



Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 6865/1
Permit type: Area Permit

1.2. Proponent details

Proponent's name: Shalinden Pty Ltd

1.3. Property details

Property: Mining Lease 74/49
Mining Lease 74/61
Local Government Area: Shire of Esperance
Colloquial name: Lake Tay Project

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
15.3		Mechanical Removal	Mineral Production

1.5. Decision on application

Decision on Permit Application: Granted
Decision Date: 28 January 2016

2. Site Information

2.1. Existing environment and information

2.1.1. Description of the native vegetation under application

Vegetation Description The application area has been mapped as the following vegetation two Beard vegetation associations:

125: Bare areas; Salt Lakes,

521: Medium woodland; salmon gum and red mallee.

A Level 1 flora and vegetation survey of the application area was undertaken by EnviroWorks Consulting (EnviroWorks, 2015) during the period 22nd to 25th September 2015. The vegetation survey identified the following two community types in the application area:

1. A low open woodland of *Callitris columellaris*, *Casuarina obesa* and *Eucalyptus spreta* over open to dense heathland and scrubland of *Scaevola spinescens*, *Comesperma volubile*, *Hibbertia inclusa*, *Maireana erioclada*, *Alyxia buxifolia*, *Darwinia* sp. Karonie (K. Newbey 8503), *Melaleuca brevifolia*, *Melaleuca hamulosa*, *Calytrix tetragon*, *Alyxia buxifolia* and *Billardiera lehmanniana* over an open herbland of annual and soft perennial species including *Zygophyllum aurantiacum* subsp. *aurantiacum*, *Disphyma crassifolium*, *Kippistia suaedifolia*, *Crassula colorata*, *Asteridia chaetopoda* and *Dianella brevicaulis*. This community occurs on slopes and crests of low and tall gypsum dunes.
2. An open low to dwarf shrubland to 0.4 metres of *Frankenia cinerea*, *Tecticornia moniliformis*, *Lawrenia squamata*, *Maireana oppositifolia*, *Tecticornia halocnemoides* and *Disphyma crassifolium* over an annual ground flora of herbs and daisies (e.g. *Isotoma scapigera*, *Kippistia suaedifolia*). This community occurs on low lying saline flat areas of grey and white sands which are seasonally inundated or saturated.

Clearing Description Lake Tay Project.
Shalinden Pty Ltd (Shalinden) proposes to clear 15.3 hectares within an application area of approximately 15.3 hectares for the purposes of mineral production. The project is located approximately 140 kilometres north – west of Esperance at North Cascade, within the Shire of Esperance.

Vegetation Condition Excellent: Vegetation structure intact; disturbance affecting individual species, weeds non-aggressive (Keighery, 1994).

Comment While the vegetation of the gypsum dunes and adjacent playas were predominantly in excellent condition, the only exception was along narrow roads and the active mining areas. No weed species were recorded within the study area and grazing disturbance by rabbits was localised (EnviroWorks, 2015). The project will require the expansion of an existing gypsum mine. Mining of gypsum will occur from two areas at Lake Tay. The mining of gypsum is proposed to take place over a period of five years.

3. Assessment of application against clearing principles

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

Comments	<p>Proposal is not likely to be at variance to this Principle</p> <p>The application area is located within the Eastern Mallee sub-region of the Mallee Interim Biogeographic Regionalisation of Australia (IBRA) bioregion (GIS Database, EnviroWorks, 2015). The Eastern Mallee sub-region comprises calcareous clays and loams as duplex soils that often contain sheet and modular kankar, outcrops of metamorphosed sandstone, and white and yellow sandplains and loamy plains with numerous salt pans (panfields). Mallee on sandplains, samphire around small salt lakes, mallee and patches of woodland on clay, and scrubheath on sandstone. Mallee with Boree (<i>Melaleuca pauperiflora</i>) on calcareous clay and loam (CALM, 2002). The vegetation of the Eastern Mallee (IBRA sub-region) is well represented in Western Australia and in the Shire of Esperance and is considered to be of least concern with regards to conservation status (Government of Western Australia, 2015; Department of Natural Resources and Environment, 2002).</p> <p>A flora survey was undertaken by EnviroWorks (2015) which identified two native vegetation community types within the survey area. A total of 66 species from 51 genera and 29 families were recorded during the flora survey (EnviroWorks, 2015). No species of Threatened flora were recorded during the flora survey. Two Priority flora species were recorded during the survey including <i>Austrostipa geoffreyi</i> (P1) (approximately 4,000 individuals recorded in the application area) and <i>Persoonia scabra</i> (P3) (approximately 15 individuals recorded in the application area) (EnviroWorks, 2015). The total local population size for both Priority flora species is large with an estimated number of greater than 75,000 individuals of <i>Austrostipa geoffreyi</i> and approximately 540 individuals of <i>Persoonia scabra</i> located in the survey area. The clearing of each Priority flora species represents a small amount of the total local population of each species. The proportional loss of the local population of <i>A. geoffreyi</i> is 5.4% while the proportional loss of <i>P. scabra</i> is 2.7% (EnviroWorks, 2015). Both Priority flora species are widely distributed in the local area and EnviroWorks (2015) reported approximately 187 hectares of gypsum dune vegetation of similar composition and structure located around Lake Tay. The proposal is not considered to have a significant impact on either of these Priority flora species or habitat that is critical to their continued existence.</p> <p>There are no records of Threatened Ecological Communities (TEC's) or Priority Ecological Communities (PEC's) occurring within or near the application area (GIS Database, EnviroWorks, 2015). The flora survey also did not identify TEC's or PEC's within the survey area (EnviroWorks, 2015).</p> <p>The open salt lake area of the application area may provide seasonal fauna habitat for bird species, however, all these species are highly mobile and unlikely to rely on the application area. No fauna species were observed during the fauna survey and the majority of the application area contained 80% bare ground with sparse vegetation (EnviroWorks, 2015). The application area is unlikely to provide habitat for fauna species which require vegetation and leaf litter for shelter (EnviroWorks, 2015, GIS Database). Given the habitat present, the application area is not likely to support a high level of faunal diversity.</p> <p>The biological surveys confirm the application area does not contain a high level of biological diversity. The proposed clearing is small (15.3 hectares), temporary and the vegetation proposed to be cleared is well represented in the surrounding area. For these reasons it is unlikely the proposal will result in the clearing of native vegetation that has higher biodiversity values than the surrounding, undisturbed vegetation.</p> <p>Based on the above, the proposed clearing is not likely to be at variance to this Principle.</p>
Methodology	<p>CALM (2002) Department of Natural Resources and Environment (2002) EnviroWorks (2015) Government of Western Australia (2015) GIS Database: - Threatened Fauna - Threatened and Priority Flora</p>

(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

A Level 1 fauna survey was conducted over the application area on 22nd – 25th September 2015 and no fauna species were observed in the fauna survey. However, some evidence of fauna presence was evident from scats (emu, kangaroo and rabbit) and birds in flight (EnviroWorks, 2015). The fauna survey reported the majority of the application area contained 80% bare ground with sparse vegetation. The application area does not contain large trees, therefore no habitat is present for large arboreal or aerial fauna species. EnviroWorks (2015) reported the application area is unlikely to provide habitat for fauna species which require vegetation and leaf litter for shelter (EnviroWorks, 2015). The application area does not contain suitable habitat for these faunal species. The open salt lake area of the application area may provide seasonal fauna habitat for bird species, however, these species are highly mobile and unlikely to rely on the application area.

A search of available biological databases was undertaken and no Threatened fauna were located in the application area (GIS Database). A desktop survey of fauna species potentially occurring in the region was undertaken prior to the fauna survey (EnviroWorks, 2015). The desktop survey identified 26 fauna species of conservation significance potentially occurring within a 45 km buffer area of the fauna survey area. The results of the desktop survey indicated the area is low in fauna species diversity. The majority of fauna species identified as part of the desktop survey were bird species. The exception being the following species; Chuditch (*Dasyurus geoffroii* - Threatened), Malleefowl (*Leipoa ocellata* - Threatened), Western Brush Wallaby (*Macropus irma* – Priority 4), Lake Cronin Snake (*Paroplocephalus atriceps* - Priority 3) and the Western Mouse (*Pseudomys occidentalis* - Priority 3) (EnviroWorks, 2015).

The fauna survey identified dunes slopes which may provide nesting opportunities for the Rainbow Bee-Eater (*Merops ornatus* – Migratory). It is unlikely Rainbow Bee-eater individuals would rely on the application area as this species require suitable habitat for foraging (shrublands and woodland) and often require close proximity to a permanent water source (DotE, 2016). Rainbow Bee-Eaters are highly mobile and widely distributed around Australia, therefore the application area is not considered to be significant habitat for the species (DotE, 2016). Open salt lake habitat may also provide seasonal habitat for wading birds (EnviroWorks, 2015). However, it is unlikely that wading bird species would rely on the application area as Lake Tay is a non-perennial water source and these species are also highly mobile.

The area proposed to be cleared does not contain significant habitat for fauna species indigenous to Western Australia.

Based on the above, the proposed clearing is not likely to be at variance to this Principle.

Methodology

DotE (2016)
EnviroWorks (2015)
GIS Database:
- Threatened Fauna

(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

A search of available databases was undertaken and no Threatened flora were located in the application area (GIS Database). A flora survey was also undertaken by EnviroWorks (2015) which identified two native vegetation community types within the survey area. No species of Threatened flora were recorded from sampling points or from opportunistic sampling (EnviroWorks, 2015). The native vegetation proposed to be cleared is not likely to contain or is not necessary for the continued existence of rare flora.

Based on the above, the proposed clearing is not likely to be at variance to this Principle.

Methodology

EnviroWorks (2015)
GIS Database:
- Threatened and Priority Flora

(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

According to available databases, there are no Threatened Ecological Communities (TEC's) occurring within or near the application area (GIS Database). The flora survey undertaken by EnviroWorks (2015) did not identify any vegetation communities considered to be a TEC within or near the application area (EnviroWorks, 2015).

Based on the assessment above, the proposed clearing is not likely to be at variance to this Principle.

Methodology

EnviroWorks (2015)
GIS Database:
- TEC/PEC - Buffers

(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 at variance to this Principle

The application area falls within the Mallee Interim Biogeographic Regionalisation of Australia (IBRA) bioregion in which approximately 56.54% of the pre-European extent of vegetation remains in Western Australia and more than 79% of the pre-European extent of vegetation remains in the Eastern Mallee, (IBRA sub-region) in Western Australia (refer table) (Government of Western Australia, 2015). Large areas of the pre-European extent of native vegetation remain in the Shire of Esperance with 72% of vegetation remaining. The vegetation within the Mallee (IBRA region), Eastern Mallee (IBRA sub-region) and Shire of Esperance is therefore considered to be of least concern with regards to conservation status (Department of Natural Resources and Environment, 2002).

The native vegetation located in the application area has been mapped as Beard vegetation associations 125 (Bare areas; salt lakes) and 521 (Medium woodland; salmon gum and red mallee) (EnviroWorks, 2015; GIS Database). These two vegetation associations have not been extensively cleared as over 90% of the vegetation associations remain at the State level and more than 96% of the two vegetation associations remain in the Eastern Mallee IBRA sub-region (Government of Western Australia, 2015).

Historically, large areas of vegetation have been cleared in the south-east of Western Australia and the Shire of Esperance. However, very large areas of intact native vegetation occur in the Eastern Mallee IBRA sub-region and the area surrounding this proposal (GIS Database). Large areas of the total amount of native vegetation and vegetation associations 125 and 521 remain in the local area and within the bioregion. The vegetation is also considered to be in good condition and for these reasons the clearing of native vegetation is not likely to be at variance to this principle. The clearing of remnant vegetation as part of the proposal is not part of a significant ecological linkage. The area proposed to be cleared is also not considered to be significant as a remnant in an area that has been extensively cleared (GIS Database).

	Pre-European area (ha)*	Current extent (ha)*	Remaining %*	Conservation Status**	Pre-European % in All DPaW Managed Land
IBRA Bioregion – Mallee	7,397,556.37	4,181,381.46	56.54	Least Concern	18.02
IBRA Subregion -Eastern Mallee	3,415,838.54	2,709,890.01	79.37	Least Concern	27.35
Local Government -Esperance	4,459,670.76	3,211,004.45	72.00	Least Concern	22.08
Beard veg assoc. – State					
125	3,485,786.61	3,146,497.92	90.27	Least Concern	8.99
521	122,059.53	122,059.53	100.00	Least Concern	5.83
Beard veg assoc. – Bioregion					
125	160,327.47	107,845.15	67.27	Least Concern	26.82
521	20,327.36	20,327.36	100.00	Least Concern	4.12
Beard veg assoc. – Subregion					
125	78,722.68	76,043.23	96.60	Least Concern	8.97
521	20,327.36	20,327.36	100.00	Least Concern	4.12

* Government of Western Australia (2015).

** Department of Natural Resources and Environment (2002).

Based on the assessment above, the proposed clearing is not at variance to this Principle.

Methodology

Department of Natural Resources and Environment (2002)
 EnviroWorks (2015)
 Government of Western Australia (2015)
 GIS Database:
 - IBRA WA (Regions - Sub Regions)
 - 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 **Proposal is at variance to this Principle.**

The proposal is located at Lake Tay, a non-perennial, internally draining, lake located approximately 85 kilometres north-east of Ravensthorpe and approximately 140 kilometres north-west of Esperance (GIS Database). Lake Tay is part of a system of salt lakes in the Kalgoorlie-Norseman region that extend between Frank Hann National Park in the west and Peak Charles National Park in the east. Three Star Lake is located directly west and Lake Sharpe is located to the east of Lake Tay (GIS Database). The line of salt lakes are connected by shallow depressions which do not flood as the full chain of lakes are no longer connected (EnviroWorks, 2015). The lakes in the region and their catchments also remain largely vegetated (EnviroWorks, 2015). Lake Tay is a salt lake which contains gypsum deposits in the dunes and playas located in the south-east area of the lake (EnviroWorks, 2015). There are no named tributaries connected to the lake. However, a number of small unnamed drainage depressions exist around the lake margins, which drain water into the lake after rainfall.

The application area supports riparian vegetation that is growing in, or in association with the Lake Tay wetland including the flora species; *Callitris columellaris*, *Casuarina obesa*, *Hibbertia inclusa*, *Melaleuca brevifolia*, *Melaleuca hamulosa*, *Billardiera lehmanniana*, *Zygophyllum aurantiacum* subsp. *aurantiacum*, *Disphyma crassifolium*, *Kippistia suaedifolia*, *Crassula colorata*, *Frankenia cinerea*, *Tecticornia moniliformis*, *Lawrencia squamata*, *Maireana oppositifolia*, *Tecticornia halocnemoides*, *Disphyma crassifolium*, *Isotoma scapigera* and *Kippistia suaedifolia* (EnviroWorks, 2015; DPaW, 2015). These species all occur in or around salt lakes or saline flats/depressions or swamps or claypan areas (DPaW, 2015). In addition, the Priority 1 flora species *Austrostipa geoffreyi* occurs in sandy rises in salt lakes (DPaW, 2015) and is located at the fringing playa/dune interface (as part of Community 2) and also occurs sporadically on slopes and crests within the application area (as part of Community 1) (EnviroWorks, 2015).

The majority of the vegetation to be cleared for the proposal is part of the gypsum dune vegetation community, with small areas of saline playa vegetation required to be cleared. The flora report confirms, there is a large extent of potentially similar gypsum dune vegetation (approximately 187 hectares) along the south-east margin of Lake Tay. This surrounding vegetation is of similar floristic composition and structure to the vegetation required to be cleared as part of the proposal. The clearing area proposed (15.3 hectares) represents a small area (8%) of the identified similar vegetation around Lake Tay (EnviroWorks, 2015).

The application area contains wetland dependent vegetation which will be cleared as part of the proposal. However, the clearing footprint is considered to be a small portion of a large area of similar gypsum dune vegetation which is located in the surrounding area (approximately 187 hectares). Areas cleared as part of the proposal will also be progressively rehabilitated. The clearing is considered to be at variance to this Principle, although the clearing is not likely to significantly impact the ecological or hydrological functions of Lake Tay. Native vegetation clearing will not have a detrimental impact on vegetation types located in the area.

Based on the above, the proposed clearing is at variance to this Principle.

Methodology DPaW (2015)
 EnviroWorks (2015)
 GIS Database:
 - Hydrography, linear

(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 application area is located in the Salmon Gums Mallee Zone as described by Tille (2006). This soil-landscape zone is broadly described as flat to undulating plains (with some salt lakes) on deeply weathered mantle and alluvium over Bremer Basin sediments on granite and gneiss of the Yilgarn Craton and Albany-Fraser Orogen. Calcareous loamy earths and alkaline grey shallow sandy duplexes with salt lake soils and some alkaline grey shallow loamy duplexes and Pale deep sands. Merrit-coral gum-salmon gum-red mallee woodlands with mallee scrub and some mallee heath (Tille, 2006).

The soil substrates in the two native vegetation communities identified in the flora survey report are described by EnviroWorks (2015):

- Community 1 - (open shrubland of *Callitris columellaris* – *Melaleuca* sps) occurs on the dunal system, soils are grey, white and brown sands with gypsum,
- Community 2 - (dwarf samphire scrub of *Tecticornia* sps - *Frankenia cinerea*) occurs in low lying and seasonally inundated saline playas, soils are grey, brown and white sands.

Northcote, et al. (1960-68) describes soils in the application area as saline valleys with some dunes including barchan forms, salt-lake channels, mostly devoid of true soils and their fringing areas. Common soils are gypseous and saline loams together with grey-brown highly calcareous earths. Associated on fringe areas are various soils; siliceous sand on dunes and lunettes; and other undescribed soils. Deposits of common salt, gypsum, lime, and alunite may occur (Northcote, 1960-68; GIS Database).

The two areas required to be cleared as part of the proposal are located at the south-west margin of Lake Tay in the gypsum dunes fringing the lake (EnviroWorks, 2015). Saline and gypseous soils are generally stable soils restricted to salt pan areas. However, sandy soils (similar to those in the dunal system), are prone to soil and wind erosion. It is unlikely that the linear clearing of 15.3 hectares of native vegetation required for the proposal will cause large scale soil or wind erosion. The two areas identified to be cleared will be cleared over a period of five years and will be progressively rehabilitated (EnviroWorks, 2015). In the event that soil/wind erosion occurs, impacts will be minor, limited to the areas cleared and short term in duration. Potential impacts from erosion may be minimised by the implementation of a staged clearing condition.

As the proposal requires a relatively small amount of native vegetation clearing, it is unlikely the proposal will change salinity levels or impact nutrient export. Soils located in the area are alkaline, sandy duplexes and will not increase soil acidification (Tille, 2006). It is also unlikely the small amount of clearing proposed will affect the present or future use of land at this location. The proposed native vegetation clearing will not cause appreciable land degradation or reduce the land capability of the application area.

Based on the above, the proposed clearing may be at variance to this Principle.

Methodology EnviroWorks (2015)
Northcote, et al. (1960-68)
Tille (2006)
GIS Database:
- Hydrography, linear
- Soil Atlas

(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 not at variance to this Principle

The application area does not lie within any conservation areas or Department of Parks and Wildlife managed lands (GIS Database). The nearest conservation area is the Peak Charles National Park (EnviroWorks, 2015). Peak Charles National Park is located approximately 22 kilometres east of the proposal area and Frank Hann National Park is located approximately 30 kilometres west of the proposal area (GIS Database). As these conservation areas are located a considerable distance from the proposal area, the proposed clearing is not likely to have any impacts on the environmental values of adjacent or nearby conservation areas.

Based on the above, the proposed clearing is not at variance to this Principle.

Methodology EnviroWorks (2015)
GIS Database:
- DPaW 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 Proposal is not likely to be at variance to this Principle

No Public Drinking Water Source Areas (PDWSA's) are located within the application area (GIS Database). The nearest PDWSA is the Salmon Gums Catchment Area which is located approximately 8 kilometres to the east of the application area (GIS Database).

As expected, the groundwater within the application area is highly saline and between 35,000 – 100,000 milligrams per litre of Total Dissolved Solids (TDS) (GIS Database). It is not expected that the proposed clearing of 15.3 hectares would adversely alter salinity levels within an already saline environment in the application or surrounding area. Additionally, the proposed clearing is not likely to have an impact on the quality of groundwater either on-site or off-site of the application area.

Three Star Lake is located directly west and Lake Sharpe is located to the east of Lake Tay. The lakes in the region and their catchments remain largely vegetated. A number of small, unnamed drainage depressions exist around the lake margins, which drain water into the lake after rainfall (EnviroWorks, 2015). It is not expected that the quality of these drainage areas or nearby surface waters will deteriorate, as part of the clearing required for the proposal.

The clearing of vegetation in low lying, saline playas may result in a minor, temporary increase in sedimentation and erosion on-site. However, these impacts are not expected to result in the deterioration of water quality. The majority of vegetation clearing required as part of the proposal, is located in the gypsum dune systems and all cleared areas will be progressively rehabilitated (EnviroWorks, 2015). It is unlikely that the small, linear vegetation clearing required for the proposal would cause deterioration in the quality of surface water (including changes to pH, turbidity or eutrophication) on-site or off-site at adjacent lakes, minor watercourses or drainage depressions.

Based on the above, the proposed clearing is not likely to be at variance to this Principle.

Methodology EnviroWorks (2015)
GIS Database:
- Groundwater Salinity, Statewide
- Hydrography, linear
- Public Drinking Water Source Areas

(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 proposal is located at Lake Tay, a salt lake which forms part of an east-west chain of salt lakes in the region. These salt lakes are connected by shallow depressions which do not flood and the full chain of lakes are no longer connected (EnviroWorks, 2015). There are also no named tributaries connected to Lake Tay, only a number of small, unnamed drainage depressions which exist around the margins which drain water into the lake after rainfall (EnviroWorks, 2015, GIS Database).

Annual total rainfall for the nearest weather station located at Salmon Gums Research Station recorded 373.2 millimetres in 2015 (BoM, 2016). With a low total annual rainfall in the region (approximately 300 millimetres) there is likely to be little surface flow during seasonal rain periods and the potential for large flood events to occur as a result of the proposal is unlikely (BoM, 2016).

The proposal requires a small amount of native vegetation clearing (15.3 hectares) and minimal disturbance with linear clearing to be undertaken over a five year period. EnviroWorks (2015) also states the proposed clearing footprint represents a small proportion (8%) of similar vegetation around Lake Tay (approximately 187 hectares of dune vegetation in similar condition). The flora report confirms areas cleared as part of the proposal will be progressively rehabilitated (EnviroWorks, 2015). Therefore, it is unlikely the clearing will cause or exacerbate the incidence or intensity of flooding.

Based on the assessment above, the proposal is not likely to be at variance to this Principle.

Methodology EnviroWorks (2015)
GIS Database:
- Hydrography, linear

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

Comments There is one native title claim (WC1996/064) over the application area (DAA, 2015). This claim has been determined with the National Native Title Tribunal (NNTT) on behalf of the claimant groups (DAA, 2015). However, the tenure has been granted in accordance with the future act regime of the *Native Title Act 1993* and the nature of the Act (i.e. the proposed clearing activity) has been provided for in that process, therefore, the granting of a clearing permit is not a future act under the *Native Title Act 1993*.

According to available databases, there are no registered Aboriginal sites of significance within the application area (DAA, 2015). It is the proponent's responsibility to comply with the *Aboriginal Heritage Act 1972* and ensure that no Aboriginal sites of significance are damaged through the clearing process.

It is the proponent's responsibility to liaise with the Department of Environment Regulation, Department of Parks and Wildlife and the Department of Water to determine whether a Works Approval, Water Licence, Bed and Banks Permit, or any other licences or approvals are required for the proposed works.

The clearing permit application was advertised on 21 December 2015 by the Department of Mines and Petroleum inviting submissions from the public. No submissions were received.

Methodology DAA (2015)

4. References

- BoM (2016) Bureau of Meteorology. Climate Data Online, Salmon Gums Research Station, Total Annual Rainfall Data 2015. Retrieved 7 January 2016 from: <http://www.bom.gov.au/climate/data/index.shtml>
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- Tille, P J. (2006), Soil-landscapes of Western Australia's Rangelands and Arid Interior, Report 313. Department of Agriculture and Food Western Australia, Perth, Western Australia.

5. Glossary

Acronyms:

BoM	Bureau of Meteorology, Australian Government
DAA	Department of Aboriginal Affairs, Western Australia
DAFWA	Department of Agriculture and Food, Western Australia
DEC	Department of Environment and Conservation, Western Australia (now DPaW and DER)
DER	Department of Environment Regulation, Western Australia
DMP	Department of Mines and Petroleum, Western Australia
DRF	Declared Rare Flora
DotE	Department of the Environment, Australian Government
DoW	Department of Water, Western Australia
DPaW	Department of Parks and Wildlife, Western Australia
DSEWPaC	Department of Sustainability, Environment, Water, Population and Communities (now DotE)
EPA	Environmental Protection Authority, Western Australia
EP Act	<i>Environmental Protection Act 1986</i> , Western Australia
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i> (Federal Act)

GIS	Geographical Information System
ha	Hectare (10,000 square metres)
IBRA	Interim Biogeographic Regionalisation for Australia
IUCN	International Union for the Conservation of Nature and Natural Resources – commonly known as the World Conservation Union
PEC	Priority Ecological Community, Western Australia
RIWI Act	<i>Rights in Water and Irrigation Act 1914</i> , Western Australia
TEC	Threatened Ecological Community

Definitions:

{DPaW (2015) Conservation Codes for Western Australian Flora and Fauna. Department of Parks and Wildlife, Western Australia):-

- T** **Threatened species:**
Published as Specially Protected under the *Wildlife Conservation Act 1950*, listed under Schedules 1 to 4 of the Wildlife Conservation (Specially Protected Fauna) Notice for Threatened Fauna and Wildlife Conservation (Rare Flora) Notice for Threatened Flora (which may also be referred to as Declared Rare Flora).

Threatened fauna is that subset of ‘Specially Protected Fauna’ declared to be ‘likely to become extinct’ pursuant to section 14(4) of the Wildlife Conservation Act.

Threatened flora is flora that has been declared to be ‘likely to become extinct or is rare, or otherwise in need of special protection’, pursuant to section 23F(2) of the Wildlife Conservation Act.

The assessment of the conservation status of these species is based on their national extent and ranked according to their level of threat using IUCN Red List categories and criteria as detailed below.
- CR** **Critically endangered species**
Threatened species considered to be facing an extremely high risk of extinction in the wild. Published as Specially Protected under the *Wildlife Conservation Act 1950*, in Schedule 1 of the Wildlife Conservation (Specially Protected Fauna) Notice for Threatened Fauna and Wildlife Conservation (Rare Flora) Notice for Threatened Flora.
- EN** **Endangered species**
Threatened species considered to be facing a very high risk of extinction in the wild. Published as Specially Protected under the *Wildlife Conservation Act 1950*, in Schedule 2 of the Wildlife Conservation (Specially Protected Fauna) Notice for Threatened Fauna and Wildlife Conservation (Rare Flora) Notice for Threatened Flora.
- VU** **Vulnerable species**
Threatened species considered to be facing a high risk of extinction in the wild. Published as Specially Protected under the *Wildlife Conservation Act 1950*, in Schedule 3 of the Wildlife Conservation (Specially Protected Fauna) Notice for Threatened Fauna and Wildlife Conservation (Rare Flora) Notice for Threatened Flora.
- EX** **Presumed extinct species**
Species which have been adequately searched for and there is no reasonable doubt that the last individual has died. Published as Specially Protected under the *Wildlife Conservation Act 1950*, in Schedule 4 of the Wildlife Conservation (Specially Protected Fauna) Notice for Presumed Extinct Fauna and Wildlife Conservation (Rare Flora) Notice for Presumed Extinct Flora.
- IA** **Migratory birds protected under an international agreement**
Birds that are subject to an agreement between the government of Australia and the governments of Japan (JAMBA), China (CAMBA) and The Republic of Korea (ROKAMBA), and the Bonn Convention, relating to the protection of migratory birds. Published as Specially Protected under the *Wildlife Conservation Act 1950*, in Schedule 5 of the Wildlife Conservation (Specially Protected Fauna) Notice.
- CD** **Conservation dependent fauna**
Fauna of special conservation need being species dependent on ongoing conservation intervention to prevent it becoming eligible for listing as threatened. Published as Specially Protected under the *Wildlife Conservation Act 1950*, in Schedule 6 of the Wildlife Conservation (Specially Protected Fauna) Notice.
- OS** **Other specially protected fauna**
Fauna otherwise in need of special protection to ensure their conservation. Published as Specially Protected under the *Wildlife Conservation Act 1950*, in Schedule 7 of the Wildlife Conservation (Specially Protected Fauna) Notice.
- P** **Priority species**
Species which are poorly known; or
Species that are adequately known, are rare but not threatened, and require regular monitoring. Assessment of Priority codes is based on the Western Australian distribution of the species, unless

the distribution in WA is part of a contiguous population extending into adjacent States, as defined by the known spread of locations.

P1 Priority One - Poorly-known species:

Species that are known from one or a few locations (generally five or less) which are potentially at risk. All occurrences are either: very small; or on lands not managed for conservation, e.g. agricultural or pastoral lands, urban areas, road and rail reserves, gravel reserves and active mineral leases; or otherwise under threat of habitat destruction or degradation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under immediate threat from known threatening processes. Such species are in urgent need of further survey.

P2 Priority Two - Poorly-known species:

Species that are known from one or a few locations (generally five or less), some of which are on lands managed primarily for nature conservation, e.g. national parks, conservation parks, nature reserves and other lands with secure tenure being managed for conservation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under threat from known threatening processes. Such species are in urgent need of further survey.

P3 Priority Three - Poorly-known species:

Species that are known from several locations, and the species does not appear to be under imminent threat, or 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. Species may be included if they are comparatively well known from several locations but do not meet adequacy of survey requirements and known threatening processes exist that could affect them. Such species are in need of further survey.

P4 Priority Four - Rare, Near Threatened and other species in need of monitoring:

(a) Rare. Species that are considered to have been adequately surveyed, or for which sufficient knowledge is available, and that are considered not currently threatened or in need of special protection, but could be if present circumstances change. These species are usually represented on conservation lands.

(b) Near Threatened. Species that are considered to have been adequately surveyed and that are close to qualifying for Vulnerable, but are not listed as Conservation Dependent.

(c) Species that have been removed from the list of threatened species during the past five years for reasons other than taxonomy.