



Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 7457/1
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: Iluka Resources Limited

1.3. Property details

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

1.4. Application

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

1.5. Decision on application

Decision on Permit Application:
Decision Date:

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 379: Shrublands; scrub-heath on lateritic sandplain in the central Geraldton Sandplain Region; and

Beard vegetation association 392: Shrublands; *Melaleuca thyioides* thicket.

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

The vegetation to be cleared consist of rehabilitated vegetation (33.17 ha), degraded vegetation (3.48) and remnant vegetation (2.75 ha). Woodman Environmental mapped the application area in 2010 and identified six Floristic Community Types (FCTs) within the 2.75 hectares of remaining remnant vegetation (Woodman, 2016a):

- **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 2a:** Low woodland of *Banksia attenuata* and occasional *Banksia menziesii* and *Xylomelum angustifolium*, over Low Scrub of mixed species including *Banksia leptophylla* var. *leptophylla*, *Banksia candolleana*, *Melaleuca leuropoma* and *Hibbertia hypericoides* on brown or grey sands on 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 6a:** Low scrub of mixed species including *Beaufortia elegans* and *Banksia* spp. and sedges on soil types ranging from white-grey sands to grey sand with lateritic gravel on mid and upper slopes;
- **FCT 6b:** Shrublands and Heaths, with occasional Low Woodland of *Eucalyptus pleurocarpa*. Common species include *Allocasuarina microstachya*, *Melaleuca leuropoma*, *Melaleuca trichophylla*, and *Verticordia* spp. over sedges on grey-brown sands, sandy clays and/or gravels on flats, swales and lower slopes; and
- **FCT 18:** Thicket dominated by *Melaleuca viminea* subsp. *viminea*, with occasional *Eucalyptus loxophleba* subsp. *loxophleba* or *Eucalyptus camaldulensis* in clay flats.

Clearing Description Eneabba East Project
Iluka Resources Limited proposes to clear up to 39.4 hectares of native vegetation within a total boundary of approximately 1,455 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);
To:
Good: Structure significantly altered by multiple disturbance; retains basic structure/ability to regenerate (Keighery, 1994).

Comment The condition of the vegetation under application was determined via the use of aerial imagery and a flora and vegetation survey conducted over the application area by Mattiske Consulting Pty Ltd (2016).

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 is not likely to 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).

While the clearing permit boundary is over 1,400 hectares in size, the actual clearing consists of 63 separate areas totalling 39.4 hectares (Iluka, 2017).

The proposed clearing of up to 39.4 hectares of native vegetation will allow for rehabilitation activities to integrate existing infrastructure and roads/tracks with the surrounding native or previously rehabilitated vegetation (Iluka, 2017). The vegetation to be cleared consists of rehabilitated vegetation (33.17 ha), degraded vegetation (3.48) and remnant vegetation (2.75 ha). All areas of proposed clearing occur adjacent to areas of previously rehabilitated native vegetation, the edges of which are relatively degraded (Iluka, 2017).

Areas of potential clearing were identified and assessed in order to determine which areas should be included as one of the 63 separate sites where clearing will actually be undertaken within the application area and all sensitive area were avoided and removed (Iluka, 2017).

As part of final landform shaping and drainage control required for final rehabilitation and closure at the Eneabba East Project area, disturbance to the edges of existing mining rehabilitation vegetation and remnant native vegetation is required (Iluka, 2017). Access to stockpile locations is also required. To allow machinery access to topsoil stockpiles the slashing of all vegetation to 150mm above ground level and the width of the stockpile is needed. All soil and vegetation will be graded or pushed to one side and then returned to its original position, once the stockpile has been exhausted. The area will then be reseeded and planted with Kwongan species mix (Iluka, 2017).

One threatened flora, two Priority 2, five Priority 3 and three Priority 4 flora species were recorded within areas proposed to be cleared during a targeted flora survey conducted by Mattiske Consulting (2016), these included:

- *Leucopogon obtectus* (T)
- *Verticordia argentea* (P2)
- *Verticordia amphigia* (P3)
- *Verticordia fragrans* (P3)
- *Grevillea biformis* subsp. *cymbiformis* (P3)
- *Hemiandra* sp. Eneabba (H. Demarx 3687) (P3)
- *Mesomelaena stygia* subsp. *Deflexa* (P3)
- *Conostephium magnum* (P4)
- *Eucalyptus macrocarpa* subsp. *elachantha* (P4); and
- *Verticordia aurea* (P4)

Grevillea althoferorum subsp. *althoferorum* (T) is located within the clearing permit boundary area, but is not within one of the 63 separate areas where clearing is proposed.

No live plants of the Threatened flora species identified (*Leucopogon obtectus*) were recorded within the application area (Iluka, 2017; Mattiske, 2016). The majority of the Priority flora species recorded were located in rehabilitated areas, indicating that re-establishment post clearing and remediation works is likely to be successful (Mattiske, 2016). Impacts to priority flora species are not likely to be significant, given that all *Verticordia* species have shown a preference to previously disturbed areas and no more than 10% of known individuals of the remaining taxa will be cleared (Iluka, 2017).

DPaW (2017a) advised that all of the *Verticordia* species have shown an ability to regenerate and the level of impact proposed to all Priority flora species listed above is not likely to have a significant impact on their conservation status.

Six Floristic Community Types (FCT) were identified within the areas of remnant vegetation that persist within the application area, all of which are known in the local area and are considered to be well represented (Iluka, 2017). Impacts to these communities are negligible; the greatest impact represents 0.14% of the mapped FCT in the local area.

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 and an environmentally sensitive area). The community itself is located approximately 700 metres west of the clearing permit boundary (GIS Database) area and is restricted to ferricrete soils, which are unusual in the Eneabba area and easily recognised (Woodman, 2016a).

Of the 39.4 hectares of vegetation proposed to be cleared, approximately 24.83 hectares is located within the South Eneabba Nature Reserve. DPaW (2017b) advised that based on management measures to be implemented and the rehabilitation goals of the proposal, the proposed clearing does not pose an unacceptable level of risk to the conservation values of the reserve.

Phytophthora (Dieback) is known to occur in the local area and within the application area (Iluka, 2017; Woodman, 2016a). The proponent will implement a dieback management plan, which was approved by the Office of the Environmental Protection Authority (OEPA) in September 2016. Weeds are known to occur in low numbers throughout the local 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.

Although there will be a temporary impact to vegetation, it is anticipated that the subsequent rehabilitation will improve the overall vegetation condition (Iluka, 2017).

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

Methodology

CALM (2002)
DPaW (2017a)
DPaW (2017b)
Iluka (2017)
Mattiske (2016)
Woodman (2016a)

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

A number of fauna surveys have been conducted in the region. Previous studies and database reviews have identified 264 vertebrate fauna species that may be present in the region, of these up to 218 have the potential to occur within, or within close proximity to, the application area (Iluka, 2017). This figure includes 32 fauna species of conservation significance (including nine waterbird species). Of particular note were the Carnaby's cockatoo (*Calyptorhynchus latirostris* - EN), Rainbow Bee-eater (*Merops ornatus* - Migratory), Cricket (*Phasmodes jeeba* - P2), Black-striped snake (*Neelaps calonotos* - P3), Woolybush bee (*Hylaeus globuliferus* - P3) and Graceful Sunmoth (*Synemon gratiosa* - P4), which are considered likely to be regular visitors or residents (Iluka, 2017).

The remaining 26 species were determined to be either locally extinct, irregular visitors, residents not dependant on the vegetation, species known from the area that do not have preferred habitat within the application area (Iluka, 2017) or species no longer considered to be of conservation significance.

There are no natural water features (watercourses or wetlands) located in the application area to support waterbird species and the vegetation present within the application is unlikely to represent significant habitat for local fauna species (including species of conservation significance) due to the limited range of habitats, small areas of remaining remnant vegetation and poor condition of the vegetation in comparison to adjacent areas (Iluka, 2017).

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 (Iluka, 2017). The proposed clearing of up to 39.4 hectares of native vegetation will allow for rehabilitation activities to integrate existing infrastructure and roads/tracks with the surrounding native or previously rehabilitated vegetation (Iluka, 2017). The vegetation to be cleared consists of rehabilitated vegetation (33.17 ha), degraded vegetation (3.48) and remnant vegetation (2.75 ha). All areas of proposed clearing occur adjacent to areas of previously rehabilitated native vegetation, the edges of which are relatively degraded (Iluka, 2017).

The proposed clearing has the potential to displace local fauna species (including species of conservation significance), however given that the actual clearing consists of 63 separate areas totalling 39.4 hectares,

significant habitat fragmentation is not anticipated (Iluka, 2017). Impacts to resident fauna species could be reduced by conducting clearing activities so that fauna species are directed to vegetated areas that are not proposed to be cleared. This would give fauna species the opportunity to move into adjacent vegetation.

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. The habitat values impacted through clearing are to be re-instated via rehabilitation (Iluka, 2017) and local fauna species may return following rehabilitation.

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

Methodology Iluka (2017)

(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

Two species of Threatened flora species were recorded within the application area during a flora survey; *Grevillea althoferorum* subsp. *althoferorum* and *Leucopogon obtectus*.

Grevillea althoferorum subsp. *althoferorum* was located off a track within the project area, but is not within areas proposed to be cleared. While the clearing permit boundary is over 1,400 hectares in size, the actual clearing consists of 63 separate areas totalling 39.4 hectares. The proponent has stated that a 50 metre buffer will be established around this species.

All recorded occurrences of *Leucopogon obtectus* were dead (Iluka, 2017; Mattiske, 2016). DPaW (2017a) advised that *Leucopogon obtectus* is a relatively short lived disturbance opportunist in that it is killed by fire, regenerating from seed rather than re-sprouting from lignotuberous/perennial root stock. It is therefore likely that, in common with most other Australian Epacridaceae, *L. obtectus* recruits only from soil stored seed. As this species has shown an ability to regenerate from seed, the proponent will need to obtain a permit to take DRF that covers the taking of soil stored seed at the locations of *L. obtectus*. As the proposed clearing could result in outcomes which would see the regeneration of this species, the proposed clearing is not considered to be detrimental (DPaW, 2017a). 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.

Potential impacts to Threatened flora species as a result of the proposed clearing may be minimised by the implementation of a flora management condition that prevents clearing within 50 metres of known locations of live Threatened flora. A permit to take DRF will be required from the Department of Parks and Wildlife, for dead and live records of *Leucopogon obtectus*.

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

Methodology DPaW (2017a)
Iluka (2017)
Mattiske (2016)
Woodman (2016b)

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 noted during the flora and vegetation survey of the application area and adjacent areas (Mattiske, 2016; Woodman, 2016a; Woodman, 2016b). The entire application area does fall within the buffer area for the 'Ferricrete floristic community,' which is a TEC. The community itself is located approximately 700 metres west of the nearest section of application area and over 1 kilometre from areas to be cleared (GIS Database). This community is restricted to ferricrete soils, which are unusual in the Eneabba area, easily recognised (Woodman, 2016a) and are not typical within the entire Eneabba East Project area (Iluka, 2017).

Given the distance of the TEC from the actual 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 Iluka (2017)
Woodman (2016a)
Woodman (2016b)

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 44.8% of the pre-European vegetation remains (see table below) (Government of Western Australia, 2015; GIS Database).

Two Beard vegetation associations have been mapped within the application area (GIS Database). Beard vegetation association 392 retains greater than 50% of pre-European levels within the state, bioregion, subregion and local government area and is considered to be of 'Least Concern' (Department of Natural Resources and Environment , 2002).

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, 2015). 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 39.4 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 33.17 hectares) (Iluka, 2017). 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 post 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	287,231	118,658	~ 41.3	Depleted	~ 21.8 (41.9)
Beard veg assoc. - State					
379	547,737	129,737	~ 23.7	Vulnerable	~ 5.4 (22.2)
392	3,069	1,595	~ 52.0	Least Concern	~ 9.0 (17.2)
Beard veg assoc. - Bioregion					
379	546,507	129,496	~ 23.7	Vulnerable	~ 5.4 (22.3)
392	1,678	1,333.31	79.46	Least Concern	~ 5.42
Beard veg assoc. - Subregion					
379	370,030	111,633	~ 30.2	Depleted	~ 5.9 (19.2)
392	1,634	1,321.67	80.88	Least Concern	~ 16.8 (20.7)
Beard veg assoc. - Local Government					

379	72,271	30,878	~ 42.7	Depleted	~ 8.9 (19.4)
392	437	260.6	~ 59.6	Least Concern	~ 9.04 (19.7)

* Government of Western Australia (2015)

** 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 (2015)
Iluka (2017)

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 likely to be at variance to this Principle

According to available databases, there are no watercourses mapped within the application area (GIS Database) and none were noted during flora and vegetation surveys of the application area or adjacent areas (Iluka, 2017; Matiske, 2016; Woodman, 2016a; Woodman, 2016b). Five non-perennial wetlands (lakes) occur within the application area but are not within any areas where clearing is to be undertaken. Indirect impacts to these systems are not anticipated, as the rehabilitation of roads and final earthworks in the area is expected to improve surface drainage to the wetlands and improve overall vegetation health (Iluka, 2017).

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

Methodology Matiske (2016)
Woodman (2016a)
Woodman (2016b)
Iluka (2017)

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 proposed clearing of up to 39.4 hectares of native vegetation will allow for rehabilitation activities to integrate existing infrastructure and roads/tracks with the surrounding native or previously rehabilitated vegetation (Iluka, 2017).

Although there will be temporary increase in the amount of open areas as a result of the proposed clearing, final earthworks and rehabilitation are expected to improve the overall vegetation condition (Iluka, 2017). 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 (2017)

(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

Of the 39.4 hectares of vegetation proposed to be cleared, approximately 24.83 hectares is located within the South Eneabba Nature Reserve. DPaW (2017b) advised that based on management measures to be implemented and the rehabilitation goals of the proposal, the proposed clearing does not pose an unacceptable level of risk to the conservation values of the reserve.

The South Eneabba Nature reserve has an extent of more than 7,000 hectares. The 39.4 hectares of native vegetation applied to be cleared will be rehabilitated following clearing. Although there will be a temporary impact to vegetation, it is anticipated that the subsequent rehabilitation will improve the overall vegetation condition (Iluka, 2017). The proposed clearing is unlikely to result in long-term impacts to the environmental values of the South Eneabba Nature Reserve.

Phytophthora (Dieback) is known to occur in the local area and within the application area (Iluka, 2017) and weeds have also been recorded in low numbers in adjacent areas (Woodman, 2016a). Weeds (and weed invasion) has the potential to impact adjacent conservation areas.

The proponent will implement a dieback management plan, which has been endorsed by the Office of the Environmental Protection Authority. Final landform design and drainage patterns will also be considered in order to protect dieback free areas (Iluka, 2017).

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.

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

Methodology DPaW (2017b)
Iluka (2017)
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 within the application area and none were noted during flora and vegetation surveys of the area (Mattiske, 2016; Woodman, 2016a; Woodman, 2016b).

Five non-perennial wetlands (lakes) occur within the application area, all but one are located outside of areas proposed to be cleared (GIS Database). While these systems may have been altered by historic activities, impacts to these systems are not anticipated as a result of the proposed clearing, as the proposed clearing to enable final rehabilitation, includes drainage control that will likely improve sediment loads which area currently an issue in some areas adjacent to where clearing is proposed to occur (Iluka, 2017).

The groundwater salinity of the application area is mapped as ranging from marginal to brackish (500 to 3000 milligrams/Litre Total Dissolved solids) (GIS Database). The 39.4 hectares of native vegetation applied to be cleared is spread out of 63 separate areas, and all areas will be rehabilitated following clearing. 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 Iluka (2017)
Mattiske (2016)
Woodman (2016a)
Woodman (2016b)

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**

The clearing of 39.4 hectares of native vegetation will allow for final landform designs to be implemented as apart of rehabilitation activities at the Eneabba East Project area. The final landform design will incorporate appropriate surface water management and drainage control, which will likely reduce the potential for flooding (Iluka, 2017).

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

Methodology Iluka (2017)

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, 2017). 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, 2017). 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 20 February 2016 by the Department of Mines and Petroleum inviting submissions from the public. No submissions were received.

Methodology DAA (2017)

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 (2017) Aboriginal Heritage Inquiry System, Department of Aboriginal Affairs, Perth, Western Australia
< <http://maps.dia.wa.gov.au>> (Accessed March 2017).
- 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.
- DPaW (2017a) Flora Advice for CPS 7457/1 – Iluka Resources Ltd – Clearing of 39.4 ha of Native Vegetation within Mining Lease 267SA. Department of Parks and Wildlife, Species and Communities Branch, Western Australia
- DPaW (2017b) State Forest Advice for CPS 7457/1 - Iluka Resources Ltd – Clearing of 39.4 ha of Native Vegetation within Mining Lease 267SA. Department of Parks and Wildlife, Environmental Management Branch, Western Australia
- Government of Western Australia (2015) 2015 Statewide Vegetation Statistics incorporating the CAR Reserve Analysis (Full Report). Current as of June 2015. WA Department of Environment and Conservation, Perth.
- Iluka (2017) IPL Central Rehabilitation Earthworks. Native Vegetation Clearing Permit Application Supporting Document. Iluka Resources Limited, February 2017.
- 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 (2016) Threatened and Priority Survey of Proposed Clearing Areas, Eneabba Operations. Report prepared for Iluka Resources Ltd, by Mattiske Consulting Pty Ltd, December 2016.
- Woodman (2016a) Eneabba Mineral Sands Mine Native Vegetation Clearing Proposal (CPS 6915/1). Native Vegetation Clearing for Rehabilitation Landform Construction. Report prepared for Iluka Resources Limited, by Woodman Environmental Consulting Pty Ltd, January 2016.
- Woodman (2016b) Threatened and Priority Survey of Proposed Clearing Areas, Eneabba Operations. Report prepared for Iluka Resources Ltd, by Woodman Environmental Consulting Pty Ltd, December 2016.

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)
DEE	Department of the Environment and Energy, Australian Government
DER	Department of Environment Regulation, Western Australia
DMP	Department of Mines and Petroleum, Western Australia
DRF	Declared Rare Flora
DoE	Department of the Environment, Australian Government (now DEE)
DoW	Department of Water, Western Australia
DPaW	Department of Parks and Wildlife, Western Australia
DSEWPac	Department of Sustainability, Environment, Water, Population and Communities (now DEE)
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
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
s.17	Section 17 of <i>the Environment Protection Act 1986</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	<p>Threatened species: Published as Specially Protected under the <i>Wildlife Conservation Act 1950</i>, 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).</p> <p><i>Threatened fauna</i> is that subset of ‘Specially Protected Fauna’ declared to be ‘likely to become extinct’ pursuant to section 14(4) of the Wildlife Conservation Act.</p> <p><i>Threatened flora</i> 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.</p> <p>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.</p>
CR	<p>Critically endangered species Threatened species considered to be facing an extremely high risk of extinction in the wild. Published as Specially Protected under the <i>Wildlife Conservation Act 1950</i>, in Schedule 1 of the Wildlife Conservation (Specially Protected Fauna) Notice for Threatened Fauna and Wildlife Conservation (Rare Flora) Notice for Threatened Flora.</p>
EN	<p>Endangered species Threatened species considered to be facing a very high risk of extinction in the wild. Published as Specially Protected under the <i>Wildlife Conservation Act 1950</i>, in Schedule 2 of the Wildlife Conservation (Specially Protected Fauna) Notice for Threatened Fauna and Wildlife Conservation (Rare Flora) Notice for Threatened Flora.</p>
VU	<p>Vulnerable species Threatened species considered to be facing a high risk of extinction in the wild. Published as Specially Protected under the <i>Wildlife Conservation Act 1950</i>, in Schedule 3 of the Wildlife Conservation (Specially Protected Fauna) Notice for Threatened Fauna and Wildlife Conservation (Rare Flora) Notice for Threatened Flora.</p>

- 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.
- 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.