



## 1. Application details

### 1.1. Permit application details

Permit application No.: 688/1  
 Permit type: Area Permit

### 1.2. Proponent details

Proponent's name: Quito Pty Ltd

### 1.3. Property details

Property: LOT 5426 ON PLAN 206216 (House No. 60 KILN NOWERGUP 6032)  
 Local Government Area: City Of Wanneroo  
 Colloquial name: Kiln Rd - Lot 5426 on Plan 206216

### 1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
17.32		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: 998, Medium woodland; tuart (Shepherd 2006).</p> <p>Hedde Vegetation Complex: Cottesloe Complex Central/South, Mosaic of woodland of E. gomphocephala and open forest of E. gomphocephala - E. marginata - E. calophylla; closed heath on the Limestone outcrops. (Hedde et al. 1980).</p>	<p>The proposal is to clear 17.23ha of native vegetation on Lot 5426 (41.12ha) for turf. The original application was submitted for the entire property, however this was subsequently amended.</p> <p>A site inspection (2007) of the vegetation under application identified the overstorey as predominantly comprising Jarrah (Eucalyptus marginata). The understorey comprised of very little species diversity, with the dominant species being Xanthorrhoea preissii. Other species identified included Macrozamia sp, Mesomelaena sp, Hakea sp, Conostylis sp, Patersonia occidentalis and Desmodadus sp. The vegetation under application ranged in condition from degraded to good.</p> <p>Mattiske (2004) determined that the vegetation under application has been previously heavily logged, resulting in the regeneration of Jarrah (Eucalyptus marginata).</p>	<p>Good: Structure significantly altered by multiple disturbance; retains basic structure/ability to regenerate (Keighery 1994)</p>	<p>The vegetation clearing description was obtained during a site inspection (2007) of the applied areas, and information provided in the Mattiske (2004) Flora report.</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 may be at variance to this Principle**

The vegetation under application comprises a Jarrah (*Eucalyptus marginata*) overstorey with an understorey dominated by *Xanthorrhoea preissii* (Site Inspection 2007). The vegetation under application is primarily in good condition, with areas of higher disturbance in a degraded condition.

A flora survey conducted by Mattiske Consulting Pty Ltd (2004) for the entire property recorded a total of 117 plant taxa within the survey area, consisting of 77 native species and 40 weed (introduced) species. The flora survey determined that a history of past logging and grazing activities had resulted in a modified vegetation community with a consequentially high number of introduced species in sections of the property (Mattiske Consulting Pty Ltd 2004).

The vegetation under application comprises feeding habitat for local indigenous fauna, including the Carnaby's Black Cockatoo (*Calyptorhynchus latirostris*). Carnaby's Cockatoos are known to feed on *Corymbia calophylla*, *Eucalyptus marginata* and *Eucalyptus gomphocephala* (Birds Australia WA 2006), with the Northern Region of the Swan Coastal Plain considered to be an important area throughout the season for this species (Shah 2006).

As the vegetation under application has been altered through historic grazing and logging activities and subsequent weed invasion, the full complement of flora and fauna species is not considered likely to be present within the areas of vegetation under application. However, given the 77 species present within the area under application and the suitability of the vegetation as a feeding site for species such as the Carnaby's Black Cockatoo, it is considered that the vegetation under application may comprise a high level of biological diversity.

**Methodology**      **References:**

- Birds Australia WA (2006)
- Mattiske Consulting Pty Ltd (2004)
- Shah (2006)
- Site Inspection (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**

The vegetation under application comprises a Jarrah (*Eucalyptus marginata*) overstorey with an understorey dominated by *Xanthorrhoea preissii* (Site Inspection 2007) in a good to degraded condition. The vegetation under application has been altered through historic grazing and logging activities and subsequent weed invasion (Mattiske Consulting Pty Ltd 2004).

The following fauna species of conservation significance have been recorded within the local area (10km radius):

- Carnaby's Black Cockatoo (*Calyptorhynchus latirostris*) (Endangered);
- Chuditch (*Dasyurus geoffroii*) (Vulnerable);
- the native bee (*Hylaeus globuliferus*) (Priority 3);
- Graceful Sunmoth (*Synemon gratiosa*) (Endangered);
- Carpet Python (*Morelia spilota imbricata*) (Schedule 4);
- Western Brush Wallaby (*Macropus irma*) (Priority 4), and
- Quenda (*Isoodon obesulus fusciventer*) (Priority 5) (Biodiversity Coordination Section 2006).

Whilst the overstorey remains largely intact across the property, the understorey of the vegetation under application is variable across the site with weed density ranging from 30-70% cover (Mattiske Consulting Pty Ltd 2004, Site Inspection 2007). Given the lack of dense understorey, it is not considered likely that the vegetation under application would comprise significant habitat for most ground-dwelling mammals

However, the vegetation under application is considered to provide feeding habitat for local indigenous fauna, including the Carnaby's Black Cockatoo (*Calyptorhynchus latirostris*). Carnaby's Cockatoos are known to feed on *Corymbia calophylla*, *Eucalyptus marginata* and *Eucalyptus gomphocephala* (Birds Australia WA 2006), with the Northern Region of the Swan Coastal Plain considered to be an important area throughout the season for this species (Shah 2006).

In addition the vegetation under application is considered to provide connectivity and an ecological linkage to facilitate the movement of fauna between nearby wetlands and conservation areas (Biodiversity Coordination Section 2006).

Therefore, given that the vegetation under application is considered to provide foraging habitat for species of conservation significance, such as Carnaby's Cockatoo, and provides an ecological linkage for fauna, it is considered that the vegetation under application may comprise significant habitat for fauna.

- Methodology**    **References:**
- Biodiversity Coordination Section (2006)
  - Birds Australia WA (2006)
  - Mattiske Consulting Pty Ltd (2004)
  - Shah (2006)
  - Site Inspection (2007)
- GIS Databases:**
- Bushforever - MFP 07/01
  - CALM Managed Lands and Waters
  - Geomorphic Wetlands (Mgt Categories), Swan Coastal Plain - DEC
  - Swan Coastal Plain North 20cm Othomosaic - DLI06

**(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 thirteen records of the Declared Rare Flora species, *Eucalyptus argutifolia* within a 10km radius (local area) of the areas of vegetation under application (Biodiversity Coordination Section 2006). *Eucalyptus argutifolia* is known to occur on shallow soils over limestone and along slopes or gullies of limestone ridges and outcrops (Western Australian Herbarium 1998-).

Flora surveys undertaken in August, September and November 2004 of the property including the area under application did not identify any Declared Rare Flora species (Mattiske Consulting Pty Ltd 2004). Furthermore, whilst small limestone outcrops were observed within the north-eastern portion of the property, the areas of vegetation under application were observed to contain deep sands and are therefore not considered likely to support *E. argutifolia* populations (Biodiversity Coordination Section 2006).

Fifteen Priority Flora species are also known to occur within the local area, however as none of these species were observed during flora surveys undertaken in August, September and November 2004 (Biodiversity Coordination Section), these species are not considered likely to occur within the vegetation under application.

- Methodology**    **References:**
- Biodiversity Coordination Section (2006)
  - Mattiske Consulting Pty Ltd (2004)
  - Western Australian Herbarium (1998-)

**(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**

Three Threatened Ecological Communities (TEC) are known to occur within a 10km radius of the areas of vegetation under application, being:

- Caves SCP01: 'Aquatic Root Mat Community number 1 of the Swan Coastal Plain (SCP)';
- SCP Floristic Community Type (FCT) 26a: 'Melaleuca huegelii - Melaleuca systema shrublands on limestone ridges'; and
- SCP Floristic Community Type (FCT) 19b: 'Woodlands over sedgeland in Holocene dune swales of the southern Swan Coastal Plain' (Gibson et al. 2004).

The closest TEC is SCP FCT 26a, located 2.5m north-west of the areas of vegetation under application.

A flora survey conducted by Mattiske Consulting Pty Ltd (2004) identified the vegetation within Lot 5426 as containing four plant communities. These communities are noted as corresponding with Floristic Community Types (FCT) 24: 'Northern Spearwood shrublands and woodlands' and FCT 28: 'Spearwood Banksia attenuata or Banksia attenuata - Eucalyptus woodlands' (Mattiske Consulting Pty Ltd 2004).

Neither of these Floristic Community Types have been identified as a Threatened Ecological Community (CALM 2004). In addition, a site inspection undertaken in 2003 by officers from the (then) Department of Conservation and Land Management (CALM) reported that there is a low probability of Threatened Ecological Communities being within Lot 5426 (Biodiversity Coordination Section 2006).

Given this, and the distance to local records of TEC occurrences, the vegetation under application is not considered likely to comprise the whole or a part of, or be necessary for the maintenance of a threatened ecological community.

- Methodology**    **References:**
- Biodiversity Coordination Section Advice (2006)
  - CALM (2004)
  - Gibson et al. (1994)
  - Mattiske Consulting Pty Ltd (2004)

**(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 vegetation under application is mapped as a component of Beard Vegetation Association 998 (Hopkins et al. 2001), and Heddle Vegetation Complex Cottesloe Complex Central and South (Heddle et al. 1980), of which 41.5% and 41.0% remains respectively (Shepherd 2006, EPA 2006). The vegetation under application is located within the City of Wanneroo, which has 50% vegetation extent remaining (Del Marco et al. 2004) and there is approximately 57% of vegetation remaining in the local area (10km radius).

The State Government is committed to the National Objectives and Targets for Biodiversity Conservation which includes a target that prevents a clearance of ecological communities with an extent below 30% of that present pre-European settlement (Commonwealth of Australia 2001).

Both vegetation communities associated with the vegetation under application are above the State Governments 30% biodiversity conservation target. In addition, historic grazing and logging activities within the applied areas have resulted in a modified vegetation community, with a consequentially high number of introduced species in sections of the property (Mattiske Consulting Pty Ltd 2004). Therefore, the vegetation under application is not considered to be significant as a remnant of native vegetation in an extensively cleared area.

	Pre-European (ha)	Current extent (ha)	Remaining (%)	% In reserves/ CALM managed land
IBRA Bioregions				
Swan Coastal Plain**	1,501,456	571,758	38.1	
Local area (~10km radius)	~28,600	~16,500	~57	
City of Wanneroo*	68,070	34,057	50.0	
Beard Vegetation Association - 998**	51,017	21,178	41.5	35.2
Heddle Vegetation Complex - Cottesloe Central & South***	44,995	18,474	41.0	21

\* (Del Marco et al. 2004)

\*\* (Shepherd 2006)

\*\*\* (EPA 2006)

**Methodology References:**

- Commonwealth of Australia (2001)
  - Del Marco et al. (2004)
  - EPA (2006)
  - Hopkins et al (2001)
  - Mattiske Consulting Pty Ltd (2004)
  - Shepherd (2006)
- GIS Databases:
- Pre-European Vegetation - DA 01/01.
  - Heddle Vegetation Complexes - DEP 21/06/95.
  - Interim Biogeographic Regionalisation of Australia - EA 18/10/00.
  - Local Government Authorities

**(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 two wetlands located within relatively close proximity to the areas under application, being Nowergup Lake, a Conservation Category Wetland (CCW), and Carabooda Lake, a Resource Enhancement Wetland (REW). Both of these Lakes are approximately 500 metres south and west of the vegetation under application respectively, and are classified as Environmental Protection Policy (EPP) Lakes.

A wetland buffer of 50-200m is recommended to all developments to protect wetland values and functions (Water and Rivers Commission 2001). Given the distance to the nearest wetlands (500m), the proposed clearing is not considered likely to be growing in association with these wetlands.

In addition, flora surveys undertaken by Mattiske Consulting Pty Ltd (2004) and a site inspection of the applied areas (2007) identified the vegetation under application as comprising open woodland of *Eucalyptus marginata*

with a Xanthorrhoea understorey. Given the description of the vegetation and elevation in comparison to nearby wetland areas, the vegetation under application is considered to be representative of upland vegetation community. Therefore the vegetation under application is not considered to be growing in an environment associated with a watercourse or wetland.

**Methodology**    **References:**

- Matiske Consulting Pty Ltd (2004)
  - Water and Rivers Commission (2001)
  - Site Inspection (2007)
- GIS Databases:
- EPP, Lakes - DEP 1/12/92
  - Geomorphic Wetlands (Mgt Categories), Swan Coastal Plain - DEC
  - Topographic Contours, Metropolitan Area

**(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 vegetation under application is located within the Spearwood Dune system, and comprises deep Spearwood sands with Karrakatta yellow sands on the eastern margin of the applied areas (DAFWA 2007).

Deep Spearwood and Karrakatta sands are known to have a high risk of wind erosion (DAWA 2005). Given the sandy soils present on site, large area proposed to be cleared (17.32ha) and extensive clearing directly to the west and north, the proposed clearing may result in wind erosion. Without appropriate ground cover, windbreaks or adequate dust suppression on exposed surfaces wind erosion may result in appreciable land degradation. Retention of the remaining vegetation on site should assist in reducing the impacts of wind erosion by providing a windbreak for the proposed pivots.

Water erosion is not considered likely to result from the proposed clearing, given the sandy nature of the soils on site. However the proposed clearing of 17.32ha of native vegetation may result in nutrient loss due to the low Phosphorus Retention Index (PRI) of the soils.

Given this and the risk of wind erosion, the proposed clearing may cause appreciable land degradation.

**Methodology**    **References:**

- DAFWA (2007)
  - DAWA (2005)
  - Matiske Consulting Pty Ltd (2004)
- GIS Databases:
- Geomorphic Wetlands (Mgt Categories), Swan Coastal Plain - DEC
  - Soils, Statewide - DA 11/99
  - Swan Coastal Plain North 20cm Orthomosaic - DLI06

**(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**

There are several conservation areas within the local area to the vegetation under application, including Bush Forever Site 383 (~500m south west), Neerabup Nature Reserve, (500m south west), Gnangara-Moore River State Forest (1.4km east), Bush Forever Site 290 (~1.4km east), and Bush Forever Site 130 (~2km north-west).

Bush Forever (Government of Western Australia 2000) identified that sites to the west of the subject property provide a contiguous or largely contiguous corridor of bushland to wetland areas. In addition, advice provided by the Department of Environment (2004a) and CALM (2004a) in relation to the proposed clearing of the entire Lot (41ha) advised that Lot 5246 is part of a contiguous vegetation corridor which links the Neerabup Nature Reserve and National Park to the Gnangara-Moore River State Forest, and that the removal of the vegetation (41ha) is likely to have a significant detrimental impact on the values of the Bush Forever areas. Furthermore, 'the linkage between Neerabup National Park and Nature Reserve and the Gnangara-Moore River State Forest is currently at the minimum possible width to maintain its functionality' (Department of Environment 2004a).

Whilst the clearing proposal has been amended to a reduced area (17.32ha) and vegetation on the eastern portion of the Lot will now be retained, it is considered likely that the proposed clearing within this Lot will impact on the environmental values of the retained remnant vegetation, and subsequently the values of the ecological linkage, due to the impacts of disturbance and edge effects. Given this and the close proximity of nearby reserves, it is considered likely that the proposed clearing will impact on the environmental values of nearby conservation areas.

To mitigate the potential impact on nearby conservation areas conditions will be imposed on a clearing permit if granted requiring weed and dieback prevention measures; and fencing, weed control and revegetation within

the remaining corridor.

- Methodology**    **References:**
- CALM (2004a)
  - Department of Environment (2004a)
  - Government of Western Australia (2000)
- GIS Databases:**
- Bushforever
  - CALM Managed Lands and Waters
  - Swan Coastal Plain North 20cm Othomosaic - DLI06

**(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**

Two Priority Drinking Water Source Areas (PDWSA) occur within close proximity to the vegetation under application, the closest being a Priority 3 Underground Water Pollution Control Area located ~1.2km south-west of the applied area. Hydrological movement from the site is generally in a west-southwest direction (DAWA 2005), therefore the proposed clearing is not considered likely to impact on the nearby PDWSA.

There are two wetlands located within relatively close proximity to the areas under application, being Nowergup Lake, a Conservation Category Wetland (CCW), and Carabooda Lake, a Resource Enhancement Wetland (REW). Both of these Lakes are approximately 500 metres south and west of the vegetation under application respectively, and are classified as Environmental Protection Policy (EPP) Lakes.

The vegetation under application is located within the Spearwood Dune system, and comprises deep Spearwood sands with Karrakatta yellow sands on the eastern margin of the applied areas (DAFWA 2007). These soils are known to possess a low Phosphorus Retention Index (PRI) and the mobilisation of nutrients following the clearing of 17.32ha of native vegetation may lead to eutrophication to the nearby Nowergup Lake, given the west-southwest drainage flow from the property. Therefore, the proposed clearing may be at variance to this Principle.

- Methodology**    **References:**
- DAFWA (2007)
  - DAWA (2005)
- GIS Databases:**
- EPP, Lakes - DEP 1/12/92
  - Geomorphic Wetlands (Mgt Categories), Swan Coastal Plain - DEC
  - Public Drinking Water Source Areas (PDWSAs) - DOE 09/08/05

**(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**

Groundwater contour mapping indicates that groundwater levels are an average depth of approximately 15 to 24 metres below the soil surface (Department of Environment 2004). Given the depth to groundwater and sandy nature of the soils on site (DAFWA 2007), the proposed clearing is not considered likely to cause or exacerbate the incidence or intensity of flooding.

- Methodology**    **References:**
- DAFWA (2007)
  - Department of Environment (2004)

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

**Comments**

The proposal is to clear 17.32ha of native vegetation for turf. The application was originally submitted for the entire lot (41ha), for the construction of a wholesale nursery, however this was subsequently amended.

A Notice of Intent to Clear (NOIC) was submitted to the Department of Agriculture in 2003 for the entire property (41ha). During the time the NOIC was being considered by the Department of Agriculture, an Interdepartmental Committee with staff from the (then) Department of Environment raised concerns about the proposal and its likely impacts on vegetation representation, further fragmentation of native vegetation on the Swan Coastal Plain (particularly east-west ecological linkages) and the likelihood of increased nutrients leaching into groundwater and deteriorating water quality (TRIM Ref. DOC43665). The proposal was subsequently referred to the Environmental Protection Authority. However during the time the NOIC was being considered by the EPA the new clearing legislation came in to effect, and therefore a clearing permit was submitted.

A flora and vegetation survey and Nutrient and Irrigation Management Plan were requested by the Environmental Protection Authority to support the applicant's original NOIC. In correspondence to the

Environmental Protection Authority, Benara Nurseries advised that they would 'adhere to the recommendations in the (flora) report - the retention of a strip of Eucalyptus gomphocephala (Tuart) on the eastern boundary of the property'.

The applicant has previously been issued with development approval from the City of Wanneroo for the undertaking of intensive agriculture (market garden) on the property. Turf farms are considered intensive agriculture under the City's District Planning Scheme, therefore an amended development approval is not required to be submitted (TRIM Ref: DOC35041). A condition of the City's development approval includes the retention of a 40m strip of existing vegetation on the eastern boundary of the property.

The Department of Agriculture (DAWA 2005) advised that areas on Lot 5426 are mapped as having a very high risk of phosphorus loss due to the soils present on site. Further, DAWA (2005) advised that drainage on the property is in a westerly direction into Nowergup Lake and that fertiliser use on the property could contribute to phosphorus export to the neighbouring lake. Whilst the implementation of a Nutrient and Irrigation Management Plan has been considered by the applicant, the development of turf and application of fertilisers on this property may lead to eutrophication of nearby wetland areas given drainage of the site into these areas.

One public submission opposing the clearing proposal was received. The submission raised the following issues in relation to this clearing application:

- Whether any flora or fauna studies had been conducted on the subject property within the last five years, given that the area under application provides habitat for kangaroos and nesting birds; and that
- Water resources may not be available to enable the proposed landuse (TRIM Ref: DOC22701).

The Water Corporation have provided advice stating their intent to build a pipe line along the eastern boundary of the property (TRIM Ref. DOC21130). An application for this development has recently been received (CPS 2117/1).

A water licence (GWL68571(3)) has been issued for the irrigation of 37/5ha of turf on Lots 5426 and 5425 (TRIM Ref. DOC43341). Managed correctly across the properties, this water allocation should satisfy the irrigation requirements on Lot 5426.

There is no other Works Approval or EP Act Licence affecting this proposal.

There are no Aboriginal Sites of Significance mapped within the areas of vegetation under application.

**Methodology** GIS Database:

- Aboriginal Sites of Significance

#### 4. Assessor's comments

Purpose	Method	Applied area (ha)/ trees	Comment
Horticulture	Mechanical Removal	17.32	The assessable criteria have been addressed and the clearing as proposed is at variance to Principle (h) and may be at variance to Principles (a), (b), (g) and (i).

#### 5. References

- Biodiversity Coordination Section (2006) Biodiversity advice for land clearing application. Advice to Assessing Officer, Native Vegetation Assessment Branch, Department of Environment (DoE), received 2006. Department of Conservation and Land Management (CALM), Western Australia (TRIM Ref. IN26234).
- Birds Australia WA (2006). Conservation of Carnaby's Black-Cockatoo on the Swan Coastal Plain, Western Australia. Carnaby's Black-Cockatoo Recovery Project (<http://www.hotgecko.com/carnabys/Carnabys.htm>). Accessed on Friday, 13 July 2007.
- CALM (2004) List of Threatened Ecological Communities on the Department of Conservation and Land Management's Threatened Ecological Community (TEC) Database endorsed by the Minister for the Environment. WA Threatened Species & Communities Unit, Department of Conservation and Land Management (Correct to January 2004). Western Australia.
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- Commonwealth of Australia (2001). National Targets and Objectives for Biodiversity Conservation 2001-2005, AGPS, Canberra.
- DAFWA (2007) Land degradation assessment report. Office of the Commissioner of Soil and Land Conservation, Department of Agriculture and Food Western Australia. DEC TRIM Ref: DOC21386.
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- Department of Environment (2004). Perth Groundwater Atlas. Second Edition. Department of Environment, Western Australia.
- Department of Environment (2004a) Land clearing proposal advice to the Commissioner of Soil and Land Conservation.

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- 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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- Hopkins, A.J.M., Beeston, G.R. and Harvey J.M. (2001) A database on the vegetation of Western Australia. Stage 1. CALMScience after J. S. Beard, late 1960's to early 1980's Vegetation Survey of Western Australia, UWA Press.
- Keighery, B.J. (1994) Bushland Plant Survey: A Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc). Nedlands, Western Australia.
- Mattiske Consulting Pty Ltd (2004) Flora and Vegetation Survey of Swan Location 5426, Kiln Road Carabooda for the proposed relocation of Benara Nursery (TRIM Ref: EI652).
- 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.
- Shah, B. (2006) Conservation of Carnaby's Black-Cockatoo on the Swan Coastal Plain, Western Australia. December 2006. Carnaby's Black-Cockatoo Recovery Project. Birds Australia, Western Australia.
- 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.
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- Water and Rivers Commission (2001). Position Statement: Wetlands, Water and Rivers Commission, Perth.
- Western Australian Herbarium (1998-). FloraBase - The Western Australian Flora. Department of Environment and Conservation. <http://florabase.calm.wa.gov.au/> (Accessed 17/01/2008).

## 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)