



CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

Purpose Permit number:	CPS 7011/1
Permit Holder:	Shire of Waroona
Duration of Permit:	30 July 2016 – 30 July 2021

The Permit Holder is authorised to clear native vegetation subject to the following conditions of this Permit.

PART I – CLEARING AUTHORISED

1. Purpose for which clearing may be done

Clearing for the purpose of road upgrades.

2. Land on which clearing is to be done

Coronation Road reserve, Waroona (PINs 1373409, 1373426, 1373427 and 1373443)
Brockman Road North reserve, Waroona (PINs 1373444 and 1373428)
Fawcett Road reserve, Waroona (PINs 1373407 and 1373402)
Weir Road reserve, Waroona (PINs 1373392, 1373411, 11173449 and 11173450)
Leavy Road reserve, Waroona (1131279)
Weller Road reserve, Waroona (PIN 1131278)
Pagannini Road reserve, Waroona (PIN 1131280)
Scarp Road reserve, Waroona (PINs 11536430 and 11536431)
Invarell Road reserve, Waroona (PIN 11072932)

3. Area of Clearing

The Permit Holder must not clear more than 4.18 hectares of native vegetation within the combined areas cross hatched yellow on attached Plan 7011/1a, Plan 7011/1b, Plan 7011/1c and Plan 7011/1d.

4. Application

This Permit allows the Permit Holder to authorise persons, including employees, contractors and agents of the Permit Holder, to clear native vegetation for the purposes of this Permit subject to compliance with the conditions of this Permit and approval from the Permit Holder.

5. Type of clearing authorised

This Permit authorises the Permit Holder to clear native vegetation for the activities described in condition 1 of this Permit to the extent that the Permit Holder has the power to carry out works involving clearing for those activities under the *Local Government Act 1995* or any other written law.

PART II – MANAGEMENT CONDITIONS

6. Avoid, minimise etc clearing

In determining the amount of native vegetation to be cleared authorised under this Permit, the Permit Holder must have regard to the following principles, set out in order of preference:

- (a) avoid the clearing of native vegetation;
- (b) minimise the amount of native vegetation to be cleared; and
- (c) reduce the impact of clearing on any environmental value.

7. Dieback and weed control

When undertaking any clearing authorised under this Permit, the Permit Holder must take the following steps to minimise the risk of the introduction and spread of *weeds* and *dieback*:

- (a) clean earth-moving machinery of soil and vegetation prior to entering and leaving the area to be cleared;
- (b) ensure that no *dieback* or *weed*-affected soil, *mulch*, *fill* or other material is brought into the area to be cleared; and
- (c) restrict the movement of machines and other vehicles to the limits of the areas to be cleared.

DEFINITIONS

The following meanings are given to terms used in this Permit:

dieback means the effect of *Phytophthora* species on native vegetation;

fill means material used to increase the ground level, or fill a hollow;

mulch means the use of organic matter, wood chips or rocks to slow the movement of water across the soil surface and to reduce evaporation;

weed/s means any plant -

- (a) that is a declared pest under section 22 of the *Biosecurity and Agriculture Management Act 2007*; or
- (b) published in a Department of Parks and Wildlife Regional Weed Rankings Summary, regardless of ranking; or
- (c) not indigenous to the area concerned.



Simon Weighell
A/MANAGER
CLEARING REGULATION

*Officer delegated under Section 20
of the Environmental Protection Act 1986*

30 June 2016

Plan 7011/1a



Legend

-  Localities
-  Roads
-  Imagery
-  Clearing Instruments Activities
-  Local Government Authority



0 500m

1:8,863

(Approximate when reproduced at A4)

GDA 94 (Lat/Long)

Geocentric Datum of Australia 1994

S. Weighell Date *30/6/16*

S Weighell

Officer with delegated authority under Section 20 of the Environmental Protection Act 1986



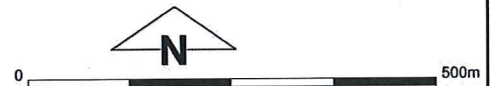
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Plan 7011/1b



Legend

-  Localities
-  Roads
-  Imagery
-  Clearing Instruments Activities
-  Local Government Authority



1:8,863

(Approximate when reproduced at A4)

GDA 94 (Lat/Long)

Geocentric Datum of Australia 1994

S. Weighell Date *30/6/16*
 S Weighell

Officer with delegated authority under Section 20 of the Environmental Protection Act 1986



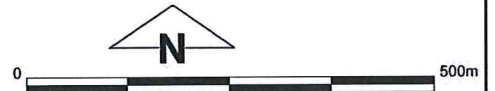
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Plan 7011/1c



Legend

-  Localities
-  Roads
-  Imagery
-  Clearing Instruments Activities
-  Local Government Authority



1:8,861

(Approximate when reproduced at A4)

GDA 94 (Lat/Long)

Geocentric Datum of Australia 1994

S. Weighell Date *30/6/16*
 S Weighell

Officer with delegated authority under Section 20 of the Environmental Protection Act 1986



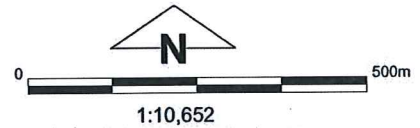
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Plan 7011/1d



Legend

-  Localities
-  Roads
-  Imagery
-  Clearing Instruments Activities
-  Local Government Authority



(Approximate when reproduced at A4)

GDA 94 (Lat/Long)

Geocentric Datum of Australia 1994

S. Weighell Date *30/6/16*
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1. Application details

1.1. Permit application details

Permit application No.: 7011/1
Permit type: Purpose Permit

1.2. Applicant details

Applicant's name: Shire of Waroona

1.3. Property details

Property: Coronation Road, Brockman Road North, Fawcett Road:
Road Reserve 1373443
Road Reserve 1373444
Road Reserve 1373427
Road Reserve 1373428
Road Reserve 1373426
Road Reserve 1373402
Road Reserve 1373407
Road Reserve 1373409

Scarp Road, Leavy Road, Weller Road, Pagannini Road, Invarell Road:
Road Reserve 11536431
Road Reserve 1131280
Road Reserve 11536430
Road Reserve 1131278
Road Reserve 1131279

Weir Road:
Road Reserve 11173450
Road Reserve 1373411
Road Reserve 1373392

Local Government Authority: WAROONA, SHIRE OF
DER Region: Greater Swan
DPaW District: PERTH HILLS and SWAN COASTAL
Localities: WAROONA

1.4. Application

Clearing Area (ha)	Method of Clearing	For the purpose of:
1.5	Mechanical Removal	Road construction or upgrades (Coronation Road, Brockman Road North, Fawcett Road)
1.6	Mechanical Removal	Road construction or upgrades (Scarp Road, Leavy Road, Weller Road, Pagannini Road, Invarell Road)
1.08	Mechanical Removal	Road construction or upgrades (Weir Road)

1.5. Decision on application

Decision on Permit Application: Granted
Decision Date: 30 June 2016
Reasons for Decision: The clearing application has been assessed against the clearing principles, planning instruments and other matters in accordance with s51O of the Environmental Protection Act 1986, and it has been concluded that the proposed clearing is at variance to Principle (f), may be at variance to Principle (h) and is not likely to be at variance to any of the remaining clearing principles.

The proposed clearing may impact a mapped multiple use wetland, a minor, non-perennial watercourse and Dwellingup State Forest. Given the nature of the application (i.e. upgrades to existing roads) any impacts to these values are unlikely to be significant and may be minimised through the implementation of weed and dieback management measures.

The proposed clearing is unlikely to have any significant environmental impacts. State policies and other relevant policies have been taken into consideration in the decision to grant a clearing permit.

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
Three Beard vegetation associations are mapped over the application areas:	The clearing of 1.5 hectares within Coronation Road, Brockman Road North and Fawcett Road (Area 1 – Plan 7011/1a and Plan 7011/1b).	Area 1 and Area 2: Degraded: Structure severely disturbed; regeneration to good condition requires intensive management (Keighery, 1994)	The condition and structure of the vegetation was determined through a site inspection conducted by Department of Environment Regulation (DER) Clearing Regulation Officers on 20 May 2016.
Beard vegetation association 3 is described as medium forest; jarrah-marri (Jarrah Forest);	The clearing of 1.08 hectares within Weir Road (Area 2 – Plan 7011/1c)	To	
Beard vegetation association 968 is described as medium woodland; jarrah, marri & wandoo (Swan Coastal Plain);	The clearing of 1.6 hectares within Scarp Road, Leavy Road, Weller Road, Pagannini Road, and Invarell Road (Area 3 – Plan 7011/1d).	Completely Degraded: No longer intact; completely/almost completely without native species (Keighery, 1994)	
Beard vegetation association 4 is described as medium woodland; marri & wandoo (Jarrah Forest) (Shepherd et al., 2001).	The purpose of the clearing is for road upgrades.	Area 3: Excellent: Structure intact, disturbance affecting individual species and weeds are non-aggressive species (Keighery, 1994). To Degraded: Structure severely disturbed; regeneration to good condition requires intensive management (Keighery, 1994).	

3. Assessment of application against clearing principles

(a) Native vegetation should not be cleared if it comprises a high level of biological diversity.

Comments	Proposed clearing is not likely to be at variance to this Principle
	<p>The application is for the clearing of 4.18 hectares of native vegetation for the purpose of road upgrades within the following areas;</p> <ul style="list-style-type: none"> ➤ Coronation Road, Brockman Road North and Fawcett Road (Area 1 – 1.5 hectares); ➤ Weir Road (Area 2 - 1.08 hectares); and ➤ Scarp Road, Leavy Road, Weller Road, Pagannini Road, and Invarell Road (Area 3 – 1.6 hectares). <p>In January 2016 Area 2 and portions of Area 3 were burnt during the Waroona fires. Vegetation communities have the ability to regenerate following natural disturbance events such as fire and with time the full suite of environmental values of the areas are likely to return.</p> <p>Area 1 consists of <i>Eucalyptus rudis</i>, the occasional <i>Corymbia calophylla</i> (Marri) and <i>Xanthorrhoea preissii</i> (grass tree) or <i>Kingia australis</i> (kingia). The understorey is dominated by pasture weeds (DER, 2016) and no hollows were noted in the larger trees.</p> <p>Area 2 consists predominately of <i>Corymbia calophylla</i> (Marri) with the understorey being dominated by weeds (DER, 2016). It appears this area was heavily impacted by the recent fire, with the Marri burnt into the upper canopy (DER, 2016). A site inspection did not note any large hollows, although two smaller hollows in branches were observed (DER, 2016).</p> <p>Area 3 consists predominately of <i>Corymbia calophylla</i> (Marri) forest with the ground cover species including orchids, <i>Conostylis setigera</i>, <i>Adenanthos barbiger</i>, <i>Hardenbergia comptoniana</i>, bracken and <i>Drosera</i> sp. (DER, 2016). There was some evidence of historic logging in the area and the Marri was likely to be regrowth due to the small diameter (DER, 2016). There were few, if any, weeds along the majority of Area 3 (DER, 2016).</p> <p>A total of 28 priority flora and six rare flora species have been mapped in the local area (10 kilometre radius). A site inspection of the application areas determined that, due to the vegetation condition or vegetation types observed, none of the five rare flora species are likely to be present.</p> <p>The closest priority flora mapped to the application areas, mapped within the same vegetation and soil types, are <i>Chamaescilla gibsonii</i> (P3 – 644 metres away), <i>Millotia tenuifolia</i> var. <i>laevis</i> (P2 – 722 metres away),</p>

Stylidium ireneae (P4 – 722 metres away) and *Melaleuca viminalis* (P2 – one kilometre away).

Melaleuca viminalis is found within wetlands and based on a site inspection, Areas 2 and 3 are unlikely to provide such habitat for this species (DER, 2016). Area 1 has been mapped within a multiple use wetland however the vegetation within this area is in a degraded to completely degraded (Keighery, 1994) condition.

Millotia tenuifolia var. *laevis* has been recorded near Area 3. The species prefers granite or laterite soils (WA Herbarium, 1998), this soil type is within Area 3 (DER, 2016). However, the record of this species was recorded in 1965 in the Dwellingup State Forest, since this time no other records of this species have been recorded within the Waroona area. Considering this and that the proposed clearing is confined to the road reserve, it is unlikely the proposed clearing will significantly impact this species.

Priority 3 flora species are known from several locations, and the species do not appear to be under imminent threat, or are known from few but widespread locations with either large population size or significant remaining areas of apparently suitable habitat, much of it not under imminent threat (Jones, 2015). Priority 4 flora species are considered to have been adequately surveyed, or for which sufficient knowledge is available, and are considered not currently threatened or in need of special protection, but could be if present circumstances change (Jones, 2015).

Considering this it is unlikely the application will significantly impact the abovementioned priority flora species.

Several conservation significant fauna species have been mapped within the local area. Areas 1 and 2 consists of vegetation in a degraded to completely degraded (Keighery, 1994) condition (DER, 2016) with an understorey dominated by weeds and lack large hollow bearing trees. Therefore these areas are unlikely to provide significant habitat for fauna. Given the linear nature of application Area 3, which for the most part is surrounded by equal or better quality habitat in Dwellingup State Forest, Area 3 is not likely to contain significant habitat for fauna.

No threatened or priority ecological communities have been mapped within the application areas.

Given the above, the proposed clearing is not likely to be at variance to this principle.

Methodology References:
DER (2016)
Jones (2015)
Keighery (1994)
Western Australian Herbarium (1998-)

GIS Databases:
- SAC Bio Datasets - accessed June 2016

(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 **Proposed clearing is not likely to be at variance to this Principle**
Eight fauna species listed as rare or likely to become extinct under the Wildlife Conservation Act 1950 have been recorded within the local area (10 kilometre radius). They are Carnaby's cockatoo (*Calyptorhynchus latirostris*), forest red-tailed black cockatoo (*Calyptorhynchus banksii naso*), Baudin's cockatoo (*Calyptorhynchus baudinii*), numbat (*Myrmecobius fasciatus*), southern brush-tailed phascogale (*Phascogale tapoatafa* subsp. *tapoatafa*), noisy scrub-bird (*Trichornis clamosus*), chuditch (*Dasyurus geoffroii*) and carter's freshwater mussel (*Westralunio carteri*) (Parks and Wildlife, 2007-).

Areas 1 and 2 consist of vegetation in a degraded to completely degraded (Keighery, 1994) condition (DER, 2016) with an understorey dominated by weeds. These areas are unlikely to provide habitat for ground dwelling fauna. A site inspection of Areas 1 and 2 identified potential black cockatoo habitat trees (trees of species known to support breeding within the range of the species which either have a suitable nest hollow or are of a suitable diameter at breast height (DBH) to develop a nest hollow - for most tree species, suitable DBH is 500 millimetres; for salmon gum and wandoo suitable DBH is 300 millimetres). Of the potential habitat trees (marri), none containing suitable hollows were observed (DER, 2016). Two smaller hollows in branches were seen in Area 2 however they are not suitable for black cockatoo nesting (DER, 2016).

The majority of Area 3 lies adjacent to Dwellingup State Forest, which occupies an area of approximately 180,000 hectares. Although portions of Area 3 are in an excellent (Keighery, 1994) condition (DER, 2016) and may provide suitable habitat for fauna, it is unlikely to contain significant habitat. This is due to the linear nature of the proposed clearing and the presence of extensive similar or better quality habitat within Dwellingup State Forest.

Given the above, the proposed clearing is not likely to be at variance to this principle.

Methodology References:
DER (2016)
Keighery (1994)
Parks and Wildlife (2007-)

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

Comments **Proposed clearing is not likely to be at variance to this Principle**
Six rare flora species have been recorded within 10 kilometres of the application areas with the closest being approximately 3.2 kilometres north of Area 1. The species is a clumped perennial, grass-like or herb and is found in freshwater creeks or claypans (WA Herbarium, 1998-). A site inspection did not identify this type of habitat (DER, 2016).

The other five rare flora species have been mapped at a distance of more than five kilometres from the application areas and the species have been mapped within different soil and vegetation types.

Given the above, the proposed clearing is not likely to be at variance to this principle.

Methodology References:
DER (2016)
Western Australian Herbarium (1998-)

GIS Databases:
- SAC Bio Datasets - accessed June 2016

(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 **Proposed clearing is not likely to be at variance to this Principle**
No threatened ecological communities (TEC) have been mapped within the application areas. Approximately three kilometres away from Area 1 is the TEC 'Eucalyptus calophylla – Kingia australis woodlands on heavy soils'. Next to this is the Endangered TEC 'Shrublands on dry clay flats' and the Vulnerable 'Herb rich shrublands in clay pans'.

Due to the distance from these TECs and the degraded to completely degraded (Keighery, 1994) nature of Area 1, it is unlikely that these TECs are present.

Given the above, the proposed clearing is not likely to be at variance to the principle.

Methodology References:
Keighery (1994)

GIS Databases:
- SAC Bio Datasets - accessed June 2016

(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 **Proposed clearing is not likely to be at variance to this Principle**
Area 2 and Area 3 are found within the Jarrah Forest Interim Biogeographic Regionalisation of Australia (IBRA) bioregion. Beard vegetation associations 3 (Medium forest; jarrah-marri) and 4 (medium woodland; marri and wandoo) are mapped over these areas:

Area 1 is located within the Swan Coastal Plain IBRA bioregion, and is mapped as Beard vegetation association 968 (Medium woodland; jarrah, marri and wandoo).

The national objectives and targets for biodiversity conservation in Australia has a target to prevent clearance of ecological communities with an extent below 30 per cent of that present pre-1750, below which species loss appears to accelerate exponentially at an ecosystem level (Commonwealth of Australia, 2001).

The vegetation statistics in the table below show that Beard vegetation associations 4 and 968 are below the 30 per cent threshold, at 28 and 6 per cent, respectively. Beard vegetation association 968 has been mapped within Area 1 and Beard vegetation association 4 within Area 2. Areas 1 and 2 are in a degraded to completely degraded (Keighery, 1994) condition (DER, 2016) and are no longer representations of the mapped vegetation associations.

There is approximately 60 per cent native vegetation remaining within a 10 kilometre radius of Areas 2 and 3. Area 1 occurs within an extensively cleared landscape with only 20 per cent vegetation remaining within a 10 kilometre radius. Area 1 is in a degraded to completely degraded (Keighery, 1994) condition (DER, 2016), does not provide significant habitat for fauna or flora and is not considered a significant remnant of vegetation.

Given the above, the proposed clearing is not likely to be at variance to this principle.

	Pre-European	Current Extent	Remaining	Extent in Parks and Wildlife Managed Lands
	(ha)	(ha)	(%)	(%)
IBRA Bioregion				
Jarrah Forest (JF) within 73 per cent of the application	4,506,660	2,422,782	54	69
Swan Coastal Plain (SCP) within 27 per cent of the application	1,501,221	579,161	39	37
Shire				
Shire of Waroona	83,233	44,082	52	49
Beard Vegetation Association in Bioregion*				
3 – JF only	2,390,591	1,611,061	67	80
4 – JF only	1,022,712	286,845	28	22
968 – SCP only	136,188	9,052	6	19

Methodology References:
Commonwealth of Australia (2001)
DER (2016)
*Government of Western Australia (2015)
Keighery (1994)

GIS Databases:
- Pre-European Vegetation

(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 Proposed clearing is at variance to this Principle

Area 1 falls within a multiple use wetland with the wetland covering an area of 30,479 hectares. A minor perennial watercourse intersects Area 2.

Multiple use category wetlands are wetlands with few important ecological attributes and functions remaining. Use, development and management should be considered in the context of ecologically sustainable development and best practice catchment planning (Water and Rivers Commission, 2001).

The application involves the clearing of vegetation within a wetland and minor perennial watercourse. The proposed clearing is at variance to this principle.

Areas 1 and 2 are in degraded to completely degraded (Keighery, 1994) condition (DER, 2016). Considering this and the linear nature of the works, the proposed clearing is unlikely to result in significant impacts to the wetland or watercourse.

Methodology References:
DER (2016)
Keighery (1994)
Water and Rivers Commission (2001)

GIS Datasets:
- Geomorphic Wetlands, Swan Coastal Plain
- Hydrography linear

(g) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.

Comments Proposed clearing is not likely to be at variance to this Principle

Six soil types have been mapped within the application areas. Of the mapped soils types the dominant soil type is unit Mw31 which is mapped over approximately 40 per cent of the application areas. Mw31 is described as deeply incised, steep scarp and valley side slopes of the Darling scarp and its more deeply incised tributary valleys, chief soils of the steep scarp and valley side slopes, on which massive rock outcrops are a feature, seem to be acid red earths on the colluvial slope deposits (Northcote et al., 1960-68). A site inspection of the application areas identified that Areas 1 and 2 consisted of sandy black grey sands, with application Area 3 soils comprising of granite and laterite (DER, 2016).

A site inspection of the application areas identified that the northern side of Scarp Road within Area 3 exhibited signs of erosion (DER, 2016). It is considered that the proposed clearing may result in further erosion, however this is likely to be mitigated through installation/modification of drainage infrastructure as part of the road construction works.

No appreciable land degradation attributable to wind erosion, nutrient export, waterlogging or salinity is considered likely given the narrow linear nature of the proposed clearing.

The proposed clearing is not likely to be at variance to this principle.

Methodology References:
DER (2016)
Northcote et al. (1960-68)

GIS Datasets:
-Soils, 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 Proposed clearing may be at variance to this Principle

The majority of Area 3 lies adjacent to the Dwellingup State Forest. Dwellingup State Forest occupies an area of approximately 180,000 hectares.

The proposed clearing may impact the state forest by increasing edge effects such as the spread of weeds and dieback.

The proposed clearing may be at variance to this principle. Weed and dieback mitigation measures will assist in minimising the risk of significant impacts.

Methodology GIS Datasets:
- Parks and Wildlife Tenure

(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 Proposed clearing is not likely to be at variance to this Principle

Several wetlands have been mapped within the local area (10 kilometre radius). A multiple use wetland has been mapped within Area 1. A minor perennial watercourse intersects Area 2. The vegetation under application at these locations is in a degraded to completely degraded (Keighery, 1994) condition (DER, 2016). Considering this and the linear nature of the application areas, it is unlikely the proposed clearing will significantly impact the surface or ground water quality.

Groundwater salinity mapped within the application areas is between 500 and 1000 total dissolved solids milligrams per litre. The proposed clearing is not likely to lead to a perceptible rise in the water table and thus an increase in groundwater salinity levels.

The proposed clearing is not likely to be at variance to this principle

Methodology References:
DER (2016)
Keighery (1994)

GIS Datasets:
- Geomorphic Wetlands, Swan Coastal Plain
- Hydrography linear
- Salinity Statewide

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

Comments Proposed clearing is not likely to be at variance to this Principle

Given the linear application areas, the proposed clearing is not likely to cause or exacerbate the incidence or intensity of flooding.

The proposed clearing is not likely to be at variance to this principle.

Methodology GIS Datasets:
- Geomorphic Wetlands, Swan Coastal Plain
- Hydrography linear

Planning instruments and other relevant matters.

Comments No public submissions were received in relation to this application.

No Aboriginal sites of significance are mapped within the application areas.

Methodology GIS Datasets:
- Aboriginal Sites of Significance

4. References

- Commonwealth of Australia (2001) National Objectives and Targets for Biodiversity Conservation 2001-2005, Canberra.
- DER (2016) Site Inspection Report for Clearing Permit Application CPS 7011/1 Shire of Waroona. Site inspection undertaken 20 May 2016. Department of Environment Regulation, Western Australia (DER Ref:A1115386).
- Government of Western Australia (2015) 2015 Statewide Vegetation Statistics incorporating the CAR Reserve Analysis (Full Report). Current as of June 2014. WA Department of Parks and Wildlife, Perth.
- Jones, A. (2015) Threatened and Priority Flora List, 11 November 2015. Department of Parks and Wildlife: Kensington, WA.
- 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.
- Parks and Wildlife (2007-) NatureMap: Mapping Western Australia's Biodiversity. Department of Parks and Wildlife. URL: <http://naturemap.dpaw.wa.gov.au/>. Accessed May 2016
- 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.
- Water and Rivers Commission (2001) Position Statement: Wetlands, Water and Rivers Commission, Perth.
- Western Australian Herbarium (1998-) FloraBase - The Western Australian Flora. Department of Parks and Wildlife. <http://florabase.dpaw.wa.gov.au/> (Accessed May 2016).