



# Clearing Permit Decision Report

## 1. Application details

### 1.1. Permit application details

Permit application No.: 6915/1  
Permit type: Purpose Permit

### 1.2. Proponent details

Proponent's name: **Iluka Resources Limited**

### 1.3. Property details

Property: Mining Lease 70/821  
*Mineral Sands (Eneabba) Agreement Act 1975*, Mining Lease 267SA (AM 70/267)  
Local Government Area: Shire of Carnamah  
Colloquial name: South Tails Project

### 1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
49.64		Mechanical Removal	Rehabilitation

### 1.5. Decision on application

Decision on Permit Application: Grant  
Decision Date: 10 March 2016

## 2. Site Information

### 2.1. Existing environment and information

#### 2.1.1. Description of the native vegetation under application

**Vegetation Description** Beard vegetation associations have been mapped for the whole of Western Australia. Two Beard vegetation associations are located within the application area (GIS Database):

**Beard vegetation association 49:** Shrublands; mixed heath

**Beard vegetation association 379:** Shrublands; scrub-heath on lateritic sandplain in the central Geraldton Sandplain Region

Note: >95% of the application area falls within Beard vegetation association 379.

Woodman Environmental mapped the application area in 2010 and identified five floristic Community Types within the 3.4 hectares of vegetation remaining (Woodman, 2016a):

- **FCT 1a:** Open Low Woodland to Open Low Scrub of *Eucalyptus pleurocarpa* and/or *Eucalyptus todtiana* over mixed shrubs dominated by *Banksia* spp. and *Hakea* spp. over sedges on grey to brown sands with very occasional laterite influence on lower to mid slopes;
- **FCT 1b:** Open Woodland to Scrub of *Eucalyptus* spp. and/or *Banksia* spp., with occasional *Xylomelum angustifolium*, over mixed shrubs dominated by myrtaceous spp., *Banksia* spp., and *Jacksonia* spp. on grey sand on mid to upper slopes;
- **FCT 2b:** Scrub of *Banksia attenuata*, with emergent *Eucalyptus todtiana* or *Eucalyptus pleurocarpa*, over Low Scrub dominated by *Banksia* spp. on predominantly yellow sands on mid and upper slopes;
- **FCT 7:** Open Low Woodland of *Eucalyptus pleurocarpa* to species rich Low Heath generally dominated by *Banksia* spp., *Daviesia* spp., *Lambertia multiflora* var. *multiflora* and *Xanthorrhoea drummondii* on grey sands with a moderate to heavy laterite component; and
- **FCT 18:** Thicket dominated by *Melaleuca viminea* subsp. *viminea*, with occasional *Eucalyptus loxophleba* subsp. *loxophleba* or *Eucalyptus camaldulensis* in clay flats

**Clearing Description** South Tails Project  
Iluka Resources Limited proposes to clear up to 49.64 hectares of native vegetation within a total boundary of approximately 51.34 hectares, for the purpose of rehabilitation. The project is located approximately 150 kilometres south-east of Geraldton in the Shire of Carnamah.

**Vegetation Condition** Degraded: Structure severely disturbed; regeneration to good condition requires intensive management (Keighery, 1994).

**Comment** The condition of the vegetation under application was determined via flora and vegetation surveys conducted over the application area by Woodman Environmental Consultancy in 2010 and 2016.

This clearing permit is required for two primary reasons (Iluka, 2016):

1. To recover windblown material surrounding the perimeter of completed mining areas. This is to enable final landform shaping and drainage to be re-instated.
2. To construct surface water diversion channel to protect new rehabilitation areas from erosion.

The clearing permit area consists primarily of highly disturbed vegetation, on the edges of existing cleared areas. Approximately 80% of the clearing area is rehabilitated native vegetation. This clearing permit is required to ensure the long-term success of the rehabilitation, by ensuring appropriate landform shaping and drainage control. Although there will be a temporary impact to vegetation, the end result post rehabilitation will increase the likelihood of rehabilitation success.

### 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 area is located within the Lesueur Sandplain subregion of the Geraldton Sandplains Interim Biogeographic Regionalisation for Australia bioregion (GIS Database). The Lesueur Sandplain is characterised by shrub-heaths rich in endemics occurring on a mosaic of lateritic mesas, sandplains, coastal sands and limestones as well as heath on lateritised sandplains along the subregions north-eastern margins (CALM, 2002). The Lesueur Sandplain subregion is recognised for its high level of biodiversity, and in particular floral diversity and endemism (Woodman, 2016a).

The application area has seen large areas of previously rehabilitated vegetation develop a significant build-up of wind-blown sand, and deposition of sediment as a result of water flow and runoff (Woodman, 2016a). The intention behind this clearing permit application is to recover windblown material surrounding the perimeter of completed mining areas, reshape final landforms, re-instate drainage, construct a surface water diversion channel to protect new rehabilitation areas from erosion and harvest vegetation as mulch material in rehabilitation works (Iluka, 2016a). Although there will be a temporary impact to vegetation, the end result post rehabilitation will provide a better outcome than what currently exists and will increase the likelihood of rehabilitation success (Iluka, 2016).

The application area consists of 28 separate sections (varying in size from 0.004 hectares to 21.6 hectares). The vegetation proposed to be cleared is situated around the edges of already cleared vegetation. In previous surveys of the application area Woodman Environmental mapped the majority of the application area and identified 48.5 hectares (~93.5%) as being cleared. The native vegetation persisting within the application area (45.2 hectares) is comprised predominately of rehabilitated native vegetation (>80%), primarily surrounding larger areas of cleared land (Woodman, 2016a). The vegetation that remains within the application area (approximately 3.4 hectares) is considered to be degraded and is generally in poorer condition than the surrounding vegetation (Woodman, 2016). The vegetation proposed to be cleared will be harvested for mulch, for later use in rehabilitation activities (Woodman, 2016a).

The proposed clearing will result in the temporary loss of 2.9% of completed rehabilitation within the application area (Woodman, 2016a). All areas proposed to be cleared within the application area will be immediately rehabilitated following final landform reshaping earthworks, and areas of cleared land surrounding the application area will also be rehabilitated (Woodman, 2016a).

A number of flora and vegetation surveys have been conducted within the area surrounding the application area, resulting in 11 Threatened flora taxa and 70 Priority flora taxa being recorded (Woodman, 2016a). There are over 1,200 individuals of 16 different Priority flora found within the application area (DPaW, 2016a; Woodman, 2016a). Woodman (2016a, 2016b) conducted a flora and vegetation survey over the application area in November 2015 and recorded 16 Priority flora species. DPaW (2016a) advised that of the sixteen Priority flora species recorded within the application, impacts to two species may be significant and further information, survey or avoidance measures are required. One hundred and twenty five individuals of *Eucalyptus macrocarpa* subsp. *elachantha* (P4) and 233 individuals of *Grevillea uniformis* (P3) occur within the application area. The proponent provided additional information on potential impacts to these species and advised that almost all occurrences of *Eucalyptus macrocarpa* subsp. *elachantha* occur within previously rehabilitated areas (Iluka, 2016). This suggests any impacts may be temporary and this species responds well to disturbance or existing rehabilitation methods. In areas outside the application area, there are approximately 2,183 individuals spread between Dongara and the Cataby vicinity. Based on existing records, which were obtained via two different survey methods (intensive gridding and broad survey), the proposed impact to 125 individuals represents no more than 5.7% of the regional population (Iluka, 2016). It is highly possible that the current data underestimates the regional population (Iluka, 2016). Impacts to *Grevillea uniformis* will be limited to five individuals (Iluka, 2016). Potential impacts to Priority flora species as a result of the proposed clearing may be further minimised by the implementation of a flora management condition.

*Thelymitra pulcherrima* (P2) was not recorded during the flora survey but may be present within the application area (DPaW, 2016a). *Thelymitra pulcherrima* (P2) flowers in August to early September and as the flora survey was conducted in November, it is possible that this species persists within the application area but was not recorded during the flora survey (DPaW, 2016a). Woodman (2016b) considered this possibility during the flora survey and based on the degraded condition of the vegetation to be cleared, determined that it is unlikely for *Thelymitra pulcherrima* to occur within the application area. Woodman (2016b) also advised that given the limited amount of clearing proposed, impacts to this species (if present) would not affect the conservation status or conservation significance of this taxon at a local or regional scale. To reduce potential impacts to this species, in addition to existing rehabilitation procedures, the proponent has committed to focusing on propagation and seedling germination, to be undertaken in the site nursery, and tailored rehabilitation monitoring will be developed in order to detect the presence of this taxon in future assessments (Iluka, 2016).

No Threatened Ecological Communities (TECs) or Priority Ecological Communities (PECs) are known within

the application area (GIS Database) and none of the five FCTs identified within the application area were noted as resembling a TEC or PEC during the flora and vegetation survey (Woodman, 2016a). Some sections of the clearing permit boundary area do fall within the buffer for the Ferricrete floristic community (a TEC). The community itself is located approximately 3.8 kilometres west of the nearest section of clearing permit boundary (GIS Database) area and is restricted to ferricrete soils, which are unusual in the Eneabba area and easily recognised (Woodman, 2016a).

*Phytophthora* (Dieback) is known to occur in the local area and within the application area (Woodman, 2016). The proponent will implement a dieback management plan; the latest version is currently under development in consultation with the Department of Parks and Wildlife (DPaW). Despite weeds largely being absent or occurring in low numbers throughout the application area (Woodman, 2016a), weeds (and weed invasion) have the potential to alter the biodiversity of an area, competing with native vegetation for available resources and making areas more fire prone. Potential impacts to biodiversity as a result of the proposed clearing may be minimised by the implementation of a weed and dieback management condition.

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

**Methodology** CALM (2002)  
DPaW (2016a)  
Iluka (2016)  
Woodman (2016a)  
Woodman (2016b)

GIS Database:  
- IBRA WA (Regions - Sub Regions)  
- Imagery  
- Pre-European vegetation  
- Threatened and Priority Ecological Communities Buffers  
- Threatened and Priority Ecological Communities Boundaries

**(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**

Woodman (2016a) reviewed several fauna surveys conducted over the region and determined that of the 264 species that may occur in the region, 212 have the potential to occur within, or within close proximity to, the application area.

Twenty eight species of conservation significance were identified as potentially utilising the vegetation within the application area (Woodman, 2016a). Of particular note were the Carnaby's Cockatoo (*Calyptorhynchus latirostris* - Endangered), Rainbow Bee-eater (*Merops ornatus* - Migratory) and Rufous Fieldwren (*Calamanthus campestris montanellus* - DPaW, P4), which have been recorded within the application area. The remaining 25 species were determined to be either locally extinct, irregular visitors, residents not dependant on the vegetation, or species known from the area that do not have preferred habitat within the application area (Woodman, 2016a).

The proposed clearing will cause a temporary reduction in available foraging habitat for the Carnaby's Cockatoo; however foraging habitat is abundant in the local area (Woodman, 2016a). The Rainbow Bee-eater is a widespread, opportunistic species that is known to inhabit a variety of habitats, including various habitats within cleared or semi cleared areas (DotE, 2016; Woodman, 2016a) and may frequent the application area (Woodman, 2016a). The Rufous Fieldwren inhabits low heath and was previously recorded within the application area. This species is likely to be a permanent and widespread resident and some individuals may be displaced as a result of the proposed clearing (Woodman, 2016a). DPaW (2016b) has advised that the proposed clearing has the potential to impact on resident fauna species, although given the opportunity fauna species may move into adjacent vegetation. Conducting clearing activities so that fauna species are directed to vegetated areas that are not to be cleared, would reduce impacts to local resident fauna. The proponent has committed to implementing clearing activities that direct fauna species to vegetated areas (Iluka, 2016).

The fauna habitats present within the application area are considered to be locally widespread and extensive amounts of suitable habitat remains in nearby in vegetation (Woodman, 2016a). The vegetation that remains within the application area (approximately 3.4 hectares) is considered to be degraded and is generally in poorer condition than the surrounding vegetation. Areas of rehabilitated vegetation make up the majority of the vegetation to be cleared (approximately 45.2 hectares) (Woodman, 2016a). While the proposed clearing is likely to temporarily displace some local fauna species, given that the application area consists of 28 sections of vegetation in a mostly degraded condition, close to existing areas of cleared land, it unlikely to result in significant fragmentation of local habitat and local fauna species may return following rehabilitation (Woodman, 2016a).

As the vegetation proposed to be cleared is to be rehabilitated and other nearby areas of rehabilitated native vegetation will likely improve or be more likely to succeed as a result of remedial works, the proposed clearing is not anticipated to result in significant long-term impacts to local fauna species, including species of conservation significance.

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

**Methodology** DPaW (2015b)  
DotE (2016)  
Iluka (2016)  
Woodman (2016a)

**(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**

No Threatened flora species were recorded within the application area during a targeted flora survey, despite five historically known locations of *Leucopogon obtectus* being present. These locations were checked for the presence of *Leucopogon obtectus*; however no plants remained (Woodman, 2016a). While no individuals of *Paracaleana dixonii* (Threatened flora) were observed within the application area, known habitat for this taxon does occur (within FCTs 1a and 7). Given that the proposed clearing will impact < 5% of each of the five FCTs identified within the application area including FCTs 1a and 7, impacts to these communities and associated flora species is not considered to be significant (Woodman, 2016a). DPaW (2016a) advised that the proposed clearing will impact <1% of the total habitat for *Leucopogon obtectus* and *Paracaleana dixonii* within the region. Further to this, the vegetation proposed to be cleared will be rehabilitated and other areas of rehabilitated native vegetation (outside the application area) will likely improve or be more likely to succeed as a result of remedial works. The proposed clearing is not anticipated to result in significant long-term impacts to Threatened flora species or habitat necessary for the continued existence of Threatened flora.

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

**Methodology** DPaW (2016a)  
Woodman (2016a)

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 known Threatened Ecological Communities (TECs) within the application area (GIS Database) and no TECs were identified during the flora and vegetation survey of the application area (Woodman, 2016a). Some sections of the application area fall within the buffer for the 'Ferricrete floristic community,' which is a TEC. The community itself is located approximately 3.8 kilometres west of the nearest section of application area (GIS Database) and is restricted to ferricrete soils, which are unusual in the Eneabba area and easily recognised (Woodman, 2016a).

Given the distance of the TEC from the proposed clearing, the proximity of the vegetation to be cleared to existing areas of disturbance, and that all vegetation is to be rehabilitated following clearing, impacts to the Ferricrete floristic community are likely to be negligible.

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

**Methodology** Woodman (2016a)

GIS Database:  
- Threatened and Priority Ecological Communities Buffers  
- Threatened and Priority Ecological Communities Boundaries

**(e) Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.**

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

The application area occurs within the Geraldton Sandplains Interim Biogeographic Regionalisation of Australia bioregion, in which approximately 48.8% of the pre-European vegetation remains (see table below) (Government of Western Australia, 2014; GIS Database).

Two Beard vegetation associations have been mapped within the application area (GIS Database). Beard vegetation association 49 retains less than 50% of pre-European levels within the state, bioregion, subregion and local government area and is considered to be 'Depleted' (Government of Western Australia, 2014). Beard vegetation association 379 retains less than 30% of pre-European vegetation within the state and bioregion and is considered to be 'Vulnerable' but retains greater than 30% within the subregion and local government area (Government of Western Australia, 2014). The State Government is committed to the National Objectives and Standards which includes a target that prevents clearance of ecological communities with an extent below 30% of pre-European settlement levels (Commonwealth of Australia, 2001). However, the vegetation that remains within the application area (approximately 3.4 hectares) is considered to be degraded and is generally in poorer

condition than the surrounding vegetation, and areas of rehabilitated vegetation make up the majority of the vegetation to be cleared (approximately 45.2 hectares) (Woodman, 2016a). There are extensive tracts of native vegetation to the west and east of the application area, and the South Eneabba Nature Reserve also extends south of the application area .

Given the condition of the vegetation to be cleared and the amount of vegetation remaining in the local area and subregion, the vegetation proposed to be cleared is not considered to represent a remnant within an extensively cleared area. The vegetation proposed to be cleared will be rehabilitated following clearing and other areas of rehabilitated native vegetation (outside the application area) will likely improve or be more likely to succeed as a result of remedial works.

	Pre-European area (ha)*	Current extent (ha)*	Remaining %*	Conservation Status**	Pre-European % in DPaW Managed Lands (and pos clearing %)
IBRA Bioregion - Geraldton Sandplains	3,136,038	1,404,375	~ 44.8	Depleted*	~ 18.2 (40.3)
IBRA Subregion - Lesueur Sandplain	1,171,775	502,918	~ 43.0	Depleted*	~ 18.2 (41.9)
Local Government - Carnamah	287,236.06	118,663.65	~ 41.3	Depleted*	~ 21.8 (41.9)
Beard veg assoc. - State					
49	52,492	26,136	~ 49.8	Depleted*	~ 22.3 (44.3)
379	547,737	129,738	~ 23.7	Vulnerable*	~ 5.4 (22.3)
Beard veg assoc. - Bioregion					
49	39,718	14,489	~ 36.5	Depleted*	~ 8.8 (24.0)
379	546,507	129,497	~ 23.7	Vulnerable*	~ 5.4 (22.3)
Beard veg assoc. - Subregion					
49	33,139	13,619	~ 41.1	Depleted*	~ 10.5 (25.6)
379	370,030	111,633	~ 30.2	Depleted*	~ 5.9 (19.2)
Beard veg assoc. - Local Government					
49	13,960	5,650	~ 40.5	Depleted*	~ 8.2 (20.2)
379	72,271	30,878	~ 42.7	Depleted*	~ 8.9 (19.4)

\* Government of Western Australia (2014)

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

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

**Methodology** Commonwealth of Australia (2001)  
Department of Natural Resources and Environment (2002)  
Government of Western Australia (2014)  
Woodman (2016a)

GIS Database:  
- IBRA Australia  
- Imagery  
- 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 not at variance to this Principle**  
According to available databases, there are no watercourses or wetlands mapped within the application area and none have been identified during flora and vegetation surveys of the area (Woodman, 2016a).

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

**Methodology** Woodman (2016a)  
  
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 is not likely to be at variance to this Principle**

The purpose of the proposed clearing is to recover windblown material surrounding the perimeter of completed mining areas, reshape final landforms, re-instate drainage, construct a surface water diversion channel to protect new rehabilitation areas from erosion and use harvested vegetation as mulch material in rehabilitation works (Iluka, 2016). Although cleared areas will be open for a short period of time prior to rehabilitation activities and some erosion may occur, the end result post rehabilitation will provide a better outcome than what currently exists and ensure the long-term success of rehabilitated areas (Iluka, 2016). Potential erosion impacts as a result of the proposed clearing may be minimised by the implementation of a stage clearing condition.

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

**Methodology** Iluka (2016)

**(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 likely to be at variance to this Principle**

The application area is bordered by the South Eneabba Nature Reserve to the west and south. The South Eneabba Nature reserve has an extent of more than 7,000 hectares. The 49.64 hectares of native vegetation applied to be cleared will be rehabilitated following clearing and other areas of rehabilitated native vegetation (outside the application area) will likely improve or be more likely to succeed as a result of remedial works (Woodman, 2016a).

*Phytophthora* (Dieback) is known to occur in the local area and within the application area (Woodman, 2016) and despite weeds largely being absent or occurring in low numbers throughout the application area (Woodman, 2016a), weeds (and weed invasion) has the potential to impact adjacent conservation areas. The proponent will implement a dieback management plan; the latest version is currently under development in consultation with the Department of Parks and Wildlife (DPaW). Potential impacts to biodiversity as a result of the proposed clearing may be further minimised by the implementation of a weed and dieback management condition.

The proposed clearing is unlikely to result in long-term impacts to the environmental values of the South Eneabba Nature Reserve.

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

**Methodology** Woodman (2016a)

GIS Database:  
- DPaW Tenure  
- Imagery

**(i) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.**

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

The application area is not located within a Public Drinking Water Source Area (PDWSA) (GIS Database). According to available databases, there are no watercourses or wetlands mapped within the application area and none have been identified during flora and vegetation surveys of the area (Woodman, 2016a).

The groundwater salinity of the application area is considered marginal (500 to 1000 milligrams/Litre Total Dissolved solids) (GIS Database). The 49.64 hectares of native vegetation applied to be cleared will be rehabilitated following clearing and other areas of rehabilitated native vegetation (outside the application area) will likely improve or be more likely to succeed as a result of remedial works (Woodman, 2016a). The proposed clearing is considered unlikely to result in adverse impacts to groundwater.

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

**Methodology** Woodman (2016a)

GIS Database:  
- Groundwater Salinity, Satewide  
- Hydrography, linear  
- Public Drinking Water Source Areas (PDWSAs)  
- RIWI Act, Groundwater 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**

A major component of the application to clear 49.64 hectares of native vegetation is to re-instate drainage and construct a surface water diversion channel to protect new rehabilitation areas from erosion (Woodman, 2016a). The application area and surrounding area recently experienced substantial erosion following significant rainfall events (Woodman, 2016a). Remedial works following clearing will likely decrease the incidence and intensity of flooding in and around the application area.

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

**Methodology** Woodman (2016a)

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

**Comments**

There is one native title claim over the application area (WC2004/002) (DAA, 2016). However, the mining 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*.

There are no Sites of Aboriginal Significance located in the area applied to clear (DAA, 2016). It is the proponent's responsibility to comply with the *Aboriginal Heritage Act 1972* and ensure that no Sites of Aboriginal Significance are damaged through the clearing process.

It is the proponent's responsibility to liaise with the Department of Environment Regulation, the 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 19 January 2016 by the Department of Mines and Petroleum inviting submissions from the public. No submissions were received.

**Methodology** DAA (2016)

#### **4. References**

- CALM (2002) A Biodiversity Audit of Western Australia's 53 Biogeographical Subregions. Department of Conservation and Land Management.
- Commonwealth of Australia (2001) National Targets and Objectives for Biodiversity Conservation 2001-2005, AGPS, Canberra
- DAA (2016) Aboriginal Heritage Inquiry System, Department of Aboriginal Affairs, Perth, Western Australia < <http://maps.dia.wa.gov.au> > (Accessed 15 February 2016).
- Department of Natural Resources and Environment (2002) Biodiversity Action Planning. Action planning for native biodiversity at multiple scales; catchment bioregional, landscape, local. Department of Natural Resources and Environment, Victoria.
- DotE (2016) *Merops ornatus* in Species Profile and Threats Database, Department of the Environment, Canberra < <http://www.environment.gov.au> > (Accessed 12 February 2016).
- DPaW (2016a) Flora advice received in relation to Clearing Permit Application CPS 6915/1. Species and Communities Branch, Department of Parks and Wildlife, Western Australia, February 2016.
- DPaW (2016b) Fauna advice received in relation to Clearing Permit Application CPS 6915/1. Species and Communities Branch, Department of Parks and Wildlife, Western Australia, February 2016.
- Government of Western Australia (2014) 2014 Statewide Vegetation Statistics incorporating the CAR Reserve Analysis (Full Report). Current as of June 2014. WA Department of Environment and Conservation, Perth.
- Iluka (2016) Additional information received in relation to Clearing Permit Application CPS 6915/1. Iluka Resources Limited, Western Australia.
- Keighery, B.J. (1994) Bushland Plant Survey: A Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc). Nedlands, Western Australia.
- Woodman (2016a) Eneabba Mineral Sands Mine Native Vegetation Clearing Proposal - Native Vegetation Clearing for Rehabilitation Landform Construction. Report prepared for Iluka Resources Limited, by Woodman Environmental Consulting Pty Ltd, January 2016.
- Woodman (2016b) Significant Flora Survey, South Mine Rehabilitation – Clearing for Final Landform and Drainage. Report prepared for Iluka Resources Ltd, by Woodman Environmental Consulting Pty Ltd, January 2016.

#### **5. Glossary**

**Acronyms:**

<b>BoM</b>	Bureau of Meteorology, Australian Government
<b>DAA</b>	Department of Aboriginal Affairs, Western Australia
<b>DAFWA</b>	Department of Agriculture and Food, Western Australia
<b>DEC</b>	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
s.17	Section 17 of the <i>Environment Protection Act 1986</i> , Western Australia
TEC	Threatened Ecological Community

### **Definitions:**

{DPaW (2013) Conservation Codes for Western Australian Flora and Fauna. Department of Parks and Wildlife, Western Australia}:-

- T**            **Threatened species:**  
Specially protected under the *Wildlife Conservation Act 1950*, listed under Schedule 1 of the Wildlife Conservation (Specially Protected Fauna) Notice for Threatened Fauna or the Wildlife Conservation (Rare Flora) Notice for Threatened Flora (which may also be referred to as Declared Rare Flora).  
  
Threatened Fauna and Flora are further recognised by the Department according to their level of threat using IUCN Red List criteria. For example Carnaby's Cockatoo *Calyptorhynchus latirostris* is specially protected under the *Wildlife Conservation Act 1950* as a threatened species with a ranking of Endangered.  
Rankings:  
CR: Critically Endangered - considered to be facing an extremely high risk of extinction in the wild.  
EN: Endangered - considered to be facing a very high risk of extinction in the wild.  
VU: Vulnerable - considered to be facing a high risk of extinction in the wild.
- X**            **Presumed Extinct species:**  
Specially protected under the Wildlife Conservation Act 1950, listed under Schedule 2 of the Wildlife Conservation (Specially Protected Fauna) Notice for Presumed Extinct Fauna and Wildlife Conservation (Rare Flora) Notice for Presumed Extinct Flora (which may also be referred to as Declared Rare Flora).
- IA**           **Migratory birds protected under an international agreement:**  
Specially protected under the Wildlife Conservation Act 1950, listed under Schedule 3 of the Wildlife Conservation (Specially Protected Fauna) Notice.  
Birds that are subject to an agreement between governments of Australia and Japan, China and The Republic of Korea relating to the protection of migratory birds and birds in danger of extinction.
- S**            **Other specially protected fauna:**  
Specially protected under the Wildlife Conservation Act 1950, listed under Schedule 4 of the Wildlife Conservation (Specially Protected Fauna) Notice.
- P1**           **Priority One - Poorly-known species:**  
Species that are known from one or a few collections or sight records (generally less than five), all on lands not managed for conservation, e.g. agricultural or pastoral lands, urban areas, Shire, rail reserves and Main Roads WA road, gravel and soil reserves, and active mineral leases and under threat of habitat destruction or degradation. Species may be included if they are comparatively well known from one or more localities but do not meet adequacy of survey requirements and appear to be under immediate threat from known threatening processes.
- P2**           **Priority Two - Poorly-known species:**  
Species that are known from one or a few collections or sight records, some of which are on lands not under imminent threat of habitat destruction or degradation, e.g. national parks, conservation parks, nature reserves, State forest, unallocated Crown land, water reserves, etc. Species may be included if they are comparatively well known from one or more localities but do not meet adequacy of survey requirements and appear to be under threat from known threatening processes.
- P3**           **Priority Three - Poorly-known species:**  
Species that are known from collections or sight records from several localities not under imminent threat, or from few but widespread localities 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 localities but do not meet adequacy of survey requirements and known threatening processes exist that could affect them.



**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 do not qualify for Conservation Dependent, but that are close to qualifying for Vulnerable.
- (c) Species that have been removed from the list of threatened species during the past five years for reasons other than taxonomy.

**P5**

**Priority Five - Conservation Dependent species:**

Species that are not threatened but are subject to a specific conservation program, the cessation of which would result in the species becoming threatened within five years.