



1. Application details

1.1. Permit application details

Permit application No.:

170641

Permit type:

Area Permit

1.2. Proponent details

Proponent's name:

HI & NI & N & C Tran & Tran & Huynh & Yew

1.3. Property details

Property:

LOT 9 ON DIAGRAM 28574 (House No. 276 SYDNEY GNANGARA 6065)

Local Government Area:

City of Wanneroo

Colloquial name:

1.4. Application

Clearing Area (ha)

No. Trees

Method of Clearing

For the purpose of:

2.2

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
<p>Beard vegetation association 1949: Low woodland; banksia on low sandhills, swamps in swales with tea-tree and paperbark. (Hopkins et al. 2001, Shepherd et al. 2001)</p> <p>Heddl vegetation complexes: Bassendean Complex - Central and South; vegetation ranges from woodland of <i>E. marginata</i> - <i>C. fraseriana</i> - <i>Banksia</i> spp. to low woodland of <i>Melaleuca</i> species, and sedgelands on the moister sites. This area includes the transition of <i>E. marginata</i> to <i>E. tottiana</i> in the vicinity of Perth.</p> <p>Bassendean Complex - North-Transition vegetation complex: a transition complex of low open forest and low woodland of <i>Banksia</i> species - <i>E. tottiana</i> on a series of high sand dunes. The understorey species reflect similarities with both the Bassendean-North and Karrakatta-North vegetation complexes. (Heddl et al. 1980)</p>	<p>The six areas under application (total area of 2.2ha) are located within Lot 9 (Zoned rural and rural-water protection), which is a 7.7 ha property. The clearing is to change the land use from a disused poultry farm to market garden. One area abutting the northern boundary totals 2.1ha and the remaining five small areas total 0.1 ha.</p> <p>The vegetation within the areas under application include <i>Banksia</i> spp. (<i>B. attenuata</i>; <i>B. menziesii</i>; <i>B. ilicifolia</i>), blackbutt (<i>Eucalyptus tottiana</i>), <i>Baeckea</i> spp., <i>Corynotheca</i> sp., <i>Hibbertia</i> sp., <i>Jacksonia</i> sp., <i>Macrozamia riedlei</i>, <i>Xanthorrhoea preissii</i>, paperbark (<i>Melaleuca</i> sp.) and weeds African lovegrass (<i>Eragrostis curvula</i>), pigface (<i>Carpobrotus edulis</i>), rose geranium (<i>Pelargonium capitatum</i>) and Geraldton Carnation weed (<i>Euphorbia terracina</i>) (Site Inspection 2007).</p>	<p>Degraded: Structure severely disturbed; regeneration to good condition requires intensive management (Keighery 1994)</p>	<p>The condition of the native vegetation under application was sourced from the Site Inspection (2007).</p>

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 six areas under application (total area of 2.2ha) are located within Lot 9 (Zoned rural and rural-water protection), which is a 7.7 ha property.

The vegetation under application is considered to be in a degraded condition (Site Inspection 2007). The areas to be cleared comprise predominantly *Banksia* spp. with minimal native mid-storey and understorey, and numerous weeds (Site Inspection 2007). This vegetation includes *Banksia* spp. (*B. attenuata*; *B. menziesii*; *B. ilicifolia*), blackbutt (*Eucalyptus todtiana*), *Baeckea* spp., *Corynotheca* sp., *Hibbertia* sp., *Jacksonia* sp., *Macrozamia riedlei*, *Xanthorrhoea preissii*, paperbark (*Melaleuca* sp.) and weeds African lovegrass (*Eragrostis curvula*), pigface (*Carpobrotus edulis*), rose geranium (*Pelargonium capitatum*) and Geraldton Carnation weed (*Euphorbia terracina*) (Site Inspection 2007).

Given the lack of species diversity and the high level of weed invasion, it is considered that the areas under application are unlikely to comprise a high level of biological diversity.

Methodology Reference:

- Site Inspection (2007) (TRIM Ref ED1823)

(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**

The following species are known to occur within a 5km radius of the proposed clearing (with the closest being 1.2km south):

- Quenda, *Isodon obesulus fusciventer* (P5) State, WC Act 1950. This species prefers areas with dense understorey vegetation, particularly around swamps and along watercourses, that provides ample protection from predators.
- Carnaby's Black-Cockatoo, *Calyptorhynchus latirostris* (EN) State, WC Act 1950. This species moves around seasonally in flocks to feeding areas in proteaceous scrubs and heaths and eucalypt woodlands as well as pine plantations. Breeding occurs in winter/spring, mainly in the eastern forests and wheatbelt where they can find mature hollow-bearing trees to nest in.
- Australasian Bittern, *Botaurus poiciloptilus* (VU) State, WC Act 1950. This species inhabits beds of tall dense reeds and sedges in freshwater swamps.
- Little Bittern, *Ixobrychus minutus* (P4) State, WC Act 1950. This cryptic species inhabits dense reeds and rushes bordering swamps, lakes and watercourses.

The vegetation under application is considered to be in a degraded condition (Site Inspection 2007). The areas to be cleared are predominantly *Banksia* spp. with minimal native mid-storey and understorey, and numerous weeds (Site Inspection 2007).

Given the lack of species diversity and the level of introduced flora, it is considered that the vegetation to be cleared is unlikely to comprise a significant number of hollows or significant nesting or feeding habitat for these species of conservation significance, or for other fauna indigenous to Western Australia. Therefore, the clearing is considered not likely to be at variance to this Principle.

Methodology References:

- Site Inspection (2007) (TRIM Ref ED1823)
 - DEC Conservation Officer (2007) (TRIM Ref ED143)
 - DEC Fauna habitat notes.xls February 2007
- GIS Databases:
- SAC Bio Datasets 120507

(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**

There are no known records of Declared Rare Flora (DRF) in the local area (5km radius). The nearest recorded DRF (*Grevillea curviloba* subsp. *curviloba*) is located approximately 8.5km north-east of the areas under application, on the same soils and within the same Beard vegetation type and Hedde vegetation complex (Bassendean Complex North and Transition only) as those under application.

Although these populations occur generally on the same soil and vegetation type, *Grevillea curviloba* subsp. *curviloba* typically occurs with other shrubs in open heath in winter-wet, deep peaty sand over limestone, near Bullsbrook (Brown et al 1998).

Cyathochaeta teretifolia (Priority 3) is the only Priority species known to occur within a 5km radius of the area

under application, and is located 500m south-east of the areas under application.

Cyathochaeta teretifolia is described on DEC's Florabase (WA Herbarium 1998-) as a rhizomatous, clumped, robust perennial, grass-like or herb (sedge), which grows up to 2 m high and up to 1.0 m wide, occurs on grey sands and sandy clays within swamps and creek edges.

Given the descriptions and habitat requirements as outlined above, it is considered unlikely that the vegetation to be cleared includes, or is necessary for the continued existence of, rare flora.

Methodology

References:

- Brown et al (1998)
 - DEC Conservation Officer (2007) (TRIM Ref ED143)
 - WA Herbarium (1998-).
- GIS Databases:**
- SAC Bio Datasets 120507
 - Pre-European Vegetation - DA 01/01
 - Hedde Vegetation Complexes - DEP 21/06/95
 - 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

There are 12 occurrences of Threatened Ecological Communities (TECs) located within the local area (5km radius). The nearest recorded TECs are located approximately 2.4km and 2.5km south south-east of the areas under application. These TECs have been identified as being Banksia attenuata woodlands over species rich dense shrublands (Gibson et al. 1994). Typical native species that are associated with the TEC include Banksia attenuata, Hibbertia hypericoides, Petrophile linearis, Stirlingia latifolia, Burchardia umbellata, Alexgeorgea nitens, Daviesia nudiflora and Mesomelaena pseudostygia (Gibson et al. 1994).

The vegetation within the areas under application includes Banksia spp. (B. attenuata; B. menziesii; B. ilicifolia), blackbutt (Eucalyptus todtiana), Baeckea spp., Corynotheca sp., Hibbertia sp., Jacksonia sp., Macrozamia riedlei, Xanthorrhoea preissii, paperbark (Melaleuca sp.) and weeds African lovegrass (Eragrostis curvula), pigface (Carpobrotus edulis), rose geranium (Pelargonium capitatum) and Geraldton Carnation weed (Euphorbia terracina) (Site Inspection 2007).

Given that the limited species present within the areas under application are not representative of the two nearby TECs, the clearing as proposed is not likely to comprise the whole or part of a TEC. Furthermore, given the distance to the nearest TECs the vegetation under application is unlikely to be necessary for the maintenance of the TECs.

Methodology

References:

- DEC Conservation Officer (2007) (TRIM Ref ED143)
 - Site Inspection (2007) (TRIM Ref ED1823)
 - Gibson et al. (1994)
- GIS Databases:**
- Environmentally Sensitive Areas - DOE 08/03/05
 - SAC Bio Datasets 010607

(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 State Government is committed to the National Objectives and Targets for Biodiversity Conservation which includes a target that prevents the clearance of ecological communities with an extent below 30% of that present Pre-European settlement (Commonwealth of Australia 2001). Two of the vegetation types within the area under application (Beard Unit 1949 and Hedde Bassendean Central and South) are below the recommended minimum of 30% representation.

	Pre-European (ha)	Current extent (ha)	Remaining (%)	Conservation status*****	In secure tenure (%)
IBRA Bioregion					
- Swan Coastal Plain*	1,501,456	571,758	38.1	Depleted	NA
City of Wanneroo**	68,070	34,057	50.0	Depleted	NA
Vegetation type:***					
Beard: Unit 1949	132,958	34,012	25.6	Vulnerable	24.4

Hedde:****

Bassendean Central & Sth	87,477	23,624	27.0	Vulnerable	0.7
Bassendean Nth -Transition	17,675	16,308	92.3	Least Concern	57.8

* (Shepherd 2006)

** (Del Marco et al. 2004)

*** (Shepherd et al. 2001)

**** (EPA 2006)

***** (Department of Natural Resources and Environment 2002)

The vegetation within the areas under application is identified as a component of Beard Vegetation Association 1949 (Hopkins et al. 2001, Shepherd et al. 2001) and Hedde Vegetation Complexes Bassendean Complex Central and South and Bassendean Complex North-Transition Vegetation Complex (Hedde et al. 1980), of which there is 25.6%, 27.0% and 92.3% of Pre-European extent remaining respectively.

Further, the Hedde vegetation complex: Bassendean Complex Central & South is poorly represented in secure tenure (0.7%).

However, the vegetation under application is considered to be in a degraded condition; with the areas applied to be cleared being predominantly *Banksia* spp. with minimal native mid-storey and understorey, and numerous weeds (Site Inspection 2007). Further, aerial mapping of the local area shows limited connectivity from the areas under application to the surrounding conservation areas. Therefore, the vegetation under application is unlikely to be considered significant as a remnant of native vegetation.

Methodology

References:

- Commonwealth of Australia (2001)
- Department of Natural Resources and Environment (2002)
- Del Marco et al. (2004)
- EPA (2006)
- Shepherd et al. (2001)
- Shepherd (2006)
- Hedde et al. (1980)
- Site Inspection (2007) (TRIM Ref ED1823)

GIS Databases:

- Pre-European Vegetation - DA 01/01
- Interim Biogeographic Regionalisation of Australia - EA 18/10/00
- Swan Coastal Plain North 20cm Orthomosaic - DLI06

(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 may be at variance to this Principle

Wetland mapping of the areas under application identifies a Resource Enhancement Wetland (REW) immediately adjacent to three of the small areas under application, and extending to the nearby Vintage Park (150m south). A REW is described as been partially modified but still supporting substantial ecological attributes and functions, and should be protected (Water and Rivers Commission 2001). Water and Rivers Commission (2001) suggest that a minimum of a 50 m buffer is recommended.

Mapping also identifies wetlands surrounding the areas under application including Gngangara Lake, a Conservation Category Wetland and EPP lake, located 600m south; and Little Dunderbar Swamp, a Conservation Category Wetland, located 1.5km north. Further, there are 11 Multiple Use wetlands and another REW within a 2km radius of the proposed clearing.

Observations during the site inspection (2007) identified the majority of the vegetation under application (2.1ha) comprising upland *Banksia* spp. with minimal native mid-storey and understorey and numerous weeds, in a degraded condition. Observations also identified numerous weeds in a completely degraded condition within the REW, and one *Melaleuca* sp. in one of the small areas under application immediately adjacent to the REW. *Melaleuca* sp. is recognised as being a wetland dependent species. DEC Wetlands advice (2007) suggests that in spite of some cleared areas and development within the REW, the area may still contain pedological and hydrological wetland characteristics.

While the majority of the vegetation applied to be cleared (2.1ha) is representative of upland vegetation, four of the small areas under application (<0.1 ha) are within the 50m buffer to the REW with one consisting of one *Melaleuca* sp. The clearing as applied therefore, may be at variance to this Principle.

Methodology

References:

- Site Inspection (2007) (TRIM Ref ED1823)
- Water and Rivers Commission (2001)

GIS Databases:

- EPP, Lakes - DEP 1/12/92
- Geomorphic wetlands (Mgt Categories)- Swan Coastal Plain DEC

(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 Acid Sulphate Soil (ASS) risk mapping indicates the areas under application are mapped as having a Class 2 risk. This classification is defined as having a low risk of shallow (<3m depth) of ASS or potential ASS.

The landscape of the areas under application and surrounds can be described as subdued dune-swale terrain (Northcote et al. 1960). The chief soils are leached sands on the low dunes and small areas of other sandy soils (Northcote et al. 1960).

Given the sandy soils present on site, it is considered that there is the potential for the proposed clearing to result in wind erosion, and without appropriate ground cover, windbreaks or adequate dust suppression on exposed surfaces the proposal may cause appreciable land degradation.

Methodology

References:

- Northcote et al. (1960)
- GIS Databases:
- Acid Sulphate Soil risk map, Swan Coastal Plain DEC
 - 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 not likely to be at variance to this Principle

There are three conservation reserves within close proximity of the areas under application including Gngangara-Moore River State Forest 0.9km east and Jandabup Nature Reserve (also identified as Bush Forever Site 324 and System 6 Conservation Reserve) 3.3km north-west. Further, Bush Forever Site 193 (also identified as Gngangara Lake, some of Gngangara-Moore River S.F. and System 6 Conservation Reserve) is located 2.6km west north-west; Site 326 (also identified as Little Dunbar Swamp and some of Gngangara-Moore S.F.) is located 1.1km north; Site 463 is located 1.6km south-west; and Site 327 (also identified as a Conservation Category Wetland and System 6 Conservation Reserve) is located 2.2km west of the areas under application. Furthermore, there are an additional ten System 6 Conservation Reserves (also identified as eight Multiple Use Wetlands and one Resource Enhancement Wetland) within 2km of the areas under application.

The vegetation under application is considered to be in a degraded condition (Site Inspection 2007). The areas to be cleared are predominantly Banksia spp. with minimal native mid-storey and understorey, and numerous weeds (Site Inspection 2007).

Aerial mapping of the local area shows limited connectivity from the areas under application to the surrounding conservation areas. Therefore, given the degraded condition and limited species diversity of the areas under application (Site Inspection 2007) and the lack of connectivity it is unlikely that the clearing as proposed will impact on the environmental values of these conservation areas.

Methodology

Reference:

- Site Inspection (2007) (TRIM Ref ED1823)
- GIS databases:
- DEC Managed Lands and Waters - CALM 1/07/05
 - Bushforever - MFP 07/01
 - Swan Coastal Plain North 20cm Orthomosaic - DLI06
 - System 6 Conservation Reserves - DEP 06/95
 - Geomorphic wetlands (Mgt Categories)- Swan Coastal Plain DEC

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

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

There are 11 Multiple Use wetlands, two Resource Enhancement Wetlands (REW), and two Conservation Category Wetlands (CCW) and within a 2km radius of the proposed clearing. There is a Resource Enhancement Wetland (REW) located immediately adjacent to three of the small areas (<0.1 ha) under application; a CCW identified as Gngangara Lake (also mapped as an EPP Lake) located 600m south; and a CCW identified as Little Dunderbar Swamp located 1.5km north of the areas under application.

A CCW is described as supporting a high level of ecological attributes and functions and is considered the most valuable of wetlands; and a REW is described as been partially modified but still supporting substantial ecological attributes and functions, and should be protected (Water and Rivers Commission 2001).

Observations of the REW during the site inspection (2007) identified the wetland as containing a numerous weeds in a completely degraded condition with one Melaleuca sp. within adjacent to REW. Therefore it is considered the REW supports limited attributes and functions.

The areas under application are not located in a Public Drinking Water Source Area or surface water catchment area. A Priority 2 Public Drinking Water Source Area (PDWSA), namely the Gngangara Underground Water Pollution Control Area, is located adjacent to the areas under application (south-east corner of Lot 9). Further there is a Priority 1 PDWSA, which is also the Gngangara Mound Environmental Protection Policy Area, is located 600m south-east areas under application.

The ground water within the local area is considered to have fresh water quality (0-500mg/L).

Given the areas under application are in a degraded condition (Site Inspection 2007) and are located outside of the Public Drinking Water Source Areas, the clearing is unlikely to cause deterioration in the quality of surface and ground water.

- Methodology** **References:**
- Site Inspection (2007) (TRIM Ref ED1823)
 - Water and Rivers Commission (2001)
- GIS Databases:**
- EPP, Areas - DEP 06/95
 - EPP, Lakes - DEP 1/12/92
 - Geomorphic Wetlands (Mgt Categories), Swan Coastal Plain DEC
 - Groundwater Salinity, Statewide - DOW
 - Public Drinking Water Source Areas (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**
- With an average annual rainfall of approximately 800mm and an annual evaporation rate of approximately 2,000mm there is little surface flow during normal seasonal rains. It is only during major rainfall events that there is a likelihood of flooding. However, given the transmissive nature of the sandy soils identified at the site (Site Inspection 2007), clearing is unlikely to cause or exacerbate the incidence of flooding.

- Methodology** **Reference:**
- Site Inspection (2007) (TRIM Ref ED1823)
- GIS Databases:**
- Evaporation Isopleths - BOM 09/98
 - Isohyets - BOM 09/98

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

- Comments**
- The proposed clearing is for the purpose of Market Garden, this will ensure ground cover on area cleared and mitigate risk of wind erosion.
- The area under application is within the Proclaimed Groundwater Area of Wanneroo. Therefore any abstraction of groundwater would require a licence. A Licence to Take Water on Lots 9 and 20 has been Issued by the Department of Water for 30,000 kL, which incorporates the irrigation of 3.7ha of vegetables (TRIM Ref DOC35912).
- There is no other RIWI Act Licence, Works Approval or EP Act Licence that affects the areas under application.
- Water and River Commission (2001) identifies recommended buffer distances for land uses from wetland areas, with the minimum area being 200 metres on transmissive soils for market gardens. A CCW is located 650m south from the proposed clearing, which is not within this recommended 200m buffer distance. A REW is located immediately adjacent to four small areas under application (0.1ha) and approximately 50m south of two areas under application (2.1ha).
- City of Wanneroo granted Development Approval in November 2006 (TRIM Ref DOC13202). Several conditions have been imposed on the Development Approval including:
- Condition 6: The intensive Agriculture area shall be setback 7.5 metres from the front boundary and 4 metres from the side and rear boundaries;
 - Condition 7: A 30 metre vegetation buffer area facing Sydney Road [western boundary] as indicated on the approved plans [approximately 0.3ha] is to be planted with native species and thereafter maintained to the satisfaction of the Manager Planning Services.
- Condition 6 is a standard condition for general rural areas. Condition 7 was imposed to retain an area of mature trees and to provide a buffer for the caravan park across the road from dust and pesticides.

- Methodology** **Reference:**

- Water and Rivers Commission (2001)
- GIS databases:
 - RIWI Act, Groundwater Areas - DOW
 - RIWI Act, Surface Water Areas - DOW

4. Assessor's comments

Purpose	Method	Applied area (ha)/ trees	Comment
Horticulture	Mechanical Removal	2.2	The clearing application has been assessed against the clearing principles, planning instruments and other matters in accordance with s51O of the Environmental Protection Act 1986. The clearing as proposed may be at variance to Principles (f) and (g), and is not likely to be at variance to the remaining Principles.

5. References

- Brown A., Thomson-Dans C. and Marchant N., (1998) Western Australia's Threatened Flora, Department of Conservation and Land Management, Western Australia.
- Commonwealth of Australia (2001). National Targets and Objectives for Biodiversity Conservation 2001-2005, AGPS, Canberra.
- Del Marco, A., Miles, C., Taylor, R., Clarke, K. and Savage, K. (2004) Local Government Biodiversity Planning Guidelines for the Perth Metropolitan Region - Edition 1. Western Australian Local Government Association, West Perth.
- Department of 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.
- Environmental Protection Authority (1992). Environmental Protection (Gnangara Mound Crown Land) Policy Approval Order 1992. www.epa.wa.gov.au/. Accessed date 31.07.07
- EPA (2006) Guidance for the Assessment of Environmental Factors -level of assessment of proposals affecting natural areas within the System 6 region and Swan Coastal Plain portion of the System 1 Region. Report by the EPA under the Environmental Protection Act 1986. No 10 WA.
- Gibson et al. (1994). A Floristic Survey of the Southern Swan Coastal Plain. Western Australian Department of Conservation and Land Management.
- 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.
- 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.
- 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 ANZWA1050000124.
- Shepherd, D.P., Beeston, G.R. and Hopkins, A.J.M. (2001) Native Vegetation in Western Australia, Extent, Type and Status. Resource Management Technical Report 249. Department of Agriculture, Western Australia.
- Site Inspection (2007) Site Inspection Report, Department of Environment and Conservation (DEC), Western Australia. TRIM Ref ED1823.
- Waters and Rivers Commission (2001) Position Statement: Wetlands. Water and Rivers Commission, Western Australia.
- Western Australian Herbarium (1998-). FloraBase - The Western Australian Flora. Department of Environment and Conservation. <http://florabase.calm.wa.gov.au/> (Accessed 19/04/2007).

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)