



1. Application details

1.1. Permit application details

Permit application No.: 3102/1

Permit type: Area Permit

1.2. Proponent details

Proponent's name: Julie Dawn Pond

1.3. Property details

Property: LOT 11 ON DIAGRAM 60555 (House No. 283 JENKINS BULLSBROOK 6084)

Local Government Area: City Of Swan

Colloquial name:

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
1.303		Mechanical Removal	Building or Structure

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: 1020 - Mosaic: Medium forest; jarrah-marri / Medium woodland; marri-wandoo (Shepherd 2007; SAC Bio datasets 14/05/2009).</p> <p>Hedde Complex: REAGAN COMPLEX: Vegetation ranges from low open woodland of Banksia species E. tottiana to closed heath depending on the depth of soil. (Hedde et al 1980).</p>	<p>The proposal is to clear up to 1.303 hectares of native vegetation from a 10.8ha remnant of native vegetation located within Lot 11. This remnant is subject to an Agreement to Reserve (ATR) under Section 30 of the Soil and Land Conservation Act and is also located within Bush Forever Site 291.</p> <p>The clearing is required for the construction of a house, access track and fire protection. The proposed southern access track to the applied area incorporates an existing fire break which will minimise the amount of vegetation needed to be cleared.</p>	<p>Excellent: Vegetation structure intact; disturbance affecting individual species, weeds non-aggressive (Keighery 1994)</p>	<p>The vegetation clearing description is based on a site inspection by DEC officers on 18 May 2009 (DEC 2009a).</p>
	<p>The vegetation under application comprises immature Eucalyptus marginata, E. tottiana and Corymbia calophylla over a dense understorey comprising Calothamnus sanguineus, Grevillea spp, Hakea spp, Isopogon spp, Gastrolobium spp, and Xanthorrhoea species, with limited patches of bare soil. The vegetation within the applied area has dense leaf litter and minimal weeds and is considered to be in overall excellent condition.</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 at variance to this Principle**

The area proposed to be cleared is located within Bush Forever 291 (321 ha) which is one of a number of Bush Forever sites in the local area.

The vegetation under application comprises *Eucalyptus marginata*, *E. todtiana* and *Corymbia calophylla* over dense, low lying shrubland. Species observed on site, included *Calothamnus sanguineus*, *Grevillea* spp, *Hakea* spp, *Isopogon* spp, *Gastrolobium* spp. and *Xanthorrhoea* species with minimal weeds. Degraded areas were confined to an access track/firebreak. The vegetation within the applied area is considered to be in excellent Keighery (1994) condition (DEC, 2009a).

Within the local area (10km radius) there are seven records of rare flora species. Of the identified rare flora species, only *Acacia anomala* is found within the same vegetation complex and soil type to that found within the area under application. In addition, there are thirteen known populations of nine species of priority flora, the closest *Platysace ramosissima* (P3) is located approximately 1.2 km from the applied area and is found within the same vegetation complex, but within a different soil type as the area under application. Of the identified priority flora, *Adenanthos cygnorum* subsp. *chamaephyton* (P3) located approximately 4.5km from the applied area; is found within the same vegetation complex and soil type to that found on site. DEC (2009b) advise that despite the proposed reduction in size (0.5ha), given the excellent condition of the vegetation under application there is the potential for rare and priority species recorded in the local area to occur on site.

The dense vegetation under application is likely to provide suitable habitat for a range of ground dwelling fauna species such as the Quenda, Chuditch, snakes and lizard species, the native bee and foraging bird species such as the Scarlet Robin which was observed during the DEC site inspection (DEC 2009a). In particular due to the excellent condition of the vegetation within the applied area, DEC (2009c) advise the Trapdoor Spider and a number of other invertebrate species are likely to occur on site. Although the vegetation under application may also provide some foraging habitat for the Endangered Carnaby's Black Cockatoo (*Calyptorhynchus latirostris*), given the proposed reduction in size, it is not considered to be significant (DEC, 2009b).

Given the diversity of the vegetation under application and the potential for it to support a range of native fauna species and that it may provide suitable habitat for rare and priority flora species, it is considered that the applied area is an area of high biological diversity.

Methodology

References:

- DEC (2009a)
 - DEC (2009b)
 - DEC (2009c)
 - Keighery (1994)
 - Western Australian Herbarium (1998)
- GIS Databases:**
- SAC BIO datasets - accessed on 22/05/2009
 - Perth Metropolitan Area North 20cm Orthomosaic - Landgate 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 may be at variance to this Principle**

There are six fauna species of conservation significance which have been recorded within the local area (10km radius) including the Endangered Native Bee (*Leioproctus douglasiellus*), Chuditch (*Dasyurus geoffroi*, VU), Black-striped snake (*Neelaps calonotos*, P3), Carpet Python (*Morelia spilota imbricata*, P4) and the Bee (*Leioproctus contrarius*, P3), the closest being the Trapdoor Spider (*Arbanitis inornatus*, P1) which was recorded approximately 3.2km south east of the applied area.

The area under application is located within the distribution range of the Carnaby's Black-Cockatoo (*Calyptorhynchus latirostris*) (EPBC Act, Endangered). These birds inhabit uncleared or remnant *Eucalyptus* and *Banksia* woodlands and coastal scrub foraging on the seeds and nectar from the flowers of *Eucalyptus*, *Banksia*, *Grevillea* and *Hakea* species (Burbidge 2004). Although the trees under application are unlikely to provide suitable nesting hollows, the vegetation under application includes some of these species which potentially could be utilised by foraging Carnaby's Black-Cockatoo. However, given the proposed reduction in size (~0.5ha) of the proposed area to be cleared, it is no longer likely to be significant as Carnaby's Black-Cockatoo habitat (2009b)

The area under application is located within a 10.8ha remnant within Lot 11. A site inspection of the applied area identified the vegetation under application as comprising *Eucalyptus marginata*, *E. todtiana* and *Corymbia calophylla* over a dense understorey dominated by *Calothamnus sanguineus* and *Xanthorrhoea* species, with a high level of biological diversity (DEC, 2009a).

A number of passerine birds were heard during the site inspection, with the vegetation under application likely to provide suitable foraging habitat for the native bee and local bird species (DEC, 2009a). In addition, a Scarlet Robin observed immediately south of the applied area, is a bird listed as a Significant bird species with a reduced distribution range on the Swan Coastal Plain (Government of Western Australia, 2000).

The dense vegetation under application is likely to provide suitable habitat for a number of ground dwelling fauna species such as the Quenda, snakes and lizards. In particular, DEC (2009c) advise that given the excellent condition of the vegetation, the Trapdoor Spider and other invertebrate species are likely to occur on site; and any fragmentation or a deterioration in the condition of this habitat will have a detrimental affect on the Trapdoor Spider, with some spider species unable to recover.

In addition, whilst the dense vegetation under application is likely to provide suitable habitat for the above mentioned ground dwelling fauna species, the high perimeter fencing would likely prohibit the movement of larger fauna species such as kangaroos across the wider landscape.

Given the potential for the vegetation under application to provide suitable habitat for a range of fauna species, including species of conservation significance, it is considered that the vegetation under application may comprises part of a significant habitat for indigenous fauna.

Methodology

References:

- DEC (2009a)
- DEC (2009b)
- DEC (2009c)
- Government of Western Australia (2000)

GIS Databases:

- Bush Forever
- Perth Metropolitan Area North 20cm Orthomosaic - Landgate 2007
- SAC Bio datasets accessed 22/05/2009

(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

Seven rare flora species have been recorded within the local area (10km radius) including *Verticordia plumosa* var. *pleiobotrya*, *Grevillea althoferorum*, *Acacia anomala*, *Thelymitra stellata*, *Eleocharis keigheryi*, *Grevillea curviloba* subsp. *curviloba* and *Darwinia foetida*; the closest of which *Verticordia plumosa* var. *pleiobotrya* is located approximately 600m from the area under application. Of the identified rare flora species, only *Acacia anomala* is found within the same vegetation complex and soil type to that found on site.

Acacia anomala is a small rush-like shrub up to 50cm tall which occurs in shallow sands and lateritic soils, with yellow flowers from August - September (Western Australia Herbarium, 1998). Given that *A. anomala* is found within the same vegetation complex and soil type to that within the applied area; and has been recorded within Bush Forever site 291, it is considered that the vegetation under application may include, or be necessary for the maintenance of, rare flora.

Acacia anomala is a small rush-like shrub up to 50cm tall which occurs in shallow sands and lateritic soils, with yellow flowers from August - September (Western Australia Herbarium, 1998). *A. anomala* is found within the same vegetation complex and soil type to that within the applied area; and has been recorded within Bush Forever site 291. DEC (2009b) advice that that despite the proposed reduction in size (0.5ha), given the excellent condition (Keighery, 1994) of the vegetation under application there is the potential for rare and priority species recorded in the local area to occur on site.

Given the above, it is therefore considered that the vegetation under application may include, or be necessary for the maintenance of, rare flora; and the proposed clearing may be at variance to this principle.

Methodology

References:

- DEC (2009a)
 - DEC (2009b)
 - Keighery (1994)
 - Western Australian Herbarium (1998-)
- GIS Databases:
- Bushforever
 - Heddle Vegetation Complexes
 - Perth Metropolitan Area North 20cm Orthomosaic - Landgate 2007
 - SAC Bio Databases 16/02/09
 - Soils, Statewide

(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

Within the local area (10km radius) there are occurrences of seven Threatened Ecological Communities (TEC) with the closest known occurrence being identified as Floristic Community Type SCP07 - Herb rich saline shrublands in clay pans (Gibson et al, 2008) which is located approximately 1.8km west of the area under application. All of the TECs within a 10km radius of the applied area are found on different soils and within a different vegetation complex to that found on site.

Given the above, and the distance to the nearest TEC, the proposed clearing is not considered likely to impact on, or be necessary for the maintenance of this TEC.

Therefore, the proposed clearing is not likely to be at variance to this Principle.

Methodology

References:

- DEC (2009a)
- Gibson et al (2008)

GIS Database:

- Heddle Vegetation Complexes
- SAC Bio Datasets 22/05/2009
- 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

Heddle et al. (1980) defines the vegetation under application as Reagan Complex of which there is 38% of pre-European extent remaining (EPA 2006). The vegetation under application is also described as Beard vegetation association 1020 of which there is 32.98% of pre-European extent remaining (Shepherd 2007). In addition, the Heddle vegetation complex is identified as having 1.9ha representation within secure tenure (EPA 2006).

The area under application is located within the City of Swan, within which there is 44.05% of pre-European extent remaining.

The Environmental Protection Authority (EPA) supports a 30% threshold level as recommended in the National Objectives Targets for Biodiversity Conservation; below which species loss appears to accelerate exponentially at an ecosystem level (EPA, 2000). The Beard vegetation type and Heddle complex under application retain more than this 30% threshold level.

The area under application has an Agreement to Reserve (10 hectares) and is located within Bush Forever site 291 (325 hectares) which comprises the same vegetation type as that found on site. Although there are high representations of the vegetations associations in the local area; given that the applied area is located in the western portion of Bush Forever site 291, the proposed clearing would reduce the east-west connectivity to adjacent remnant vegetation and the identified Bush Forever site.

Given the above, it is considered likely that the vegetation under application is significant as a remnant in the local area.

	Pre-European (ha)	Current extent (ha)	Remaining (%)	In secure tenure (%)
IBRA Bioregion*				
Swan Coastal Plain^	1,501,208	583,140	38.84	32.5
City of Swan**	104,246	45,925	44.05	
Beard vegetation type*				
1020	5,295	1,723	32.55	5.44
Heddle vegetation complex**				
Reagan Complex	9,097	3,455	38.0	1.9

* (Shepherd, 2007)

** (EPA, 2006)

^ Area within Intensive Land Use Zone

- Methodology** References:
- Commonwealth of Australia (2001)
 - EPA (2006)
 - Government of Western Australia (2000)
 - Heddle (1980)
 - Shepherd et al (2007)
- GIS Databases:
- Pre-European Vegetation
 - Heddle Vegetation Complexes
 - Interim Biogeographic Regionalisation of Australia
 - SAC BIO Datasets accessed 14/05/2009

(f) Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.

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

There are no wetlands or watercourses mapped within the vegetation under application. However, there are numerous wetlands located within a 10km radius of the area under application; the closest a Conservation Category Wetland is located approximately 1.3km west of the applied area. In addition, the nearest Environment Protection Policy (EPP) Lake is located approximately 4.9km west of the area under application.

The nearest watercourse is Ellen Brook, which is located approximately 3km west of the area under application.

During the DEC site inspection (DEC, 2009a) the vegetation under application was identified as being representative of an upland vegetation community, at an elevation of between 150 - 170 metres.

Given the high elevation of the area proposed to be cleared, the distance to the nearest wetland and watercourses and the vegetations resemblance to an upland vegetation community, the vegetation under application is not considered to be growing in, or in association with, an environment associated with a watercourse or wetland.

- Methodology** References:
- DEC (2009a)
- GIS Databases:
- EPP, Lakes
 - Geomorphic Wetlands (Classification), Swan Coastal Plain
 - Hydrography, linear (hierarchy)
 - Topographic Contours, Statewide - DOLA

(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 soils within the area under application are described as sandy yellow mottled soils, containing ironstone gravels (Northcote et al, 1968) which generally have a low risk of land degradation including wind erosion and water logging (Department of Agriculture, 2005). The area under application is also associated with a nil to low risk of salinity.

The main land degradation risk associated with the removal of vegetation on the identified soil type is considered to be water erosion. However, given that the applied area is contained within a densely vegetated remnant and that no erosion gullies or rills were observed during the DEC site inspection (DEC, 2009a), the risk of water erosion is considered to be low.

DAFWA (2009a) advise that the proposed clearing of 1.303ha for the construction of a house, access track and fire protection is unlikely to cause appreciable land degradation.

Given the above, it is therefore not considered likely that the proposed clearing would result in appreciable land degradation.

- Methodology** References:
- DAFWA (2009a)
 - DEC (2009a)
 - Northcote et al. (1960-68)
 - Department of Agriculture (2005)
- GIS Databases:
- Perth Metropolitan Area North 20cm Orthomosaic - Landgate 2007
 - Salinity Risk LM 25m - DOLA 00

- Soils, Statewide - DA 11/99
- Topographic Contours, Statewide

(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 area under application is located within Bush Forever site 291 (Jenkins Road South Bushland). Bush forever sites have been selected for their representation for a range of ecological communities, high diversity of flora and/or fauna in close association and for their representation of rare or threatened communities or species, or species of restricted distribution (Government of Western Australia 2000). The proposed clearing will have a direct impact on the environmental values of this Bush Forever site, through the removal of vegetation which would reduce the east-west connectivity to adjacent remnant vegetation and the identified Bush Forever site (DEC 2009b).

In addition, the proposed clearing could further impact on this conservation area through the introduction or spread of weed species and/or dieback by machinery. The consequences associated with the spread of such exotic species into areas reserved for conservation can include a deterioration of the conservation reserve, including the potential local extinction of species.

Advice received from Bush Forever (2009) is that the proposed clearing of vegetation within the Bush Forever site is contrary to the intent and purpose of Bush Forever Policy and does not support the proposal in its current form; and recommends that the building envelope be moved outside of the Bush Forever site to previously cleared or degraded areas within Lot 11.

Given the proposed clearing will directly impact the conservation area; it is considered that the proposal is at variance to this Principle.

Methodology

References:

- DEC (2009a)
- DEC (2009b)
- Bush Forever (2009)
- Government of Western Australia (2000)

GIS Databases:

- Bushforever
- CALM Managed Lands and Waters
- CALM Regional Parks
- Perth Metropolitan Area North 20cm Orthomosaic - Landgate 2007

(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 closest water courses are Ellen Brook which is located approximately 3km west of the area under application and South Chittering Creek which is located approximately 3.2km south east of the applied area. The area under application is located within the Swan Avon Catchment, but is not located within a Public Drinking Water Source Area.

The area under application has a nil to low risk of salinity. Given the low salinity risk, it is not considered likely that the proposed clearing would cause salinity resulting in the deterioration in the quality of underground water.

Although the main land degradation risk associated with the removal of vegetation on the identified soil type is considered to be water erosion, DAFWA (2009a) advise that the clearing of 1.303ha for the proposed land use is unlikely to cause appreciable land degradation. Given this and the distance to the nearest watercourse, it is not considered likely that the proposed clearing would cause water erosion resulting in the deterioration in surface water quality.

Given the above, it is therefore not considered likely that the proposed clearing would cause deterioration in the quality of surface or underground water.

Methodology

References:

- DAFWA (2009a)

GIS Databases:

- Groundwater Salinity, Statewide
- Hydrographic Catchments - Catchments - DOW
- Hydrographic, linear (hierarchy) - DOW
- Public Drinking Water Source Areas (PDWSAs) - DOW
- Salinity Mapping LM 25 - DOLA 00

(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 area under application is located approximately 3km west from the Ellen Brook at an elevation of between 150 - 170 metres. Given the distance to the nearest watercourse and the limited size of the applied area (1.303ha), it is not considered likely that the proposed removal of vegetation would impact on peak flood height or duration.

Methodology GIS Databases:

- Hydrography, linear (hierarchy) - DOW
- Topographic Contours, Statewide

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

Comments

Lot 11 on Diagram 60555 is freehold land, zoned Landscape under the local Town Planning Scheme.

The area under application is zoned Rural under the Metropolitan Regional Scheme.

DEC notes that the property under application is subject to an Agreement to Reserve (ATR) under s30B of the Soil and Land Conservation Act 1945 that covenants the protection of 10.8ha but allows, subject to the necessary approvals, an area of up to 1ha to be cleared within the retained area for the purpose of a building envelope, essential services and access to the building envelope.

DAFWA (2009a) advise that there are no land degradation issues associated with the proposed clearing.

DAFWA (2009b) advise that 1.3ha or approximate may be cleared for the purpose of a building envelope, essential services and access to the building envelope subject to necessary DEC approvals.

In a submission, the City of Swan advise that the City does not support the proposed clearing for the purpose of a house construction within the Bush Forever site, given that there is sufficient existing cleared land within Lot 11 to construct a dwelling.

In a submission, Bush Forever advise the proposed clearing of vegetation within the Bush Forever site is contrary to the intent and purpose of Bush Forever Policy and therefore do not support the proposal in its current form. Bush Forever recommends that the building envelope be moved to a cleared or degraded area within Lot 11, outside of Bush Forever site 291. These issues were considered as part of the assessment. In addition the Rural implementation category of Bush Forever Site 291 allows for negotiations for rural development (under draft State Planning Policy 2.8 – Bushland Policy for the Perth Metropolitan Region).

In a private submission, an objection was made to the proposed clearing on the grounds that the area under application is located within Bush Forever site 291, an area recognised for its conservation values; and that there are other suitable areas already cleared within Lot 11 which could be used to locate the house. In addition, eutrophication and recharge impacts to Ellen Brook associated with the clearing of native vegetation were also raised. These issues were considered as part of the assessment.

A submission was received from applicant (Pond, 2009) in response to correspondence from DEC dated 11 June 2009. Mr Syd Pond (on behalf of the applicant) stated that he was of the understanding that under the Agreement to Reserve, he would be entitled to build within a portion of the Bush Forever site. The applicant further advised that after having the area surveyed, the proposed clearing was reduced to 0.5 hectares and that all attempts would be made to reserve the natural bush and habitat in the area.

Methodology References:

- Bush Forever (2009)
- City of Swan (2009)
- DEC (2009b)
- DAFWA (2009a)
- DAFWA (2009b)
- Submission - private (2009)
- Pond (2009)

GIS Databases:

- Town Planning Scheme Zones_1
- Metropolitan Regional Scheme

4. Assessor's comments

Comment

The assessable criteria have been addressed and the proposed clearing is at variance to Principles (a), (e) and (h), may be at variance to Principles (b) and (c); and is not likely to be at variance to Principles (d), (f), (g), (i) and (j).

5. References

Brown A., Thomson-Dans C. and Marchant N. (1998). *Western Australia's Threatened Flora*, Department of Conservation and Land Management, Western Australia.

Burbidge, A. (2004) *Threatened Animals of Western Australia*, Department of Conservation and Land Management, Perth, Western Australia.

Bush Forever (2009) Submission, Direct Interest Submission, Bush Forever, 8 June 2009, TRIM DOC 86639.

City of Swan (2009) Submission, Direct Interest Submission, City of Swan, 3 June 2009, TRIM DOC 86206.

DAFWA (2009a) Land Degradation Advice for clearing permit application CPS 3102/1. Received 2/06/2009. Office of the Commissioner of Soil and Land Conservation, Department of Agriculture and Food Western Australia (TRIM Ref. DOC 86100).

DAFWA (2009b) Land Degradation Advice for clearing permit application CPS 3102/1. Received 2/06/2009. Office of the Commissioner of Soil and Land Conservation, Department of Agriculture and Food Western Australia (TRIM Ref. DOC 85085).

DEC (2009) Site Inspection Report for Clearing Permit Application CPS 3102, House Construction and Fire Protection. Site inspection undertaken 18/05/2009. Department of Environment and Conservation, Western Australia (TRIM Ref. DOC 86170).

DEC (2009b) Biodiversity advice for land clearing application. Advice to Assessing Officer, Native Vegetation Assessment Branch, received 19/08/2009. Department of Environment and Conservation, Western Australia (TRIM Ref: DOC94214).

DEC (2009c) Biodiversity advice for land clearing application. Advice to Assessing Officer, Native Vegetation Assessment Branch, received 25/08/2009. Department of Environment and Conservation, Western Australia (TRIM Ref: DOC94907).

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.

EPA (2006) Guidance for the Assessment of Environmental Factors - Level of Assessment for Proposals Affecting Natural Areas Within the System 6 Region and Swan Coastal Plain Portion of the System 1 Region. Guidance Statement No 10. Environmental Protection Authority, Western Australia.

Gibson N., Keighery B., Keighery G., Burbidge A. and Lyons M. (1994). *A Floristic Survey of the Southern Swan Coastal Plain*. Western Australian Department of Conservation and Land Management and the Western Australian Conservation Council.

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WAHedde, 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.

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.

Pond, S. (2009) Letters of response to Department of Environment and Conservation (DEC) 30 day letter dated 11 June 2009 (TRIM Ref: DOC88924 and TRIM Ref: DOC 92605).

Private (2009) Submission, Direct Interest Submission, 28 May 2009, TRIM DOC 86638.

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.

Western Australian Herbarium (1998-). *FloraBase - The Western Australian Flora*. Department of Environment and Conservation. <http://florabase.calm.wa.gov.au/> Accessed on 2/06/2009.

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)

