



1. Application details

1.1. Permit application details

Permit application No.: 2264/1
 Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: City of Armadale

1.3. Property details

Property: LOT 471 ON DIAGRAM 49689 (HARRISDALE 6112)
 LOT 623 ON PLAN 12788 (HARRISDALE 6112)
 Local Government Area: City Of Armadale
 Colloquial name:

1.4. Application

| | | | |
|--------------------|-----------|--------------------|----------------------------------|
| Clearing Area (ha) | No. Trees | Method of Clearing | For the purpose of: |
| 0.5 | | 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 Association: 1001 - Medium very sparse woodland; jarrah, with low woodland; banksia and casuarina (Shepherd et al. 2001). | The proposed clearing consists of 0.5 ha along Ranford Road for road widening. The proposed clearing is in an Environmentally Sensitive Area due to its proximity to an ANCA/EPP wetland, this being Balannup Lake. | Very Good: Vegetation structure altered; obvious signs of disturbance (Keighery 1994) | Description and condition of the vegetation under application was determined from the Site Inspection (2008). Vegetation ranges in condition from 'degraded' to 'very good' with an average condition rating of 'degraded'. Ecologia (1999) conducted a flora survey of Shepherd Court Reserve in June 2000. |
| Hedde Vegetation Complex: Southern River Complex - Open woodland of E. calophylla - E. marginata - Banksia species with fringing woodland of E. rudis - M. raphiophylla along creek beds (Hedde et al. 1980). | Vegetation with the area under application ranges in condition from 'degraded' to 'very good'. Vegetation along the road verge is 'degraded', vegetation along the northern half of the application site is in 'good' condition and vegetation along the southern half of the site is in 'very good' condition. The area under application supports two vegetation associations, these being Banksia Woodland and Melaleuca raphiophylla Open Forest. Banksia Woodland occupies the northern two thirds of the site and Melaleuca raphiophylla Open Forest occupies the southern third of the site. Banksia Woodland supports Banksia attenuata, Allocasuarina fraseriana, Kunzea glabrescens, Adenanthos cygnorum, Acacia | | |

pulchella, Patersonia occidentalis, Lyginia imberbis, Desmodcladus sp., Conostylis sp., Goodenia sp. and Melaleuca sp. Weeds present in this area include Perennial Veldt grass (Ehrharta calycina), Wild Oats (Avena fatua) and Wild Gladiolus (Gladiolus caryophyllaceus).

Melaleuca rhapsiophylla Open Forest supports Melaleuca rhapsiophylla, Eucalyptus rudis and Allocasuarina fraseriana over Eucalyptus todtiana, Kunzea glabrescens, Melaleuca sp. and Xanthorrhoea preisii. Weeds present in this area include Perennial Veldt grass (Ehrharta calycina) with Lantana (Lantana camara), Oleander (Nerium oleander) and African Lovegrass (Eragrostis curvula) restricted to the road verge.

The portion of Shepherd Court Reserve under application is affected by Phytophthora (Ecologia 1999).

Approximately one quarter of the area under application or 0.1 hectares has been identified as being in 'very good' condition. All vegetation in 'very good' condition is on Lot 121 (1 Hatch Court).

As above.

Approximately one quarter of the area under application or 0.16 hectares has been identified as being in 'good' condition.

Good: Structure significantly altered by multiple disturbance; retains basic structure/ability to regenerate (Keighery 1994)

As above.

As above.

Approximately half of the area under application or 0.24 hectares has been identified as being in 'degraded' condition.

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

As above.

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 area under application forms part of Shepherd Court Reserve and bordering Lot 121 (1 Hatch Court), where Shepherd Court Reserve and Lot 121 Hatch Court border Ranford Road. Shepherd Court Reserve and Lot 121 Hatch Court, together occupy approximately 3 ha and the area under application occupies 0.5 ha of this combined area.

Both Shepherd Court Reserve and Lot 121 Hatch Court are isolated from Bush Forever site 413 and large tracts of native vegetation by Ranford Road to the north and expanding urbanisation.

The area of Shepherd Court under application is affected by Phytophthora (Ecologia 1999).

During Site Inspection (2008) the area under application was observed to support Banksia Woodland and Melaleuca rhapsiophylla Open Forest.

Two species of priority flora, being *Acacia benthamii* and *Thysanotus glaucus* occur on the same soil type and within the same vegetation associations as the area under application (Western Australian Herbarium 1998), however *Ecologia* (1999) did not record either of these species within the Shepherd Court Reserve.

The area under application is deemed to support poor quality habitat for fauna and is unlikely to support high floristic diversity or habitat for priority flora. Given this, clearing is unlikely to be at variance to this principle.

- Methodology** **References:**
- Site Inspection (2008)
 - *Ecologia* (1999)
 - Western Australian Herbarium (1998)
- GIS Databases:**
- Swan Coastal Plain Central 20cm Orthomosaic - DLI06
 - Bushforever

(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

Fourteen indigenous fauna taxa of significance are recorded within a 10 km radius of the area under application. These taxa include Schedule 1 species:

- Red-tailed Black Cockatoo (*Calyptorhynchus banksii naso*) (vulnerable)
- Chuditch (*Dasyurus geoffroii*) (vulnerable)
- Numbat (*Myrmecobius fasciatus*) (vulnerable)
- Brush-tailed Phascogale (*Phascogale tapoatafa*) (vulnerable)
- Native bee (*Neopasiphe simplicior*) (endangered)
- Native bee (*Leioproctus douglasiellus*) (endangered)

Priority species:

- Cricket (*Throscodectes xiphos*) (P1),
- Native bee (*Leioproctus bilobatus*) (P2)
- Lined Skink (*Lerista lineata*) (P3)
- Native bee (*Leioproctus contrarus*) (P3)
- Western Brush Wallaby (*Macropus irma*) (P4)
- Water Rat (*Hydromys chrysogaster*) (P4)

and specially protected fauna the Peregrine Falcon (*Falco peregrinus*).

During Site Inspection (2008) the area under application was observed to support *Banksia Woodland* and *Melaleuca raphiophylla* Open Forest ranging in condition from 'very good' to 'degraded'.

The area under application forms the north eastern boundary of a larger bushland remnant approximately 3 ha in area with this remnant having been isolated from large tracts of native vegetation by Ranford Road and expanding urbanisation.

Considering the size of the area under application (being 0.5 ha), the areas lack of connectivity to larger patches of native vegetation, the lack of dense understorey, lack of hollow bearing trees and absence of significant food resources, the area is unlikely to support significant habitat for Chuditch, Numbat, Brush-tailed Phascogale, Western Brush Wallaby or Red-tailed Black Cockatoo.

The area under application and larger remnant, although supporting wetland dependent vegetation (*Melaleuca raphiophylla*) does not support open water making it unsuitable for the Water Rat.

As approximately 0.26 ha is in 'good' or better condition the area is unlikely to support significant habitat for native bee species *Neopasiphe simplicior*, *Leioproctus douglasiellus*, *Leioproctus bilobatus* or *Leioproctus contrarus* and is unlikely to be significant for the native cricket *Throscodectes xiphos*, the Lined Skink (*Lerista lineata*) or Peregrine Falcon.

Given that the area under application does not provide significant habitat for fauna indigenous to Western Australia clearing is unlikely to be at variance to this principle.

- Methodology** **References:**
- Site Inspection (2008)
 - DEC fauna habitat notes. February 2007
- GIS Databases:**
- SAC Bio datasets 21/01/2008
 - Swan Coastal Plain Central 20cm Orthomosaic - DLI06

(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

Five species of Declared Rare Flora (DRF), three species of priority 1 flora, five species of priority 2 flora, three species of priority 3 flora and nine species of priority 4 flora occur within a 10 km radius of the area under application with the nearest DRF, *Caladenia huegelii*, being located approximately 380 m north west and the nearest priority flora, *Aponogeton hexatepalus*, being located approximately 1.3 km north west of the area under application.

During Site Inspection (2007) the area under application was observed to support *Banksia Woodland* and *Melaleuca raphiophylla* Open Woodland on dry grey sands with an understorey dominated by *Kunzea glabrescens*.

These characteristics make the site suitable for two taxa of DRF, these being *Caladenia huegelii* and *Drakaea elastica*, and two species of priority flora, these being *Acacia benthamii* and *Thysanotus glaucus* (Western Australian Herbarium 1998).

The DRF species *Drakaea elastica* flowers from September to November and has the potential to be present within the area under application as it is usually found in 'white or grey sand in low-lying situations adjoining winter-wet swamps' and is often found in association with thickets of *Kunzea glabrescens* (Western Australian Herbarium 1998-). Suitable habitat for this species was observed within the southern half of the area under application.

The DRF species *Caladenia huegelii* flowers in September-October and favours deep, sandy soils in mixed woodland of Jarrah and *Banksia* (CALM 2004). Suitable habitat for this species was observed within the northern two thirds of the area under application.

Surveys of Shepherd Court Reserve conducted by Ecologia (1999) did not record either *Acacia benthamii* or *Thysanotus glaucus* as occurring within the reserve however as the surveys were conducted in early June species such as *Caladenia huegelii* and *Drakaea elastica* may be present but were not evident at the time of survey.

Given that the area under application may support suitable habitat for two species of DRF clearing may be at variance to this principle.

A spring survey will be required to determine the presence of these two species of DRF within the area under application.

Methodology

References:

- Site Inspection (2008)
- Western Australian Herbarium (1998)
- Ecologia (1999)
- CALM (2004)

GIS Databases:

- SAC Bio datasets 25/01/2008

(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

Six known Threatened Ecological Communities (TEC) occur within a 10 km radius of the area under application, these being:

- SCP 20b: *Banksia attenuata* and/or *Eucalyptus marginata* woodlands of the eastern side of the Swan Coastal Plain;
- SCP 3b: *Eucalyptus calophylla* - *Eucalyptus marginata* woodlands on sandy clay soils of the southern Swan Coastal Plain;
- SCP 07: Herb rich saline shrublands in clay pans;
- SCP 08: Herb rich shrublands in clay pans;
- SCP 10a: Shrublands on dry clay flats, and;
- Muchea limestone: Shrublands and woodlands on Muchea limestone.

Two known Priority Ecological Communities (PEC) occur within a 10 km radius of the area under application, these being Central Granite Shrublands and, Claypans with mid dense shrublands of *Melaleuca lateritia* over herbs.

During Site Inspection (2008) the area under application was observed to support *Banksia Woodland* and *Melaleuca raphiophylla* Open Forest on dry grey sands.

Ecologia (1999) states that TEC SCP 20a: *Banksia attenuata* woodlands over species rich dense shrublands

occurs throughout Shepherd Court Reserve however given the species composition on site DEC Species and Communities (2008) states that the area is unlikely to be an occurrence of TEC 20a and is most likely an occurrence of community type 23a which is neither a TEC or PEC and occurs commonly in surrounding Bush Forever sites.

Given the soils, vegetation type and species composition and, the landform type (not being a clay pan or wetland) the area under application is not considered to represent an occurrence of a TEC or PEC and clearing is not likely to be at variance to this principle.

- Methodology** References:
- Site Inspection (2008)
 - Ecologia (1999)
 - DEC Species and Communities (2008)
- GIS Databases:
- SAC Bio datasets 28/01/2008

(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 Objective Targets for Biodiversity Conservation, which includes targets that prevent the clearing of ecological communities with an extent below 30% of that present pre-1750 (Commonwealth of Australia 2001).

Hedde Vegetation Complex, Southern River Complex has less than the recommended 30% minimum of Pre-European extent remaining (9.8% remaining) as does Beard Vegetation Association 1001 (26.5% remaining).

Although these vegetation associations are less than the recommended 30% minimum of Pre-European extent remaining, the applied area is considered to be within a constrained area. The EPA (2006) recognises the Perth Metropolitan Region as a constrained area, providing for the reduction of vegetation complexes to a minimum of 10% of Pre-European extent. The vegetation associations present within the area under application (Hedde and Beard) are both greater than 10%.

During Site Inspection (2008) the area under application was observed to support Banksia Woodland and Melaleuca raphiophylla Open Forest reflective of both Heddles Southern River Complex and Beard vegetation association 1001. Approximately 0.26 ha of the 0.5ha under application is considered to be in 'good' or better condition. The area of Shepherd Court Reserve under application is also infected with Phytophthora (Ecologia 1999).

Given approximately 0.26 ha in in 'good' or better condition, that the area is affected by Phytophthora and that the vegetation associations on site have greater than 10% of their pre-European extent remaining the area is not considered to be significant as a remnant and clearing is not considered likely to be at variance to this principle.

| | Pre-European area (ha) | Current extent (ha) | Remaining % managed land | % in reserves/DEC- | |
|--------------------------------------|---------------------------|------------------------|-----------------------------|-----------------------|-----|
| Swan Coastal Plain* | 1,501,456 | 571,758 | 38.1 | 10.4 | |
| City of Armadale (no data available) | | - | | - | - |
| Hedde vegetation complex** | | | | | |
| Southern River Complex | 57,979 | | 11,501 | 9.8 | 1.5 |
| Beard vegetation associations* | | | | | |
| 1001 | 57,412 | | 15,241 | 26.5 | 1.2 |

* (Shepherd, 2006)

** (EPA 2006)

- Methodology** References:
- Commonwealth of Australia (2001)
 - Shepherd (2006)
 - Site Inspection (2008)
 - Ecologia (1999)
 - EPA (2006)
- GIS Databases:
- Pre-European Vegetation - DA 01/01
 - Hedde Vegetation Complexes - DEP 21/06/95
 - Interim Biogeographic Regionalisation of Australia - EA 18/10/00
 - Swan Coastal Plain Central 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 is at variance to this Principle

The area under application is surrounded by an extensive wetland system including Conservation Category Wetland (CCW), Multiple Use Wetland (MUW) and Resource Enhancement Wetland. At their nearest points CCW is located approximately 30m and MUW 190m east of the area under application and the far southern tip of the area under application is within the boundary of a REW. Local areas of CCW are also Environmental Protection Policy wetlands. The nearest watercourse to the area under application is a major drain located 430m east of the application site which flows from Balannup Lake.

During Site Inspection (2008) the area under application was observed to support a small stand (approximately 0.1 ha) of *Melaleuca raphiophylla* and *Eucalyptus rudis*.

As both *Melaleuca raphiophylla* and *Eucalyptus rudis* are considered to be wetland dependant vegetation, growing in a wetland, clearing is considered to be at variance to this principle.

During Site Inspection (2008) the area under application was observed to support a small area (approximately 0.1 ha) of *Melaleuca raphiophylla* Open Forest which also included *Eucalyptus rudis*.

As both *Melaleuca raphiophylla* and *Eucalyptus rudis* are considered to be wetland dependant vegetation, growing in a wetland, clearing is considered to be at variance to this principle.

Methodology References:

- Site Inspection (2008)
- GIS Databases:
 - Geomorphic Wetlands (Classification), Swan Coastal Plain
 - Hydrography, linear (hierarchy)
 - EPP, Wetlands 2004 (DRAFT)

(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 vegetation under application lies within soils associated with sandy dunes with intervening sandy and clayey swamp flats, chief soils are leached sands, sometimes with a clay on the dunes and sandy swamps (Northcote et al. 1960-68).

During Site Inspection (2008) soils on site were observed to be dry grey sands. These soils have a high wind erosion risk. Given the small scale of the area under application, approximately 0.5 ha, clearing is considered unlikely to cause appreciable land degradation.

Given the low risk of appreciable land degradation from wind erosion clearing is considered unlikely to be at variance to this principle.

Methodology References:

- Northcote et al. (1960-68)
- Site Inspection (2008)

(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

Bush Forever site 413 is located approximately 30 m north of the area under application and is separated from the area under application by Ranford Road. This Bush Forever site also incorporates Balannup Lake Nature Reserve which is located 240 m east of the application site. Bush Forever site 253 is located to the west and at its nearest point is 450 m west of the area under application.

A submission has been received from Bush Forever stating no objections to the proposed road widening (Bush Forever 2008).

During Site Inspection (2008) the area under application was observed to support *Banksia* Woodland and *Melaleuca raphiophylla* Open Forest. Approximately 0.26 ha of the 0.5 ha area under application is considered to be in 'good' or better condition.

Ecologia (1999) states that further than 5 m away from the reserves periphery and firebreak vegetation is in 'very good' to 'excellent' condition with low weed invasion. The proposed clearing has the potential to indirectly impact the environmental values of the adjacent reserve through the spread or introduction of weed species, by machinery. There are serious consequences associated with the spread of exotic species into areas of native vegetation, including the potential decline or local extinction of species.

Given the size of the area under application and size of areas in 'good' or better condition clearing is unlikely to affect hydrology and water quality in Balannup Lake or in the wetlands associated with Bush Forever site 413 and is unlikely to impact on other environmental values associated with these conservation areas. However, given clearing may introduce and/or aid the spread of weeds into Shepherd Court Reserve it is considered that clearing may be at variance to this principle.

- Methodology** References:
- Site Inspection (2008)
 - Bush Forever (2008)
 - Ecologia (1999)
- GIS Databases:
- Swan Coastal Plain Central 20cm Orthomosaic - DLI06
 - CALM Managed Lands and Waters
 - Bushforever

(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 area under application is surrounded by an extensive wetland system including Conservation Category Wetland (CCW), Multiple Use Wetland (MUW) and Resource Enhancement Wetland. At their nearest points CCW is located approximately 30m and MUW 190m east of the area under application and the far southern tip of the area under application is within the boundary of a REW. The nearest watercourse to the area under application is a major drain located 430m east of the application site which flows from Balannup Lake.

During Site Inspection (2008) the area under application was observed to support Banksia Woodland and Melaleuca raphiophylla Open Forest. Approximately 0.26 ha of the 0.5 ha area under application is considered to be in 'good' or better condition. Given the condition of the vegetation and size of the area under application clearing is considered unlikely to affect hydrology and water quality in Balannup Lake or in Wetlands surrounding the area under application.

The area under application is located in an area at high risk of developing salinity in the future. However given the small size of the application, clearing is considered unlikely to exacerbate local salinity.

Given clearing is not considered likely to affect water quality and hydrology in local wetlands and lakes and is not considered likely to exacerbate salinity, clearing is considered unlikely to be at variance to this principle.

- Methodology** References:
- Site Inspection (2008)
- GIS Databases:
- Salinity Risk LM 25m - DOLA 00
 - Geomorphic Wetlands (Classification), Swan Coastal Plain
 - Hydrography, linear (hierarchy)
 - Swan Coastal Plain Central 20cm Orthomosaic - DLI06

(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 surrounded by an extensive wetland system including Conservation Category Wetland (CCW), Multiple Use Wetland (MUW) and Resource Enhancement Wetland. At their nearest points CCW is located approximately 30m and MUW 190m east of the area under application and the far southern tip of the area under application is within the boundary of a REW. The nearest watercourse to the area under application is a major drain located 430m east of the application site which flows from Balannup Lake.

During Site Inspection (2008) the area under application was observed to be situated low in the landscape with soils on site observed to be sandy and likely to have a high infiltration rate thus reducing the likelihood of surface water pooling.

Deep rooted perennial vegetation in 'good' or better condition within the area under application is limited in extent and the area under application covers 0.5 ha (Site Inspection 2008).

Given the vegetation, soils and size of the area under application clearing is considered unlikely to exacerbate flooding in local wetlands or cause flooding within the area under application. Thus clearing is not considered likely to be at variance to this principle.

- Methodology** References:
- Site inspection (2008)

GIS Databases:

- Geomorphic Wetlands (Classification), Swan Coastal Plain
- Hydrography, linear (hierarchy)
- Swan Coastal Plain Central 20cm Orthomosaic - DLI06

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

Comments

Currently Shepherd Court Reserve is zoned 'public recreation' and the City of Armadale is seeking an excision of the area under application which is currently being assessed by DPI and WAPC (City of Armadale 2008a; City of Armadale 2008b).

A signed and finalised contract of sale has been received by City of Armadale for the sale of Lot 121 (1 Hatch Court) and this has been forwarded on the DEC (City of Armadale 2008c)

The area of Shepherd Court Reserve under application is known to be infected with *Phytophthora cinnamomi* (Ecologia 1999) however vegetation within Lot 121 south of Shepherd Court Reserve may be unaffected. Given the linear nature of the area under application there is potential for *Phytophthora* to be spread along the length of the application site by the movement of machinery possibly leading to the infection of Lot 121.

The area under application is not located in or near a Public Drinking Water Source area.

No Aboriginal Heritage Sites of Significance are located within the area under application (Department of Indigenous Affairs 2008) and the area under application is not within a Native Title Claim Area.

The vegetation under application is located on soils with a Class 2 Acid Sulphate Soil (ASS) Risk. These soils are defined as having a moderate to low risk of ASS occurring within 3 m of the natural soil surface that could be disturbed by the proposed development activities.

Methodology

References:

- Department of Indigenous Affairs (2008)
 - Ecologia (1999)
 - City of Armadale (2008a)
 - City of Armadale (2008b)
 - City of Armadale (2008c)
- GIS Databases:
- Public Drinking Water Source Areas (PDWSAs)
 - Cadastre for Labeling
 - Native Title Claims
 - Acid Sulfate Soil Risk Map, Swan Coastal Plain

4. Assessor's comments

| Purpose | Method | Applied area (ha)/ trees | Comment |
|----------------------------------|--------------------|--------------------------|---|
| Road construction or maintenance | Mechanical Removal | 0.5 | 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 may be at variance to principle (c) and (h), is at variance to principle (f) and is not or not likely to be at variance to any of the remaining principles. |

5. References

CALM (2004) Grand Spider Orchid (*Caladenia huegelii*) Fact sheet.

City of Armadale. (2008a). Excision of land from Shepherd Court Reserve and signed contract of sale for 1 Hatch Court - Personal communication. TRIM Ref. DOC46051.

City of Armadale. (2008b). City meeting 17 December 2007 - Proposed excision of Reserve 34077 (Lots 471 and 623) Ranford Road, Harrisdale. TRIM Ref. DOC45116.

City of Armadale. (2008c). Contract of Sale - Lot 121 (1 Hatch Court). TRIM Ref. DOC49975.

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

DEC Species and Communities. (2008). Personal communication: Threatened Ecological Community advice. TRIM Ref. DOC45325.

Ecologia. (1999). City of Armadale: Bushland condition assessment project. West Perth, Ecologia Environmental Consultants. TRIM Ref. DOC45117 and DOC45118.

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.

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.

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.
- Site Inspection. (2008). Site Inspection Report, Department of Environment and Conservation (DEC). Perth, Western Australia. TRIM Ref. DOC44341.
- Western Australian Herbarium (1998-). FloraBase - The Western Australian Flora. Department of Environment and Conservation. <http://florabase.calm.wa.gov.au/> (Accessed 25 January 2008).

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) |

