



Native Vegetation Clearing Permit Application -
West Mine Void Rehabilitation, Eneabba, Western Australia
Iluka Resources Limited

M267SA

Lot 2 on Plan D059695 (CT 1740/471)

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1. PURPOSE

The purpose of this document is to support Iluka Resources Limited (Iluka) application for a clearing permit (Purpose Permit).

Iluka's objective is to undertake remedial works to stabilise the banks and rehabilitate the surface of the void, originally rehabilitated in 2003. Since the native rehabilitation was completed in 2003 the regional groundwater levels have declined. This decline has exposed steep unvegetated slopes below the 2003 water line.

In summary clearing is required for the purpose of:

- clearing regrowth vegetation on existing tracks to provide access to the void rework areas; and
- clearing native vegetation rehabilitation in specific areas around the void to safely implement the remedial earthworks.

The proposed clearing permit area covers a total of up to 4.6 ha, including 2.5 ha of native vegetation (previous rehabilitation) clearing and 2.1 ha of existing tracks where some widening for Surface Mobile Equipment (SME) access may be required. All areas proposed to be cleared under this application will be rehabilitated. It is considered that there will be a long term net gain of habitat and biodiversity, as a result of this proposal, given the overall program of work incorporates rehabilitation of the void, which will result in an area of up to 29 ha, being rehabilitated with native vegetation.

Referral of this proposal to the Department of Mines, Industry Regulation and Safety (DMIRS) Native Vegetation Assessment Branch is required to enable assessment under Section 51 (Part V of the *Environment Protection Act 1986* (EP Act)). This information is provided with reference to the Environmental Protection (Clearing of Native Vegetation) Regulations 2004.

The clearing permit application (Application for a Purpose Permit) is provided as **Appendix A**.

2. INTRODUCTION

2.1 Location

The Eneabba West Mine is located near the town of Eneabba, west of Brand Highway, approximately 280 kilometres (km) north of Perth and 150 km southeast of Geraldton (**Figure 1**). Mining at the Eneabba West Mine commenced in 1990 and ceased in October 1999.

The proposed clearing at the 'Eneabba West Mine void' (**Figure 2**) consists of an area in the northwest corner of the Eneabba West Mine (West Mine), located approximately 6 km southwest of the Eneabba townsite in the Shire of Carnamah (see **Figure 1**). The West Mine void clearing permit area is located within the Iluka *Mineral Sands (Eneabba) Agreement Act 1975* tenement AM70/267 and on Iluka owned land, Lot 2 on Plan D059695 (CT 1740/471) (**Appendix B**).

The location of the proposed clearing at Iluka's West Mine is Lot 2 at the south-east intersection of Erindoon Road and Coolimba-Eneabba Road, Eneabba (Appendix B). The area of interest is illustrated in Figures 1 and 2.

2.2 Purpose of Vegetation Clearing

The West Mine void is the remaining area from dredge mining activities undertaken from 1990 to 1999. Extensive earthworks, drainage controls and revegetation efforts were completed in 2003 to rehabilitate the void to a water body, with slopes rehabilitated with native vegetation.

Since 2003, regional groundwater levels have declined (see **Appendix C**). This decline has exposed large areas below the 2003 water line which have subsequently deteriorated to form steep “cliff” edges and bare ground where vegetation cover is now limited.

Iluka intends to make the banks of the void safe and stable and retain it as a gently sloped open void revegetated with native vegetation. Clearing of former rehabilitated vegetation is required to allow machinery and equipment to safely access the site and achieve gradients no steeper than 1:5. The previous conceptual void design aimed for a 1:10 gradient. The original re-work design required clearing of 20 ha of rehabilitated vegetation. The updated re-work design, which is the basis of this proposal, will only impact 2.5 ha of previously rehabilitated native vegetation. The remedial works of the void will result in rehabilitation of up to 29 ha within the void and are expected to be completed within 18 months of commencement.

3. EXISTING ENVIRONMENT

3.1 Vegetation and Flora

Native vegetation at the Eneabba West Mine was considered degraded by grazing during a pre-mining botanical survey undertaken by J Elkinton in 1988 (AMC Mineral Sands 1989). The vegetation within the proposed clearing area includes rehabilitated vegetation on previously cleared areas surrounding an open area of bare ground.

A vegetation assessment conducted by Iluka’s Revegetation and Closure Superintendent and Senior Rehabilitation Technician has recorded the predominant species listed in Table 1. Vegetation within the proposed disturbance footprint mainly consists of banksia heath, which has been affected by dieback. Given the small scale of proposed clearing, which is rehabilitation vegetation planted by Iluka, and the temporary nature of the clearing (all cleared areas will be incorporated into native vegetation rehabilitation), an independent Flora and Vegetation survey of the proposed clearing area was not warranted.

The Western Australian (WA) herbarium records and the Parks and Wildlife Threatened and Priority Flora Species Database have been reviewed. These records indicate one priority species previously recorded within the already cleared area planned for rehabilitation earthworks: *Grevillea biformis subsp. Cymbiformis* - 2 mature plants recorded 19/11/2002. These records were not found during the April 2022 vegetation assessment within the proposed clearing area, nor was this species recorded in this assessment,

An assessment of the flora present within the proposed clearing permit area was undertaken on the 29th April 2022 by suitably qualified Iluka personnel (by Iluka’s Revegetation and Closure Superintendent and Senior Rehabilitation Technician). No threatened or priority flora were identified during the inspection. Thirteen native plant taxa were identified within the proposed clearing area, as listed in Table 1. In addition, other native plant taxa found outside and adjacent to the proposed clearing area have also been included in Table 1.

Table 1: Flora taxa recorded inside and outside the proposed clearing permit area

| Native species recorded inside the proposed clearing permit area | | |
|--|------------------------------------|-------------------------------|
| <i>Acacia blakelyi</i> | <i>Acacia pulchella</i> | <i>Banksia prionotes</i> |
| <i>Banksia menziesii</i> | <i>Eucalyptus pleurocarpa</i> | <i>Eucalyptus macrocarpa</i> |
| <i>Eucalyptus todiana</i> | <i>Calothamnus blepharospermus</i> | <i>Calothamnus sanguineus</i> |
| <i>Hakea conchifolia</i> | <i>Hakea psilorrhyncha</i> | |
| Native species recorded outside and adjacent to the proposed clearing permit area | | |
| <i>Tecticornia indica</i> | <i>Facina nodosa</i> | <i>Callitris pyramidalis</i> |
| <i>Casuarina obesa</i> | <i>Melaleuca brevifolia</i> | <i>Melaleuca hamulosa</i> |
| <i>Melaleuca leuropoma</i> | <i>Melaleuca raphiophylla</i> | <i>Banksia leptophylla</i> |
| <i>Calothamnus hisutus</i> | <i>Calothamnus quadrifidus</i> | <i>Viminaria juncea</i> |
| <i>Lomandra hastilis</i> | <i>Petrophile drummondii</i> | |





3.2 Hydrology

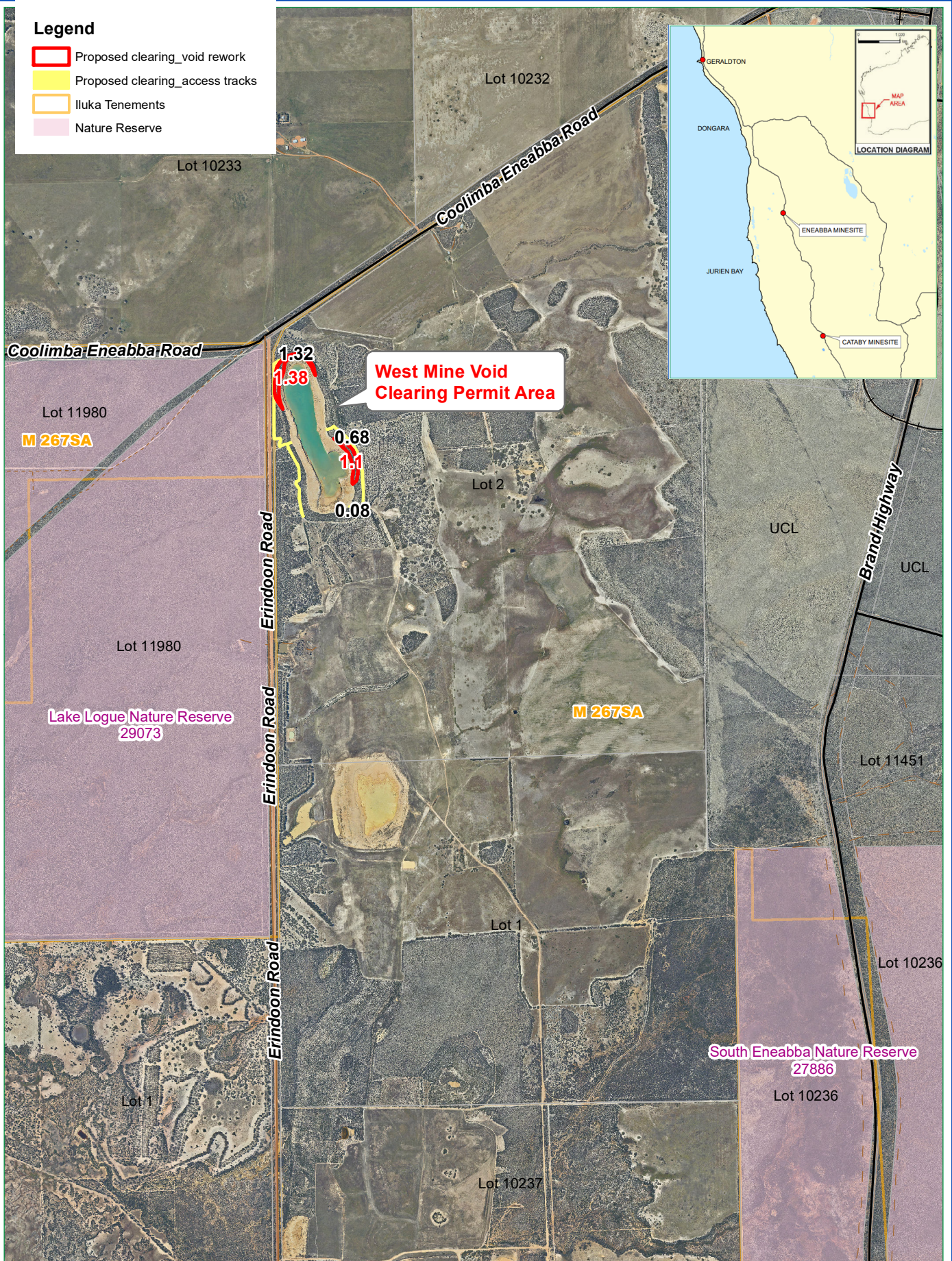
There are no watercourses or wetlands located within the proposed Eneabba West Mine void clearing permit disturbance area. The nearest wetlands are located 5.5 km southeast from the disturbance area. Erindoon Creek and Lake Indoon are 4.5 km and 5.5 km southeast from the clearing permit area respectively. During mining operations at the Eneabba West Mine in 1999, the mine pit intersected an unnamed creek. The creek was permanently redirected around the pit, following a request from DBCA (then CALM). Flows of the unnamed creek were maintained to the LLNR downstream. The northern disturbance area is adjacent to the unnamed creek but the rehabilitation works will not affect the watercourse. It is worth noting there have been no recorded flows in this water course and during the April 2022 vegetation assessment no evidence to suggest any recent flows. Surface water flowing into the void appear to be general drainage from the surrounding area excising steep gullies in some places as shown in Appendix 3.

3.3 Dieback

Phytophthora Dieback is the common name for a disease in native plants, caused by the pathogen *Phytophthora cinnamomi*. Plant species of the Proteaceous family are highly susceptible to Dieback and play an important structural role in Kwongan vegetation communities by comprising a large proportion of projective foliage in cover (Iluka 2016). The void clearing permit area is located within an area identified as dieback infested (**Figure 4**).

Legend

-  Proposed clearing_void rework
-  Proposed clearing_access tracks
-  Iluka Tenements
-  Nature Reserve



Kilometers



WEST MINE VOID CLEARING PERMIT AREA ENEABBA



ILUKA

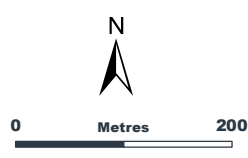


Lake Logue
Nature
Reserve

Proposed Clearing:
 Void Rework = 2.48Ha
 Access Tracks = 2.08Ha
 Total = 4.56Ha

**WEST MINE
VOID CLEARING PERMIT AREA**

- Proposed Access
- Proposed clearing_void rework
- Proposed clearing_access tracks



ENEABBA



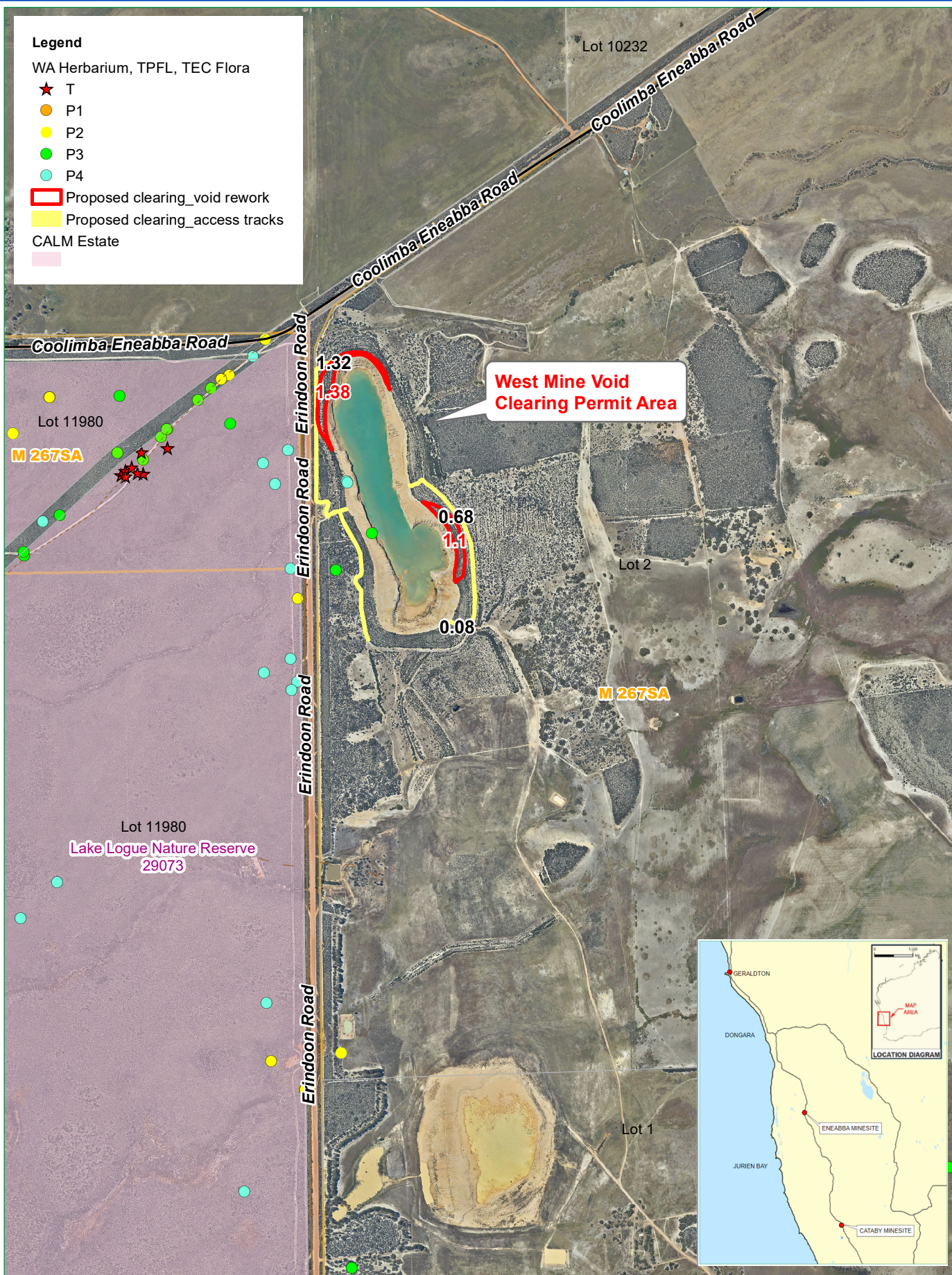
ILUKA

Legend

WA Herbarium, TPFL, TEC Flora

- ★ T
- P1
- P2
- P3
- P4

- ▭ Proposed clearing_void rework
- ▭ Proposed clearing_access tracks
- ▭ CALM Estate



Meters

0 500 1,000

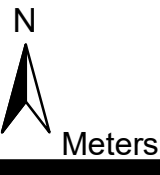
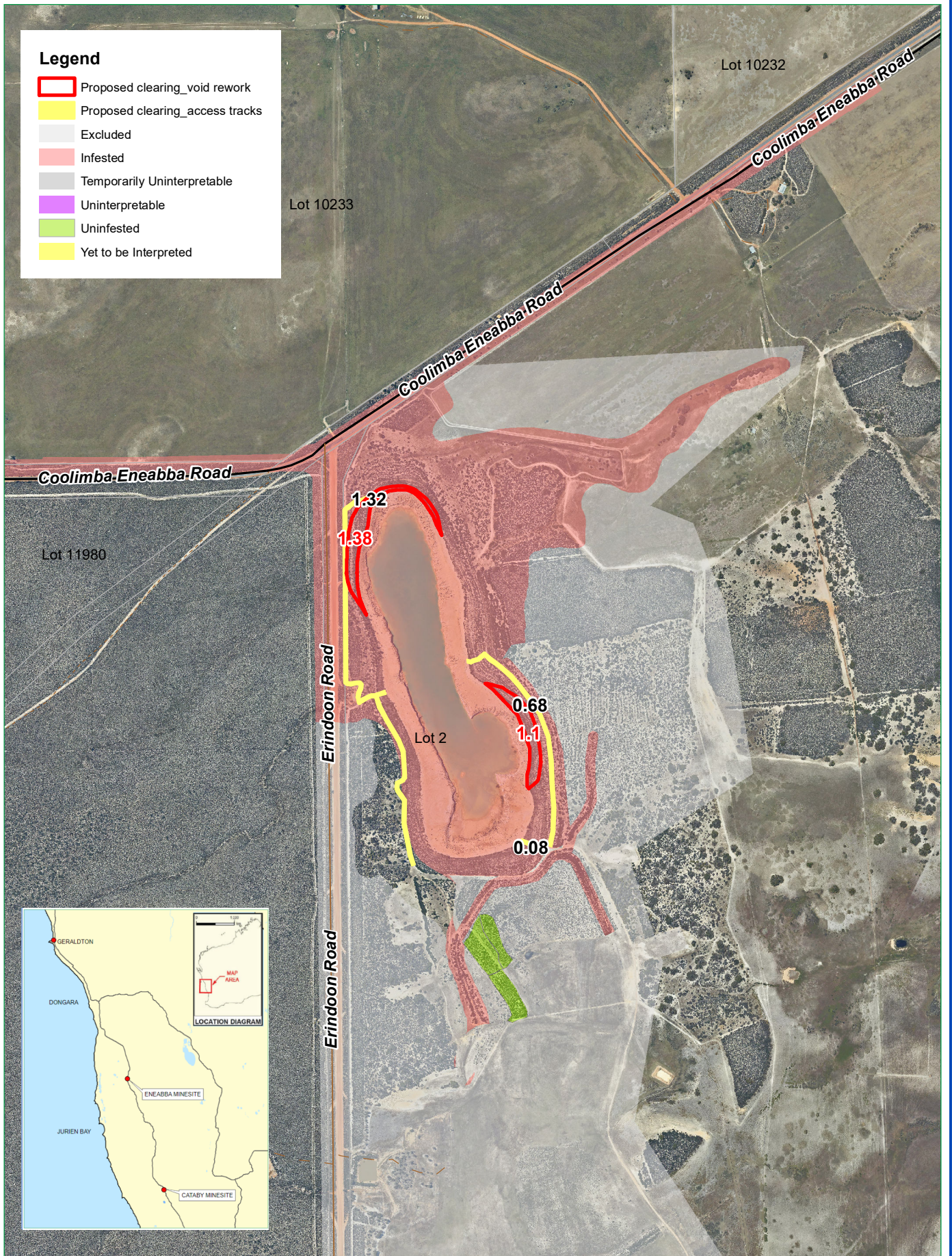
**TECS, THREATENED & PRIORITY FLORA
PROXIMITY TO THE WEST MINE VOID
CLEARING PERMIT AREA
ENEABBA**



ILUKA

Legend

- Proposed clearing_void rework
- Proposed clearing_access tracks
- Excluded
- Infested
- Temporarily Uninterpretable
- Uninterpretable
- Uninfested
- Yet to be Interpreted



**WEST MINE
VOID CLEARING PERMIT AREA
DIEBACK STATUS
ENEABBA**



4. ENVIRONMENTAL IMPACTS

Annual and triennial environmental reports prepared and submitted under the *Mineral Sands (Eneabba) Agreement Act 1975* outline environmental management activities for a range of environmental factors. These include, land clearing, dust, *Phytophthora* dieback, groundwater, surface water and rehabilitation. The environmental impacts from the proposed Eneabba West Mine void vegetation clearing described in this proposal are considered to be minimal as detailed below.

4.1 Land Clearing

The maximum extent of vegetation clearing will be 4.6 ha as shown in Figure 2 (including up to 2.1 ha of access tracks). The topsoil that was applied during the initial rehabilitation earthworks will be stripped and stockpiled. This will be replaced, ripped and revegetated after reshaping has occurred. The proposed tracks to access the area have some vegetative regrowth which will be slashed to allow SME access.

4.1.1 Threatened Flora

There are no recorded Threatened flora located within the Eneabba West Mine void clearing permit area (see **Figure 3**).

4.1.2 Priority Flora

There were 2 previously recorded Priority Flora in already cleared areas and not within the proposed clearing area. No priority flora were identified during the most recent field assessment by suitably qualified Iluka personnel (**Appendix C**):

P3: *Calytrix superba* – recorded 19/06/1997

P4: *Grevillea biformis subsp. Cymbiformis* - 2 mature plants recorded 19/11/2002

4.1.3 Loss of Habitat and Biodiversity

The Eneabba West Mine void vegetation clearing proposed comprises previously rehabilitated vegetation as listed in Table 1 and as illustrated (Appendix C). The proposed clearing areas will be incorporated into the final rehabilitation of the voids surrounding native vegetation; therefore all vegetation clearing will be re-established. It is considered that there will be no significant impact on habitat and biodiversity as a result of this proposal

4.2 Rehabilitation

Pending approval of this clearing permit application, rehabilitation of the void will be undertaken during 2022 and 2023 in accordance with the Eneabba West Mine rehabilitation schedule. Reshaping of the slopes and base of the void will aim to achieve a safe and stable landform, revegetated with native vegetation.

Rehabilitation of the Eneabba West Mine void is expected to have a net environmental benefit.

4.2.1 Introduction and Spread of *Phytophthora* Dieback and Weeds

The management of *Phytophthora* Dieback in rehabilitation areas is detailed within Iluka's *Phytophthora* Dieback Management Plan – Eneabba Operations (Iluka 2016) which was approved by the OEPA in September 2016. Since 1991, Iluka has implemented hygiene management to prevent the spread of *Phytophthora* Dieback and will continue to implement these management actions. The implementation of the hygiene control measures for *Phytophthora* Dieback will also minimise the risk of weeds being spread. It is considered unlikely that clearing the Eneabba West Mine void clearing permit area will result in the spread of *Phytophthora* Dieback or the spread of weeds. Dieback hygiene controls will be detailed in

the pending earthmoving contract (yet to be awarded) as per the current management requirements and any further advice received by the local DBCA office.

4.3 Impact Assessment against the 10 Clearing Principles

The impacts of clearing under this proposal are discussed below, with regard to the 10 Clearing Principles as specified in Schedule 5 of the EP Act.

Principle 1: Native vegetation should not be cleared if it comprises a high level of biological diversity

The Eneabba West Mine void clearing permit area is located within the Lesueur Sandplain Interim Biogeographic Regionalisation for Australia (IBRA) subregion which is comprised of proteaceous scrub-heaths, rich in endemics with a high level of species diversity and a large number of Threatened and priority flora species (Desmond and Chant 2001).

The vegetation proposed to be cleared does not comprise a high level of biological diversity because of historical clearing of the affected area.

Clearing under this proposal is likely to have a minimal impact on the overall biodiversity of the Lesueur Sandplain subregion and the local area within which the Eneabba West Mine void clearing permit area is located. The impacts of the proposed clearing to intact native vegetation is negligible, with the proposed clearing impacting previously rehabilitated vegetation on along the edges of the existing cleared void and access tracks.

The Eneabba West Mine void clearing permit area will be revegetated following rehabilitation earthworks. The areas proposed to be cleared are relatively small and located adjacent to the existing cleared areas.

This proposal is not considered to be at variance with this clearing principle.

Principle 2: 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

Conservation significant fauna are unlikely to be present within the Eneabba West Mine void clearing permit area, due to the limited range of habitats, small areas and the poorer condition of the vegetation, in comparison to nearby large expanses of undisturbed and un-fragmented native vegetation. Therefore, clearing of native vegetation under this proposal is not expected to have a regional impact on any of the conservation significant fauna.

The proposed clearing at the void clearing permit area is not considered to be at variance to this principle.

Principle 3: Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, rare flora.

There will be no clearing of rare flora within the Eneabba West Mine void clearing permit area. Iluka personnel undertook a field assessment of the proposed void clearing permit area and identified no rare flora species.

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

Principle 4: Native vegetation should not be cleared if it comprises the whole or part of, or is necessary for the maintenance of a Threatened ecological community

There are no occurrences of any Threatened Ecological Community (TEC) or Priority Ecological Community (PEC) within the Eneabba West Mine Void clearing permit area. The nearest TEC, is the 'ferricrete – Rocky Springs' located approximately 6 km southeast of the proposed clearing area, near Rocky Springs Road. This TEC is restricted to ferricrete soils. No TECs or PECs will be impacted by the proposed clearing.

The proposed clearing within this proposal therefore is not at variance to this principle.

Principle 5: Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared

The proposed clearing area is located within the IBRA Lesueur Sandplain subregion, where 42.92% of the Pre-European Extent of vegetation remains (Government of Western Australia 2018).

The proposed clearing area comprises predominantly of previously rehabilitated vegetation surrounding the existing cleared Eneabba West Mine void area.

There are extensive tracts of uncleared land to the west, east and south of the proposed clearing area within unallocated crown land and within the SENR (South Eneabba Nature Reserve) and the Lake Logue Nature Reserve (LLNR). The Eneabba West Mine Void clearing permit area does not represent an area that is significant as a remnant of native vegetation in an area that has been extensively cleared.

The proposed clearing within this proposal is not at variance to Principle 5.

Principle 6: Native vegetation should not be cleared if it is growing, or in association with, an environment associated with a watercourse or wetland.

There are no watercourses or wetlands located within the Eneabba West Mine Void clearing permit area. From the void, Erindoon Creek is situated 4.5 km to the southwest and Lake Indoon is 5km to the southwest. The closest Wetland is 5.5 km southeast of the proposed clearing area.

The unnamed creek is adjacent to the northern disturbance area. Remedial earthworks and rehabilitation of the clearing permit area will not intercept or impact the watercourse. Suitably qualified Iluka personnel followed the course of the unnamed creek in 2021 and were able to verify the unnamed creek will be outside the Eneabba West Mine clearing permit area.

The proposed clearing in this proposal is not at variance to this principle.

Principle 7: Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation

The clearing proposed is to enable remedial earthworks of the Eneabba West Mine Void. The area will be temporarily cleared as remedial earthworks safely achieve final landform design. With Iluka's 40 years of rehabilitation experience, suitable vegetation will then be reinstated in the 2.5 hectares of cleared area. In addition, the remaining areas within the void including the base (which will remain as a seasonal wetland) will be revegetated with appropriate native species which will support a net gain in native vegetation, habitat and biodiversity

The proposed clearing is not at variance to this principle.

Principle 8: Native vegetation should not be cleared if the clearing of the vegetation is likely to have any impact on the environmental values of any adjacent or nearby conservation area

The proposed clearing is located on Iluka owned freehold land. The proposed clearing is unlikely to impact on the environmental values of any conservation areas. The closest conservation areas are the SENR and the LLNR located approximately 3.5 km southeast and 50 metres west of the Eneabba West Mine void clearing permit area respectively (see **Figure 1**). It is expected that rehabilitation of the Eneabba West Mine Void will improve the environmental values of the area.

The proposed clearing is not at variance to this principle.

Principle 9: 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

The proposed clearing will not cause any deterioration in the quality of surface water. There will be no impact to groundwater quality or levels as a result of this proposal.

The proposed clearing is not at variance to this proposal.

Principle 10: Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the incidence of intensity of flooding

The clearing of vegetation in this proposal is to rehabilitate the Eneabba West Mine Void, including remedial rehabilitation earthworks. These earthworks will establish a safe and stable sloping void with reinstated topsoil and suitable vegetation rehabilitated surrounding the void. The final landform design will incorporate appropriate surface water management and drainage control. The proposed clearing will not cause, or exacerbate the incidence or intensity of flooding, and will not cause any change to the catchment.

The proposed clearing is not at variance to this principle.

5. CONCLUSIONS

This proposal outlines Iluka's application for a clearing permit (Purpose Permit) in accordance with the *EP Act* to clear up to 4.6 ha of vegetation (comprising of 2.5 ha of clearing of native vegetation rehabilitation around the void and up to 2.1 ha of regrowth to allow widening of existing tracks). The proposed clearing is to enable remedial earthworks and revegetation of a mining void which was rehabilitated in 2003 but since deteriorated to an unsafe state requiring repair. The areas to be cleared outlined within this proposal will be rehabilitated and incorporated into the surrounding vegetation.

The limited extent of the proposed clearing is not at variance to the Clearing Principles as specified in Schedule 5 of the *EP Act*. It is expected that rehabilitation of the Eneabba West Mine void will provide for an overall improved environmental outcome.

6. REFERENCES

AMC Mineral Sands, 1989, *Eneabba West Project Public Environmental Report*. May 1989

Desmond and Chant, 2001, *Geraldton Sandplain 3 (GS3- Lesueur Sandplain subregion)* Subregional description and biodiversity values, as part of *A Biodiversity Audit of Western Australia's 53 Biogeographical Subregions in 2002*. https://www.dpaw.wa.gov.au/images/documents/about/science/projects/waaudit/geraldton_sandplains03_p293-313.pdf Accessed: 8 March 2021

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