



1. Application details

1.1. Permit application details

Permit application No.: 2310/1
 Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: B & J Catalano Pty Ltd

1.3. Property details

Property: LOT 2 ON PLAN 15419 (Lot No. 2 LUDLOW MYALUP 6220)
 Local Government Area: Shire Of Harvey
 Colloquial name: B & J Catalano, Lot 2 Ludlow Road Myalup.

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
5.6		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 Unit 998: Medium woodland; tuart (Shepherd, 2006)	The vegetation under application is for 5.6ha for the purpose of sand extraction. A site visit confirmed that the vegetation consisted of an open heath. The dominant species include Banksia spp., Eucalyptus spp. (mallee), Eucalyptus todtiana (?), Nuytsia floribunda, Agonis flexuosa and Hakea spp. The mid story consists of Melualeuca spp. and Xanthorrea spp. and the understorey was dominated by weeds.	Degraded: Structure severely disturbed; regeneration to good condition requires intensive management (Keighery 1994)	The application area has been divided into two areas, based on the condition of the vegetation. The vegetation to the east was considered to be in degraded condition as determined by aerial mapping and site visit (2008).
Cottesloe Complex Central and South: Mosaic of woodland of E. gomphocephala and open forest of E. gomphocephala - E. marginata - E. calophylla; closed heath on the Limestone outcrops. (Heddl et al., 1980)	The vegetation under application is for 5.6ha for the purpose of sand extraction. A site visit confirmed that the vegetation consisted of an open heath. The dominant species include Banksia spp., Eucalyptus spp. (mallee), Eucalyptus todtiana (?), Nuytsia floribunda, Agonis flexuosa and Hakea spp. The mid story consists of Melualeuca spp. and Xanthorrea spp. and the understorey was dominated by weeds.	Good: Structure significantly altered by multiple disturbance; retains basic structure/ability to regenerate (Keighery 1994)	The application area has been divided into two areas, based on the condition of the vegetation. The vegetation to the west was considered to be in good condition as determined by aerial mapping and site visit (2008).
Beard Vegetation Unit 998: Medium woodland; tuart (Shepherd, 2006)	The vegetation under application is for 5.6ha for the purpose of sand extraction. A site visit confirmed that the vegetation consisted of an open heath. The dominant species include Banksia spp., Eucalyptus spp. (mallee), Eucalyptus todtiana (?), Nuytsia floribunda, Agonis flexuosa and Hakea spp. The mid story consists of Melualeuca spp. and Xanthorrea spp. and the understorey was dominated by weeds.	Good: Structure significantly altered by multiple disturbance; retains basic structure/ability to regenerate (Keighery 1994)	The application area has been divided into two areas, based on the condition of the vegetation. The vegetation to the west was considered to be in good condition as determined by aerial mapping and site visit (2008).
Cottesloe Complex Central and South: Mosaic of woodland of E. gomphocephala and open forest of E. gomphocephala - E. marginata - E. calophylla; closed heath on the Limestone outcrops. (Heddl et al., 1980)	The vegetation under application is for 5.6ha for the purpose of sand extraction. A site visit confirmed that the vegetation consisted of an open heath. The dominant species include Banksia spp., Eucalyptus spp. (mallee), Eucalyptus todtiana (?), Nuytsia floribunda, Agonis flexuosa and Hakea spp. The mid story consists of Melualeuca spp. and Xanthorrea spp. and the understorey was dominated by weeds.	Good: Structure significantly altered by multiple disturbance; retains basic structure/ability to regenerate (Keighery 1994)	The application area has been divided into two areas, based on the condition of the vegetation. The vegetation to the west was considered to be in good condition as determined by aerial mapping and site visit (2008).

3. Assessment of application against clearing principles

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

Comments

Proposal is at variance to this Principle

The proponent has applied to clear 5.6 ha of vegetation for the purpose of sand extraction. The vegetation under application can be separated into two areas based on the condition of the vegetation. The eastern side of the area under application is in degraded (Keighery 1994) condition and the western area is in good (Keighery 1994) condition (DEC site visit 2008).

The vegetation under application is mapped as Beard vegetation association 998 (Medium woodland, Tuart) and Heddle vegetation complex Cottesloe of which there is 41.8% and 45% of the pre-European vegetation extent remaining (respectively) however the local area (10km radius) is highly cleared with ~ 25% of vegetation remaining.

The applied area is within the Greater Bunbury Region Scheme area and is identified as being in close proximity to the indicated Yalgorup, Riverdale road, Yarloop (Riverdale road transect) ecological linkage line. This ecological linkage is significant as it is one of three linkages, within the Greater Bunbury area, which persists from the coast to the plateau. (EPA, 2003)

Supporting information (2008) supplied by the applicant raised the issue that there were areas of land between the ecological linkage and the proposed clearing site however as the application area is not within the constrained portion of the Greater Bunbury Area, only the linkage line has been identified by the EPA (2003), and thus the extent of the linkage has not been located to date. The extent of this linkage will be located with future updates to System 6 and System 1 defined areas.

As the area under application is in close proximity to the identified ecological linkage, application of precautionary principle (EPA, 2000) is necessary to avoid clearing of potentially significant vegetation of this ecological linkage.

There is one rare and 9 priority flora species in a 10km radius from the application area. The rare flora and 3 priority species occur on the same soil and vegetation as the application area. A site visit confirmed that the soils were not likely to be suitable for the rare species however are likely to be suitable for 3 priority species, namely *Lasiopetalum membranaceum* (P3), *Hakea* sp. Yalgorup (P4) and *Haloragis scoparia* (P1).

Lasiopetalum membranaceum is a multi stemmed shrub which is known to occur on sand over limestone (Florabase, 2008b) and *Hakea* sp. Yalgorup is a shrub which typically occurs on brown sand and limestone ridges, (Florabase, 2008c) therefore both of these flora are likely to occur within the application area. *Haloragis scoparia* is a perennial herb and very little information is known about its typical habitat (Florabase, 2008c) Ground truthing at the time the population was recorded indicated that the flora was occurring on clay soils in vegetation dominated by *Eucalyptus rudis*. As little information is known about the niches in which this flora may persist it is possible that this species occurs within the area under application. (Flora Base, 2008)

The applied area is approximately 300m from Lake Preston and approximately 35m from the Peel-Yalgorup wetland system extension (RAMSAR, 2000). The application area is also in close proximity (20m south) of the Yalgorup National Park with which it shares ecological values. Therefore is likely that the area under application may support a diversity of flora and fauna and act as a buffer to these conservation areas.

The clearing as proposed is at variance to this principle as portions of the vegetation are in good condition, are likely to be part for the Yalgorup, Riverdale road, Yarloop ecological linkage, are likely to contain flora of priority conservation significance, are likely to be significant habitat for fauna indigenous to Western Australia as part of a vegetation corridor and as it shares ecological values in common with nearby conservation area Yalgorup National Park.

Methodology

Keighery (1994)
Shepherd (2006)
Shepherd et al (2001)
Heddle et al (1980)
MSB Environmental (2007)
Florabase (2008)
Site Visit (2008)
Greater Bunbury Regional Scheme (2008)
Supporting Information (2008)
EPA (2003)
Regional Advice (2008)
EPA (2004)
EPA (2000)

GIS Database:

- Declared Rare and Priority Flora List - CALM 13/08/03
- Heddle Vegetation Complexes DEP 22/06/95

(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

The proponent has applied to clear 5.6 ha of vegetation for the purpose of sand extraction. The vegetation under application can be separated into two areas based on the condition of the vegetation. The eastern side of the area under application is in degraded (Keighery 1994) condition and the western area is in good (Keighery 1994) condition (Site visit 2008).

The vegetation under application is mapped as Beard Vegetation Association 998 (medium woodland of tuart) and Heddlé Vegetation Complex Cottesloe (mosaic of woodland of *E. gomphocephala* and open forest of *E. gomphocephala*, *E. marginate*, *E. calophylla*; closed heath on the limestone outcrops) (Shepherd, 2006; Heddlé et al, 1980). A site visit (2008) found that vegetation within the application area consisted of dominant species including *Banksia* spp., *Eucalyptus* spp. (mallee), *Eucalyptus todtiana*, *Nuytsia floribunda*, *Agonis flexuosa* and *Hakea* spp. The mid story consists of *Melaleuca* spp. and *Xanthorrea* spp. and the understorey was dominated by weeds.

The applied area is within the Greater Bunbury Region Scheme area and is identified as being in close proximity to the indicated Yalgorup, Riverdale road, Yarloop (Riverdale road transect) ecological linkage line. (GBRS, 2008) This ecological linkage is significant as it is one of three linkages, within the Greater Bunbury area, which persists from the coast to the plateau. (EPA, 2003)

There are 5 records of conservation significant fauna within a 10km radius of the applied area. Three of these species are designated Priority 4 species, namely the Hooded Plover (P4), Easter Curlew (P4) and Western False Pipistrelle (P4). The remaining 2 records are designated under the Environment Protection and Biodiversity Conservation Act 1999 as being of vulnerable status and has a threatened status under the Wildlife Conservation Act 1950, namely the Brush Tailed Phascogale (VU) and the Western Ringtail Possum (VU). Of these species, the application area is only likely to provide habitat for the Western Ringtail Possum.

The Western Ringtail Possum (VU) mostly inhabits coastal Peppermint-Tuart associations from Bunbury to Albany. They are arboreal and have a small, stable home range and mainly feed on Peppermint leaves, Myrtaceous sp. and Jarrah and Marri trees. (Burbridge, 1998)

Additional information was submitted by the applicant (Western Ringtail Possum Habitat Assessment, 2008) in response to the issue of the area under application possibly being habitat for Western Ringtail possum, however surveys were only completed of Lot 4 not Lot 2 (of which the application area is a part). Site Visit (2008) identified a small number of peppermint trees and mallee trees in the southern portion of the application area which may provide habitat for the Western Ringtail possum, however the area is not considered to be significant habitat due to its limited extent and degraded (Keighery, 1994) condition.

As the landscape is highly cleared, retention of intact vegetation in good condition, that provides linkages to nearby conservation areas, is required to maintain the fauna movement in the local area.

Given that the applied area is likely to form part of the Yalgorup, Riverdale road, Yarloop (Riverdale road transect) ecological linkage and given that the landscape has been extensively cleared, the vegetation under application is significant as habitat for fauna indigenous to Western Australia during east-west migration and home range movement across landforms and vegetation types.

Therefore the clearing as proposed is at variance to this principle.

Methodology EPA (2003)
Site Visit (2008)
Greater Bunbury Region Scheme (2008)
Keighery (1994)
Shepherd (2006)
Shepherd et al (2001)
Heddlé et al (1980)
Burbridge (1998)
Supporting Information (2008)
Western Ringtail Possum Habitat Assessment (2008)

GIS Database:

- Pre European Vegetation - DA 01/01
- Heddlé Vegetation Complexes DEP 22/06/95
- SAC Bio Datasets (090408), 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

The proponent has applied to clear 5.6 ha of vegetation for the purpose of sand extraction. The vegetation under application can be separated into two areas based on the condition of the vegetation. The eastern side of the area under application is in degraded (Keighery 1994) condition and the western area is in good (Keighery 1994) condition (Site visit 2008).

The vegetation under application is mapped as Beard Vegetation Association 998 (Medium woodland, Tuart) and Heddle Vegetation Complex Cottesloe of which there is 41.8% and 45% of the pre-European vegetation extent remaining (respectively) however the local area (10km radius) is highly cleared with ~25% of vegetation remaining.

Soils under application are mapped as B24 and described as undulating dune landscape underlain by aeolianite which is frequently exposed; small swales of estuarine deposits are included: chief soils are siliceous sands with smaller areas of brown sands and leached sands in the wetter sites. (Northcote et al., 1968) The area under application is also mapped as Spearwood S1a Phase (Dune ridges with shallow to moderately deep siliceous yellow-brown sands, very common limestone outcrop and slopes up to 15%) (DAFWA, 2007)

There is 1 record of rare flora (*Diuris micrantha*) within the local area (10km radius).

Rare Flora, *Diuris micrantha*, is a tuberous, perennial herb which is known to occur on brown loamy clay in winter wet swamps and shallow waters. (Florabase, 2008a) According to GIS mapping (soils state wide) this species occurs on the same soils as the application area, however, Site Visit (2008) confirmed that the soils are predominately sandy and it is therefore, unlikely that this species would occur within the application area.

The clearing as proposed is not likely to be at variance to this principle as no rare flora are likely to occur within the application area.

Methodology

Keighery (1994)
Shepherd (2006)
Shepherd et al (2001)
Heddle et al (1980)
Northcote et al. (1968)
Florabase (2008)
Site Visit (2008)
MBS Environmental (2007)
DAFWA (2007)

GIS Database:

- Declared Rare and Priority Flora List - CALM 13/08/03
- Heddle Vegetation Complexes DEP 22/06/95
- Pre European Vegetation - DA 01/01
- Soils, Statewide DA 11/99

(d) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of a threatened ecological community.

Comments

Proposal is not likely to be at variance to this Principle

Much of the area under application lies within the buffer zone of a Threatened Ecological Community (SCP18; Ellis02).

The vegetation under application is mapped as vegetation types, Beard vegetation unit 998 (Shepherd, 2006) and Heddle vegetation complex Cottesloe (Heddle et al., 1980) while the soil type is mapped as B24 (Northcote et al., 2001). The nearby TEC (SCP18; Ellis02) is mapped as Beard vegetation unit 998 and 27 (Shepherd 2006) and soil type B24 (Northcote et al., 2001), however advice from DEC South West region indicates that the soils of the TEC are more accurately mapped as Spearwood S6 Phase (Flat stony plain with poorly drained shallow siliceous sands and large areas of bare limestone pavement) while the application area is mapped as Spearwood S1a Phase (Dune ridges with shallow to moderately deep siliceous yellow-brown sands, very common limestone outcrop and slopes up to 15%) (DAFWA, 2007)

Supporting Information (2008) supplied by the applicant in response to issues raised regarding the impacts of clearing within the buffer zone of a TEC addressed the likely impacts of clearing on TEC Sedgeland in Holocene dune swales of the southern Swan Coastal Plain which was identified as being on the western side of Lake Preston. The supporting information, therefore, did not address the issue of the impacts of clearing on TEC SCP18 (Ellis02) it is described as Shrublands on calcareous silts of the Swan Coastal Plain and is east of Lake Preston and the application area.

DEC South West Region advises that given the distance, different soils and the nature of sand extraction

(shallow extraction staying above the superficial water table) they do not expect that the clearing as proposed will impact on the TEC ecological values. (Regional Advice, 2008)

Given that the vegetation under application is approximately 3.5km from the TEC and on different soils the proposed clearing is not likely to be at variance to this principle.

Methodology Keighery (1994)
DAFWA (2007)
Shepherd (2006)
Shepherd et al (2001)
Heddle et al (1980)
Northcote et al. (1968)
Site Visit (2008)
Supporting Information (2008)
Regional Advice (2008)

GIS Database:

- SAC Bio Datasets (200508), TEC Database
- Heddle Vegetation Complexes DEP 22/06/95
- Pre European Vegetation - DA 01/01
- Soils, Statewide DA 11/99

(e) Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.

Comments Proposal is at variance to this Principle

The proponent has applied to clear 5.6 ha of vegetation for the purpose of sand extraction. The vegetation under application can be separated into two areas based on the condition of the vegetation. The eastern side of the area under application is in degraded (Keighery 1994) condition and the western area is in good (Keighery 1994) condition (Site visit 2008).

The vegetation under application is mapped as Beard Vegetation Association 998 (Medium woodland, Tuart) (Shepherd, 2006) and Heddle Vegetation Complex Cottesloe (Heddle et al., 2001) of which there is 41.8% and 45% of the pre-European vegetation extent remaining (respectively) (Hopkins et al, 2001) however the local area (10km radius) is highly cleared with approximately 25% of vegetation remaining.

The applied area is within the Greater Bunbury Region Scheme area and is identified as being in close proximity to the indicated Yalgorup, Riverdale road, Yarloop (Riverdale road transect) ecological linkage line. This ecological linkage is significant as it is one of three linkages, within the Greater Bunbury area, which persists from the coast to the plateau. (EPA, 2003)

Supporting information (2008) supplied by the applicant raised the issue that there were areas of land between the ecological linkage and the proposed clearing site however as the application area is not within the constrained portion of the Greater Bunbury Area, only the linkage line has been identified by the EPA (2003), and thus the extent of the linkage has not been located to date. The extent of this linkage will be located with future updates to System 6 and System 1 defined areas.

As the area under application is in close proximity to the identified ecological linkage, application of precautionary principle (EPA, 2000) is necessary to avoid clearing of potentially significant vegetation of this ecological linkage.

The vegetation under application is significant as a remnant of vegetation which is likely to be part of the Yalgorup, Riverdale road, Yarloop (Riverdale road transect) ecological linkage and is within an extensively cleared (approximately 25% of native vegetation remaining) landscape, therefore the clearing as proposed is at variance to this principle.

Methodology Keighery (1994)
Shepherd (2006)
Shepherd et al (2001)
Heddle et al (1980)
Hopkins et al. (2001)
EPA (2003)
EPA (2000)
Supporting Information (2008)
Site Visit (2008)
Greater Bunbury Regional Scheme (2008)

GIS Database:

- Heddle Vegetation Complexes DEP 22/06/95
- Pre European Vegetation - DA 01/01
- Interim Biogeographic Regionalisation of Australia - EA 18/10/00

(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 at variance to this Principle

The applied area is approximately 35m south of the Peel-Yalgorup wetland system extension (RAMSAR, 1971). The Peel-Yalgorup wetland system was determined to be a wetland of international significance as the values of the wetland meet criteria 1, 3, 4, 5, 6 and 8 of the criteria for identifying wetlands of international importance (Hale & Butcher, 2007).

The area under application is approximately 300m east of Lake Preston (wetland of ANCA and Ramsar significance), however, as much of the buffer has been cleared the capacity of the buffer to protect Lake Preston against the impacts of clearing is currently unknown.

The application area is within the recommended buffer (200m) for the Peel-Yalgorup wetland system (RAMSAR, 1971) which is a conservation category wetlands (DOW, 2006). DoW (2006) lists the purpose of a buffer as filtering water particularly on down gradient erosive soils (such as those of the applied area). The buffer between the applied area and the Peel-Yalgorup wetland system is of insufficient size to be providing this environmental benefit and thus removal of vegetation from the applied area may increase land degradation in the form of off site water salinisation into the Peel-Yalgorup wetland system and indirectly into Lake Preston.

As the application area is within 35m of a conservation category wetland the vegetation under application is growing in association with vegetation associated with a wetland; therefore the clearing as proposed is at variance to this Principle.

Methodology DoW (2006)
RAMSAR (1971)
ANCA (1996)
Hale & Butcher (2007)
RAMSAR (1971)

GIS Database:
-ANCA wetlands Environment Australia 26.3.99
-CALM Managed Lands and Waters CALM 01.06.05
-EPP Lakes Policy Area DEP 14.05.97
-EPP, Wetlands 2004 (DRAFT) EPA 21.7.04
-Environmentally Sensitive Areas (ESA) DEC 30.05.05
-Geomorphic Wetlands (Mgt Categories) Swan Coastal Plain DEC 11.04.07

(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 vegetation under application is mapped as Beard vegetation association 998 (Medium woodland, Tuart) (Shepherd, 2006) and Heddl vegetation complex Cottesloe (Heddl et al., 2001) of which there is 41.8% and 45% of the pre-European vegetation extent remaining (respectively) (Hopkins et al., 2001) however the local area (10km radius) is highly cleared with approximately 25% of vegetation remaining.

Soils under application are mapped as B24 and described as undulating dune landscape underlain by aeolianite which is frequently exposed; small swales of estuarine deposits are included: chief soils are siliceous sands with smaller areas of brown sands and leached sands in the wetter sites (Northcote et al., 1968). Alternatively the soil has been mapped as Spearwood S1a Phase (Dune ridges with shallow to moderately deep siliceous yellow-brown sands, very common limestone outcrop and slopes up to 15%) (DAFWA, 2007)

Clearing of the vegetation under application may add incrementally to salinity levels in a landscape that is highly cleared due to the high rainfall (~800mm per annum) flushing stored soil salts into nearby wetlands and indirectly to Lake Preston.

Removal of native vegetation from the applied area is likely to result in land degradation in the form of on site wind erosion from top soil stripping and stockpiles, as the application area is observed as having leached white sands below the topsoil (Site Visit, 2008).

The clearing as proposed maybe at variance to this principle as the clearing is likely to result in on site wind erosion, and may increase off site water salinisation.

Methodology Keighery (1994)
Shepherd (2006)
Shepherd et al (2001)

Heddle et al (1980)
Hopkins et al. (2001)
Northcote et al. (1968)
Site Visit (2008)
DAFWA (2007)

GIS Database:
Acid Sulfate Soil Risk Map, Swan coastal Plain DEC 07/08/06
Annual Evaporation Contours (Isopleths)
Hydrographic catchments, subcatchments
DoW 01/06/07 - Hydrography, linear
DOW 13/7/06
Salinity Risk LM 25m - DOLA 00
Topographic contours statewide
Soils, Statewide DA 11/99

(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 vegetation under application is mapped as Beard vegetation association 998 (Medium woodland, Tuart) (Shepherd, 2006) and Heddle vegetation complex Cottesloe (Heddle et al., 2001) of which there is 41.8% and 45% of the pre-European vegetation extent remaining (respectively) (Hopkins et al., 2001) however the local area (10km radius) is highly cleared with approximately 25% of vegetation remaining.

The applied area is within the Greater Bunbury Region Scheme area and is identified as being in close proximity to the indicated Yalgorup, Riverdale road, Yarloop (Riverdale road transect) ecological linkage line. This ecological linkage is significant as it is one of three linkages, within the Greater Bunbury area, which persists from the coast to the plateau. (EPA, 2003)

MBS Environmental (2007) identified 2 declared weed species (under the Agriculture and Related Resources Protection Act, 1976) within the application area, namely Cotton Bush and Apple of Sodom (confirmed by Site Visit, 2008). Clearing of the area under application is likely to cause spreading of the Cotton Bush into the Yalgorup National Park (20m north) due to the wind disposal mechanism of the seeds.

Supporting Information (2008) supplied by the applicant indicates that a 20m buffer between the areas applied to clear and the Yalgorup National Park will be maintained and will result in the clearing being unlikely to impact on the environmental values of the conservation area. Site Visit (2008) observed that the 20m vegetation buffer which may not be sufficient due to approximately 25% of this buffer being cleared for a fire break.

Supporting information (2008) supplied by the applicant raised the issue that there were areas of land between the ecological linkage and the proposed clearing site however as the application area is not within the constrained portion of the Greater Bunbury Area, only the linkage line has been identified by the EPA (2003), and thus the extent of the linkage has not been located to date. The extent of this linkage will be located with future updates to System 6 and System 1 defined areas.

As the area under application is in close proximity to the identified ecological linkage, application of precautionary principle (EPA, 2000) is necessary to avoid clearing of potentially significant vegetation of this ecological linkage.

The application area is also within 35m of the Peel-Yalgorup wetland System (RAMSAR, 1971) and is within the recommended buffer for a conservation category wetland (200m). Clearing of the vegetation under application would incrementally degrade the ecological values of this internationally significant wetland through an increase in edge effects and the increased spread of aggressive weeds into riparian vegetation.

The clearing as proposed is at variance to this principle as clearing of vegetation will impact on the conservation values of the Yalgorup National Park, Peel-Yalgorup wetland system and Yalgorup, Riverdale road, Yarloop (Riverdale road transect) ecological linkage line by increasing the number of weeds and increasing edge effects.

Methodology MBS Environmental (2007)
Keighery (1994)
Shepherd (2006)
Shepherd et al (2001)
Heddle et al (1980)
Hopkins et al. (2001)
Site Visit (2008)
Greater Bunbury Regional Scheme (2008)
Supporting Information (2008)
EPA (2000)

EPA (2003)
RAMSAR (1971)

GIS Database:

- Heddl Vegetation Complexes DEP 22/06/95
- Pre European Vegetation - DA 01/01
- Interim Biogeographic Regionalisation of Australia - EA 18/10/00
- CALM Managed Lands and Waters CALM 01/08/04

(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 may be at variance to this Principle

Clearing of the vegetation under application may add incrementally to salinity levels in a landscape that is highly cleared due to the high rainfall (~800mm per annum) flushing stored soil salts into nearby wetlands and indirectly to Lake Preston.

DEC South West Region guidance statement on the impacts of extractive industry in the Shire of Harvey which advises that the impacts of sand and limestone extraction on groundwater quality (pollution and salinity) is low. (DEC South West Region, 2007)

The application area is within the recommended buffer (200m) for the Peel-Yalgorup wetland system (RAMSAR, 1971) a conservation category wetland (DOW, 2006). DoW (2006) lists the purpose of a buffer as filtering water particularly on down gradient erosive soils (such as those of the applied area).

The buffer of 35m between the applied area and the Peel-Yalgorup wetland system is of insufficient size to be providing the required environmental protection and thus removal of vegetation from the applied area may increase off site water salinisation into the Peel-Yalgorup wetland system and indirectly into Lake Preston.

The clearing as proposed may be at variance to this Principle as the clearing as proposed may decrease the quality of surface water (through increased dissolved salts) flowing into the Peel-Yalgorup wetland system and indirectly into Lake Preston.

Methodology

References:

- DoW (2006)
- Keighery (1994)
- RAMSAR (1971)
- ANCA (1996)
- DEC South West Region (2007)

GIS Database:

- Hydrographic catchments, catchments - DoW 01/06/07
- Hydrographic catchments, subcatchments - DoW 01/06/07
- Hydrography, linear - DOW 13/7/06
- Salinity Risk LM 25m - DOLA 00
- Average Annual Rainfall Isohyets - WRC 29/09/98
- ANCA wetlands - Environment Australia 26/3/99
- Ramsar wetlands - DEC 03
- Topographic contours statewide - DOLA and ARMY 12/09/02

(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 at variance to this Principle

Soils under application are mapped as B24 and described as undulating dune landscape underlain by aeolianite which is frequently exposed; small swales of estuarine deposits are included: chief soils are siliceous sands with smaller areas of brown sands and leached sands in the wetter sites (Northcote et al., 1968). Alternatively the soil has been mapped as Spearwood S1a Phase (Dune ridges with shallow to moderately deep siliceous yellow-brown sands, very common limestone outcrop and slopes up to 15%) (DAFWA, 2007)

Site Visit (DEC 2008) observed the soils within the applied area as brown sands over white leached sands. These soils have high porosity and clearing of the vegetation on this soil type is unlikely to increase the intensity or incidence of flooding.

The clearing as proposed is not at variance to this principle as the soils in the application area are highly porous and thus flooding is unlikely.

Methodology

References:

- Keighery (1994)

Shepherd (2006)
Shepherd et al (2001)
Heddle et al (1980)
Northcote et al. (1968)
Site Visit (2008)
DAFWA (2007)

GIS Database:

- Hydrographic catchments, catchments - DoW 01/06/07
- Hydrographic catchments, subcatchments - DoW 01/06/07
- Hydrography, linear - DOW 13/7/06
- Salinity Risk LM 25m - DOLA 00
- Topographic contours statewide - DOLA and ARMY 12/09/02

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

Comments

There is a registered Native Title claim over the applied area for the Gnaala Karla Booja peoples.

The application area is zoned as General Farming.

The EPA determined that the proposal to extend the existing limestone quarry on Lots 2, 4 and 5 Ludlow Road Myalup, as not assessed, public advice given, on the basis that likely environmental impacts were no severe enough to warrant formal environmental assessment. The public advice provided however, recommends that the extension on Lot 2 be removed due to its close proximity to Lake Preston or further information should be given to Department of Environment and Conservation Wetlands Program to arrange an agreement with regards to this extension. (Trim Ref HP1946)

The proposed clearing is within the South West Coastal groundwater area gazetted for water management under the Rights in Water and Irrigation Act 1914 (RIWI) by the Department of Water (DoW).

The applied area is within the Greater Bunbury Region Scheme Area designated as remnant vegetation that is in close proximity to a significant east west ecological linkage line called the Yalgorup, Riverdale road, Yarloop ecological linkage.

An Extractive Industry Development Licence has been approved by the Shire of Harvey for part of the area under application. (Trim Ref DOC58477)

Methodology

GIS Database

- Cadastre - Landgate Dec 07
- Native Title Claims - LA 2/5/07
- RIWI Act, Groundwater Areas - DoW 13/07/06
- RIWI Act, Irrigation Districts - DoW 13/07/06
- Town Planning Scheme Zones - MFP 31/08/98

4. Assessor's comments

Comment

The application has been assessed against the clearing principles, planning instruments and other matters in accordance with s51O of the Environmental Protection Act 1986 and the proposed clearing is at variance to Principles (a), (b), (e), (f), (g) and (h); maybe at variance to Principles (i), is not likely to be at variance to Principles (c) and (d) and is not at variance to principle (j).

5. References

- ANCA (1996) A Directory of Important Wetlands in Australia. Second Edition. Australian Nature Conservation Agency, Canberra
- Burbridge, A. (2004) Threatened Animals of Western Australia, Department of Conservation and Land Management, Perth, Western Australia.
- Burbridge, A. (1997-1998). Endangered: Western Ringtail Possum. LANDSCOPE 13(2): 49. viewed electronically online in Western Ringtail Possum Fauna Species Profile from www.naturebase.net/component/option,com_docman/task,cat_view/gid,372/dir,ASC/order,name/Itemid,1288/limit,5/limitstart,15/ accessed on 22/05/2008
- DAFWA (2007) GIS Soil-landscape mapping in South-Western Australia. Department of Agriculture and Food Western Australia, Perth
- DEC South West Region (2008) Advice from Department of Water to Assessing Officer, Department of Environment and Conservation. Extractive Industries within the Coastal Strip of the Shire of Harvey (Limestone and Sand) Trim Ref DOC53989
- DoW (2006) Water Quality Protection Note 6; Vegetation buffers to sensitive water resources, Department of Environment. June 2005 from www.environment.wa.gov.au
- EPA (2000) Environmental protection of native vegetation in Western Australia. Clearing of native vegetation, with particular

- reference to the agricultural area. Position Statement No. 2. December 2000. Environmental Protection Authority.
- EPA (2003) Greater Bunbury Region Scheme (Bulletin 1108). Environmental Protection Authority. Perth, WA.
- EPA (2004) Guidance for the Assessment of Environmental Factors - terrestrial flora and vegetation surveys for Environmental Impact Assessment in Western Australia. Report by the EPA under the Environmental Protection Act 1986. No 51 WA.
- Flora Base (2008a) Flora species Profile; *Diuris micrantha*, viewed electronically via <http://florabase.dec.wa.gov.au/browse/profile/12938> on the 22 May 2008-05-22
- Flora Base (2008b) Flora Species Profile; *Hakea* sp. Yalgorup, viewed electronically via <http://florabase.dec.wa.gov.au/browse/profile/16740> on the 22 May 2008-05-22
- Flora Base (2008c) Flora Species Profile; *Lasiopetalum membranaceum*, viewed electronically via <http://florabase.dec.wa.gov.au/browse/profile/5038> on the 22 May 2008
- Flora Base (2008d) Flora Species Profile; *Haloragis scoparia*, viewed electronically via <http://florabase.calm.wa.gov.au/browse/profile/6178> on the 22 May 2008
- Greater Bunbury Regional Scheme (2008) Appendix 4, Greater Bunbury Region, Ecological Linkages Plan, viewed electronically via http://www.epa.wa.gov.au/docs/1683_b1108_app4.pdf accessed on 27/05/2008
- Hale, J. and Butcher, R., 2007, Ecological Character Description of the Peel-Yalgorup Ramsar Site, Report to the Department of Environment and Conservation and the Peel-Harvey Catchment Council, Perth, 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.
- Hopkins, A.J.M., Beeston, G.R. and Harvey J.M. (2001) A database on the vegetation of Western Australia. Stage 1. CALMScience after J. S. Beard, late 1960's to early 1980's Vegetation Survey of Western Australia, UWA Press.
- Keighery, B.J. (1994) Bushland Plant Survey: A Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc). Nedlands, Western Australia.
- MBS Environmental (2007) Spring Flora and Vegetation Assessment for B & J Catalano Pty Ltd Published January 2008 Trim Ref DOC44053
- Northcote, K. H. with Beckmann G G, Bettenay E., Churchward H. M., van Dijk D. C., Dimmock G. M., Hubble G. D., Isbell R. F., McArthur W. M., Murtha G. G., Nicolls K. D., Paton T. R., Thompson C. H., Webb A. A. and Wright M. J. (1960-68): 'Atlas of Australian Soils, Sheets 1 to 10, with explanatory data'. CSIRO and Melbourne University Press: Melbourne.
- RAMSAR (1971) Convention on Wetlands of International Importance especially as Waterfowl Habitat. Ramsar (Iran), 2 February 1971. UN Treaty Series No. 14583. As amended by the Paris Protocol, 3 December 1982, and Regina Amendments, 28 May 1987.
- Regional Advice (2008) Advice to assessing officer from DEC South West Region, Impacts of clearing on Threatened Ecological Community SCP18, Ellis02. Trim Ref DOC57696
- Shepherd, D.P. (2006). 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 ANZWA105000124.
- 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 (2008) Site Inspection Report for Lot 2 Ludlow Road prepared by Department of Environment and Conservation. Unpublished. Trim Ref DOC
- Supporting Information (2008) prepared by MBS Environmental on behalf of B and J Catalano Pty Ltd. Trim Ref DOC 56332
- Western Ringtail Possum Habitat Assessment (2008) prepared by G. Harewood on behalf of MBS Environmental, Trim Ref DOC 56809

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)

