



## 1. Application details

### 1.1. Permit application details

Permit application No.: 1656/2  
 Permit type: Area Permit

### 1.2. Proponent details

Proponent's name: GJ & DR & JG & JL Ryan

### 1.3. Property details

Property: LOT 9274 ON PLAN 203018 (Lot No. 9274 PIGGOTT COLLINS 6260)  
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Local Government Area: Shire Of Manjimup  
 Colloquial name:

### 1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
30.2		Mechanical Removal	Horticulture

## 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 Association: 1144 Tall forest; karri (Eucalyptus diversicolor) & marri (Corymbia calophylla) (Hopkins et al. 2001; Shepherd et al. 2001). Matiske Vegetation Complex: Pemberton (PM1): Tall open forest of Eucalyptus diversicolor with mixtures of Corymbia calophylla on valley slopes and low forest of Agonis juniperina-Banksia seminuda-Callistachys lanceolata on valley floors in the perhumid zone. Crowea (CRb): Tall open forest of Corymbia calophylla-Eucalyptus diversicolor on upper slopes with Allocasuarina decussata-Banksia grandis on upper slopes in hyperhumid and perhumid zones. (Matiske Consulting 1998).	The vegetation of Block 1 (the western block) is classified as very good to excellent (Keighery, 1994), consisting of both upland and riparian vegetation. The upland vegetation is described as a Tall Closed Forest, comprised of Eucalyptus diversicolor, Corymbia calophylla, Eucalyptus marginata, Banksia grandis, Chorilaena quercifolia, Acacia pulchella, Acacia urophylla, Hovea elliptica, Pteridium esculentum, Leucopogon propinquus and Gastrolobium cuneatum. The riparian vegetation was distinct from that of the upland and was comprised of Agonis flexuosa, Lepidosperma squamatum, Acacia divergens and Taxandria linearifolia. The vegetation structure has been altered through selective logging and there was a minor presence of weeds fringing this block of vegetation (DEC, 2007a). The block has been fenced to exclude stock access (DAFWA, 2007). Given the diversity of flora species and range of potential habitats that are likely to exist in the riparian and upland areas, the biodiversity of this block	Very Good: Vegetation structure altered; obvious signs of disturbance (Keighery 1994)	Block 1 is on the western side of the property and is divided into small section to incorporate a 50m vegetation buffer around the first and second order streams. A site visit was commenced in 2007.

will be greater than that of Block 2.

Beard Vegetation Association: 1144  
Tall forest; karri (Eucalyptus diversicolor) & marri (Corymbia calophylla) (Hopkins et al. 2001; Shepherd et al. 2001).  
Mattiske Vegetation Complex:  
Crowea (CRb): Tall open forest of Corymbia calophylla-Eucalyptus diversicolor on upper slopes with Allocasuarina decussata-Banksia grandis on upper slopes in hyperhumid and perhumid zones.  
Lefroy (LF): Tall open forest of Eucalyptus diversicolor-Corymbia calophylla on slopes and low woodland of Agonis juniperina-Callistachys lanceolata on lower slopes in hyperhumid and perhumid zones.  
(Mattiske Consulting 1998).

The vegetation of Block 2 (the eastern block within the clearing application area) is degraded (Keighery, 1994), comprised of a Tall Open Forest of Eucalyptus diversicolor (Karri), Corymbia calophylla (Marri) and Eucalyptus marginata (Jarrah). The vegetation is largely devoid of an understorey of native species, with pasture weed species dominating (DEC, 2007a). The biodiversity value of this area of vegetation is likely to be minimal given the high level of disturbance that has occurred.

Degraded: Structure severely disturbed; regeneration to good condition requires intensive management (Keighery 1994)

Block 2 is on the eastern side of the property and is a small triangular section. A site visit was commenced in 2007.

### 3. Assessment of application against clearing principles

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

##### Comments

##### Proposal may be at variance to this Principle

The proposed clearing involves selectively removing 30.2 hectares of native vegetation for the purpose of extending a dam and horticulture. The area under application is divided into two sections, Block 1 and Block 2. Block 1 is on the western side of the property and Block 2 is on the eastern side of the property and is a small triangular section.

The vegetation of Block 2 (the eastern block within the clearing application area) is degraded (Keighery, 1994), comprised of a Tall Open Forest of Eucalyptus diversicolor (Karri), Corymbia calophylla (Marri) and Eucalyptus marginata (Jarrah). The vegetation is largely devoid of an understorey of native species, with pasture weed species dominating (DEC, 2007a). The biodiversity value of this area of vegetation is likely to be minimal given the high level of disturbance that has occurred.

The vegetation of Block 1 (the western block) is classified as very good to excellent (Keighery, 1994), consisting of both upland and riparian vegetation. The upland vegetation is described as a Tall Closed Forest, comprised of Eucalyptus diversicolor, Corymbia calophylla, Eucalyptus marginata, Banksia grandis, Chorilaena quercifolia, Acacia pulchella, Acacia urophylla, Hovea elliptica, Pteridium esculentum, Leucopogon propinquus and Gastrolobium cuneatum. The riparian vegetation was distinct from that of the upland and was comprised of Agonis flexuosa, Lepidosperma squamatum, Acacia divergens and Taxandria linearifolia. The vegetation structure has been altered through selective logging and there was a minor presence of weeds fringing this block of vegetation (DEC, 2007a). The block has been fenced to exclude stock access (DAFWA, 2007). Given the diversity of flora species and range of potential habitats that are likely to exist in the riparian and upland areas, the biodiversity of this block will be greater than that of Block 2.

A large proportion of the State Forest within the local area has been harvested with a clear-felling silvicultural prescription since 2000, resulting in a mosaic of regeneration forest less than 10 years of age distributed amongst mature forest that has been informally or formally reserved in stream buffers, road buffers, old-growth forest and national parks. Competing uses for surrounding tracts of vegetation have compromised the biodiversity values of these areas and in doing so have increased the importance of vegetation that has not been heavily modified such as Block 1. On this basis, the proposed clearing of Block 1 may be at variance as the vegetation may represent an area of high biodiversity in a local context.

Methodology DEC (2007a)  
DAFWA (2007)  
Keighery (1994)  
GIS Database:

**(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**

There are six recorded occurrences of Declared Threatened Fauna within the local area (10km radius), namely Quokka, Brush-tailed Phascogale and Chuditch. There are also records of the Forest Red-tailed Black Cockatoo and Western Ringtail Possum occurring within 11 kilometres from the area that has been applied to be cleared.

Two DEC site visits were conducted in June 2007. The vegetation of Block 2 of the application area (eastern block) has been described as degraded, with the vegetation structure having been significantly altered through grazing which has resulted in the removal of native understorey vegetation. Due to the lack of an understorey and mature trees, the vegetation of Block 2 is not likely to provide significant habitat for native fauna.

During the DEC site visit, the vegetation within Block 1 was classified as being very good to excellent condition (DEC, 2007a). Forest Red-tailed Black Cockatoos were seen feeding and Quenda diggings were also observed during the site visit. The site may also provide potential habitat for the Western Ringtail Possum, Brushtail Possum and Western Grey Kangaroo (DEC, 2007a). Advice received from DEC's Principal Zoologist (25 July 2007) was that the vegetation of Block 1 could represent significant habitat for Quokka, Quenda, Western Ringtail Possums, Brush-tailed Phascogales, Crested Shrike-tits [south-west species] (a Priority 1 species), Baudin's Cockatoo, Forest Red-tailed Black Cockatoo, Western Mud Minnow, Balston's Pygmy Perch and the Pouched Lamprey (a Priority 4 species).

While there are several fauna species that may utilise the proposed areas for feeding, there are larger areas of similar vegetation within the surrounding area that can be utilised. The proposed clearing is not likely to represent a significant habitat for indigenous fauna as the local area (10km radius) is not a heavily cleared area.

**Methodology** DEC's Principal Zoologist (2007)  
DEC (2007a)  
GIS Database:  
- SAC Bio datasets - Threatened and Priority Fauna 25/06/07

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

**Comments Proposal is not likely to be at variance to this Principle**

Two rare flora species have been identified within the local area (10km radius) of the clearing application area. *Caladenia christineae* was recorded in 1956 approximately 5.7km west of the application area, in the area now known as the Gloucester National Park. *Kennedia glabrata* has been recorded approximately 10 kilometres south-east in the Greater Dordagup National Park.

*Caladenia christineae* typically occurs on the margins or in the standing water of winter wet flats, swamps and freshwater lakes (DEC, 2007b). It occurs in heath and tall scrub communities, often in Jarrah/Marri forest and sometimes under Paperbark (Brown et al., 1998).

*Kennedia glabrata* occurs on soil pockets and sandy soils on granite outcrops (DEC, 2007b). The supporting information (Ryan, 2006) and site visit report (DEC, 2007a) do not indicate that granite outcrops are present within the clearing application area. Therefore it is unlikely that this species of DRF occurs within the areas proposed to be cleared.

The DEC site visit (2007a) identified that the vegetation proposed to be cleared does not contain rare flora or priority flora species, or suitable habitat for such.

**Methodology** DEC (2007a)  
DEC (2007b)  
Brown et al (1998)  
Ryan (2006)  
GIS Database:  
- SAC Bio datasets - defl - DEC 26/6/07  
- SAC Bio datasets - donnelly\_waherb - DEC 26/6/07

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

**Comments Proposal is not at variance to this Principle**

There are no known threatened ecological communities (TECs) occurring within a 10km area. Therefore the clearing as proposed is not at variance to this principle.

Methodology GIS Database:  
- TEC, SAC Bio Databset (25/07/08)

**(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		
	Pre-European	Current Extent	Remaining
IBRA Bioregion			
Warren	833,981.12	663,141.78	79.5
Shire			
Manjimup	696,702.28	589,728.22	84.6
Beard Vegetation			
1144	160,315.39	127,463.48	79.5
Mattiske Vegetation			
Pemberton (PM1)	258,061	169,317	65.6
Crowea (CRb)	527,433	428,454	81.2
Lefroy (LF)	201,286	164,947	81.9

The area under application is located in the Warren Bioregion and is in the Shire of Manjimup. The extent of the Warren is 79.5%. The extent of the pre-European vegetation (1144) is 79.5% for vegetation type (Shepherd et al. 2001) and within the Shire of Manjimup is 84.6% (Shepherd et al. 2001). The extent of the Mattiske Vegetation Complex, Pemberton (PM1), Crowea (CRb) and Lefroy (LE) is 65.6% for the Pemberton type, 81.2% for Crowea and 81.9% for Lefroy. Vegetation has not been extensively cleared within this region, and is higher than the desirable 30% threshold level target identified by the EPA (2000).

The local area (10km radius) is approximately 75% vegetated. Given the pre-European extent remaining of the aforementioned vegetation association and complexes and the relatively high proportion of vegetation remaining within the local area, the vegetation of the clearing application area is unlikely to constitute a significant remnant of vegetation.

Methodology EPA (2000)  
Mattiske Consulting (1998)  
Shepherd (2006)  
Shepherd et al. (2001)  
GIS Database:  
- Interim Biogeographic Regionalisation of Australia - EA 18/10/00  
- Manjimup 50cm ORTHOMOSAIC - DLI04  
- Mattiske Vegetation (01/03/1998)  
- Pre European Vegetation, SAC Bio Dataset (25/07/08)

**(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 clearing application area is located within the Warren River Catchment. The application area includes two first-order streams, and one associated second-order stream. These streams are classified as minor, perennial streams and flow in a south-east direction, eventually flowing into the Warren River (a major, perennial watercourse) which is located, at its closest point to the clearing application area, approximately 625 metres south-east. The riparian vegetation surrounding the water course requires a minimum of a 50m buffer zone. As vegetation is proposed to be cleared along the watercourses for the purpose of the dam construction, the proposed clearing is at variance to this principle.

The clearing for the proposed dam will occur within the riparian vegetation and a 50m buffer will be retained around the dam and remaining water courses as a condition of the permit.

Methodology GIS Databases:  
- Hydrography, Linear - DOE 01/02/04  
- Hydrographic Catchments - Catchments DoE 3/04/03

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

Comments **Proposal is not likely to be at variance to this Principle**  
The area under applications proposal is to selectively remove 30.2 hectares of native vegetation for the purpose of extending a dam and horticulture.

The vegetation of Block 2 (the eastern block within the clearing application area) is degraded (Keighery, 1994),

comprised of a Tall Open Forest of *Eucalyptus diversicolor* (Karri), *Corymbia calophylla* (Marri) and *Eucalyptus marginata* (Jarrah). The vegetation is largely devoid of an understorey of native species, with pasture weed species dominating (DEC, 2007a). The biodiversity value of this area of vegetation is likely to be minimal given the high level of disturbance that has occurred.

The vegetation of Block 1 (the western block) is classified as very good to excellent (Keighery, 1994), consisting of both upland and riparian vegetation. The upland vegetation is described as a Tall Closed Forest, comprised of *Eucalyptus diversicolor*, *Corymbia calophylla*, *Eucalyptus marginata*, *Banksia grandis*, *Chorilaena quercifolia*, *Acacia pulchella*, *Acacia urophylla*, *Hovea elliptica*, *Pteridium esculentum*, *Leucopogon propinquus* and *Gastrolobium cuneatum*. The riparian vegetation was distinct from that of the upland and was comprised of *Agonis flexuosa*, *Lepidosperma squamatum*, *Acacia divergens* and *Taxandria linearifolia*. The vegetation structure has been altered through selective logging and there was a minor presence of weeds fringing this block of vegetation (DEC, 2007a). The block has been fenced to exclude stock access (DAFWA, 2007). Given the diversity of flora species and range of potential habitats that are likely to exist in the riparian and upland areas, the biodiversity of this block will be greater than that of Block 2.

The area under application lies within Zone C of the Warren River Water Reserve gazetted under the County Areas Water Supply Act 1947 (CAWS Act). The CAWS Act controls land clearing within the Warren River Water Reserve in order to protect public drinking water quality and was developed in response to increased dryland salinity and increasing concentrations of salts in drinking water within the catchment.

The CAWS Act requires that 10 per cent of vegetation must remain on the land in question. The Act requires any application to clear below this threshold be refused to reduce the impacts of salinity on the land and waterways (DoW 2007). DoW recommends that the proponent keeps a 50m buffer of native vegetation from the watercourses as this will retain the 10% threshold (DoW 2008).

The topography of the site is 150m - 100m AHD (Australian Height Datum); the land is situated within a valley, sloping southerly towards the Warren River. The soil type of the area is described as Steep hilly to hilly dissected lateritic plateau with steep valley side slopes: chief soils are hard, and also sandy, neutral, and also acidic, yellow and yellow mottled soils with conspicuous but relatively smaller areas of red earths. Associated are areas of block laterite, gravelly and bouldery soils on tops of rises and their colluvial slopes; some areas of leached sands some soils on slopes; some soils on terraces of major streams (Northcote et al. 1960-68). The mean rainfall is 1200mm per annum and the evapotranspiration rate is 900mm. It is unlikely the clearing will cause water logging due to the size of the catchment, land slopes and soil types. No significant change is expected (DAFWA, 2007).

The groundwater salinity is 500 to 1000mg/L (Low salinity risk). Given the catchment area (Warren River Basin) has not been highly cleared salinity is not considered a risk.

Advice received from the Department of Agriculture and Food indicates that the proposed clearing is unlikely to cause appreciable land degradation, although it may have some implications for surface water quality (DAFWA, 2007). As the application area is positioned on mid and upper slopes, there is a chance of water erosion, however, as a 50m native vegetation buffer will be retained on all watercourses and vegetation not cleared under this Permit will be fenced as a condition of the Permit. This would minimise any erosion impacts. As the proposal is unlikely to cause land degradation, water logging and water erosion, the clearing is unlikely to be at variance to this principle.

**Methodology** DAFWA (2007)  
DoW (2008)  
Keighery (1994)  
Northcote et al. (1968)  
GIS Database:  
- Evapotranspiration Isopleths - WRC 29/09/98  
- Groundwater Salinity Statewide DoW 13/07/06  
- Hydrographic catchments, catchments - DoW 01/06/07  
- Hydrogeology, statewide DOW 13/07/06  
- Mean Annual Rainfall Isohytes (1975 - 2003) DEC 02/08/05  
- Topographic Contours, Statewide - DOLA 12/09/02

**(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 may be at variance to this Principle**

There are several conservation areas within the local area (10km radius), with the Greater Dordagup National Park, Gloucester National Park, Eastbrook Nature Reserve, Smith Brook Nature Reserve, Whistler Nature Reserve and Sir James Mitchell National Park occurring between approximately 4.5 kilometres to 8.5 kilometres from the application area. Several of these National Parks or Nature Reserves are also areas on the Register of National Estate. Four indicative Fauna Habitat Zones, which are informal reserves, also occur within the local area. Approximately 65% of the local area is comprised of DEC-managed forest. Given the relatively consolidated nature of these forest areas, the value of the forest within the application area as an ecological linkage is reduced.

As the vegetation within the application area borders State Forest, including some small areas classified as Informal Reserves (DEC, 2007), this vegetation will be providing some buffering capacity against the spread of weeds into this DEC-managed forest. The impact of weed invasion into this forest may have a relatively small impact in comparing the potential edge effect to the large and consolidated area of this forest that occurs within the local area. However, as the stream occurs near the western border of Block 1 of the application area which could be a vector for increased weed spread, weed control conditions will be imposed if the clearing is granted to minimise the spread of weeds into the adjacent forest areas.

The application area is bordered by the Warren State Forest, with Block 1 (the western area of vegetation within the application area) surrounded on three sides and the northern border of Block 2 (the eastern area) being adjacent to State Forest. Dieback (*Phytophthora cinnamomi*) has been identified in some forest areas adjacent to Block 1 (DEC, 2007). At the time Dieback mapping was undertaken in the area Dieback was not identified in forest adjacent to Block 2. As Dieback has been identified in forest adjacent to or in proximity of the application area, there is a high possibility that it could occur within the application area. Dieback control conditions will be imposed if clearing is granted to mitigate the potential for spread into neighbouring forest if Dieback is present within the application area.

**Methodology** GIS Databases:  
- CALM Estate (Statewide) - CALM, 06/06  
- Fauna Habitat Zones - CALM, 30/06/06  
- Hydrography, Linear - DoE 1/2/04  
- Register of National Estate - EA 28/01/03  
- AGWA Heritage Parcels - DA

**(i) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.**

**Comments** **Proposal is not likely to be at variance to this Principle**

The clearing application area is located within the Warren River Catchment. The application area includes two first-order streams, and one associated second-order stream. These streams are classified as minor, perennial streams and flow in a south-east direction, eventually flowing into the Warren River (a major, perennial watercourse) which is located, at its closest point to the clearing application area, approximately 625 metres south-east.

The riparian vegetation surrounding the watercourse requires a minimum of a 50m buffer zone (DoW, 2008). The clearing proposal was amended to keep the 50m buffer zone, however some of areas within the proposed clearing is still within the 50m buffer zone (riparian vegetation), due to dam construction. The dam will be constructed covering two of the streams running through the area in question and 50m buffers retained around the dam.

The land under application generally occupies the upper and mid slope positions in the landscape (DAFWA, 2007). The application area is also located in a CAWS Act Zone C area and a Public Drinking Water Source Area. Retention of the 50m buffer satisfies the minimum 10% of vegetation to be retained on holdings under the CAWS legislation.

The area proposed to be cleared has an annual rainfall of 1100 to 1200mm and the groundwater salinity has been mapped as 500-1000TDS/mg/L. No salinity is occurring on the property and no offsite salinity has been observed (DAFWA, 2007). It is stated in the DAFWA Land Degradation Report that the proposed clearing may have implications for surface water quality. There is a low risk of the proposed clearing contributing to eutrophication of surface and/or groundwater bodies (DAFWA, 2007). Conductivity readings were taken from the two existing dams during a DOW site visit, with results indicating fresh water with no salinity issues (DOW, 2007). There is a low risk that the proposed clearing could result in water erosion. The retention of a 50 metre wide buffer of native vegetation along the streams and planned dams within Block 1 would reduce the transport of nutrients and sediments, and potential turbidity, down-stream. Also, as the streams within Block 1 of the clearing application area are currently dammed just outside of this Block, the risk of water quality deterioration in down-stream water bodies would be further reduced.

**Methodology** DAFWA (2007)  
DOW (2007)  
GIS Databases:  
- Rainfall, Mean Annual - BOM 30/9/01  
- Groundwater Salinity, Statewide - DOW  
- Hydrography, linear - DoE 1/2/04  
- CAWSA Part IIA Clearing Control Catchments - DOW  
- Public Drinking Water Source Area (PDWSAs) - DOW

**(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**

The area under applications proposal is to selectively remove 30.2 hectares of native vegetation for the purpose of extending a dam.

The topography of the site is 150m - 100m AHD (Australian Height Datum); the land is situated within a valley, sloping southerly towards the Warren River. The soil type of the area is described as Steep hilly to hilly dissected lateritic plateau with steep valley side slopes: chief soils are hard, and also sandy, neutral, and also acidic, yellow and yellow mottled soils with conspicuous but relatively smaller areas of red earths. Associated are areas of block laterite, gravelly and bouldery soils on tops of rises and their colluvial slopes; some areas of leached sands some soils on slopes; some soils on terraces of major streams (Northcote et al. 1960-68). The mean rainfall is 1200mm per annum and the evapotranspiration rate is 900mm. It is unlikely the clearing will cause extensive flooding due to the size of the catchment, land slopes and soil types. No significant change is expected (DAFWA, 2007) and therefore the proposed clearing is unlikely to exacerbate the incidence or intensity of flooding.

**Methodology DAFWA (2007)  
Northcote et al. (1960-68)  
GIS Databases:**

- CALM Managed Lands and Waters CALM 01/08/04
- Topographic Contours, Statewide - DOLA 12/09/02
- Mean Annual Rainfall Isohytes (1975 - 2003) - DEC 02/08/05
- Soils, Statewide DA 11/99

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

**Comments**

The application area is located in a CAWS Act Zone C area. Part of the area applied to clear was protected by an Agreement to Reserve (ATR) and is "controlled land" under the Country Areas Water Supply Act 1947 (CAWS). However the Department of Water (DoW) agreed to revoke the ATR and it was lifted from the Certificate of Title on 26 Feb 2008.

The DOW indicated that they would allow the lifting of the ATR if a buffer of 50 metres of native vegetation is retained around the proposed dams, and that native vegetation is retained on streams, steep slopes and wet areas, which is consistent with the proposed management activities stated by the proponent in the supporting information provided with their application to clear.

Under CAWSA a minimum of 10% of native vegetation must be retained holding. The proposed clearing meets this minimum, however the DOW initially indicated that they would insist that the 10% retention area be buffers around the streamlines on the holding (consistent with the buffers that have been retained and are evident in the State Forest to the north, which are buffers with a 50 metre minimum width).

DoW issued a permit to interfere with bed and banks (construct dam) under RIWI Act 1914 on 4th Dec 2007 (DOC41058).

**Methodology DOW (2007)  
DAFWA (2007)  
GIS Database:**

- CAWSA Part IIA Clearing Control Catchments - DOW
- Public Drinking Water Source Area (PDWSAs) - DOW

**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 has found principle (f) is at variance, (a) and (h) may be at variance, (d) and (j) are not at variance and all other principles are not likely to be at variance.

**5. References**

- Brown A., Thomson-Dans C. and Marchant N.(1998). Western Australia's Threatened Flora, Department of Conservation and Land Management, Western Australia.
- EPA (2000) Environmental protection of native vegetation in Western Australia. Clearing of native vegetation, with particular reference to the agricultural area. Position Statement No. 2. December 2000. Environmental Protection Authority, Western Australia.
- 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.

Mattiske, E.M. and Havel, J.J. (1998) Vegetation Complexes of the South-west Forest Region of Western Australia. Maps and report prepared as part of the Regional Forest Agreement, Western Australia for the Department of Conservation and Land Management and Environment Australia.

Shepherd, D.P. (2007). Adapted from: Shepherd, D.P., Beeston, G.R., and Hopkins, A.J.M. (2001), Native Vegetation in Western Australia. Technical Report 249. Department of Agriculture Western Australia, South Perth. Includes subsequent updates for 2006 from Vegetation Extent dataset ANZWA1050000124.

Shepherd, D.P., Beeston, G.R. and Hopkins, A.J.M. (2001) Native Vegetation in Western Australia, Extent, Type and Status. Resource Management Technical Report 249. Department of Agriculture, Western Australia.

## 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)