



1. Application details

1.1. Permit application details

Permit application No.: 847/1
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: Commissioner of Main Roads WA (Main Roads)

1.3. Property details

Property: AVON LOCATION 25926 (GORGE ROCK 6375)
ROAD RESERVE (GORGE ROCK 6375)
AVON LOCATION 24533 (GORGE ROCK 6375)
LOT 29293 ON PLAN 193964 (GORGE ROCK 6375)
LOT 5635 ON PLAN 113466 (GORGE ROCK 6375)

Local Government Area: Shire Of Corrigin

Colloquial name:

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
1.6		Mechanical Removal	Road construction or maintenance

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 Associations: - 8: Medium woodland; Salmon gum and gimlet.	The proposal is to clear 1.6 hectares of native vegetation over a length of 0.95km for the realignment of a dangerous section of the Brookton Highway in Corrigin.	Very Good: Vegetation structure altered; obvious signs of disturbance (Keighery 1994)	The vegetation clearing description is based on information obtained during a DEC site inspection undertaken 8 May 2006 (TRIM Ref. ED810) and information provided within an Environmental Impact Assessment (GHD 2005), which included a flora survey undertaken in November 2004.
- 955: Mosaic: Shrublands; scrub-heath (South East Avon)/ Shrublands; Allocasuarina campestris thicket (Shepherd 2006).	The area under application is located within a patch of remnant vegetation within Water Reserve 9425, Reserve 18318 and Lot 29755 (previously part of Lot 58) set aside for the purpose of a road. The vegetation under application comprises <i>Casuarina obesa</i> , <i>Allocasuarina campestris</i> , <i>Acacia acuminata</i> and <i>Eucalyptus loxophleba</i> over <i>Borya spp.</i> and native Speargrass (<i>Austrostipa spp.</i>). The area under application within Lot 29755 also includes previously cleared pasture within an adjoining rural lot. A few trees within this area may be cleared for the proposed realignment. The vegetation under application ranges in condition from completely degraded to very good, with an overall condition of very good.		

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 vegetation under application comprises a dense shrubland of *Casuarina obesa*, *Allocasuarina campestris*, *Acacia acuminata* and *Eucalyptus loxophleba* over *Borya spp.* and native Spear grass (*Austrostipa spp.*) (GHD 2005).

GHD (2005) identified the vegetation under application within Reserves 9425, 18318 and 16714 (Gorge Rock Nature Reserve) to be of 'good quality, and even though it is a small area, it is rare (to find) such vegetation with intact understorey generally uninfested by weeds'. During a DEC site visit the vegetation under application was considered to be in very good condition overall.

The vegetation under application includes the Priority 4 species *Daviesia purpurascens* and has the potential to include Declared Rare Flora. A native grass understorey is unusual in this vegetation association (Jam woodland) and therefore it is considered that the vegetation under application is significant as a poorly represented vegetation type...

The vegetation under application is also considered to potentially provide habitat for a range of fauna, especially given the extensive clearing within the region, the location within a larger remnant of native vegetation, and connectivity to the nearby Gorge Rock Nature Reserve.

Given the very good condition of the vegetation under application, the high floral diversity, and the location within an area that has been extensively cleared, it is considered that the vegetation under application comprises a high level of biological diversity.

Methodology GHD (2005)
DEC Site visit (2006)
GIS Databases:
Cadastre - DLI
DEC SAC Bio Datasets, Date accessed 03/09/2007

(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 vegetation under application comprises *Casuarina obesa*, *Allocasuarina campestris*, *Acacia acuminata* and *Eucalyptus loxophleba* over *Borya spp.* and native Spear grass (*Austrostipa spp.*), and is in good to very good condition (GHD 2005).

GHD (2005) identified the following fauna species of conservation significance as potentially occurring within the vegetation under application:

- Carnaby's Black Cockatoo (*Calyptorhynchus latirostris*),
- White-browed babbler (*Pomatostomus temporalis*),
- Malleefowl (*Lepipoa ocellata*),
- Peregrine Falcon (*Falco peregrinus*),
- Australian Bustard (*Ardeotis australis*).

Of these species, GHD (2005) considers that Carnaby's Black Cockatoo is most likely to be affected by the proposed clearing due to the loss of potential nesting trees within the proposal area. The Department of Conservation and Land Management (CALM) (2006) concluded 'given that these potential nesting trees occur within an otherwise extensively cleared Wheatbelt landscape, this proposal is likely to have a locally significant impact on this Threatened fauna species'.

The vegetation under application is known to comprise habitat for a locally important, small, isolated population of Brush tail possums (*Trichosurus vulpecular*), which also utilise mature trees for habitat.

The vegetation under application also includes an understorey that has the potential to provide habitat for ground-dwelling fauna species.

The vegetation under application forms part of a large vegetated remnant of approximately 48 hectares that is considered to provide significant habitat for fauna in a local area that has been extensively cleared for agriculture. CALM (2006) advised that the proposed clearing will lead to further habitat loss and fragmentation in the local area, and is likely to result in the displacement of fauna. It is therefore considered that the proposed clearing is at variance to this Principle.

Methodology CALM (2006)
GHD (2005)
DEC Site visit (2006)

GIS Databases:
Cadastre - DLI
CALM Managed Lands and Waters - CALM 1/07/05
Corrigin North 1.4m Orthomosaic - DOLA 01
DEC SAC Bio Datasets, Date accessed 03/09/2007

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

Comments Proposal may be at variance to this Principle

Three Declared Rare Flora (DRF) species have been recorded within a 10km radius of the vegetation under application, being *Eremophila nivea*, *Grevillea scapigera* and *Guichenotia seorsiflora*. The closest recorded population of DRF is *E. nivea*, located approximately 5m from the vegetation under application. The Department of Conservation and Land Management (CALM) (2006) has advised that this population of *E. nivea* was resurveyed in 2001 and found to have been cleared.

The local populations of the above DRF species are found within the same vegetation and soil associations as the applied area, and the loamy and clayey soils (GHD 2005) found on site are likely to provide suitable habitat for these species.

During a flora survey undertaken in November 2004 GHD (2005) did not locate any DRF species within the Brookton Highway Upgrade project area (SLK 221.6-226.0). This is not the optimum time for surveying *E. nivea* and *G. seorsiflora*, which flower in Aug-Oct and Jul-Sept respectively; however *E. nivea* is a shrub that may be able to be identified outside its flowering time (Western Australian Herbarium 1998-).

There are also eight Priority Flora species that occur in the local area, the closest of which is *Daviesia purpurascens* (P4) located approximately 850m to the northwest of the applied area. The Priority species *Acacia sclerophylla* var. *teretiuscula* (P1), and *Dryandra lindleyana* subs. *agricola* (P2) area also found in the local area and are found in similar soils to those found within the applied area.

During a survey undertaken by CALM (2000) *D. purpurascens* (P4) and *Eremophila veneta* (P4) were located within the area under application. During the November 2004 survey (GHD 2004) *E. veneta* was not observed, however two *D. purpurascens* plants were identified and it is likely they will be cleared as part of this proposal.

A. sclerophylla var. *teretiuscula*, and *Dryandra lindleyana* subs. *agricola* were not observed during the November 2004 flora survey (GHD 2005) but would not have been flowering during the time of the survey (Western Australian Herbarium 1998-). It is therefore considered that these species may be present within the area under application.

Given the close proximity of the DRF species *G. seorsiflora* and *E. nivea* to the applied area, and that the flora survey was not conducted at an optimal time for these species, it is therefore considered that the vegetation under application may include rare flora. In addition, the Priority species *D. purpurascens* is present within the applied area, and the flora survey was not conducted at an optimal time for detecting the Priority species *A. sclerophylla* var. *teretiuscula*, and *Dryandra lindleyana* subs. *agricola*, which are also in the local area.

An appropriately timed flora survey targeting the aforementioned DRF and Priority flora species would be required to conclusively determine whether the vegetation under application includes rare flora.

Methodology GHD (2005)
DEC Site visit (2006)
GIS Databases:
Cadastre - DLI
DEC SAC Bio Datasets, Date accessed 03/09/2007

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

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

There are no known occurrences of Threatened Ecological Communities (TEC) within 60km of the vegetation under application. CALM (2006) advised that the proposal is unlikely to impact on any known occurrences of TEC. It is therefore not considered likely that the vegetation under application comprises, or is necessary for the maintenance of, a TEC.

Methodology CALM (2006)
GIS Database:
DEC SAC Bio Datasets, Date accessed 04/09/2007

(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 seriously at variance to this Principle

The vegetation proposed to be cleared is in degraded to very good condition with an overall rating of very good condition (Keighery 1994). The majority of the vegetation under application has been identified as Beard vegetation association 955, of which there is 7.7% of pre-European extent remaining, and which is considered to be of 'endangered' status for biodiversity conservation (Shepherd 2006). A portion of the vegetation has also been identified as Beard association 8, of which there is 47.4% of pre-European extent remaining and which is considered to be of 'depleted' status (Shepherd 2006).

The vegetation under application is also located within the Mallee and Avon Wheatbelt IBRA Bioregions, which have 54.3% and 15.4% respectively of pre-European vegetation extent remaining (Shepherd 2006; Shepherd et al. 2001). The Shire of Corrigin has been extensively historically cleared for agriculture with 4.9% of pre-European extent remaining, and is considered to be endangered. There is approximately 9.7% of vegetation remaining in the local area (~10km radius of application) (Shepherd et al. 2001).

The State Government is committed to the National Objectives Targets for Biodiversity Conservation which includes a target that prevents clearance of ecological communities with an extent below 30% of that present pre-1750 (EPA, 2000). Beyond this value, species extinction is believed to occur at an exponential rate and any further clearing may have irreversible consequences for the conservation of biodiversity.

Furthermore, the area under application is located within the Intensive Land-use Zone (Shepherd et al. 2001) and located in the area defined in EPA Position Statement No. 2 (EPA 2000). The EPA Position Statement No. 2 (EPA 2000) states that all jurisdictions (States) have committed to the goal of no clearing of endangered ecological communities, which are those with less than 10% pre-European extent remaining.

The area under application is located within a Shire that has been extensively cleared for agriculture and has less than 10% remaining; and the vegetation under application is in very good condition and is part of a vegetation association of which there is less than 10% pre-European extent remaining.

The proposed clearing will reduce the integrity of the remaining remnant vegetation through fragmentation and edge effects including the likely spread of weeds. Given the above it is considered that the vegetation under application is significant as a remnant in an area that has been extensively cleared and the proposal is considered to be seriously at variance to this Principle.

	Pre-European (ha)	Current extent (ha)	Remaining (%)	Conservation status***	% In reserves
IBRA Bioregions					
Mallee**	7,395,901	4,017,868	54.3	Least concern	31.3
Avon Wheatbelt**	9,517,117	1,468,711	15.4	Vulnerable	7.6
Local area (~10km radius)	31,400	3,049	~9.7	Endangered	
Shire of Corrigin*	267,786	13,047	4.9	Endangered	
Beard Vegetation Associations:					
8**	694,643	329,592	47.4	Depleted	13.0
955**	139,326	10,682	7.7	Endangered	15.1

* (Shepherd et al. 2001)

** (Shepherd 2006)

Methodology

CALM (2006)
 EPA (2000)
 GHD (2005)
 Shepherd et al. (2001)
 Shepherd (2006)
 DEC site visit (2006)
 GIS Databases:
 Pre-European Vegetation - DA 01/01
 Interim Biogeographic Regionalisation of Australia - EA 18/10/00
 EPA Position Paper No 2 Agricultural Region - DEP 12/00

(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

There are no wetlands mapped within the area under application, however several minor non-perennial watercourses are located adjacent to the area, with one traversing the eastern end of the area under application.

The Shire of Corrigin is characterised by disorganised drainage lines that form channels and only flow after heavy rains, leading into salt lake systems approximately 11km north east of the vegetation under application

(GHD 2005).

Given that a mapped watercourse is located within the application area, the vegetation adjoining this watercourse within the area under application is considered to be growing in an environment that is associated with a watercourse.

Methodology GHD (2005)
GIS Databases:
Corrigin North 1.4m Orthomosaic - DOLA 01
Hydrography, linear - DOE 1/2/04
Rivers, DoW

(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 area under application lies within two soil units, with the majority of the applied area occurring on hard yellow soils, and the eastern portion of the applied area occurring on hard yellow mottled or red soils (Northcote et al. 1960-68). These soils are considered to have a high risk of water erosion and wind erosion; and during the DEC site visit water erosion was evident in the southern portion of the existing road reserve.

The eastern end of the applied area is also associated with a minor watercourse and it is considered that the risk of water erosion is likely to be higher in this location.

The area under application has a groundwater salinity of 7,000-14,000 TDS mg/L (saline), however has a low salinity risk and it is not considered likely that the proposed clearing of 1.6 hectares would result in a significant increase in salinity on or off site.

Given the high risk of wind erosion and water erosion associated with the identified soil types, is considered that without adequate management the proposed removal of vegetation may result in water erosion or wind erosion.

The installation of a 'rip rap' rock system at culvert outlets will reduce the likelihood of water erosion occurring (TRIM Ref. EI4613).

Methodology Northcote et al. (1960-68)
DEC Site visit (2006)
GIS Databases:
Groundwater Salinity, Statewide - DOW
Salinity Risk LM 25m - DOLA 00
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 may be at variance to this Principle

There are four nature reserves within a 10km radius of the vegetation under application, being the Gorge Rock Nature Reserve (~15ha, 100m east), Wedgengully Nature Reserve (~22ha, 3.6km SW), Morton Nature Reserve (~109ha, 4.2km SE) and Paperbark Nature Reserve (~120ha, 9.3km NE).

In an Environmental Impact Assessment of the larger proposal (SLK 221.6-226.0) GHD (2005) advised that the proposed roadworks within the Gorge Rock Nature Reserve will be limited to the existing road reserve and as such, there will be no impact on the reserve itself. The works adjacent to this nature reserve do not form part of this assessment, and given the distance between the applied area and conservation reserves in the local area, it is not considered likely that the proposed clearing would have a direct impact on their environmental values.

CALM (2006) advised that there is likely to be displacement of fauna and individual fauna mortalities as a result of habitat loss associated with the proposed clearing, and whilst Reserves 9425 and 18318 are not vested for the purpose of conservation, the inherent biodiversity values of both will be impacted through habitat loss and fragmentation.

The vegetation under application is located within a large vegetated remnant in an area that has been extensively cleared for agriculture and is considered to be part of a significant ecological linkage, facilitating movement of fauna to other remnants nearby, including conservation areas. It is considered that further clearing within this remnant may lead to a decline in the environmental values and ecological functions of the larger surrounding remnant through loss of habitat, fragmentation and increased edge effects, such as weed invasion. It is therefore considered that the proposed clearing may be at variance to this Principle.

Methodology CALM (2006)
GHD (2005)
GIS Databases:

(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

The area under application has a groundwater salinity of 7,000-14,000 TDS mg/L (saline), however has a low salinity risk and it is not considered likely that the proposed clearing of 1.6 hectares would result in increased salinity on or off site causing a deterioration in groundwater quality.

Several minor non-perennial watercourses are located adjacent to the applied area, with one traversing the eastern portion. The area under application comprises hard yellow soils (Northcote et al. 1960-68), which are considered to have a high risk of water erosion that is likely to be increased with the removal of vegetation.

Given the high risk of water erosion associated with the soil type within the applied area, it is considered that without adequate management the proposed clearing may result in water erosion causing a deterioration in surface water quality.

Methodology Northcote et al. (1960-68)
GIS Databases:
Groundwater Salinity, Statewide - DOW
Salinity Risk LM 25m - DOLA 00
Soils, Statewide - DA 11/99

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

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

The vegetation under application is associated with a flat to undulating topography with hard yellow soils (Northcote et al. 1960-68) which are considered to have a low risk of localised flooding.

Given the above and that the area under application is limited to 1.6 hectares, the proposed clearing is not considered likely to cause, or exacerbate, the incidence or intensity of flooding.

Methodology Northcote et al. (1960-68)
GIS Databases:
Soils, Statewide - DA 11/99

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

Comments

The area under application is not part of a Native Title Claim, however is associated with an Aboriginal Site of Significance (S810, George Rock). GHD (2005) advise that the site will not be impacted by proposed roadworks as the highway is proposed to be realigned to the south over the section that traverses this site. Furthermore, during ethnographic surveys of the area, a previously unrecorded site of significance was identified. The Department advises that the proponent contact the relevant authorities to seek advice on whether or not the proposed works will impact upon the Aboriginal Sites of Significance listed within the Shire.

The Brookton Highway realignment in Corrigin from SLK 221.6-226.0 was referred to the Environmental Protection Authority (EPA) in 2005. On 19 June 2006 a decision to set the level of assessment as 'Not Assessed - Public advice given and managed under Part V of the EP Act' was set. Two appeals were subsequently lodged with the Office of the Appeals Convenor, being dismissed on 16 August 2007 (TRIM Ref. DOC32459).

The Minister noted that appellants were concerned that this clearing will result in significant impacts to the remaining vegetation given that the Shire of Goomalling has only 5% native vegetation cover remaining. The Minister acknowledged that the proposal may result in some impact to poorly represented vegetation communities, priority flora and threatened fauna habitat. However, due to the small area of clearing (2.4ha) the EPA advised that the environmental losses would not be so significant to warrant formal assessment. Further, the EPA contended that any environmental losses would be mitigated through the revegetation of 17.2ha of native vegetation and adequately managed under the clearing provisions of Part V of the Act.

Accordingly the Minister dismissed the appeal.

The vegetation under application is located within the Intensive Land-use Zone (Shepherd et al. 2001) and located in the area defined in EPA Position Statement No. 2 (EPA 2000). EPA Position Statement No. 2 states that 'in exceptional circumstances the EPA could consider supporting clearing in the agricultural area' where

alternative mechanisms address biodiversity values. Therefore, an offset proposal could be considered to mitigate the proposed clearing. It is noted in the EPA Appeal Decision Report that Main Roads is going to revegetate 17.2ha of native vegetation to mitigate the clearing of 2.4ha of vegetation from SLK 221.6-226.0 (TRIM Ref. DOC32459).

The Shire of Corrigin has raised no objections to the proposed clearing (TRIM Ref. NI1203).

A submission from the Roadside Conservation Committee (RCC) (TRIM Ref. DOC34005) advises that the proposed alignment for Gorge Rock (SLK 221.7 - 222.5) is not an appropriate choice and that the proposed alignment will have a severe impact on this unique vegetation community and will not provide the best results for the Gorge Rock environment as a whole. Further the RCC supports the route proposed to the west of the reserve, starting at SLK 220.5, which joins back into the current alignment at the bottom of the current curve (SLK 222.5). This option still has considerable impacts on the Gorge Rock vegetation block through the widening of the existing road from SLK 222.5 to SLK 223.8 and then the loss of one side of the roadside vegetation from this point to SLK 225.9. However high quality vegetation of the old roadway and acquired land, particularly within the vegetation block, would compensate for some of this loss.

A submission (TRIM Ref. DOC34004) has been received stating the proposed clearing is not supported. Comments include:

- the existing road reserve and southern part of Shire Reserve 18318, where the new road is proposed, supports York Gum/Jam Woodland in very good condition in comparison to the northern side near Gorge Rock;
- This reserve is one of only two small reserves within this vegetation type in the Shire of Corrigin and is very rare within the Wheatbelt;
- EPA Position Statement No. 2 states no further clearing should take place in the over cleared wheatbelt landscape and the York Gum/Jam Woodland is significant;
- Biological survey for the Salinity Action Plan (Department of CALM) identified York Gum/Jam Woodland as supporting significant fauna and all small reserves in the Wheatbelt are seen as significant habitat;
- The clearing of large mature Salmon and York Gums lining the northern side of Brookton Highway, forming a 'cathedral effect', is not supported as the route is used by 200, 000 tourists which travel to Wave Rock annually. - These trees are also habitat for breeding Carnaby's Black Cockatoos;
- The offset of revegetation proposed by Main Roads WA is not supported as it is not possible to recreate complex vegetation communities and;
- recent revegetation works carried out by Main Roads WA have been of a poor standard.

Correspondence was received from Main Roads advising the following: 'upgrading substandard road sections on Brookton Highway will significantly boost road safety by eliminating single lane 3.7 m seals and introducing edge lined two lane 8 m wide seals. Widening and realigning substandard sections on Brookton Highway will provide a safer journey for both heavy vehicles and light vehicles. Benefits to road users will be significant.

Main Roads considers seriously the balance between road safety, funding, local community needs and conserving and protecting the environmental values with its road reserves. In this instance, the realignment itself has been designed to minimise its clearing footprint in an effort to reduce the project's environmental impacts.

Although there is the possibility that threatened flora could be impacted by the project, as the rare flora in the area are not annuals, I feel that the two threatened flora surveys undertaken in 2000 and 2004 would have successfully identified potential rare flora species that may occur within the project area, even if the surveys' timings were not optimal in regard to flowering periods.

The project will require the clearing of Vegetation Association 955, which is considered to be under represented with less than 7.7% pre-European extent remaining. Unfortunately this vegetation association can not be practically avoided, however, to mitigate the project's overall clearing of 2.43ha, Main Roads will revegetate more than 17ha of cleared land, in addition to the redundant sections of road, which will become part of the reserve. The vegetation and topsoil to be removed to accommodate the realignment will assist in revegetating the 17ha of cleared land.

Methodology EPA (2000)
GHD (2005)
Main Roads (2007)
Shepherd et al. (2001)
GIS Databases:
Aboriginal Sites of Significance - DIA
Cadastre - DLI
Corrigin North 1.4m Orthomosaic - DOLA 01
EPA Position Paper No 2 Agriculture Region - DEP 12/00
Native Title Claims - DLI
Register of National Estate - EA 28/01/0

4. Assessor's comments

Purpose	Method Applied	Comment
Road construction maintenance	Mechanical Removal 1.6	The assessable criteria have been addressed and the clearing as proposed is seriously at variance to Principle (e); is at variance to Principles (a), (b) and (f); and may be at variance to Principles (c), (g),(h) and (i).

5. References

CALM (2006) Main Roads Brookton Highway Upgrade 221.6-226.0SLK, Gorge Rock Area, Advice to the Environmental Protection Authority, Western Australia (TRIM Ref. CRN220035).

Commonwealth of Australia (2001). National Targets and Objectives for Biodiversity Conservation 2001-2005, AGPS, Canberra.

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.

GHD (2005) Environmental Impact Assessment and Environmental Management Plan, Prepared for Main Roads WA Wheatbelt South Region (Main Roads), June 2005.

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.

JANIS Forests Criteria (1997) Nationally agreed criteria for the establishment of a comprehensive, Adequate and Representative reserve System for Forests in Australia. A report by the Joint ANZECC/MCFFA National Forest Policy Statement Implementation Sub-committee. Regional Forests Agreement process. Commonwealth of Australia, Canberra.

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 Visit 08/05/06, Department of Environment and Conservation (DEC), Western Australia. TRIM ref ED810.

Western Australian Herbarium (1998-) FloraBase-The Western Australian Flora. Department of Environment and Conservation. <http://florabase.calm.wa.gov.au/> Accessed on 15 November 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)

