A. A. (2004). *Threatened Animals of Western Australia*. Department of Conservation and Land Management, Kensington, Western Australia.
- CALM (Department of Conservation and Land Management) (1998) Nambung National Park Management Plan 1998 - 2008. Management Plan No. 37. URL: <http://www.naturebase.net/pdf/nature/management/nambung.pdf>
- DAFWA (2007) Land degradation assessment report. Office of the Commissioner of Soil and Land Conservation, Department of Agriculture and Food Western Australia. Received 30 October 2007.
- DEC (2009a) Fauna Species Profiles - Western Brush Wallaby (*Macropus irma*) www.dec.wa.gov.au/component/option,com_docman/Itemid,/gid,135/task,doc_download/ - (Accessed 16 February 2009).
- DEC (2009b) Threatened and Priority Fauna List - January 2009. Department of Environment and Conservation, Western Australia.
- DEC (2009c) Comments from Environmental Management Branch regarding application to clear native vegetation on Mining Lease 70/308 – Westdeen Holdings Pty Ltd. Received 19 February 2009.
- Department of Natural Resources and Environment (2002) Biodiversity Action Planning. Action planning for native biodiversity at multiple scales; catchment bioregional, landscape, local. Department of Natural Resources and Environment, Victoria.
- DEWHA (Department of the Environment, Water, Heritage and the Arts) (2009) Australian Heritage Database. <http://www.environment.wa.gov.au> (accessed 18 February 2009).
- DoW (Department of Water) (2007) Comments regarding application to clear native vegetation - Mining Lease 70/308.

Received 9 July 2007.

- ENV (2009) Flora and Vegetation of Cervantes Limesand Quarry - M70/308. Unpublished report by ENV Australia Pty Ltd for Valback EMS. Report No. RP001 prepared 23 January 2009.
- Hart, Simpson and Associates (1999) Westdeen Holdings Limesand Pit, M70/308, Ecological Survey. Unpublished report prepared by Hart, Simpson and Associates Pty Ltd for Westdeen Holdings Pty Ltd. February 1999.
- Johnstone, R. E. and Storr, G. M. (1998) Handbook of Western Australian birds. Volume 1: Non-passerines (Emu to Dollarbird). Western Australian Museum, Perth, 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.
- Mitchell, D, Williams, K, and Desmond, A (2002) Swan Coastal Plain 2 (SWA2-Swan Coastal Plain subregion), Department of Conservation and Land Management.
- Shepherd, D.P., Beeston, G.R. and Hopkins, A.J.M. (2001a) Native Vegetation in Western Australia, Extent, Type and Status. Resource Management Technical Report 249. Department of Agriculture, Western Australia (updated 2005).
- Water and Rivers Commission (1999) Cervantes Water Reserve Water Source Protection Plan.
URL:http://portal.water.wa.gov.au/portal/page/portal/WaterManagement/Publications/PlansandAssessments/Content/WRP8_CERVANTES.pdf
- Westdeen Holdings Pty Ltd (2008) Environmental Management and Rehabilitation Plan for Mining Lease 70/308, Cervantes, South West Mineral Field. Prepared by Dr Stephen Carr (Westdeen Holdings) and Bill Biggs (Valback EMS). December 2008.
- Westdeen Holdings Pty Ltd (2009a) Revised addendum to mining proposal to continue mining at Cervantes M70/308 - 2002-2017. South West Mineral Field, Limesand Mining. Westdeen Holdings Pty Ltd. Prepared by Dr Stephen Carr. February 2009.
- Westdeen Holdings Pty Ltd (2009b) Clearing Offset Proposal for clearing on Mining Lease 70/308 Cervantes, South West Mineral Field. Prepared by Dr Stephen Carr (Westdeen Holdings) and Bill Biggs (Valback EMS). February 2009.
- Western Australian Museum (2009) Faunabase - Western Australian Museum, Queensland Museum and Museum and Art Gallery of NT Collections Databases. http://www.museum.wa.gov.au/faunabase/_asp_bin/AreaSearchcx.asp?d (Accessed 11 February 2009).

6. Glossary

Acronyms:

BoM	Bureau of Meteorology, Australian Government.
CALM	Department of Conservation and Land Management, Western Australia.
DAFWA	Department of Agriculture and Food, Western Australia.
DA	Department of Agriculture, Western Australia.
DEC	Department of Environment and Conservation
DEH	Department of Environment and Heritage (federal based in Canberra) previously Environment Australia
DEP	Department of Environment Protection (now DoE), Western Australia.
DIA	Department of Indigenous Affairs
DLI	Department of Land Information, Western Australia.
DoE	Department of Environment, Western Australia.
DoIR	Department of Industry and Resources, Western Australia.
DOLA	Department of Land Administration, Western Australia.
DoW	Department of Water
EP Act	Environment Protection Act 1986, Western Australia.
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999 (Federal Act)
GIS	Geographical Information System.
IBRA	Interim Biogeographic Regionalisation for Australia.
IUCN	International Union for the Conservation of Nature and Natural Resources – commonly known as the World Conservation Union
RIWI	Rights in Water and Irrigation Act 1914, Western Australia.
s.17	Section 17 of the Environment Protection Act 1986, Western Australia.
TECs	Threatened Ecological Communities.

Definitions:

{Atkins, K (2005). *Declared rare and priority flora list for Western Australia, 22 February 2005*. Department of Conservation and Land Management, Como, Western Australia} :-

- P1** **Priority One - Poorly Known taxa:** taxa which are known from one or a few (generally <5) populations which are under threat, either due to small population size, or being on lands under immediate threat, e.g. road verges, urban areas, farmland, active mineral leases, etc., or the plants are under threat, e.g. from disease, grazing by feral animals, etc. May include taxa with threatened populations on protected lands.

Such taxa are under consideration for declaration as 'rare flora', but are in urgent need of further survey.

- P2** **Priority Two - Poorly Known taxa:** taxa which are known from one or a few (generally <5) populations, at least some of which are not believed to be under immediate threat (i.e. not currently endangered). Such taxa are under consideration for declaration as 'rare flora', but are in urgent need of further survey.
- P3** **Priority Three - Poorly Known taxa:** taxa which are known from several populations, at least some of which are not believed to be under immediate threat (i.e. not currently endangered). Such taxa are under consideration for declaration as 'rare flora', but are in need of further survey.
- P4** **Priority Four – Rare taxa:** taxa which are considered to have been adequately surveyed and which, whilst being rare (in Australia), are not currently threatened by any identifiable factors. These taxa require monitoring every 5–10 years.
- R** **Declared Rare Flora – Extant taxa (= Threatened Flora = Endangered + Vulnerable):** taxa which have been adequately searched for, and are deemed to be in the wild either rare, in danger of extinction, or otherwise in need of special protection, and have been gazetted as such, following approval by the Minister for the Environment, after recommendation by the State's Endangered Flora Consultative Committee.
- X** **Declared Rare Flora - Presumed Extinct taxa:** taxa which have not been collected, or otherwise verified, over the past 50 years despite thorough searching, or of which all known wild populations have been destroyed more recently, and have been gazetted as such, following approval by the Minister for the Environment, after recommendation by the State's Endangered Flora Consultative Committee.

{Wildlife Conservation (Specially Protected Fauna) Notice 2005} [Wildlife Conservation Act 1950] :-

- Schedule 1** **Schedule 1 – Fauna that is rare or likely to become extinct:** being fauna that is rare or likely to become extinct, are declared to be fauna that is need of special protection.
- Schedule 2** **Schedule 2 – Fauna that is presumed to be extinct:** being fauna that is presumed to be extinct, are declared to be fauna that is need of special protection.
- Schedule 3** **Schedule 3 – Birds protected under an international agreement:** being birds that are subject to an agreement between the governments of Australia and Japan relating to the protection of migratory birds and birds in danger of extinction, are declared to be fauna that is need of special protection.
- Schedule 4** **Schedule 4 – Other specially protected fauna:** being fauna that is declared to be fauna that is in need of special protection, otherwise than for the reasons mentioned in Schedules 1, 2 or 3.

{CALM (2005). *Priority Codes for Fauna*. Department of Conservation and Land Management, Como, Western Australia} :-

- P1** **Priority One: Taxa with few, poorly known populations on threatened lands:** Taxa which are known from few specimens or sight records from one or a few localities on lands not managed for conservation, e.g. agricultural or pastoral lands, urban areas, active mineral leases. The taxon needs urgent survey and evaluation of conservation status before consideration can be given to declaration as threatened fauna.
- P2** **Priority Two: Taxa with few, poorly known populations on conservation lands:** Taxa which are known from few specimens or sight records from one or a few localities on lands not under immediate threat of habitat destruction or degradation, e.g. national parks, conservation parks, nature reserves, State forest, vacant Crown land, water reserves, etc. The taxon needs urgent survey and evaluation of conservation status before consideration can be given to declaration as threatened fauna.
- P3** **Priority Three: Taxa with several, poorly known populations, some on conservation lands:** Taxa which are known from few specimens or sight records from several localities, some of which are on lands not under immediate threat of habitat destruction or degradation. The taxon needs urgent survey and evaluation of conservation status before consideration can be given to declaration as threatened fauna.
- P4** **Priority Four: Taxa in need of monitoring:** Taxa which are considered to have been adequately surveyed, or for which sufficient knowledge is available, and which are considered not currently threatened or in need of special protection, but could be if present circumstances change. These taxa are usually represented on conservation lands.
- P5** **Priority Five: Taxa in need of monitoring:** Taxa which are not considered threatened but are subject to a specific conservation program, the cessation of which would result in the species becoming threatened within five years.

Categories of threatened species (*Environment Protection and Biodiversity Conservation Act 1999*)

- EX** **Extinct:** A native species for which there is no reasonable doubt that the last member of the species has died.
- EX(W)** **Extinct in the wild:** A native species which:
(a) is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; or
(b) has not been recorded in its known and/or expected habitat, at appropriate seasons, anywhere in its past range, despite exhaustive surveys over a time frame appropriate to its life cycle and form.
- CR** **Critically Endangered:** A native species which is facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with the prescribed criteria.
- EN** **Endangered:** A native species which:
(a) is not critically endangered; and

(b) is facing a very high risk of extinction in the wild in the near future, as determined in accordance with the prescribed criteria.

VU

Vulnerable: A native species which:

(a) is not critically endangered or endangered; and

(b) is facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with the prescribed criteria.

CD

Conservation Dependent: A native species which is the focus of a specific conservation program, the cessation of which would result in the species becoming vulnerable, endangered or critically endangered within a period of 5 years.