



Clearing Permit Decision Report

Government of Western Australia
Department of Environment Regulation

1. Application details

1.1. Permit application details

Permit application No.: 6166/1
Permit type: Area Permit

1.2. Proponent details

Proponent's name: Erujin Pty Ltd

1.3. Property details

Property: LOT 50 ON DEPOSITED PLAN 37908 (House No. 461 NANARUP KALGAN 6330)
Local Government Area: City of Albany

1.4. Application

| Clearing Area (ha) | No. Trees | Method of Clearing | For the purpose of: |
|--------------------|-----------|--------------------|---------------------|
| 1.25 | | Mechanical Removal | Grazing & Pasture |

1.5. Decision on application

Decision on Permit Application: Refusal
Decision Date: 17 July 2015

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 |
|--|--|---|--|
| The vegetation under application is mapped as Beard vegetation association 3 which is described as medium forest; jarrah-marri (Shepherd et al, 2001). | To clear 1.25 hectares of native vegetation within Lot 50 on Deposited Plan 37908, Kalgan within the City of Albany, for the purpose of pasture and grazing. | Degraded: Structure severely disturbed; regeneration to good condition requires intensive management (Keighery 1994). | The condition of the vegetation under application was determined via a Department of Environment Regulation site inspection (DER 2014) and flora surveys conducted by Mattiske Consulting (2013). Mattiske Consulting (2013) describes the vegetation under application as forest of Eucalyptus marginata and Corymbia calophylla over Kingia australis, Bossiaea linophylla and Persoonia elliptica over Taxandria marginata, Hovea elliptica and Hakea amplexicaulis over Desmodium fasciculatum, Hovea chorizemifolia, Opercularia hispidula, Tetraria capillaris, Tetraria octandra and Xanthorrhoea brunonis on grey to dark brown sandy loamy gravel on hilltops. |
| The Albany Regional Vegetation Survey (ARVS) has mapped the area under application as Unit 12, Jarrah/Marri/Sheoak laterite forest (Sandiford and Barrett 2010). | | | |

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 application is to clear up to 1.25 hectares of native vegetation for the purpose of pasture and grazing. The vegetation under application was observed to be in a degraded condition with limited trees of a significant age and size present. The condition of the remnant appeared to be declining with little to no understorey, sparse vegetation, senescent trees falling over and no recruitment (DER, 2014).

The local area (10 kilometre radius) surrounding the application retains approximately 20 percent vegetation. The mapped Beard vegetation type and IBRA bioregion retain above the recommended level of 30 percent (Government of Western Australia, 2013).

A fauna survey conducted by Mattiske Consulting (2013) recorded Baudin's cockatoos feeding within the property, forest red-tailed black-cockatoo's within the property and numerous calls consistent with Carnaby's cockatoos. These species are listed as rare or likely to become extinct under the Wildlife Conservation Act 1950 (WC Act) and vulnerable or endangered under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act). Two nest hollows were recorded within the property and one of these was chewed and worn, showing signs of recent use (Mattiske Consulting, 2013). The hollow showing signs of recent use falls within the remnant immediately adjoining the application area. Removing the vegetation under application will reduce the size of the remnant to approximately 0.5 hectares.

Western ringtail possum scats have been recorded at various locations within the property (Mattiske Consulting, 2013). This species is listed as endangered under the WC Act and as vulnerable under the EPBC Act. The majority of these scats were recorded within Eucalyptus forests and given the time of year that they were recorded, it is likely that the scats were from male individuals moving through the landscape (Mattiske Consulting, 2013).

The application area has been highlighted as part of a macro habitat corridor defined in the Western Australian South Coast Macro Corridor Network (Department of Conservation and Land Management, 2006).

Mattiske Consulting conducted spring flora surveys over the application area between 2009 and 2013 and did not identify any rare flora or vegetation consistent with a threatened or priority ecological community (Mattiske Consulting, 2013). A priority one flora species was recorded during the flora survey however all occurrences fell outside of the application area.

The application area contains habitat for fauna of conservation significance, forms part of an ecological linkage and is located within an extensively cleared landscape, given this it may be at variance to this clearing principle.

Methodology

References:

Department of Conservation and Land Management (2006)
Government of Western Australia (2013)
Mattiske Consulting (2013)

GIS Datasets:

- Albany townsite January 2011 mosaic
- SacBiodataSets - accessed March 2015

(b) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna indigenous to Western Australia.

Comments

Proposal is at variance to this Principle

Numerous fauna species listed as rare or likely to become extinct under the Wildlife Conservation Act 1950 (WC Act) and vulnerable under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) have been recorded in the local area (10 kilometre radius). These include *Calyptorhynchus banksii* subsp. *naso* (forest red-tailed black-cockatoo), *Calyptorhynchus baudinii* (Baudin's cockatoo), *Calyptorhynchus latirostris* (Carnaby's cockatoo), *Pseudocheirus occidentalis* (western ringtail possum)(endangered), *Macrotis lagotis* (bilby), and *Setonix brachyurus* (quokka) (Parks and Wildlife, 2007-).

Given the lack of a dense understorey the area under application is unlikely to provide significant habitat for ground dwelling fauna.

The area under application has been mapped as an unconfirmed feeding site for Carnaby's cockatoo. Areas mapped as unconfirmed feeding sites are areas of remnant vegetation in the Jarrah Forest IBRA Bioregion that may provide important feeding resources for Carnaby's cockatoo. These areas were mapped based on the presence of vegetation types that Carnaby's cockatoo show preference for when choosing a food source. A confirmed Carnaby's cockatoo roost site has been mapped 10 kilometres south west of the application area.

A fauna survey conducted by Mattiske Consulting (2013) recorded Baudin's cockatoos feeding within the property, forest red-tailed black-cockatoo's within the property and numerous calls consistent with Carnaby's cockatoos. These species are all listed as rare or likely to become extinct under the Wildlife Conservation Act 1950 (WC Act) and vulnerable or endangered under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act). Two nest hollows have been recorded within the property and one of these was observed to be chewed and worn, showing signs of recent use (Mattiske Consulting, 2013). The hollow showing signs of recent use falls within the remnant immediately adjoining the application area. Removing the vegetation under application will reduce the size of this particular remnant to approximately 0.5 hectares.

The EPBC Act referral Guidelines for the three black cockatoo species (DSEWPaC, 2012) includes "loss and isolation of mature, hollow-bearing trees necessary for breeding", "removal of vegetation around breeding sites" and "disturbance to birds from noise, light, vibrations and fumes" as primary threats to black cockatoos. Given this, the removal of vegetation immediately adjacent to a potentially active nest hollow is likely to impact on the viability of the nesting site and constitute a primary threat to the species.

The Carnaby's cockatoo recovery plan (DEC, 2012) summarises habitat critical to the survival for Carnaby's cockatoos as:

- The eucalypt woodlands that provides nest hollows used for breeding, together with nearby vegetation that provides feeding, roosting and watering habitat that supports successful breeding;
- Woodland sites known to have supported breeding in the past and which could be used in the future, provided adequate nearby food and/or water resources are available or are re-established; and
- In the non-breeding season the vegetation that provides food resources as well as the sites for nearby watering and night roosting that enable the cockatoos to effectively utilise the available food resources.

The recovery plan also states, "Success in breeding is dependent on the quality and proximity of feeding habitat within 12 kilometres of nesting sites. Along with the trees that provide nest hollows, the protection, management and increase of this feeding habitat that supports the breeding of Carnaby's cockatoo is a critical requirement for the conservation of the species" (DEC, 2012).

As the application area falls in close proximity to two confirmed nest sites, is within 10 kilometres of a third, has been observed to be feeding habitat and falls within 60 metres of a watercourse, the application fulfils all three habitat requirements deemed critical to Carnaby's cockatoo survival.

Western ringtail possum scats have been recorded at various locations within the property (Mattiske Consulting, 2013). This species is listed as endangered under the WC Act and as vulnerable under the EPBC Act. The majority of these scats were recorded within Eucalyptus forests and given the time of year that they were recorded, it is likely that the scats were from male individuals moving through the landscape (Mattiske Consulting, 2013).

The application area has been mapped within strategic zone B of the Western Australian South Coast Macro Corridor Network, and is surrounded by areas of strategic zone A (DEC, 2006). Zone A areas are defined as cells where large remnants (greater than 30 hectares) and protected areas create the most direct link between core habitat areas. Zone B cells were identified as having large areas (greater than 30 hectares) of woody vegetation and protected areas providing habitat linkages, but which did not create the most direct link between protected areas. As the distance between suitable habitat increases so too does the risk of predation through habitat fragmentation and isolation.

As the application area forms habitat for *Calyptorhynchus banksii* subsp. *naso* (forest red-tailed black-cockatoo), *Calyptorhynchus baudinii* (Baudin's cockatoo) and *Calyptorhynchus latirostris* (Carnaby's cockatoo), forms habitat for the dispersal of *Pseudocheirus occidentalis* (western ringtail possum) and has been classified as regionally significant for the movement of endemic fauna, the application is at variance to this clearing principle.

Methodology References:
DEC (2006)
DEC (2012)
DSEWPaC (2012)
Government of Western Australia (2013)
Mattiske Consulting (2013)
Parks and Wildlife (2007-)

GIS Datasets:
- Albany townsite January 2011 mosaic
- Carnaby Cockatoo breeding sites
- Carnaby Cockatoo feeding
- Hydrography linear
- SacBiodataSets - accessed March 2015

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

Comments **Proposal is not at variance to this Principle**

Seven rare flora species have been recorded within the local area (10 kilometre radius).

Based on the known preferred habitat for these rare species, three had the potential to occur within the application area.

Mattiske Consulting conducted spring flora surveys over the application between 2009 and 2013 and did not identify any rare flora (Mattiske Consulting, 2013).

Therefore the clearing as proposed is not at variance to this principle.

Methodology Reference:
Mattiske Consulting (2013)

GIS Databases:
- SAC Biodatasets - accessed March 2015

(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 at variance to this Principle**
Numerous occurrences of the Threatened Ecological Community (TEC) open low *Allocasuarina fraseriana*, *Eucalyptus staeri* woodland, have been recorded within the local area (10 kilometre radius). The closest falling 4.8 kilometres north west of the application area. Some of the occurrences of this TEC have been found on the same soil type as the application area within a similar vegetation type.

Given the condition of the vegetation and impacts from grazing cattle within the applied area, it is not likely that the vegetation under application is necessary for the maintenance of, or is representative of a TEC.

Mattiske Consulting conducted spring flora surveys over the application area between 2009 and 2013 and did not identify vegetation consistent with a TEC (Mattiske Consulting, 2013).

Given the above, the application is not at variance to this principle.

Methodology Reference:
Mattiske Consulting (2013)

GIS Databases:
- SAC Biodatasets - accessed March 2015

(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**
The area under application is located within the Jarrah Forest Interim Biogeographic Regionalisation of Australia (IBRA) bioregion. This IBRA bioregion has approximately 54 percent of its pre-European vegetation extent remaining (Government of Western Australia, 2013).

The vegetation under application is mapped as Beard vegetation association 3 of which there is approximately 68 percent of its pre-European extent remaining within the Jarrah Forest bioregion (Government of Western Australia, 2013).

The area under application is located within the City of Albany, within which there is approximately 38 percent pre-European extent remaining (Government of Western Australia, 2013).

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

The local area (10 kilometre radius) is highly cleared with approximately 20 percent vegetation remaining.

The Albany Regional Vegetation Survey (ARVS) provides a local and regional overview of the native vegetation of the area to assist land use and conservation planning in the region by describing, mapping and assessing the conservation status of the vegetation within the ARVS area. The ARVS area encompasses 124,415 ha that extends some 30 kilometres east and west of Albany and 20 kilometres north (Sandiford and Barrett, 2010).

ARVS has identified the application area as vegetation Unit 12. Vegetation Unit 12 retains approximately 29.8 percent vegetation within the surveyed area (Sandiford and Barrett, 2010). Clearing the vegetation under application will reduce the percentage remaining by 0.0091 percent (Mattiske Consulting, 2013).

While the vegetation remaining within the bioregion and vegetation association 3 retain levels higher than national objectives, the local area (10 kilometre radius) has been extensively cleared.

The application area forms habitat for *Calyptorhynchus banksii* subsp. *naso* (forest red-tailed black-cockatoo), *Calyptorhynchus baudinii* (Baudin's Cockatoo) and *Calyptorhynchus latirostris* (Carnaby's cockatoo). It may form significant habitat for the dispersal of *Pseudocheirus occidentalis* (western ringtail possum) and has been classified as regionally significant for the movement of endemic fauna. Given this the application is a significant remnant within a highly cleared landscape.

Given the above, the proposed clearing is at variance to this principle.

| | Pre-European (ha) | Current Extent (ha) | Remaining (%) | Extent in DPaW Managed Lands (%) |
|---|----------------------|------------------------|------------------|-------------------------------------|
| IBRA Bioregion* Jarrah Forest | 4 506 660 | 2 459 298 | 54 | 68 |
| Shire* City of Albany | 431 370 | 166 839 | 38 | 24 |
| Beard Vegetation Association in Bioregion* 3 | 2 390 591 | 1 631 110 | 68 | 80 |

Methodology References:
Commonwealth of Australia (2001)
*Government of Western Australia (2013)
Mattiske Consulting, 2013)
Sandiford and Barrett (2010)

GIS Databases:
- SacBiodataSets - accessed March 2015

(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 at variance to this Principle**
The closest mapped water body to the application area is a minor perennial watercourse located approximately 60 metres from the application area.

Mattiske Consulting conducted flora surveys over the property between 2009 and 2013 and did not identify any wetland vegetation within the application area (Mattiske Consulting, 2013).

Given the above the application is not at variance to this clearing principle.

Methodology References:
Mattiske Consulting (2013)

GIS Datasets:
- Albany townsite January 2011 mosaic
- Hydrography linear

(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 Department of Agriculture and Food Western Australia undertook a site inspection of the property on 3 October 2013 for a previous application to clear, CPS 5738/1 (Commissioner of Soil and Land Conservation, 2013). The corresponding land degradation assessment report found that the risk of the proposed clearing causing land degradation is low, noting:

- No salinity was observed on or off-site;
- Wind erosion is unlikely;
- Clearing the vegetation is unlikely to significantly increase surface water run-off;
- Given the topography, soil type and intended land use the risk of eutrophication is low; and
- The proposed clearing areas are generally well drained.

Given this, the application is not likely to be at variance to this principle.

Methodology References:
Commissioner of Soil and Land Conservation (2013)

GIS Datasets:
- Albany townsite January 2011 mosaic
- Hydrography linear
- Topographic contours

(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**
The area under application falls in close proximity to four nature reserves. Mt Mason and Gull Rock nature reserves are located approximately 1.7 kilometres and 2.6 kilometres south respectively. Two Peoples Bay nature reserve is located approximately eight kilometres east and Bakers Junction nature reserve is located approximately 5 kilometres north west.

The application area has been highlighted as part of a macro habitat corridor defined in the Western Australian South Coast Macro Corridor Network (Department of Conservation and Land Management, 2006). The local area (10 kilometre radius) is highly cleared with approximately 20 percent vegetation remaining. Given this, the vegetation proposed to be cleared is likely to assist in the movement of endemic fauna through the landscape, as evidenced by the presence of western ringtail possum scats throughout vegetated areas of the property.

As the vegetation under application is likely to aid in the movement of fauna through the landscape it may form a linkage for genetic dispersal between the reserves to the south and north of the application area. The removal of which may impact on their long term environmental value.

Given the above, the clearing as proposed may be at variance to this principle.

Methodology References:
Department of Conservation and Land Management (2006)

GIS Datasets:
- Albany townsite January 2011 mosaic
- DEC Tenure
- SacBiodataSets - accessed March 2015

(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**

Groundwater salinity is mapped as 500 - 1000 milligrams per litre. This level of groundwater salinity is considered to be marginal.

No watercourses are mapped within the application area.

A site inspection undertaken on behalf of the Commissioner of Soil and Land Conservation (2013) for a previous application to clear, CPS 5738/1, found the risk of clearing causing salinity to be low. The inspection also found that the risk of significant erosion and eutrophication to be low, therefore the proposed clearing is not likely to deteriorate the quality of surface water.

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

Methodology References:
Commissioner of Soil and Land Conservation (2013)

GIS Databases:
- Groundwater Salinity Statewide
- Topographic Contours, 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 **Proposal is not at variance to this Principle**

No watercourses or wetlands have been identified within the application area. A site inspection undertaken on behalf of the Commissioner of Soil and Land Conservation (2013) for a previous application to clear, CPS 5738/1, found that the proposed clearing area is generally well drained and no change in the occurrences of waterlogging is likely.

The application is not at variance to this clearing principle.

Methodology References:
Commissioner of Soil and Land Conservation (2013)

GIS Datasets:
- Hydrography linear

Planning instrument, Native Title, RIWI Act Licence, EP Act Licence, Works Approval, Previous EPA decision or other matter.

Comments **History of Lot 50 on Plan 37908**

January 2008 - Application made to Western Australian Planning Commission (WAPC) to subdivide Lot 50 into three sub-lots. The application was approved subject to conditions and was valid for three years.

December 2008 - A State Administrative Tribunal (SAT) hearing in Albany following an appeal by the applicant against conditions set in the approval for subdivision. The conditions which were appealed relate to requirements to fence four remnant areas of vegetation.

February 2009 - Clearing Permit Application submitted to the former Department of Environment and Conservation (DEC) to clear for internal boundary fences which correspond with the proposed subdivision. This application included areas which SAT required to be fenced. The application was refused in June 2009.

March 2009 - Two new subdivision applications were submitted to the WAPC. One for the same three sub-lots proposed a year earlier and one proposing two sub lots. These were conditionally approved until 3 June 2012 and have now lapsed.

May 2009 - Clearing Permit Application (CPS 3111/1) submitted to DEC. The application proposed to clear two hectares of native vegetation for the purpose of increasing runoff into a dam. A clearing permit was granted in August 2009 with a condition to retain habitat trees.

October 2009 - A Scheme Amendment Application covering all of Lot 50 and adjoining Lot 51 was lodged with the City of Albany by the landowner. The application was made to rezone the property to Special Residential and was refused.

August 2011 - Application to amend CPS 3111/1 submitted to DEC. This application was made to extend the duration of the permit. The permit was amended in September 2011 and the duration of the permit was extended until September 2013.

October 2011 - Application to amend CPS 3111/2 submitted to DEC. This amendment proposed to clear an additional one hectare of native vegetation for the purpose of increasing runoff into an existing dam. Permit amended December 2011.

March 2012 - Application to amend CPS 3111/3 submitted to DEC. This amendment proposed to clear an additional one hectare of native vegetation for the purpose of increasing runoff into an existing dam. Permit amended 14 February 2013.

August 2013 - Clearing Permit Application CPS 5738/1 to clear 13 hectares of native vegetation within Lot 50 on Deposited Plan 37908 submitted to DER. This application was for the purpose of pasture, grazing and dam expansion. The application was refused on 16 January 2014.

3 June 2014 – An appeal against the refusal of CPS 5738/1 was dismissed by the Minister for Environment.

30 June 2014 – Clearing Permit Applications CPS 6165/1, CPS 6166/1 and CPS 6167/1 submitted to DER. CPS 6166/1 and CPS 6167/1 cover portions of the areas refused under CPS 5738/1. CPS 6165/1 covers areas not applied for under CPS 5738/1.

Other Relevant Matters

The City of Albany objects to the application as:

- The property is 237 hectares in size with approximately 60 – 70 percent already cleared for pasture/grazing (City of Albany, 2015).
- The City is not aware of any intensification of agricultural use (City of Albany, 2015).
- "The lack of productive use is reflected in the fact that the owner has sought rezoning over a number of years in an attempt to be able to subdivide the land for residential development", (City of Albany, 2014).
- The native vegetation has values for native fauna habitat and connectivity conservation (City of Albany, 2014).

The area under application falls within EPA Position Statement No.2 agricultural area, which has a general presumption against clearing within this area for agricultural purposes (EPA, 2000).

In exceptional circumstances the EPA would consider supporting clearing for agriculture within this region if:

- (a) There are alternative mechanisms for protecting biodiversity.
- (b) The area to be cleared is relatively small, depending on the scale at which biodiversity changes over the area, including extent of vegetation in the surrounding area and recognising that values will vary for different ecosystems.
- (c) The proponent demonstrates that the elements set out in Section 4.3 of this Position Statement are being met. This will require extensive local and regional biodiversity work.
- (d) Land degradation, including aquatic environments and threatening processes, such as dieback, salinisation or disruption of catchment processes, on-site and off-site would not be exacerbated.

DER wrote to the applicant on 23 September 2014 and 11 May 2015 outlining the environmental impacts of the clearing and requested advice on how the applicant intended to address the impacts. Replies received on 5 February 2015 and 22 May 2015 from Civil Technology did not adequately address the identified environmental impacts.

Methodology

References:

City of Albany (2014)
City of Albany (2015)
EPA (2000)

4. References

- City of Albany (2014) Advice received in relation to clearing permit application CPS 6165/1. Lot 50 Nannarup Road, Kalgan (DER Ref: A790595).
- City of Albany (2015) Advice received in relation to clearing permit application CPS 6165/1. Lot 50 Nannarup Road, Kalgan. Received 14 January 2015 (DER Ref: A856764).
- Commissioner of Soil and Land Conservation (2013) Advice received in relation to clearing permit application CPS 5738/1. Lot 50 Nannarup Road, Kalgan (DER Ref: A684058).
- Commonwealth of Australia (2001) National Objectives and Targets for Biodiversity Conservation 2001-2005, Canberra.
- DEC (2006) Western Australian South Coast Macro Corridor Network, a bioregional strategy for nature conservation. Department of Conservation and Land Management.
- DER (2014) Site Inspection Report for Clearing Permit Application's CPS 6165/1, CPS6166/1 and CPS 6167/1, Lot 50 Nannarup Road, Kalgan. Site inspection undertaken 31 July 2014. Department of Environment Regulation, Western Australia (DER Ref: A795308).
- DSEWPaC (2012) EPBC Act referral Guidelines for three threatened black cockatoo species. Commonwealth of Australia Parks and Wildlife (2007 -) NatureMap: Mapping Western Australia's Biodiversity. Department of Environment and Conservation. URL: <http://naturemap.dec.wa.gov.au/>. Accessed March 2012.
- 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.
- Government of Western Australia (2013) 2013 Statewide Vegetation Statistics incorporating the CAR Reserve Analysis (Full Report). Current as of March 2013. WA Department of Parks and Wildlife, Perth.
- 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 (2013) Information supplied in support of clearing permit application CPS 5738/1, Lot 50 Nannarup Road, Kalgan, Prepared for Erujin Pty Ltd (DER Ref: A481991).
- 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.
- Sandiford, E.M. and Barrett, S. (2010). Albany Regional Vegetation Survey, Extent Type and Status, A project funded by the Western Australian Planning Commission (EnviroPlanning -Integrating NRM into Land Use Planning and State NRM Program), South Coast Natural Resource Management Inc. and City of Albany for the Department of Environment and Conservation. Unpublished report. Department of Environment and Conservation, Western Australia.
- 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.