

## APPENDIX 7: ENVIRONMENTAL MANAGEMENT PLANS

APPENDIX 7A – FLORA AND VEGETATION EMP (MS1168  
CONDITION 7)



YALYALUP MINERAL  
SANDS PROJECT

YALYALUP MINERAL SANDS PROJECT,  
NORTHERN EXTENSION – FLORA AND  
VEGETATION ENVIRONMENTAL  
MANAGEMENT PLAN

DOCUMENT REFERENCE

DMS-YAL-NTH\_EMP-6.2 FLORA AND VEGETATION

28-MAR-24

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## DOCUMENT DETAILS

DOCUMENT ID	REPORT TITLE	DATE	PREPARED FOR
DMS-YAL-EMP-6.2 FLORA AND VEGETATION EMP	YALYALUP MINERAL SANDS PROJECT, NORTHERN EXTENSION – FLORA AND VEGETATION ENVIRONMENTAL MANAGEMENT PLAN	28-Mar-24	EPA and DCCEEW Assessment

## AMENDMENT REGISTER

Date	Rev	Description of Revision	Review	Approved
28-Mar-24	1	Flora and Vegetation Environmental Management Plan for EPA submission	CB	CB

## DECLARATION OF ACCURACY

I declare that:

1. To the best of my knowledge, all the information contained in, or accompanying this Flora and Vegetation Environmental Management Plan is complete, current and correct.
2. I am duly authorised to sign this declaration on behalf of the approval holder.
3. I am aware that:
  - a. Section 490 of the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act) makes it an offence for an approval holder to provide information in response to an approval condition where the person is reckless as to whether the information is false or misleading.
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  - c. The above offences are punishable on conviction by imprisonment, a fine or both.

Signed:



**Full Name:** Craig Bovell

**Organisation:** Doral Mineral Sands Pty Ltd

## GLOSSARY

<b>AER</b>	Annual Environmental Report (submitted annually to DWER, DAWE, DBCA, DEMIRS)
<b>BC Act</b>	<i>Biodiversity Conservation Act 2016</i>
<b>COE</b>	Clean on Entry
<b>DCCEEW</b>	Department of Climate Change, Energy, the Environment and Water
<b>DBCA</b>	Department of Biodiversity, Conservation and Attractions
<b>DFES</b>	Department of Fire and Emergency Services
<b>DEMIRS</b>	Department of Mines, Energy, Industry Regulation and Safety
<b>DWER</b>	Department of Water and Environmental Regulation
<b>E</b>	Endangered
<b>EMP</b>	Environmental Management Plan
<b>EPA</b>	Environmental Protection Authority
<b>EPBC Act</b>	<i>Environment Protection and Biodiversity Conservation Act 1999</i>
<b>GDE</b>	Groundwater Dependent Ecosystem
<b>GWOS</b>	Groundwater Operating Strategy
<b>Ha</b>	Hectare
<b>Km</b>	kilometre
<b>m</b>	metre
<b>myOSH</b>	Doral's Hazard and Incident Management System
<b>T</b>	Threatened
<b>TBA</b>	To be advised
<b>TEC</b>	Threatened Ecological Community

## SUMMARY

<b>PROPOSAL TITLE</b>	<b>YALYALUP MINERAL SANDS PROJECT – NORTHERN EXTENSION</b>
<b>Proponent</b>	Doral Mineral Sands Pty Ltd
<b>Ministerial Statement No.</b>	1168
<b>Environmental Factor</b>	Flora and Vegetation
<b>EPA Objective</b>	To protect flora and vegetation so that biological diversity and ecological integrity are maintained
<b>Purpose</b>	Support EPA’s assessment of the Proposal
<b>Outcomes</b>	<p>Minimise impacts as far as practicable to the following conservation significant flora and native vegetation:</p> <ul style="list-style-type: none"> <li>• SCP01b - <i>Southern Corymbia calophylla woodlands on heavy soils</i> – TEC with threat status of Vulnerable by DBCA.</li> <li>• SCP09 - TEC with threat status of Endangered by DBCA.</li> <li>• SCP10b - <i>Shrublands on southern Swan Coastal Plain Ironstones (Busselton area)</i>” (<i>Gibson, et al., 2000</i>); (<i>Meissner &amp; English, 2005</i>) – TEC with threat status of Critically Endangered by DBCA and Endangered under the <i>EPBC Act</i>.</li> <li>• <i>Verticordia plumosa var. vassensis</i> (Vasse Featherflower) – Threatened (BC Act), Endangered (<i>EPBC Act</i>).</li> <li>• <i>Loxocarya magna</i> - P3 (BC Act).</li> <li>• <i>Calothamnus quadrifidus subsp. Teretifolius</i> - P4 (BC Act).</li> <li>• <i>Acacia flagelliformis</i> – P4 (BC Act).</li> </ul>
<b>Key Provisions</b>	Management based provisions for Flora and Vegetation.
<b>EMP Responsibility</b>	Doral OHS&E Superintendent
<b>Review Date</b>	2 yearly review from commencement date of Mine (TBA)

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## 1. CONTEXT, SCOPE AND RATIONALE

### 1.1. PROPOSAL

This Flora and Vegetation Environmental Management Plan (EMP) has been prepared to address the objectives and commitments in relation to the management of conservation significant flora and vegetation for the Proposal (Figure 1) as outlined in the following document:

- *Yalyalup Mineral Sands Project Northern Extension, Referral Under S.38 of the EP Act (Doral, 2024).*

The EMP identifies management measures, monitoring actions, completion criteria and compliance reporting that are to be implemented to minimise impacts to the following conservation significant flora species and vegetation units identified within or near the predicted area of impact:

- SCP01b - *Southern Corymbia calophylla woodlands on heavy soils* – TEC with threat status of Vulnerable by DBCA.
- SCP09 – *Dense shrublands on clay flats* – Commonwealth-listed TEC.
- SCP10b - *Shrublands on southern Swan Coastal Plain Ironstones (Busselton area)*” (*Gibson, et al., 2000*); (Meissner & English, 2005) – TEC with threat status of Critically Endangered by DBCA and Endangered under the *EPBC Act*.
- *Verticordia plumosa var. vassensis* (Vasse Featherflower) – Threatened (*BC Act*), Endangered (*EPBC Act*).
- *Loxocarya magna* - P3 (*BC Act*)
- *Calothamnus quadrifidus subsp. teretifolius* - P4 (*BC Act*).
- *Acacia flagelliformis* – P4 (*BC Act*).

### 1.2. KEY ENVIRONMENTAL FACTORS

Table 1 summarises the Proposal activities and site-specific environmental values that will affect Flora and vegetation values.

**TABLE 1: KEY PROPOSAL ACTIVITIES AND SITE-SPECIFIC ENVIRONMENTAL VALUES AFFECTING FLORA AND VEGETATION**

KEY PROPOSAL ACTIVITY AFFECTING FLORA AND VEGETATION	SITE-SPECIFIC ENVIRONMENTAL VALUE
<ul style="list-style-type: none"> <li>• Loss and/or fragmentation of flora and vegetation;</li> <li>• Dewatering activities may indirectly affect groundwater-dependent vegetation by lowering local groundwater levels;</li> <li>• Altered fire regime due to operation of the mine potentially affecting flora and vegetation;</li> <li>• Vegetation clearing, earthworks, and personnel may introduce and/or spread <i>Phytophthora</i></li> </ul>	<ul style="list-style-type: none"> <li>• SCP01b - <i>Southern Corymbia calophylla woodlands on heavy soils</i> – TEC with threat status of Vulnerable under BC Act 2016.</li> <li>• SCP09 - <i>Dense shrublands on clay flats</i> – TEC with threat status of Endangered under BC Act and Critically endangered under EPBC Act.</li> <li>• SCP10b - <i>Shrublands on southern Swan Coastal Plain Ironstones (Busselton area)</i>” (<i>Gibson, et al., 2000</i>); (Meissner &amp; English, 2005) – TEC with threat status of Critically Endangered</li> </ul>

KEY PROPOSAL ACTIVITY AFFECTING FLORA AND VEGETATION	SITE-SPECIFIC ENVIRONMENTAL VALUE
<p>Dieback or weeds impacting flora and vegetation;</p> <ul style="list-style-type: none"> <li>• Potential dust generation indirectly affected conservation significant flora and vegetation due to mining activities and vehicle movement.</li> </ul>	<p>under BC Act and Endangered under the <i>EPBC Act</i>.</p> <ul style="list-style-type: none"> <li>• <i>Verticordia plumosa var. vassensis</i> (Vasse Featherflower) – Threatened (BC Act), Endangered (<i>EPBC Act</i>).</li> <li>• <i>Loxocarya magna</i> - P3 (BC Act)</li> <li>• <i>Grevillea brachystylis</i> subsp. <i>brachystylis</i> – P3 (BC Act)</li> <li>• <i>Calothamnus quadrifidus</i> subsp. <i>Teretifolius</i> - P4 (BC Act).</li> <li>• <i>Acacia flagelliformis</i> – P4 (BC Act).</li> </ul>

### 1.3. RATIONALE AND APPROACH

For each of the conservation significant flora species and vegetation communities listed above, this EMP details the following:

- Management measures to address potential impacts;
- Monitoring programs developed for each of the species, where direct and indirect impacts may occur;
- Response framework where management triggers are not met.

The development of the EMP has been informed by the results of the base surveys (Ecoedge 2020a, 2020b and 2017) and is based on the assumptions and uncertainties listed in Section 1.5.7.

### 1.4. SURVEY AND STUDY FINDINGS

Ecoedge Environmental Pty Ltd (Ecoedge) undertook the following Level 1 Flora and Vegetation Surveys of remnant vegetation within and immediately surrounding the Proposal area in accordance with *EPA Guidance Statement 51 – Terrestrial Flora and Vegetation Surveys for Environmental Impact Assessment in Western Australia* (EPA, 2004a) and *Technical Guidance - Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA, 2016d):

#### Northern Extension

- *Reconnaissance and Targeted Flora and Vegetation Survey, Proposed Yalyalup Mine Northern Extension. May 2023.* (Ecoedge, 2023).

#### Original Mine

- *Report of a Level 1 Flora and Vegetation. February 2016. Revised May 2019.* (Ecoedge, 2020a).
- *Report of a Supplementary Level 1 Flora and Vegetation. November 2017* (Ecoedge, 2017).

- Supplementary Reconnaissance and Targeted Flora and Vegetation Survey. November 2019. (Ecoedge, 2020b).

#### 1.4.1. VEGETATION UNITS

The following vegetation units were mapped by Ecoedge (2023) during the shown on Figure 2. Most areas of remnant vegetation are in Degraded or Completely Degraded condition (~98%) and consequently have low species diversity. As such, it was generally only possible to separate vegetation types based on overstorey composition and, to a lesser extent, soil type (Ecoedge, 2023). Vegetation units are described in Table 3, which includes comments on their conservation status.

**TABLE 3: VEGETATION UNITS WITHIN DEVELOPMENT ENVELOPE**

VEGETATION UNIT	DESCRIPTION	COMMENTS	QUALIFY AS TEC
A1	Woodland/open forest of <i>Corymbia calophylla</i> and <i>Eucalyptus marginata</i> , with scattered <i>Agonis flexuosa</i> , <i>B. grandis</i> , <i>Melaleuca preissiana</i> , <i>Nuytsia floribunda</i> , <i>Persoonia longifolia</i> or <i>Xylomelum occidentale</i> over <i>Xanthorrhoea preissii</i> over weeds on grey-brown or grey loamy sand or sand (on farmland usually only <i>C. calophylla</i> and <i>E. marginata</i> are present)	When in degraded or better condition it is considered to represent an occurrence of  SCP01b - Southern <i>Corymbia calophylla</i> woodlands on heavy soils'	Yes  (when in degraded or better condition)
B1	Tall shrubland of <i>Acacia saligna</i> , <i>Calothamnus quadrifidus</i> subsp. <i>teretifolius</i> , <i>Melaleuca incana</i> and <i>Kunzea micrantha</i> (with scattered emergent <i>Eucalyptus rudis</i> ) over scattered native herbs including <i>Drosera glanduligera</i> and <i>Sowerbaea laxiflora</i> , the sedge <i>Loxocarya magna</i> , and weeds on shallow red sandy clay on massive ironstone.	When in degraded or better condition it is considered to represent an occurrence of  SCP10b - Shrublands on southern Swan Coastal Plain Ironstones (Busselton area)'	Yes  (when in degraded or better condition)
B2	Open woodland of <i>Melaleuca preissiana</i> over weeds (rarely with <i>Hyalosperma cotula</i> ) on seasonally wet brown clay-loam over massive laterite.	When in degraded or better condition it is considered to represent an occurrence of  SCP10b - Shrublands on southern Swan Coastal Plain Ironstones (Busselton area)'	Yes  (when in degraded or better condition)

VEGETATION UNIT	DESCRIPTION	COMMENTS	QUALIFY AS TEC
C1	Open forest of <i>Eucalyptus rudis</i> and/or <i>Corymbia calophylla</i> over scattered <i>Agonis flexuosa</i> and <i>Melaleuca rhapsiophylla</i> occasionally over <i>Acacia saligna</i> , <i>A. extensa</i> , <i>Astartea scoparia</i> , <i>Xanthorrhoea preissii</i> scattered shrubs over weeds on grey-brown clayey loams in drainage lines and on damp flats.	When in degraded or better condition it is considered to represent an occurrence of  SCP01b - Southern <i>Corymbia calophylla</i> woodlands on heavy soils'	Yes  (when in degraded or better condition)
C2	Open woodland of <i>Melaleuca preissiana</i> over weeds on seasonally wet brown clay-loam.	All in completely degraded condition	No
C3	Tall Open Shrubland that may include <i>Acacia saligna</i> , <i>Jacksonia furcellata</i> , <i>Kingia australis</i> , <i>Melaleuca osullivanii</i> , <i>M. preissiana</i> , <i>M. viminea</i> and <i>Xanthorrhoea preissii</i> on seasonally wet grey-brown sandy loam	When in degraded or better condition it is considered to represent an occurrence of  SCP09 – Dense shrublands on clay flats	Yes  (when in degraded or better condition)
Cleared Pasture	Cleared pasture		No
Planted species	Amenity Plantings of <i>Eucalyptus</i> sp. Or <i>Melaleuca</i> sp.		No

#### 1.4.1. VEGETATION CONDITION

Vegetation condition for within the Proposal area is shown in Table 4 and Figure 3.

**TABLE 4: VEGETATION CONDITION**

VEGETATION CONDITION	AREA (HA)	%
Very Good	0.0	0
Good	0.19	0.87
Degraded/Good	0.18	0.83
Degraded	1.20	5.55
Completely Degraded	20.07	92.75
Sub-total Vegetation	21.64	100.00
<b>Cleared</b>	<b>823.27</b>	-

VEGETATION CONDITION	AREA (HA)	%
Grand Total	844.92	-

#### 1.4.2. CONSERVATION SIGNIFICANT VEGETATION

Six vegetation units comprising native vegetation (A1, B1, B2, C1, C2 and C3) were identified in the survey area with a total area of ~33ha. Most (93.7%) of which were in ‘Completely Degraded’ condition because of many years of grazing by livestock. The relatively small percentage (6.3%) that remains in Degraded or better condition (vegetation units A1, B1, B2, C1 and C3) are regarded as occurrences of three Threatened Ecological Communities (TEC) (Ecoedge, 2023). These are summarised in the following table and Figure 4.

**TABLE 5: SUMMARY OF TEC BY VEGETATION CONDITION**

FCT AND VEGETATION UNIT	CONDITION	AREA (ha)
SCP01b Units A1 and C1	Good	0.21
	Degraded	1.96
	<b>Subtotal</b>	<b>2.17</b>
SCP10b Units B1 and B2	Very Good	0.21
	Good	0.39
	Degraded	0.20
	<b>Subtotal</b>	<b>0.80</b>
SCP09 Unit C3	Good	0.07
	<b>Subtotal</b>	<b>0.07</b>
<b>Total TEC</b>		<b>3.04</b>

#### SCP01b - Southern *Corymbia calophylla* woodlands on heavy soils (Vegetation Unit A1 & C1)

- SCP01b - Southern *Corymbia calophylla* woodlands on heavy soils (Gibson, et al., 2000) is listed as a Threatened Ecological Community (TEC), with threat status of “Vulnerable” by DCCEEW. Unit C1 is associated with the winter streams that flow northwards through the western half of the survey area, which empty into the Sabina River, and also lower-lying areas with clay-loam soils. Mostly, Unit C1 consists only of the overstorey of *Eucalyptus rudis* or *Corymbia calophylla* and an understorey of pasture species, but occasionally, along the Sabina River, native understorey shrubs such as *Acacia saligna* and *Astartea scoparia* are found, and *Xanthorrhoea preissii* is sometimes found in road verge occurrences. As with Unit A1 it is also inferred to represent an occurrence of the State listed TEC SCP1b when the vegetation is in Degraded or better condition.
- This community is known from the following quadrats and Busselton Plain reference areas; ACTN01, AMBR-1, AMBR-4, AMBR-6, AMBR-9, AMBRAL-1, CAPEL-5, CARB-1, CARB-2, CARB-4, WONN-2,

YALLIN-1 and YOON-1 (Webb, et al., 2009). Average species richness for this community is 65.0 (Webb, et al., 2009).

SCP09 - Dense shrublands on clay flats (Vegetation Unit C2 & C3)

- SCP09 is listed as part of the Commonwealth listed ‘*Claypans of the Swan Coastal Plain*’ (critically endangered and listed as vulnerable under the BC Act. Unit C3, which is all in Good condition, is inferred to be an occurrence of the TEC SCP09 – ‘*Dense shrublands on clay flats*’. Unit C2, comprised of small wetlands with *Melaleuca raphiophylla* or *melaleuca preissiana* are Completely Degraded occurrences of what was Unit C3, which is only found on the verge of Princefield Rd.

SCP10b - Shrublands on southern Swan Coastal Plain Ironstones (Busselton area) (Vegetation Unit B1 & B2)

- SCP10b - *Shrublands on southern Swan Coastal Plain Ironstones (Busselton area)*” (Gibson, et al., 2000); (Meissner & English, 2005) is listed as a TEC with threat status of “Critically Endangered” by DCCEEW and Endangered under the EPBC Act. There are multiple occurrences of TEC SCP10b as vegetation units B1 and B2. One occurrence of Unit B1 is situated on Princefield Road. It is severely degraded and consists of only a few typical Busselton Ironstone community species. Another is the small area of vegetation on the corner of Princefield Road 890m east of McGibbon Track which is comprised almost entirely of *Astartea scoparia* with about 26 shrubs of the threatened *Verticordia plumosus* subsp. *vassensis*. The third occurrence is a narrow strip on the verge of Oates Road in Very Good condition however is outside the North Extension Project area.
- Unit B2 appears to be a severely degraded variant of SCP10b, recognisable by the presence of massive ironstone and lateritic boulders at or near the soil surface. Generally, the only native species still present are the trees *Eucalyptus rudis* and *Melaleuca raphiophylla*. In one small part of an occurrence of this unit, the presence of the native forbs *Brachyscome iberidifolia*, *Chamaescilla corymbosa* and *Cotula australis* lead to Degraded and Good condition ratings being applied.
- This community typically occurs on a soil type that is restricted to the eastern side of the Swan Coastal Plain along the base of the Whicher Scarp near Busselton (Meissner & English, 2005). This area contains heavy soils that are particularly useful for agricultural purposes and are around 97% cleared (CALM, 1990) (Keighery & Trudgen, 1992). Tille and Lantzke (1990) mapped the original extent of the southern ironstone soils in the Busselton area, totalling ~1,200ha, of which ~139ha remains uncleared. This equates to a 90% loss of the area of the plant community that was originally highly restricted in distribution.
- The ironstone soils near Busselton are associated with shallow seasonal inundation with fresh water (Meissner & English, 2005). This inundation may occur due to ponding of rainfall as a consequence of the impermeable nature of the surface outcrops of ironstone and the associated heavy soils (Meissner & English, 2005). Tille and Lantzke (1990) also note that groundwater levels in the community come very close to or may reach the surface in the wetter months.
- Typical and common native species in the community are the shrubs *Kunzea* aff. *micrantha*, *Pericalymma ellipticum*, *Hakea oldfieldii*, *Hemiandra pungens* and *Viminaria juncea*, and the herbs *Alphelia cyperoides*, *Centrolepis aristate* and the introduced species *Hypochaeris glabra* within the community (Gibson, et al., 1994). The community type contains a number of taxa that are listed as Threatened or Priority Flora and are either totally confined or largely confined to it, or may be shared with the ironstone of the Scott Coastal Plain (Gibson, et al., 2000).

### 1.4.3. GROUNDWATER DEPENDENT ECOSYSTEMS

Almost all of the survey area is classified as ‘Multiple Use’ palusplain wetland and all of the vegetation units identified by Ecoedge (2023) have some species that are either fully or partially phreatophytic, or ground-water dependant, e.g., *Eucalyptus rudis*, *Melaleuca incana*, *M. preissiana*, *M. raphiophylla*, *Acacia saligna* and *Kunzea micrantha* (Canham et al. 2009). It is likely, therefore, that, to a greater or lesser extent, all vegetation units within the survey area are GDEs.

Twelve GDE areas were identified within the Proposal area (Figure 5). Several of these GDEs (GDE\_3, GDE\_4, GDE\_6 and part of GDE\_7) will be cleared for the Proposal.

**TABLE 6: SUMMARY OF NORTHERN EXTENSION GDEs**

GDE #	VEGETATION TYPE <sup>1</sup>	VEGETATION CONDITION	THREATENED ECOLOGICAL COMMUNITY (TECS)	CRITICAL HABITAT SCP10B SOUTHERN IRONSTONE
GDE_1	A1	Degraded	Yes – TEC (FCT01b)	No
GDE_2	B1	Very Good	Yes – TEC (FCT10b)	Yes (SCP10b)
GDE_3	A1	Degraded	Yes – TEC (FCT01b)	No
GDE_4	A1	Degraded to Good	Yes – TEC (FCT01b)	No
GDE_5	B1	Good	Yes – TEC (FCT10b)	Yes (SCP10b)
GDE_6	C1	Degraded	Yes – TECs(FCT01b)	No
GDE_7	C1	Degraded	Yes – TEC (FCT01b)	No
GDE_8	C1 C3	Good Degraded/Good	Yes – TEC (FCT01b) Yes – TEC (FCT09)	No
GDE_10	C1	Degraded	Yes – TECs (FCT01b)	No
GDE_11	B2	Completely Degraded / Good	Yes – TECs (FCT10b)	Yes (SCP10b)
GDE_12	B2	Completely Degraded	No	Yes (SCP10b)

\*GDE\_3, GDE\_4 and GDE\_6 will be cleared and not subject to indirect impacts from drawdown. GDE\_7 will be partially cleared.

Details of the predicted maximum drawdowns at the GDE locations due to dewatering for the Proposal are shown in Table 7.



TABLE 7: PREDICTED MAXIMUM DRAWDOWNS AT SELECTED GDE LOCATIONS DUE TO NORTHERN EXTENSION DEWATERING

GDE	PREDICTED MAX DRAWDOWN (m)	MONTH OF PREDICTED MAX DRAWDOWN	PERIOD OF PREDICTED DRAWDOWN (>0.25m)	PREDICTED MAX DRAWDOWN BELOW SEASONAL LOWEST GW LEVEL (m)
YA_MB33_GDE	0.40	March 2027	December 2026 to July 2027	
YA_MB34_GDE	0.11	May 2027	NA	
YA_MB35_GDE	0.20	December 2035	NA	
YA_MB36_GDE	0.38	July 2027	June to July 2027	
YA_MB37_GDE / GDE_2	2.20	June 2027	September 2026 to November 2028	1.92
GDE_1	1.50	April 2036	February to November 2027	1.46
GDE_2 / YA_MB37_GDE	2.20	June 2027	September 2026 to November 2028	1.92
<b>*GDE_3</b>	<b>0.34</b>	<b>September 2028</b>	<b>August to September 2028</b>	<b>0.25</b>
<b>*GDE_4</b>	<b>1.62</b>	<b>August 2028</b>	<b>June 2027 to June 2030</b>	<b>1.28</b>
GDE_5	2.57	February 2029	May 2027 to October 2030	2.45
<b>*GDE_6</b>	<b>4.73</b>	<b>February 2029</b>	<b>October 2027 to November 2030</b>	<b>4.68</b>
GDE_7	2.71	August 2029	September 2028 to October 2032	2.43
GDE_8	1.60	June 2030	April 2029 to October 2032	1.20
GDE_10	0.24	July 2032	NA	0.01
GDE_11	0.07	October 2034	NA	0
GDE_12	0.10	October 2034	NA	0

The salient points in relation to groundwater drawdowns to GDEs are as follows:

- The magnitude of drawdowns along the GDE areas varies depending upon the proximity of the Northern Extension active mining pits. However, all drawdowns will be localised and temporary.

- The highest maximum drawdowns are predicted to be at GDE\_1, GDE\_2, GDE\_5, GDE\_7 and GDE\_8 (i.e. 1.5 to 2.72 m). However, these GDEs, except for GDE\_2 and GDE\_5 are in heavily degraded condition;
- GDE\_7 has the longest predicted drawdown period of more than 0.25m (i.e. ~4 years). As stated above, part of GDE\_7 is heavily degraded and in poor condition and will be partially cleared for mining;
- Drawdowns at GDE\_10, GDE\_11 and GDE12 are less than 0.25m and drawdowns at GDE\_3 are short-term (2 months), thus having a low risk of being impacted due to dewatering.
- There are minor drawdowns (less than 0.4m) that extend into the McGibbon Track area in the approved Yalyalup Mine due to mining at the Northern Extension. However, these drawdowns are localised and temporary and much smaller than the original drawdowns predicted due to the dewatering of the approved Yalyalup Mine. Implementation of the existing GDE Management Plan as required by MS1168—Condition 10 will continue to apply to these areas.

In conclusion, groundwater modelling predicts that the dewatering operations for the Proposal will temporarily cause groundwater levels to decline and fall outside the seasonally observed range. The magnitude of the change in groundwater levels (i.e. drawdowns of more than 0.25 m) exceeds thresholds that could potentially result in impacts to 0.66ha of vegetation in GDE\_1, GDE\_2, GDE\_5, GDE\_7 and GDE\_8 as follows:

- GDE\_1 – 0.09ha mapped as SCP01b - Southern *Corymbia calophylla* woodlands on heavy soils'
- GDE\_2 – 0.16ha mapped as SCP10b - Shrublands on southern Swan Coastal Plain Ironstones (Busselton area), includes 26 *Verticordia plumosa* var. *vassensis*.
- GDE\_5 – 0.21ha mapped as SCP10b - Shrublands on southern Swan Coastal Plain Ironstones (Busselton area)
- GDE\_7– 0.15ha mapped as SCP01b - Southern *Corymbia calophylla* woodlands on heavy soils'
- GDE\_8 – 0.05ha mapped as SCP09 and 0.02ha mapped as SCP01b - Southern *Corymbia calophylla* woodlands on heavy soils'

#### 1.4.4. FLORA OF CONSERVATION SIGNIFICANCE

One species of Threatened Flora (*Verticordia plumosa* var. *vassensis* (T, EN) and four Priority flora (*Acacia flagelliformis* (P4), *Calothamnus quadrifidus* subsp. *teretifolius* (P4), *Grevillea brachystylis* subsp. *brachystylis* (P3), and *Loxocarya magna* (P3) were found within the survey area. Locations of conservation significant flora species are provided in the following table and shown on Figure 6.

Local and regional perspective of these flora species are discussed below from publicly available information.

##### *Banksia squarrosa* subsp. *argillacea* (Whicher Range banksia) T(E)

The population of *B. squarrosa* subsp. *argillacea* occurs outside of the Proposal area within McGibbon Track (within the Original Project area) within a small occurrence of Vegetation Unit B1, which is recognised as the TEC SCP10b - Shrublands on southern Swan Coastal Plain Ironstones (Busselton area)" (Gibson, et al., 2000) (Meissner & English, 2005). A total of nine individuals were identified during the survey which is a decline in

population since 2003 by five individuals. Weeds, dieback, track maintenance and mining were principal threats to the population (Ecoedge, 2020a). Track maintenance remains a threat, as Ecoedge (2020a) noted the track was graded in February 2016 with some resulting damage to the ironstone shrubland vegetation.

*B. squarrosa* subsp. *Argillacea* occurs on the coastal plain close to the western base of the Whicher Range, east of Busselton, in WA (Department of the Environment, 2015). It is known from 11 subpopulations, has an abundance of 2,876 mature plants and an area of occupancy of 0.38km<sup>2</sup> (Department of the Environment, 2015). Ecoedge (2020a) reported that there are 63 records for this species in the DBCA database, most of which relate to occurrences in “Busselton Ironstone” vegetation on the Swan Coastal Plain south of Busselton, however there are several known populations in State Forest on the Blackwood Plateau.

*Verticordia plumosa* var. *vassensis* (Vasse Featherflower) T(E)

The population of *V. plumosa* var. *vassensis* is situated on the verge of Princefield Road, 2.1km west of Ludlow-Hithergreen Road. The population size was estimated at 200+ plants in 1996, and 100+ in 2006 (Williams, et al., 2001) (DoEE, 2016f, cited in Ecoedge, 2020a). The population size was difficult to estimate during the Ecoedge (2020a and 2020b) surveys as the plants are situated within an area of thick wet shrubland, however, approximately 20 individuals were recorded.

*V. plumosa* var. *vassensis* is known from 13 populations near Busselton (DEC, 2007). This species’ distribution is severely fragmented and very restricted, with known subpopulations occurring over a large geographic range in isolated pockets of remnant vegetation (DEC, 2007). Most populations are located within road, rail and recreational reserves or on private property, with only one part of a population occurring within a nature reserve. The total population of *V. plumosa* var. *vassensis* has been estimated at 3,200 mature plants, although this estimate relies on 10-year-old survey counts and may not be accurate (DEC, 2007). Ecoedge (2020a) reported that there are 97 records for this species in the DBCA database, most of which relate to locations on the Swan Coastal Plain south of Busselton, with an east-west range of 30km *V. plumosa* var. *vassensis* grows on a variety of sands and swampy clay soils in mostly winter-wet flats and depressions. It grows with sedges and rushes or in low heath and is often found on degraded, grassy-weed infested road verges (Brown, et al., 1998) (Williams, et al., 2001). This species occurs in the South West (Western Australia) Natural Resource Management region. The distribution of this species overlaps with *SCP10b - Shrublands on southern Swan Coastal Plain Ironstones (Busselton area)*” (Gibson, et al., 2000); (Meissner & English, 2005) which is listed as a TEC with threat status of “Critically Endangered” by DBCA and Endangered under the EPBC Act. This species is currently known from Ambergate Reserve and Ruabon and Ruabon-Tutunup Road Bushland areas in the Busselton and Capel Shires and from the Scott Coastal Plain (Webb, et al., 2009).

*Loxocarya magna* (P3)

*L. magna* (P3) is confined to, and dominant in, ironstone communities of the Scott River and Busselton Plains (Webb, et al., 2009) and is represented by 70 records in the DBCA databases. Within the survey area, this species was present in Busselton Ironstone on the McGibbon Track and near the junction of Coopers Road and Princefield Road. The most northern locality of this species is in the Busselton Ironstones-Tutunup Road (Webb, et al., 2009).

*Calothamnus quadrifidus* subsp. *Teretifolius* (P4)

*Calothamnus quadrifidus* subsp. *Teretifolius* (P4) is mostly confined to fragmented remnants of Busselton Ironstone plant community on the Swan Coastal Plain south of Busselton (Ecoedge, 2020a). This species is represented by 69 records in the DBCA databases. This species was found during the survey in the small area of Busselton Ironstone at the Junction of Coopers Road and Princefield Road, and on McGibbon Track. All

populations contain mainly old plants and many of those at the junction of Coopers Road and Princefield Road have recently been severely pruned back by cattle grazing (Ecoedge, 2020a).

Locations of conservation significant flora relevant to the Proposal are shown in Figure 6 and summarised in the following table:

**TABLE 7: LOCATIONS AND NUMBERS OF THREATENED AND PRIORITY FLORA**

TAXON	CONSERVATION STATUS	NUMBER	LOCATION
<i>Acacia flagelliformis</i>	P4	13	Princefield Road
<i>Calothamnus quadrifidus</i> subsp. <i>teretifolius</i>	P4	12	Cooper's Road Drain Reserve
		5	Oates Road
<i>Grevillea brachystylis</i> subsp. <i>brachystylis</i>	P3	2	Princefield Road
<i>Loxocarya magna</i>	P3	1	Cooper's Road Drain Reserve
		3	Princefield Road
<i>Verticordia plumosa</i> var. <i>vassensis</i>	T (EN)	23	Princefield Road

Ecoedge (2023) reported that the DBCA database (DBCA, 2022d in Ecoedge 2023) recorded several other populations of Threatened and Priority species within the survey area, including *Chamelaucium roycei* (T, EN), *Banksia nivea* subsp. *uliginosa* (T, EN), *Verticordia plumosa* var. *vassensis* (T, EN), *Grevillea longate* (T, EN), <sup>1</sup>*Drakaea elastica* (T, EN) and *Hakea oldfieldii* (P3). These species were searched for but were not able to be re-located. It appeared that these populations had disappeared because of ongoing degradation of the site. Information on the absence of *Chamelaucium roycei* and *Hakea oldfieldii*, previously recorded in the Cooper's Road Drain Reserve is given in Ecoedge (2020b), as per the Original Proposal assessment.

#### 1.4.5. WEEDS AND DIEBACK

##### WEEDS

Two weeds were found within the Proposal area: *Asparagus asparagoides* and *Zantedeschia aethiopica*. Both are listed as Pest Plants by the Department of Agriculture and Food (DAF, 2014) and are in the C3 (management) category for the whole of the State. *A. asparagoides* (Bridal Creeper) was only found in four locations, but *Z. aethiopica* (Arum Lily) is widespread within the Proposal area, particularly along creeklines (Figure 7).

##### DIEBACK

BARK Environmental (2023) conducted a *Phytophthora* Dieback (Dieback) occurrence assessment for the Proposal. The comprehensive assessment resulted in the majority of the area being mapped as Excluded due to historic disturbance, current grazing, pasture and degraded to completely degraded native condition

<sup>1</sup> In the instance of *Drakaea elastica* the known occurrence was not investigated because it occurred within the middle of a cleared paddock hundreds of metres from any native vegetation and because the location of the record was uncertain being dated at 1986 with a vague written description.

remaining. The native vegetation structure and communities are no longer intact across the assessment area resulting in an absence of, or too few, suitable indicator plants that are essential to enable Dieback assessment. BARK suggested that all Excluded areas are considered unprotectable from *Phytophthora* disease given their extensive past and current disturbance, land uses and, in large parts, seasonal waterlogging. One small area of Uninterpretable vegetation was included in this assessment where known Threatened flora exist, but the Proposal will not disturb this area.

During the assessment (BARK Environmental, 2019) for the Original Proposal, one small area (0.3ha) was assessed as dieback 'infested' within the Princefield Rd reserve (Figure 7). This area was previously avoided from disturbance; however, it is now proposed to be disturbed for mining.

#### 1.4.6. KEY ASSUMPTIONS AND UNCERTAINTIES

The key assumptions and uncertainties with this EMP include:

- The Flora and Vegetation surveys conducted for the Proposal have accurately recorded the presence of all conservation-significant flora species and vegetation communities within the Proposal area;
- All direct and indirect impacts to the conservation significant flora and vegetation that may result from the Proposal have been identified;
- Indirect impacts to GDEs from groundwater drawdown will be managed in accordance with the GDE Management Plan;
- Indirect Impacts to flora and vegetation from fire will be managed in accordance with the Fire Management Plan;
- The risk of potential spread and introduction of *Phytophthora* Dieback to retained vulnerable vegetation will be managed through educating the workforce, signage and hygiene protocols given within this EMP;
- An Offset Management Strategy shall be prepared to offset significant residual impacts to conservation significant flora and vegetation.

#### 1.4.7. MANAGEMENT APPROACH

The management approach has been informed by best practices and Doral's experience with similar mineral sands projects within the Southwest of Western Australia. The hierarchical approach taken focuses on avoiding ecologically sensitive areas primarily through mine pit design and refinement to utilise existing cleared areas. Where not able to be avoided, management aims to minimise the intensity and/or extent of impacts on the conservation of significant flora and vegetation during the construction and operation of the Proposal. Any significant unavoidable residual impacts to the conservation of significant flora and vegetation will be offset through an Offset Strategy prepared in accordance with State and Federal guidelines. The management measures proposed are based on field studies and surveys, and relevant information provided in Recovery Plans where they exist. The following Recovery Plans, Conservation Advice and Abatement Plans have informed the development of this EMP:

- *National Recovery Plan for the Clay pans of the Swan Coastal Plain Ecological Community* (DBCA, 2019);

- *Shrubland Association on Southern Swan Coastal Plain Ironstone (Busselton area) (Southern Ironstone Association) Recovery Plan. Interim recovery plan no. 215. Department of Environment and Conservation (Meissner & English, 2005).*
- *Approved Conservation Advice for *Verticordia plumosa* 3 var. *vassensis* (Vasse Featherflower). Canberra: Department of the Environment, Water, Heritage and the Arts (DEWHA, 2008a).*
- *Threat abatement plan for disease in natural ecosystems caused by *Phytophthora cinnamomi* (Commonwealth of Australia, 2018a).*
- *Background document: Threat abatement plan for disease in natural ecosystems caused by *Phytophthora cinnamomi* (Commonwealth of Australia, 2018b)*
- **Phytophthora Dieback Management Manual, October 2017, Department of Biodiversity, Conservation and Attractions, Perth (DBCA, 2017)**
- **Phytophthora cinnamomi and disease caused by it. Volume I – Management Guideline (CALM, 2003).**
- *Standard Dieback Signage Protocol For the use of Standard *Phytophthora Dieback Signage* on all land tenures in Western Australia. A project funded by the Australian and Western Australian Governments and implemented by South Coast NRM, 10 March 2009 (SCNRM, 2009).*

#### 1.4.8. RATIONALE FOR CHOICE OF PROVISIONS

Doral will implement management-based provisions under this Plan based on the following rationale:

- Nature of the impact – Doral’s primary mitigation strategy, throughout the project planning and environmental assessment phase has been to design the Proposal to avoid and minimise direct impacts to native vegetation, including conservation significant flora and vegetation, by utilising existing cleared areas of the Proposal. This has resulted in all but 9.83ha (~5%) of the 844.92ha disturbance area being located in cleared paddock areas. The following flora species and vegetation communities will be avoided:
  - SCP09 – *Dense shrublands on clay flats;*
  - SCP01b - *Southern *Corymbia calophylla* woodlands on heavy soils;*
  - SCP10b - *Shrublands on southern Swan Coastal Plain Ironstones (Busselton area);*
  - **Verticordia plumosa* var. *vassensis*;*
  - **Grevillea brachystylis* subsp. *Brachystylis*;*
  - **Loxocarya magna*;*
  - **Calothamnus quadrifidus* subsp. *Teretifolius*.*
  - **Acacia flagelliformis**
- Indirect Impacts – Doral has prepared and will implement the following EMPs in conjunction with this EMP to mitigate indirect impacts from the Proposal:
  - GDE Management Plan;
  - Dust Management Plan;
  - Fire Management Plan.

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- Duration of Project Impacts – Direct impacts to 1.25ha of SCP01b will occur as a result of implementing the Proposal, however no direct impacts to other conservation significant vegetation or flora will occur. Indirect impacts to conservation significant vegetation from groundwater drawdown will temporarily cause groundwater levels to decline and fall outside the seasonally observed range and will be managed through adaptive management actions including monitoring and water supplementation as detailed in the GDE Management Plan.

### 1.5. INDEX OF BIODIVERSITY SURVEYS FOR ASSESSMENTS

An IBSA data package for the Proposal was submitted to EPA as part of the Part IV assessment process.

## 2. ENVIRONMENTAL MANAGEMENT PLAN PROVISIONS

### 2.1. OBJECTIVES

The management measures have been developed to achieve the EPA’s objective “*To protect flora and vegetation so that biological diversity and ecological integrity are maintained*”. The key impacts and risks to conservation significant flora and vegetation associated with the implementation of the Proposal are:

- Loss and/or fragmentation of flora and vegetation;
- Dewatering activities may indirectly affect groundwater-dependent vegetation by lowering of local groundwater levels;
- Altered fire regime due to operation of the mine potentially affecting flora and vegetation;
- Introduction and/or spread of *Phytophthora* dieback and weeds, which may adversely impact the health and condition of flora and vegetation;
- Potential dust generation indirectly affected conservation significant flora and vegetation due to mining activities and vehicle movement.

### 2.2. MANAGEMENT ACTIONS

The management measures focus the greatest management effort on reducing loss and impact to conservation significant vegetation and flora and have been developed to ensure impacts are minimised as far as practicable during the implementation of the Proposal.

**TABLE 8: MANAGEMENT ACTIONS FOR KEY IMPACTS AND RISKS**

KEY IMPACTS/RISKS	MANAGEMENT ACTION
Loss and/or fragmentation of flora and vegetation	<p>Design the Proposal to avoid clearing conservation significant flora and vegetation as far as practicable.</p> <p>Demarcate vegetation to be cleared and receive authorisation by the OHS&amp;E Superintendent and Mine Manager prior to any clearing action. The procedure will include:</p> <ul style="list-style-type: none"> <li>• An authorised internal clearing permit must be issued prior to undertaking any vegetation clearing.</li> <li>• Clearing boundaries must be clearly marked and checked to confirm they are accurate prior to undertaking clearing.</li> <li>• A survey of cleared areas will be undertaken post-clearing to confirm boundaries have been adhered to.</li> </ul> <p>Adhere to the approved clearing limit in order to avoid conservation significant flora and vegetation.</p> <p>No clearing of any threatened or priority flora species.</p> <p>No clearing of TECs SC09 and SCP10bTECs.</p> <p>The Mine Manager will liaise with the OHS&amp;E Superintendent in regard to the location of all mine site infrastructure to ensure it minimises clearing and/or fragmentation of native vegetation.</p>



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KEY IMPACTS/RISKS	MANAGEMENT ACTION
Dewatering of groundwater-dependent vegetation	<p>Implement the Groundwater Operating Strategy (GWOS) to minimise impacts to hydrological processes by carefully managing the groundwater system at the site.</p> <p>Implement the GDE Management Plan which has been designed to monitor a combination of hydrological parameters and vegetation health assessments using qualitative criteria. As per this Plan, implement the management responses, including the provision of reticulation (sourced from Yarragadee aquifer) to groundwater-dependent vegetation during periods of reduced water availability.</p>
Altered fire regime	<p>Fire risk will be managed by implementing a Fire Management Plan, including a fire response procedure.</p>
Introduction and/or spread of <i>Phytophthora</i> dieback and weeds through human vectoring activities.	<p><u>Weeds:</u></p> <p>Declared Plants <i>Asparagus asparagoides</i> and <i>Zantedeschia aethiopica ragoides</i> will be managed in accordance with the <i>Biosecurity and Agricultural Management Act 2007</i>.</p> <p>Weed inspections will be conducted at annually and targeted spraying undertaken where identified.</p> <p>Vehicles, plant and equipment to be maintained and cleaned to reduce the spread of weeds throughout the Proposal area.</p> <p>Restrict movement of machines and other vehicles to within the Proposal area or on designated tracks.</p> <p>Comply with the requirements of the <i>Biosecurity and Agriculture Management Act 2007</i> for listed Declared Pests recorded within the Development Envelope.</p> <p><u>Dieback:</u></p> <p>Site Inductions to include information on Dieback relevant to the site;</p> <p>Dieback ‘Green Card’ training to be provided to relevant employees and contractors to increase awareness and promote positive behavior changes (Commonwealth of Australia, 2018b).</p> <p>Control access:</p> <ul style="list-style-type: none"> <li>• Standard Dieback awareness signage (SCNRM, 2009) and a ‘Clean-on-Entry’ (COE) facility consisting of padlocked gate, signage, clean down station and a vehicle Clean-on-Entry checklist around dieback infested area on Princefield Road (until removed).</li> <li>• Identified Phytophthora dieback infested area of Princefield Road reserve demarcated with a 25m exclusion zone buffer (until removed).</li> <li>• Before entry, all persons must apply a COE protocol to ensure no clods of dirt, mud, sand or organic material remain on footwear, vehicles, equipment and tools. Similarly, COE will apply upon exiting the area.</li> <li>• Wherever possible scheduled any activities within or adjoining this area in dry-soil conditions to reduce clean-down effort and efficacy.</li> <li>• If entry in wet-soil conditions is unavoidable, ensure a very thorough inspection and Clean-on-Entry by arriving to site clean and making available</li> </ul>

KEY IMPACTS/RISKS	MANAGEMENT ACTION
	<p>a high-pressure water wash-down facility on a hard-surface that does not drain into the retained vegetation. Only Yarragadee sourced water will be used for high-pressure low volume Clean-Down. Sanitisers such as Phyto-clean may be used in small quantities on tools and footwear with the effluent contained for disposal per manufacturers label and not near any native vegetation or surface water/groundwater area.</p> <p>All vegetation, topsoil and root matter from the infested area within Princefield Road will be removed and deep buried in a deep mine pit.</p> <p>No new plant and soil materials will be permitted to be brought to the site unless approved for a specific purpose and following risk assessment and determination as not posing a weed or dieback risk.</p> <p>Should seedlings be imported to site for revegetation, they must be sourced from a NIASA accredited nursery.</p>
<p>Generation of dust</p>	<p>Minimise the number and size of stockpiles. This involves the direct use of overburden as backfill and direct replacement of topsoil, wherever possible.</p> <p>Encourage vegetative cover on stockpiles, especially the topsoil stockpiles. Many of these vegetative species are generated from stored seed to minimise dust generation.</p> <p>The management and monitoring of ore loading and unloading operations such that dust generation is minimised and controlled.</p> <p>Spraying HMC stockpiles with water if they dry to the extent that dust generation occurs. HMC stockpiles generally have a moisture content of between 5-9% and are not vulnerable to the adverse effects of strong winds causing dust.</p> <p>The direct backfilling of pit voids with wet sand tailings to minimise the disturbance footprint and reduce ground areas potentially vulnerable to dust generation.</p> <p>The co-disposal of sand tails and clay fines into pit backfill areas. This homogenous mixing increases the average particle size and reduces the potential for dust generation.</p> <p>When and where necessary, spraying with water or other dust suppression measures (e.g. emulsion spray, erection of wind barriers) is employed.</p> <p>Employ routine maintenance and housekeeping practices to ensure that waste materials in and around the mine voids and infrastructure do not accumulate and lead to the generation on unacceptable airborne particulates.</p> <p>Two-way radio communication within the site to enable rapid communication of observed dust impacts requiring control (e.g. water cart or cessation of activities).</p> <p>Daily monitoring of meteorological conditions will be undertaken during the construction phase to identify and prepare or modify operations for conditions which increase the risk of windblown dust.</p>

### 2.3. MANAGEMENT TARGETS

The following management targets will be used to measure and report achievement against the environmental objective.

**TABLE 9: MANAGEMENT TARGETS**

KEY IMPACT/RISK	MANAGEMENT TARGET
Loss and/or fragmentation of flora and vegetation	Compliance with pre-defined clearing limits and boundaries described within approval documents.
Dewatering of groundwater-dependent vegetation	Minimise impacts to conservation significant flora and vegetation from dewatering activities.
Altered fire regime	No impacts to conservation significant flora and vegetation from altered fire regime.
No new introduction and/or spread of <i>Phytophthora</i> dieback and Declared weeds as a result of proposed actions	No new spread, introduction or increase of Declared weeds and dieback within conservation significant vegetation within Proposal area.
Generation of dust	Impacts to conservation significant flora and vegetation from dust generation are minimised.

## 2.4. MONITORING

The monitoring aims to inform, through the management targets, if the environmental objectives are being achieved and whether management actions need to be reviewed or revised.

Monitoring will be undertaken for each management target, as detailed in Table 10. The method, location, parameters and frequency of monitoring are specified. Early warning indicators provide advance warning that a management target may not be met. The monitoring results will be compared against these indicators. They will enable actions to be put in place to control the contributing process to meet the management objective.

**TABLE 10: MONITORING AND REPORTING**

KEY IMPACT/RISK	MONITORING	REPORTING
Loss and/or fragmentation of flora and vegetation	Prior to all clearing, ensure the proposed clearing area is equal to or less than the approved clearing area.	Report the amount of conservation significant fauna habitat cleared in the annual Compliance Assessment Report (CAR) and Annual Environmental Report (AER).
Dewatering of groundwater-dependent vegetation	Monitoring will comprise a combination of hydrological quantitative, and qualitative vegetation measurements and health assessments using qualitative criteria.  <b>Groundwater levels</b>  Monthly water table levels in six bores (at GDE_1, GDE_2, GDE_5, GDE_7, and GDE_8).  <b>Vegetation Health</b>	Reported annually in AER and CAR.

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KEY IMPACT/RISK	MONITORING	REPORTING
	<p>Vegetation health monitoring 6-8 times per year (generally Oct-May) of vegetation within GDE_1, GDE_2, GDE_5, GDE_7, and GDE_8 using visual inspection and assessed against a scale based on Lay and Meissner (1985).</p> <p><b>Threatened Flora</b></p> <p>Vegetation health monitoring 6-8 times per year for approx. 5-6 Individuals of <i>Verticordia plumosa var. vassensis</i> will be undertaken using the Lay and Meissner (1985) health scores, as this approach is non-invasive</p> <p>Monitoring of groundwater levels, vegetation health and Threatened flora will continue for two years post-dewatering of the relevant GDE location.</p>	
Altered fire regime	Daily monitoring for the presence of fires in the area through review of the DFES website during fire season in accordance with the Fire EMP until two years post-mining.	Reported in response to exceedance of an agreed trigger or threshold within the Fire EMP.
Introduction and/or spread of <i>Phytophthora</i> dieback and weeds	<p><u>Weeds:</u></p> <p>Monitored annually for Declared weed species' presence and abundance (%).</p> <p><u>Dieback:</u></p> <p>Any significant vegetation health decline or observed susceptible plant deaths shall be assessed considering Phytophthoras and sampled by a qualified Dieback Interpreter if identified as the possible pathogen.</p> <p>Monitoring will continue for two years post-mining/dewatering.</p>	Reported annually in AER
Generation of dust	Monitoring in accordance with the Dust EMP and Licence conditions.	Reported annually in AER.

### 3. ADAPTIVE MANAGEMENT AND REVIEW OF THE EMP

This EMP applies adaptive management principles through monitoring, corrective actions and implementing changes. The EMP is intended to be dynamic and will be updated to reflect changes in management practices over the life of the Proposal. This will also allow flexibility to respond to new environmental impacts and adopt new technologies/management measures.

#### 3.1. MONITORING TRIGGERS, THRESHOLDS AND CONTINGENCY ACTIONS

Triggers, thresholds and contingency for each conservation significant species included in this EMP are detailed in Table 11 based on the environmental monitoring and targets previously described.

If monitoring identifies a non-conformance/non-compliance with EMP targets, the incident will be assessed and corrective actions implemented. The corrective actions are aimed at preventing recurrences of the incident taking place.

Environmental incidents are defined as events that cause or potentially cause harm to the environment. Any environmental incident is to be reported immediately to the OHS&E Superintendent, who will assess the type and severity of the incident and, where required, notify the relevant Regulatory Authority.

Note that Table 11 will be revised following the establishment of baseline data and prior to dewatering to determine trigger values.

**TABLE 11: MONITORING TRIGGERS, THRESHOLDS AND CONTINGENCY ACTIONS**

MONITORING PARAMETER	TRIGGER	THRESHOLD	CONTINGENCY ACTION
Loss and/or fragmentation of flora and vegetation	Clearing outside of the approved clearing limit.	Any clearing action outside of the approved clearing area.	<ul style="list-style-type: none"> <li>• Investigate cause and raise incident report.</li> <li>• Implement corrective actions within 24 hours of reporting exceedance, which will include:                             <ul style="list-style-type: none"> <li>- Review the practicality and relevance of management measures.</li> <li>- Improve training and education of employees/contractors.</li> <li>- Improve and implement increased protective measures as necessary.</li> <li>- Improve methods for defining vegetation to be cleared.</li> </ul> </li> <li>• Monitor outcomes.</li> <li>• Report any non-compliance to EPA/DCCEEW within 7 days.</li> <li>• Provide a report to EPA within 21 days of exceedance detailing the actions implemented, effectiveness of actions, findings of investigations, measures to prevent future exceedance of thresholds, and measures to prevent, control or abate any environmental harm that may have occurred.</li> </ul>
Dewatering of groundwater-dependent vegetation	Reduction of groundwater levels in GDE bores below threshold levels of less than the average lowest level, or greater than 25cm (see GDE Management Plan)	Decline in vegetation health score of 2 categories (see GDE Management Plan)	<ul style="list-style-type: none"> <li>• Exceedance of absolute or rate of change triggers in groundwater levels will require water supplementation to affected areas/vegetation within 24hrs or as soon as reasonably possible.</li> <li>• Increased monitoring of groundwater level as per GDE Management Plan.</li> <li>• Report any non-compliance to EPA/DCCEEW within 7 days.</li> <li>• Provide a report to EPA within 21 days of exceedance detailing the actions implemented, effectiveness of actions, findings of investigations, measures to prevent future exceedance of thresholds, and measures to prevent, control or abate any environmental harm that may have occurred.</li> </ul>

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MONITORING PARAMETER	TRIGGER	THRESHOLD	CONTINGENCY ACTION
Altered fire regime	Presence of uncontrolled fire within disturbance area.	Uncontrolled fire impacting conservation significant flora and/or vegetation.	<ul style="list-style-type: none"> <li>• Report immediately to Mine Manager and OHS&amp;E Superintendent.</li> <li>• Implement contingency measures as per the Bushfire EMP.</li> <li>• Monitor outcomes.</li> <li>• Report any non-compliance to EPA/DCCEW within 7 days.</li> <li>• Provide a report to EPA within 21 days of exceedance detailing the actions implemented, effectiveness of actions, findings of investigations, measures to prevent future exceedance of thresholds, and measures to prevent, control or abate any environmental harm that may have occurred.</li> </ul>
Introduction and/or spread of <i>Phytophthora</i> dieback and weeds	<p>Increase in Declared weeds within conservation significant vegetation above baseline.</p> <p>Presence of <i>Phytophthora</i> dieback in conservation significant vegetation.</p>	<p>Weeds:</p> <p>Identification of any new Declared weed species above baseline.</p> <p>An increase in Declared weed coverage in conservation significant vegetation above baseline.</p> <p>Dieback:</p> <p>Presence of <i>Phytophthora</i> dieback impacts detected within conservation significant vegetation (absent at present).</p>	<ul style="list-style-type: none"> <li>• Investigate cause.</li> <li>• Conduct additional weed spraying.</li> <li>• Qualified Dieback Interpreter to recheck specific area for <i>Phytophthora</i> Dieback per DBCA (2015) methodology.</li> <li>• Further restrict access to at risk vegetation areas.</li> <li>• Review dieback controls and management in consultation with Dieback specialist/DBCA.</li> <li>• Consider application of Phosphite with relevant environmental approvals by a Dept of Health W.A. Licensed Technician qualified to implement Dieback Treatment.</li> <li>• Monitor outcomes.</li> </ul>

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MONITORING PARAMETER	TRIGGER	THRESHOLD	CONTINGENCY ACTION
Generation of dust	Visual dust observed being deposited on conservation significant vegetation.	Decline in vegetation health score of 2 categories, within conservation significant vegetation, attributable to dust impacts (monitored/assessed as per the GDE Management Plan).	<ul style="list-style-type: none"> <li>• Investigate cause.</li> <li>• Use of additional dust suppression management, including additional water carts, stockpile covers, etc.</li> <li>• Improve training and education of employees and contractors.</li> <li>• Monitor outcomes.</li> </ul>



### 3.2. EMP REVISIONS

This EMP will be reviewed on an annual basis during the life of the Proposal. The EMP review will take into account the adaptive management and continual improvement process, new or revised information relevant to conservation significant flora and vegetation and/or changes to the Proposal.

### 3.3. REPORTING

It is anticipated that this Flora and Vegetation EMP will be an EPA Ministerial Condition for the Proposal, as per the current Project (MS1168). As such compliance with this EMP will be reported annually in Doral's Annual Compliance Assessment Report (CAR), which will also be a Ministerial Condition of the Project. Should any other reporting/approval requirements be imposed by other regulatory Agencies (such as DCCEEW and/or DEMIRS) Doral will report compliance against this EMP as required. In addition, Doral will report compliance against the Management Targets (Table 9) in this EMP in Doral's Annual Environment Report. This will include how any non-compliance has been managed and reported. The Annual Environmental Report will be provided to EPA/DWER, DCCEEW and DEMIRS.

In the event of a threshold criteria (as outlined in relevant monitoring parameters in Table 10) being exceeded, Doral will prepare a report and provide it to EPA within 21 days of exceedance. The report will include:

- Detail the threshold contingency actions implemented,
- Effectiveness of threshold contingency actions,
- Findings of investigations,
- Measures to prevent future exceedance of threshold criteria;
- Measures to prevent, control or abate any environmental harm that may have occurred;
- Justifications of threshold criteria remaining or being adjusted based on better understanding to demonstrate that objectives will continue to be met.

### 3.4. AUDITING

Doral is committed to its environmental performance and has developed, implemented and continually improved its Environmental Management System (EMS) since it was established in 2001. The EMS was initially developed in response to advice from the EPA and Department of Environmental Protection during the planning and approval process for the Dardanup Mineral Sands Project. Doral's EMS is in line with the requirements of the Australian/New Zealand Standard AS/NZS ISO 14001:1996 (ISO 14001).

Doral's EMS consists of the following key elements:

- Environmental Policy and Objectives;
- Environmental Planning;
- Implementation and Operation;
- Checking and Corrective Action;
- Management Review.

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The Checking and Corrective Action component of Doral's EMS relates to the monitoring and evaluation of Doral's environmental performance and consists of the following elements:

- Monitoring and measurement;
- Non-conformance and corrective and preventive action;
- Records;
- EMS audits;
- Annual review and update of the Environmental Risk Assessment and management procedures for the project.

Doral will achieve continuous improvement for the Project by conducting an annual review and update of the Environmental Risk Assessment, risk treatments and management plans/procedures. Any additional risks and/or alternative forms of treatment/management that result in an improved outcome for site activities will be adopted and the EMS will be updated accordingly.

Should this EMP be required to be revised, it will be accompanied by documentation clearly identifying where changes have been made, to ensure the review is efficient and addresses all proposed changes.

## 4. STAKEHOLDER CONSULTATION

Doral has consulted with a number of stakeholders in relation to the management of conservation significant flora and vegetation for the Proposal. A summary of the consultation is provided in Table 12.

**TABLE 12: STAKEHOLDER CONSULTATION**

STAKEHOLDER	DATE	ISSUES/TOPICS RAISED	PROPONENT RESPONSE/OUTCOME
DWER (OEPA)	19/10/17 26/10/17 03/01/18 07/04/18 29/08/18 05/03/19 21/03/19 29/05/19 30/05/19 04/10/19	Pre-referral meeting; R Sutherland, R Hughes. All relevant environmental factors discussed. Referral Document received. Referral Document accepted and nominated as PER. Draft ESD submitted to EPA. Yalyalup Site Visit – R Hughes and M Spence. ESD Submitted to EPA. Presentation of Yalyalup Project to EPA Board. Submission of Revised version of ESD to EPA. ESD acceptable by EPA services and published on website. Submission to EPA of S43A amendment to Proposal for the amendment of Development Envelope and disturbance areas to include creation of internal access road.	No significant issues noted at this stage
DMIRS	14/02/18	Pre-referral meeting to discuss project; R Hepworth, L Copeland. All relevant environmental factors discussed.	No issues noted
DBCA	24/05/19	A Webb - Post referral meeting to discuss project, flora studies to date and proposed GDE survey scope.  Reference to historic mineral sands dewatering incident at Gwinninup mine and likelihood of direct offsets due to dewatering risks of McGibbon Track. Likely offsets requirement due to dewatering risk of McGibbon Track. Several sites	Acknowledged

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STAKEHOLDER	DATE	ISSUES/TOPICS RAISED	PROPONENT RESPONSE/OUTCOME
	03/12/19	mentioned as possible Ironstone community for investigation by Doral.  Email to DBCA; A Webb of completed Yalyalup GDE report for discussion.	Proposed meeting to discuss in new year (2020).
DWER- Licencing	01/12/17	Pre-referral meeting - D Hartnup to inform of proposal and relevant environmental factors.	No issues noted.
DWER - DoW	22/11/17	Pre referral meeting to discuss project; A De Chanee, R Gibbs. Potential for cumulative effects of dewatering with Avocado farm and Wonnerup North Mine.	Acknowledged.
DWER - Contaminated Sites Branch	13/11/17	Pre-referral meeting S Appleyard, S Jenkinson to discuss potential acid sulphate soils risk and intended management actions.	Acknowledged.
City of Busselton	09/08/19  09/12/19  2023  8/9/23  8/2/24  20/2/24	Email correspondence regarding construction for intersection and road reserve crossings.  Meeting with City of Busselton Executive and CEO to discuss Yalyalup Proposal.  Quarterly update and newsletter mailed.  Meeting with CoB CEO and Director of planning to discuss Northern Extension proposal.  Meeting with Director of Community planning and Infrastructure/Environment provide northern extension proposal overview, timeline, boundary, approvals process.  Meeting with Shire council members and Executive to brief on Northern Extension proposal.	Committed to ongoing engagement.
SWALSC	06/08/19	Consultation; P Nettleton and M Benson to review Heritage agreement contract and request nomination of consultants for Ethnographic studies.	Agreed.
DAWE (previously DoEE)	01/11/17  09/11/17	Submission of referral of Project.  Request for information; D Rothenfluh regarding Naturally Occurring Radioactive Materials.	Information supplied, not a nuclear action.

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STAKEHOLDER	DATE	ISSUES/TOPICS RAISED	PROPONENT RESPONSE/OUTCOME
	12/02/18	DAWE (then DoEE) decision a declared action. Assessment by EPA under bilateral agreement.	Acknowledged.
Water Corporation	12/12/19	Construction of crossing over Abba River identified as a drain under the <i>Water Services Act 2012</i> and will require approval by the Water Corporation.	The proposed construction of the bridge to cross the Abba River (drain) will not impede upon the waterway. Doral will provide suitable engineering drawings of the “bridge” design to the Water Corporation to satisfy Water Corporation Policy requirements.
<b>LANDOWNERS (require approvals and/or agreements)</b>			
Tonkin S & N Lot 2	2020/22  3/11/22 16/5/23 1/6/23 8/8/23 18/10/23 30/11/23 15/12/23	Regular consultation Yalyalup project overview, timeline, new developments and follow up on any concerns.  Regular engagement on Northern extension proposal overview, timeline/boundary distance and environmental approvals/assessments.  Noise, dust, visual amenity concerns  Quarterly update and newsletter mailed.  Community update letter Northern Extension proposal overview.  Discussion on referral timeline.	Committed to ongoing engagement.  Potential impacts assessed in modelling. Mitigation measures presented in management plans (refer social surroundings)      Commenced mining lease discussions.
Tonkins G & A Lot 1	2020/22  2022/23 15/2/23  24/11/23	Consultation on Yalyalup project overview, timeline, boundary and exploration drilling.  Quarterly update and newsletter mailed.  Meeting on exploration drilling and northern extension proposal.  Concerns water quality/quantity of bore.  Meeting Northern extension proposal overview, timeline/boundary distance. Environmental approvals/assessments  No concerns raised.	Investigation of historical bore monitoring results. No impact  Potential impacts assessed in ERD and will be incorporated into water management plans (refer Hydrological Processes)      Committed to ongoing engagement.
Cowcills Lot 102	2021-2023  18/10/23	Regular consultation on Yalyalup project overview, timeline, new developments and follow up concerns.  Quarterly update letter/newsletter mailed.	Potential visual amenity impacts assessed. Tree planting provision.  Potential impacts assessed in ERD and incorporated into noise and dust

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STAKEHOLDER	DATE	ISSUES/TOPICS RAISED	PROPONENT RESPONSE/OUTCOME
	5/12/23	Community update overview of northern extension proposal. Meeting on Northern Extension progress, boundary, timeline and approvals process. Concerns with visual amenity and dust.	management plans (refer Social Surroundings). <b>Committed to ongoing engagement.</b>
Stone Lot 1833	7/2/23 2022/23 18/10/23	Consultation on exploration drilling and northern extension overview. Quarterly update and newsletter mailed. Community update letter. Northern Extension proposal overview and invitation to meet. Ongoing discussion on suitable meeting date.	<b>No concerns raised</b>
Bills/Waters Lot 3196	18/10/22 13/11/23 29/2/24	Community update letter. Northern Extension proposal overview and invitation to meet. Meeting on project proposal, timeline, boundary, environmental approvals process. Concerns on impact on Surface dam water.	Potential impacts on water supply assessed in the groundwater modelling studies and ERD (refer Hydrological Processes).
Don Lot 1832	18/10/22 1/12/23	Community update letter. Northern Extension proposal overview and invitation to meet. Project proposal, timeline, boundary, environmental approvals process. Dust concerns.	Potential impacts assessed in ERD and incorporated into dust management plans (refer Social Surroundings).
Whiteland Lot 4	2019-2023 18/10/22	Regular consultation on Yalyalup project overview, timeline, new developments. Quarterly update letters/newsletter mailed. Regular consultation on exploration drilling and project extension. Community update letter Northern Extension proposal and offer to meet.	Continue to send quarterly Community update and newsletter. <b>No concerns raised.</b>

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STAKEHOLDER	DATE	ISSUES/TOPICS RAISED	PROPONENT RESPONSE/OUTCOME
Waters Haddon Lot 1761	2019-2023  18/10/22  15/12/24	Regular consultation providing Yalyalup project overview, timeline, new developments, receive feedback, follow up on any concerns.  Quarterly update letters/newsletter mailed.  Community update letter Northern Extension proposal and offer to meet.  Northern extension proposal, timeline, boundary, environmental approvals process.	No concerns raised.  <b>Committed to ongoing engagement.</b>
Hodgson Lot 1830	18/10/22  6/3/24	Community update letter. Northern Extension proposal overview and invitation to meet.  Meeting Northern Extension overview, timeline, boundary and approvals process.  Dust concerns.	Continue to send Quarterly update and newsletter.  Potential impacts assessed in modelling. Mitigation measures presented in management plans (refer social surroundings)  <b>Committed to engagement.</b>
Chapman Lot 1762 Lot 1764 Rentals	2021-2023 7/2/23 18/10/22 9/1/24 7/2/24  5/3/24	Quarterly updates, newsletter mailed.  Bore Water quality issue.  Quarterly update letter Northern extension overview and offer to meet.  Phone/email to provide Northern extension update.  Meeting to discuss the Northern Extension, timeline, boundary and approvals process.  <b>No issues raised</b>	Investigations of historical data identified no impact.  Potential impacts on water supply assessed in the groundwater modelling studies and ERD (refer Hydrological Processes).  Continue quarterly updates to landowner and tenants.  <b>Committed to ongoing engagement.</b>
Denny Lot 1 Lot 107 Rentals	2022/23  18/10/22  10/1/24	Regular consultation on Yalyalup project update, timeline, new developments, follow up on any concerns.  Quarterly update letter mailed. Northern Extension overview and offer to meet.  Consultation northern extension progress, timeline, boundary, approvals process.  Dust concerns.	Dust monitoring and assessment conducted.  Dust mitigation strategies adopted.  Potential impacts assessed in ERD and incorporated into dust management plans (refer Social Surroundings).

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STAKEHOLDER	DATE	ISSUES/TOPICS RAISED	PROPONENT RESPONSE/OUTCOME
Avery Lot 1270	2020-2023  18/10/22  14/2/24	Regular consultation providing Yalyalup project overview, timeline, new developments, follow up on concerns.  Quarterly update letter/newsletter mailed.  Northern Extension overview and offer to meet.  Discussion on extension proposal, timeline, boundary, approvals process.  Dust, water, vermin control concerns.	Potential impacts assessed in ERD and incorporated into noise and dust management plans (refer Social Surroundings).  <b>Committed to ongoing engagement</b>
Hodge 309	2019-2022  2022/23 18/10/23  8/1/24  14/02/24	Consultation providing Yalyalup project overview, timeline, new developments, receive feedback, follow up on any concerns.  Quarterly update letter/newsletter mailed.  Community update letter. Northern Extension proposal overview and invitation to meet.  Phone discussion on northern extension.  Concerns on summer weather conditions impacting on dust/noise.  Follow up to offer to meet to discuss Northern extension proposal, timeline, boundary, and approvals process.  No response	Potential impacts assessed in ERD and incorporated into dust and noise management plans (refer Social Surroundings).  <b>Committed to ongoing engagement</b>
Plank Lot 15	2022/23  2022/23 18/10/23  18/12/23 4/1/24 9/1/24	Quarterly update letter/newsletter mailed. Consultation on Yalyalup minesite and noise concerns.  Quarterly community update/newsletter mailed.  Community update letter, Northern Extension proposal overview.  Phone and email invitation to meet to discuss extension proposal in early 2024.  Exploration drilling on adjacent property and invitation to meet.  No response.	Potential impacts assessed in ERD and incorporated into noise management plans (refer Social Surroundings).



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STAKEHOLDER	DATE	ISSUES/TOPICS RAISED	PROPONENT RESPONSE/OUTCOME
Teal Lot 1831	18/10/23  29/1/24	Community update letter mailed on Northern extension proposal and invitation to meet.  Phone call to discuss extension. Concern on distance and potential impacts.	Continue to send community update sand newsletter.  Potential impacts assessed in ERD and incorporated into management plans (refer Social Surroundings).
Harbeck Lot 61  Lot 1757 Rental	2022-2023  18/10/23  26/02/24	Quarterly update letter mailed.  Regular consultation exploration drilling.  Community update letter. Northern Extension proposal overview and invitation to meet.  Meeting on Northern extension overview, timeline, boundary, and approvals process.	<b>No concerns raised</b>
Radford Lot 82	2021-2023 18/10/23  9/1/24	Quarterly update letter/newsletter mailed.  Community update letter. Northern Extension proposal overview and invitation to meet.  Phone discussion on extension timeline and boundary.  Public road condition a concern.	
Buchan Lot 81	2020-2023  18/10/23  9/1/24 5/2/24	Consultation via email.  Quarterly update letter emailed to postal address.  Community update letter. Northern Extension proposal overview and invitation to meet.  Phone and Email offer to meet to discuss extension plans.	<b>No Concerns raised.</b>
Van Kleef Lot 651	2019-2022  2022/23 18/10/23  30/11/23 30/1/24 21/02/24	Phone discussion providing project overview. Interested in site plan/ layout and proximity to residence including road haulage options.  Quarterly update letter mailed to postal address. Northern extension overview and offer to meet.  Phone call and email on extension proposal. Offer to meet to update on intent, boundary, timeline, approvals process.	No concerns raised.  Follow up meeting in 2024.  Committed to ongoing engagement

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STAKEHOLDER	DATE	ISSUES/TOPICS RAISED	PROPONENT RESPONSE/OUTCOME
Ealing Lot 1759	2022-2023  8/6/23 18/10/23  9/1/24 11/1/24	Quarterly update letter/newsletter emailed.  Exploration drilling program  Community update letter mailed on northern extension overview and offer to meet.  Emailed purpose of meeting, northern extension referral, timeline, boundary, approvals process.  Not interested in meeting.  Amenity concerns.	Committed to quarterly community update letters and newsletters.  Potential impacts assessed in ERD and will be incorporated into noise and dust management plans (refer Social Surroundings).
P & A Macleay Lot 843 Lot 748	2017 – 2022	Regular consultation providing project overview, timeline and any new developments, receive feedback, follow up on any concerns.  Quarterly update letter mailed to postal address.	<b>Property sold 2022.</b>
K & J Hester Lot 103 Lot 104	2017 – 2019	Ongoing engagement regarding project proposal, timeline and environmental approvals process.	<b>Property sold 2020</b>
Mark Conrau Lot 4551 Land only	2019-2023  18/10/24  21/2/23	Consultation and quarterly updates on Project overview, approvals process, timeline, new developments.  Quarterly update letter mailed on northern extension and offer to meet.  Meeting to discuss Northern Extension proposal overview, timeline and approvals process.	No concerns raised.
A & K Bashford Lot 1426 Lot 552	2017 – 2022  31/10/22 2022 /2023  18/10/22	Regular consultation providing project overview, timeline, new developments, receive feedback.  Quarterly update letter mailed to postal address.  Quarterly update letter mailed to postal address.  Community update Northern Extension proposal overview and invitation to meet.	Committed to ongoing engagement.  <b>Mining agreement commenced October 2022.</b>

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STAKEHOLDER	DATE	ISSUES/TOPICS RAISED	PROPONENT RESPONSE/OUTCOME
Boardman Lot 3773	2017 – 2023  18/10/24	Ongoing engagement providing project progress, timeline, new developments, follow up on any concerns.  Quarterly update Northern Extension overview and invitation to meet.	Mining agreement discussion commenced.  No concerns raised.  Committed to ongoing engagement.
Slade Lot 668 Lot 421	2017- 2024  2022/23 18/10/23	Ongoing consultation on project progress, timelines, new developments, follow up concerns raised. Dust management, noise, water concerns.  Quarterly update letter mailed.  Community update letter. Northern Extension proposal overview and invitation to meet.	Undertake dust sampling pre-mining and radiation survey. Incorporate in Dust Management Plan.  Potential noise impacts incorporated in MP. Soil and water testing incorporated in mine closure plan.
Gronya Swift Lot 200	2017-2019  5/06/19	Project overview and next phase of work were discussed.  Preliminary mine plan and approvals process discussed.	Potential impacts on water supply assessed in the groundwater modelling studies and ERD (refer Hydrological Processes).  <b>Property sold in 2020</b>
Jane Gilham Lot 200	2020-2023  18/10/24  24/11/23	New owners contacted and informed of Yalyalup project. Regular engagement on project timeline and progress.  Quarterly update letter mailed Northern Extension overview and invitation to meet.  Northern Extension proposal discussion northern extension proposal, timeline and approvals process.  Concern on impacts water supply from natural creek line.	Committed to ongoing engagement.  No concerns raised.  Committed to ongoing engagement.  Potential impacts assessed in ERD and will be incorporated into water management plans (refer Hydrological Processes)
Mitchell & Anstey Lot 292	2019-2024  18/10/222	Regular engagement on project progress, timeline and follow up concerns.  Quarterly update letter mailed Northern Extension overview and invitation to meet.  Meeting Northern Extension proposal overview, timeline and approvals process.	Potential impacts assessed in ERD and will be incorporated into noise, dust and water management plans (refer Hydrological Processes and Social Surroundings).  Committed to ongoing engagement.
McClean Lot 10	2017 – 2022	Regular consultation on Yalyalup project, timeline, new developments and any concerns or feedback.	No concerns raised.

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STAKEHOLDER	DATE	ISSUES/TOPICS RAISED	PROPONENT RESPONSE/OUTCOME
	18/10/22  20/02/24	Quarterly update letter mailed. Northern Extension proposal overview and invitation to meet.  Discussion on Northern Extension proposal. Arrange time to meet.	
<b>NEAR NEIGHBOURS (residents)</b>			
Jamie Oates Lot 652	2017 – 2024  18/10/22  16/11/23	Regular consultation on Yalyalup project, timeline, new developments and follow up any concerns.  Concern raised at increased traffic on Ludlow Hithergreen Road and visual amenity.  Quarterly update letter mailed. Northern Extension proposal overview and invitation to meet.  Meeting to discuss Northern Extension proposal overview, timeline, approvals process.	Advised of the proposed road access and haulage route as per mine plan.  Potential visual amenity impacts assessed. Tree planting along haulage route. Follow up meeting to advise on mitigation measures (refer social surroundings)  No concerns raised
Treanor Lot 60 Rental	2020-2021  2022/23  8/10/23	Overview of project, timeline and approvals process. Concerned at increase in traffic in general and air quality.  Quarterly update letter mailed to postal address.  Northern Extension proposal overview and invitation to meet.	Advised of the proposed road access and haulage route as per mine plan.  Potential impacts assessed in modelling. Mitigation measures presented in management plans (refer social surroundings)  Committed to ongoing engagement with landowner and tenant.
Clifford Lot 52	2020-2023  18/10/23	Meeting to discuss project plan, timeline and update.  Concern noise, truck movements  Quarterly update letters emailed and mailed to postal address.  Northern Extension proposal overview and invitation to meet.	Potential impacts assessed in ERD and incorporated into noise and dust management plans (refer Social Surroundings).
Taylor Lot 102	2020/ 2021	Project overview, timeline and rehabilitation. Quarterly update letter mailed to postal address.	<b>Property sold 2021</b>
Phillips Lot 229	2017	Consulted on Yalyalup project overview, mine plan and approvals process.	Committed to ongoing engagement via tenant.  Continue community update letters.

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STAKEHOLDER	DATE	ISSUES/TOPICS RAISED	PROPONENT RESPONSE/OUTCOME
Rental	2020/21  18/10/23  6/2/24	Quarterly update letter mailed to landowner and tenant.  Northern Extension proposal overview and invitation to meet.  Phone call to discuss Northern Extension.  No concerns raised.	
Scott, Spragg, Hartnett  Lot 1461	2019-2022	Overview Yalyalup project, timeline, and approvals process.  Quarterly update letter mailed.	<b>Property sold 2022</b>
Peter Oates  Lot 1370, Lot 3382, 1976	2019-2023  18/10/23  15/1/24  5/3/24	Regular consultation of Yalyalup project, mine plan and timeframe. Concerns at McGibbon track access and closure.  Quarterly update letter mailed.  Community update letter northern extension proposal and offer to meet.  Meeting discuss Northern Extension proposal, boundary, timeline and approvals process.	Potential impacts assessed in the Groundwater Dependent Ecosystems Study and the ERD (refer Flora and Vegetation and Hydrological Processes factors).  No concerns raised
Copeland  Lot 221	2019-2023  18/10/23  15/12/23	Consultation Yalyalup project, mine plan, approvals process and timeframe. Quarterly update letter/newsletter emailed and mailed.  Community update letter northern extension proposal and offer to meet.  Meeting discuss Northern Extension proposal, boundary, timeline and approvals process.	No concerns raised.
A Franklin  Lot 52	2019-2022  18/10/23  8/2/24	Phone discussion on Yalyalup project overview, current work, and timeframe.  Quarterly update letter mailed to postal address.  Community update letter northern extension proposal and offer to meet.  Meeting extension overview, timeline, boundary, approvals process.	No concerns raised.
Wright  Lot 1758	2022/23	Regular consultation on Yalyalup project, new developments, timeline.	No Concerns raised

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STAKEHOLDER	DATE	ISSUES/TOPICS RAISED	PROPONENT RESPONSE/OUTCOME
	17/2/223  18/10/23	Drilling, northern extension preliminary discussions.  Community update letter and phone conversation on extension proposal, timeline, boundary, approvals process.	
Jones	20/02/24	Preliminary discussion on northern extension. Meeting end of March  Water supply concerns.	Potential impacts assessed in ERD and will be incorporated into water management plans (refer Hydrological Processes).

## 5. REFERENCES

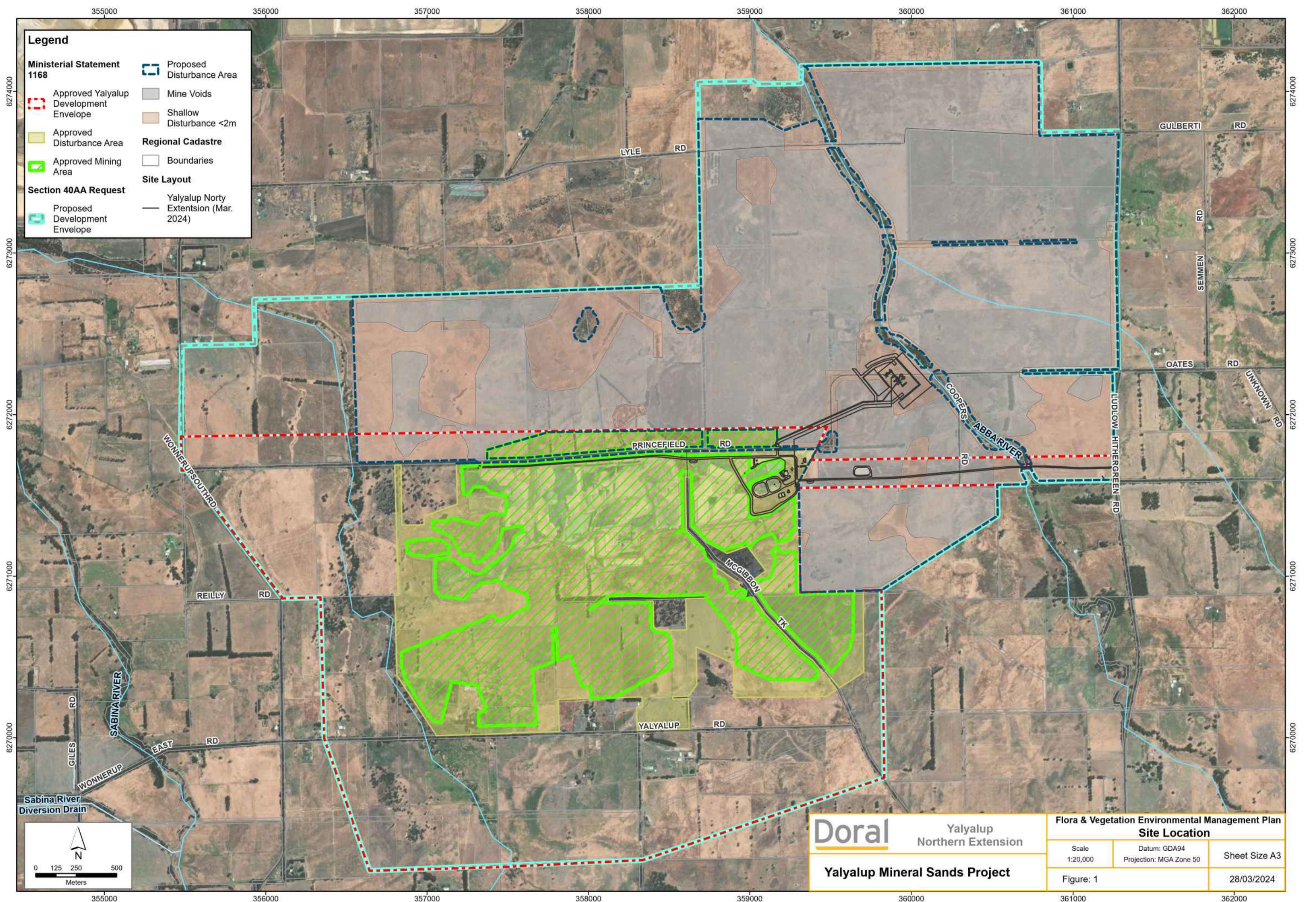
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YALYALUP MINERAL SANDS PROJECT, NORTHERN EXTENSION – FLORA AND VEGETATION ENVIRONMENTAL MANAGEMENT PLAN

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## FIGURE 1: SITE LOCATION



**Legend**

**Ministerial Statement 1168**

- Approved Yalyalup Development Envelope
- Approved Disturbance Area
- Approved Mining Area

**Section 40AA Request**

- Proposed Development Envelope

**Proposed Disturbance Area**

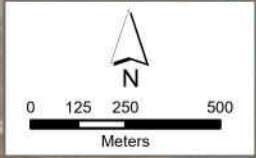
- Mine Voids
- Shallow Disturbance <2m

**Regional Cadastre**

- Boundaries

**Site Layout**

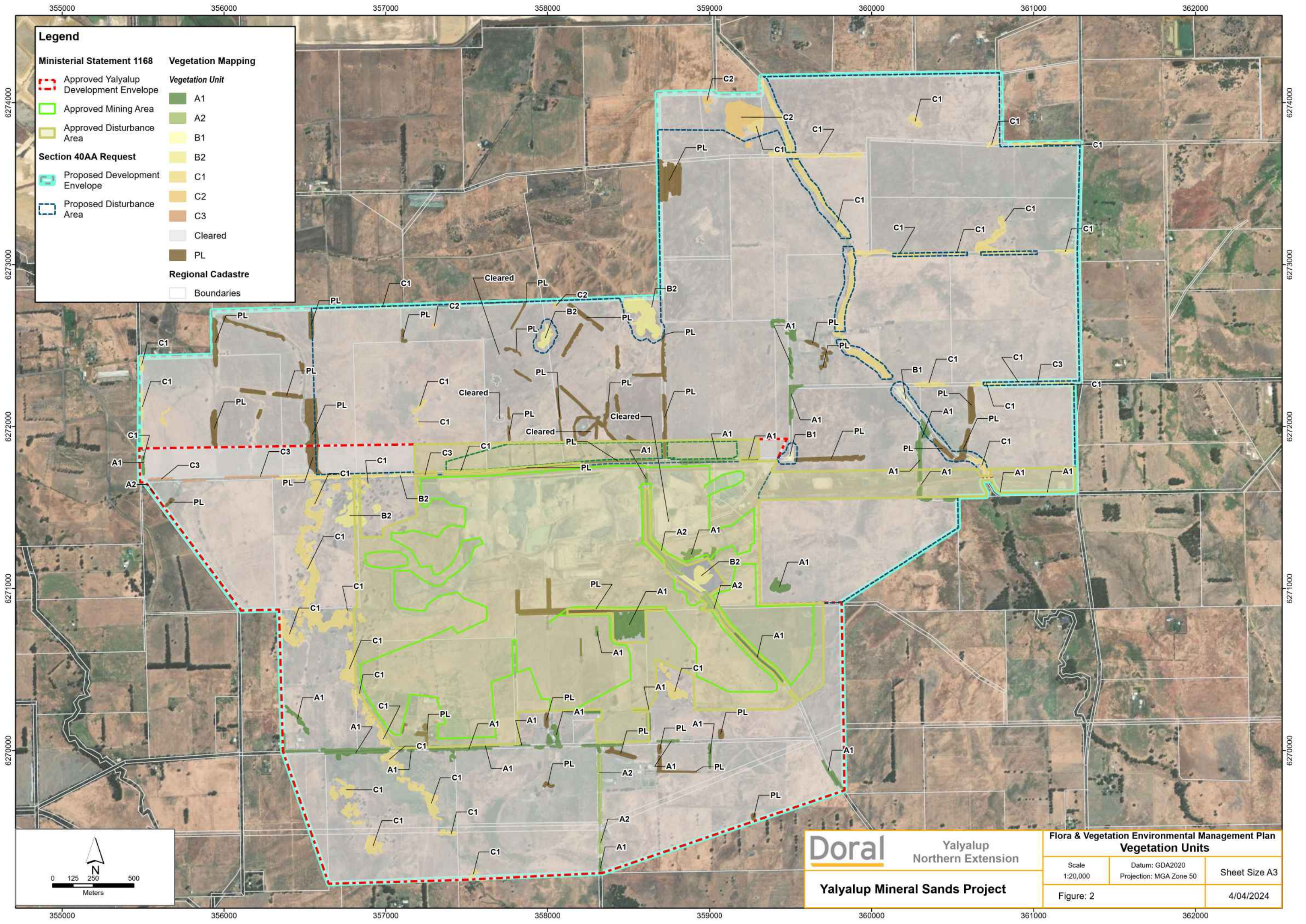
- Yalyalup Norty Extension (Mar. 2024)



**Doral** Yalyalup Northern Extension  
**Yalyalup Mineral Sands Project**

Flora & Vegetation Environmental Management Plan Site Location		
Scale 1:20,000	Datum: GDA94 Projection: MGA Zone 50	Sheet Size A3
Figure: 1	28/03/2024	

## FIGURE 2: VEGETATION UNITS



**Legend**

**Ministerial Statement 1168**

- Approved Yalyalup Development Envelope
- Approved Mining Area
- Approved Disturbance Area

**Section 40AA Request**

- Proposed Development Envelope
- Proposed Disturbance Area

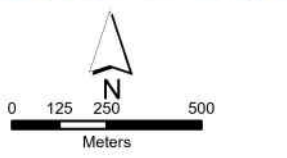
**Vegetation Mapping**

**Vegetation Unit**

- A1
- A2
- B1
- B2
- C1
- C2
- C3
- Cleared
- PL

**Regional Cadastre**

- Boundaries

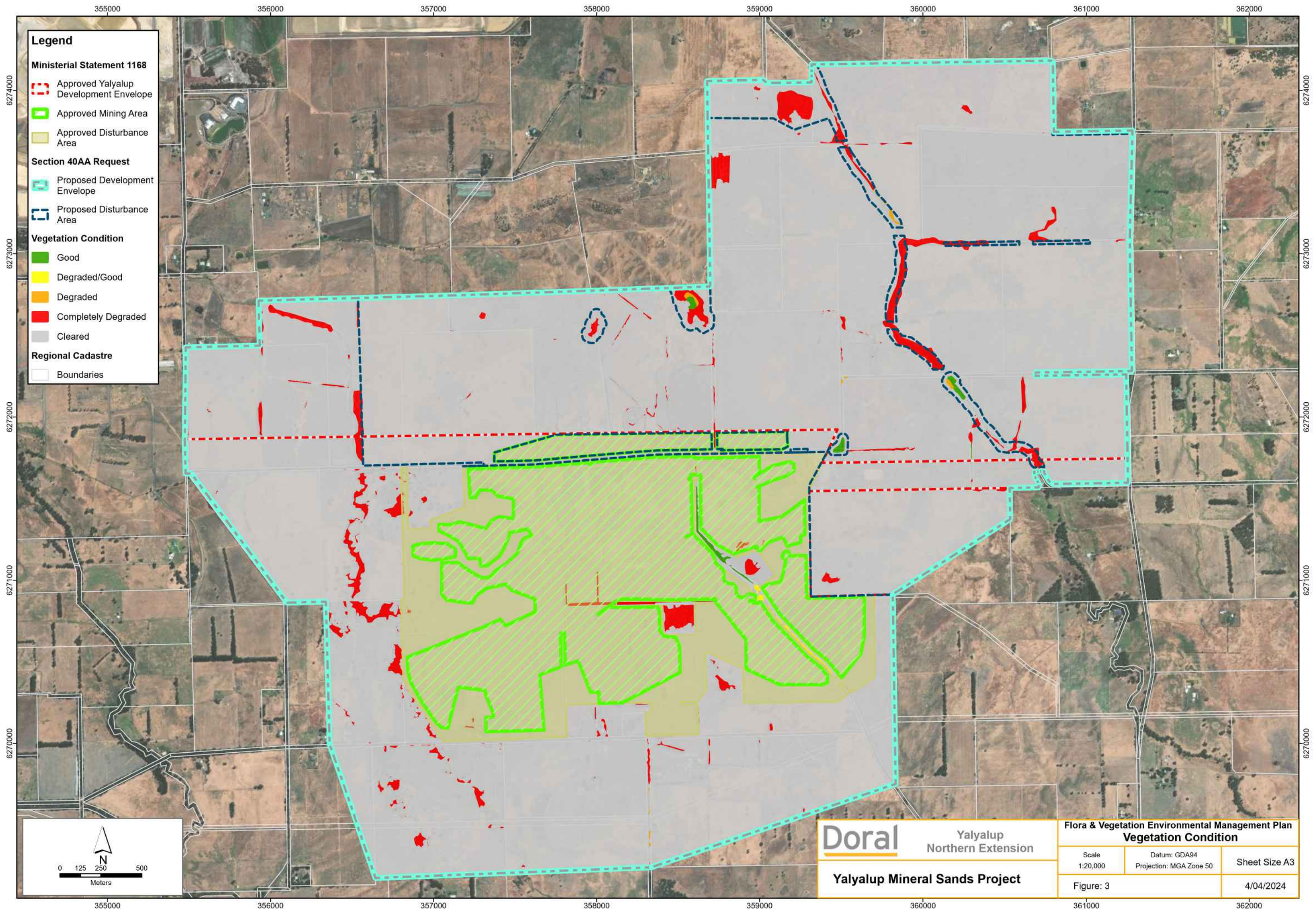


**Doral** Yalyalup Northern Extension

**Yalyalup Mineral Sands Project**

Flora & Vegetation Environmental Management Plan Vegetation Units		
Scale 1:20,000	Datum: GDA2020 Projection: MGA Zone 50	Sheet Size A3
Figure: 2	4/04/2024	

## FIGURE 3: VEGETATION CONDITION



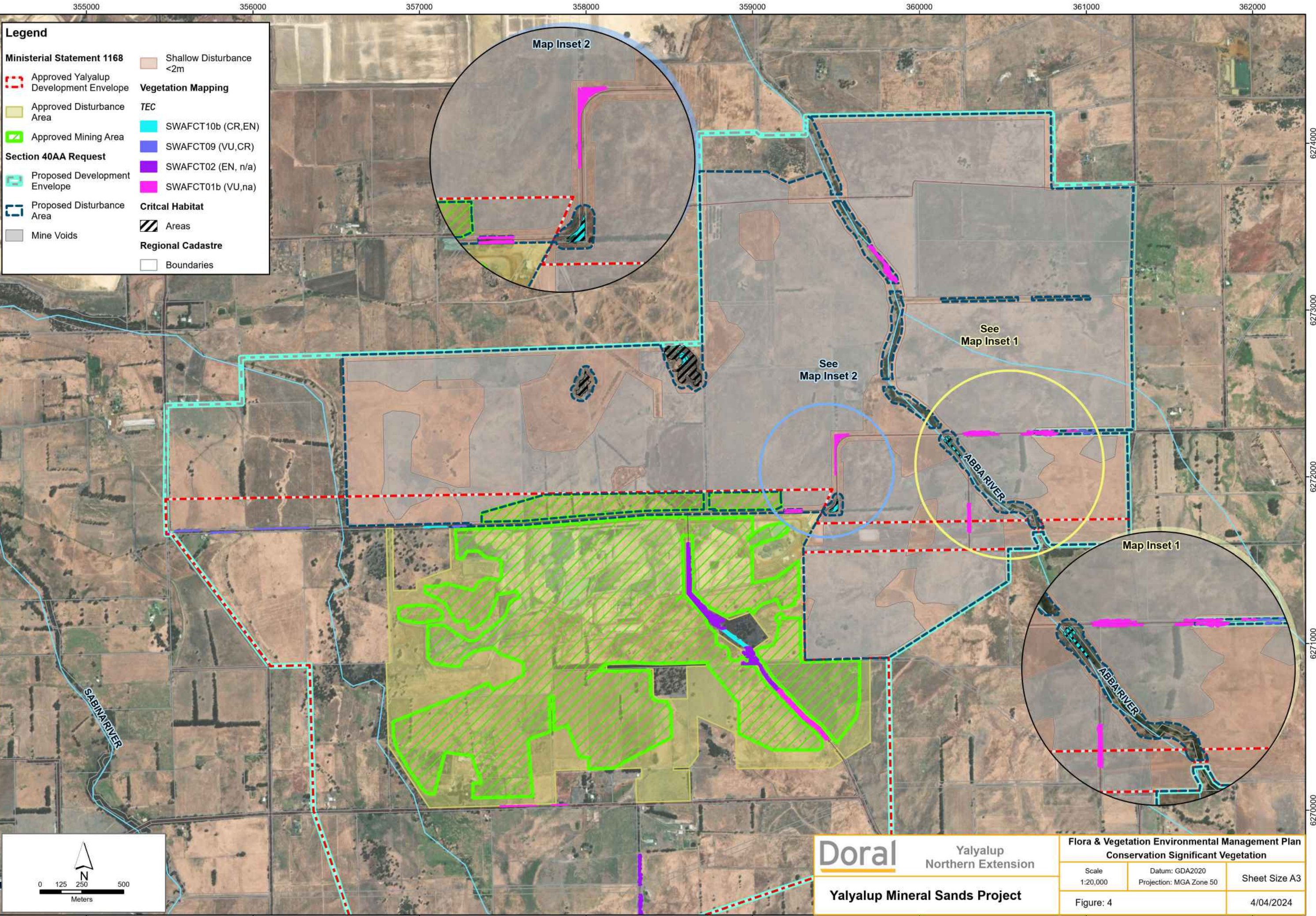
- Legend**
- Ministerial Statement 1168**
- Approved Yalyalup Development Envelope
  - Approved Mining Area
  - Approved Disturbance Area
- Section 40AA Request**
- Proposed Development Envelope
  - Proposed Disturbance Area
- Vegetation Condition**
- Good
  - Degraded/Good
  - Degraded
  - Completely Degraded
  - Cleared
- Regional Cadastre**
- Boundaries

**Doral** Yalyalup Northern Extension

**Yalyalup Mineral Sands Project**

Flora & Vegetation Environmental Management Plan Vegetation Condition		
Scale 1:20,000	Datum: GDA94 Projection: MGA Zone 50	Sheet Size A3
Figure: 3		4/04/2024

## FIGURE 4: CONSERVATION SIGNIFICANT VEGETATION



**Legend**

**Ministerial Statement 1168**

- Approved Yalyalup Development Envelope
- Approved Disturbance Area
- Approved Mining Area

**Section 40AA Request**

- Proposed Development Envelope
- Proposed Disturbance Area
- Mine Voids

**Vegetation Mapping**

**TEC**

- SWAFCT10b (CR,EN)
- SWAFCT09 (VU,CR)
- SWAFCT02 (EN, n/a)
- SWAFCT01b (VU,na)

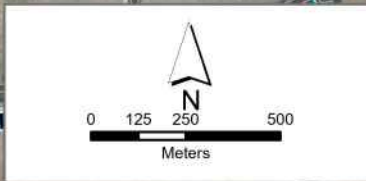
**Critical Habitat**

- Areas

**Regional Cadastre**

- Boundaries

Shallow Disturbance <2m



**Doral** Yalyalup Northern Extension

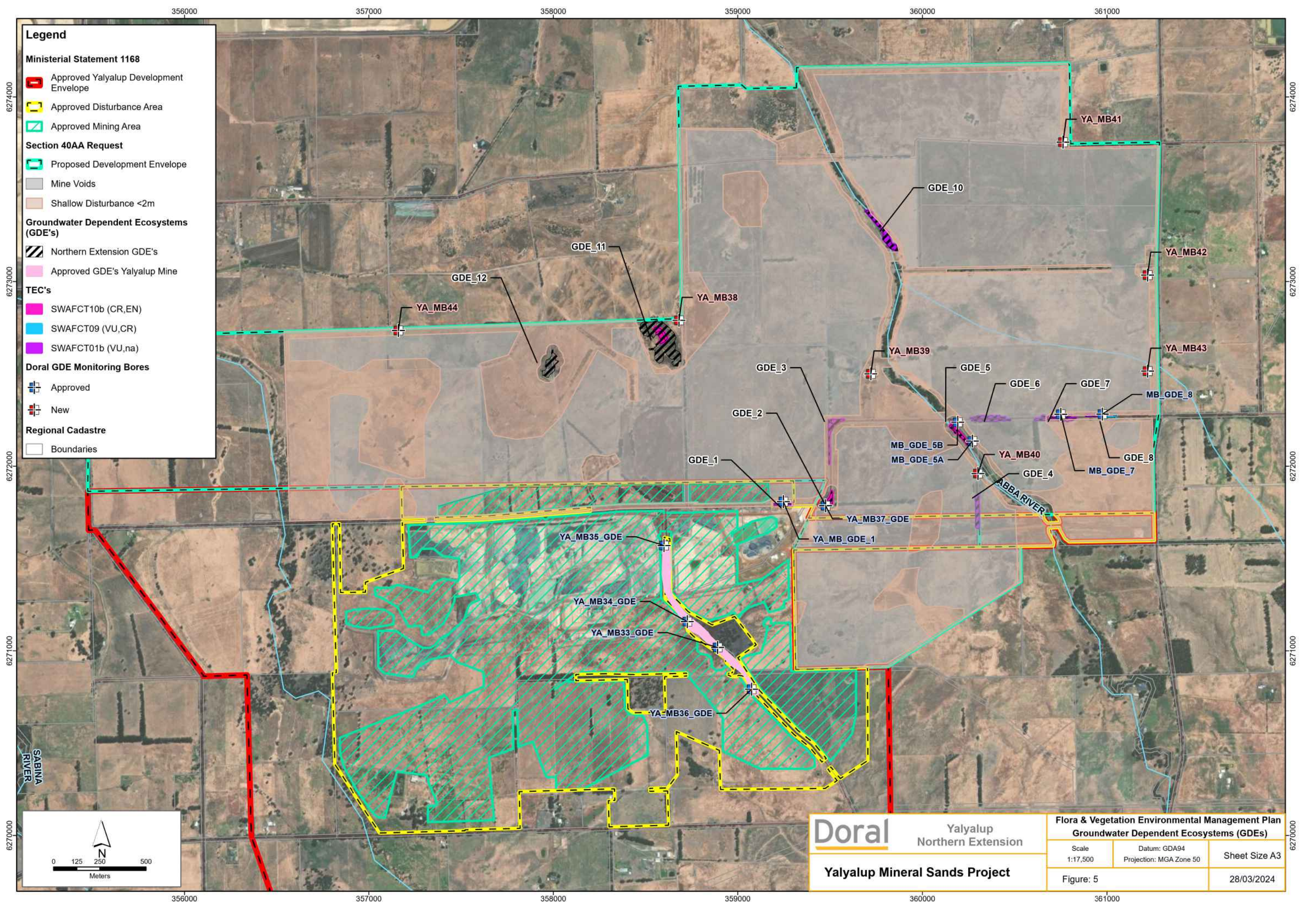
**Yalyalup Mineral Sands Project**

**Flora & Vegetation Environmental Management Plan**  
Conservation Significant Vegetation

Scale 1:20,000	Datum: GDA2020 Projection: MGA Zone 50	Sheet Size A3
Figure: 4		4/04/2024



## FIGURE 5: GDES



**Legend**

**Ministerial Statement 1168**

- Approved Yalyalup Development Envelope
- Approved Disturbance Area
- Approved Mining Area

**Section 40AA Request**

- Proposed Development Envelope
- Mine Voids
- Shallow Disturbance <2m

**Groundwater Dependent Ecosystems (GDE's)**

- Northern Extension GDE's
- Approved GDE's Yalyalup Mine

**TEC's**

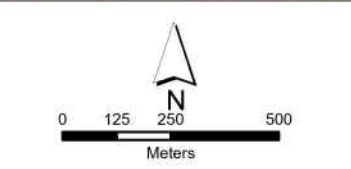
- SWAFCT10b (CR,EN)
- SWAFCT09 (VU,CR)
- SWAFCT01b (VU,na)

**Doral GDE Monitoring Bores**

- Approved
- New

**Regional Cadastre**

- Boundaries



**Doral** Yalyalup Northern Extension

**Yalyalup Mineral Sands Project**

Flora & Vegetation Environmental Management Plan Groundwater Dependent Ecosystems (GDEs)		
Scale 1:17,500	Datum: GDA94 Projection: MGA Zone 50	Sheet Size A3
Figure: 5		28/03/2024

## FIGURE 6: CONSERVATION SIGNIFICANT FLORA

356000 357000 358000 359000 360000 361000

6274000  
6273000  
6272000  
6271000

6274000  
6273000  
6272000  
6271000

**Legend**

**Ministerial Statement 1168**

- Approved Yalyalup Development Envelope
- Approved Disturbance Area
- Approved Mining Area

**Section 40AA Request**

- Proposed Development Envelope
- Mine Voids
- Shallow Disturbance <2m

**Significant Flora**

*Threatened*

- Verticordia plumosus var. vassensis

*Priority 3*

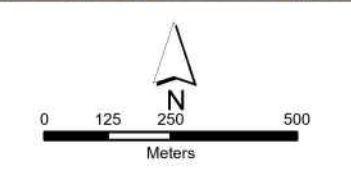
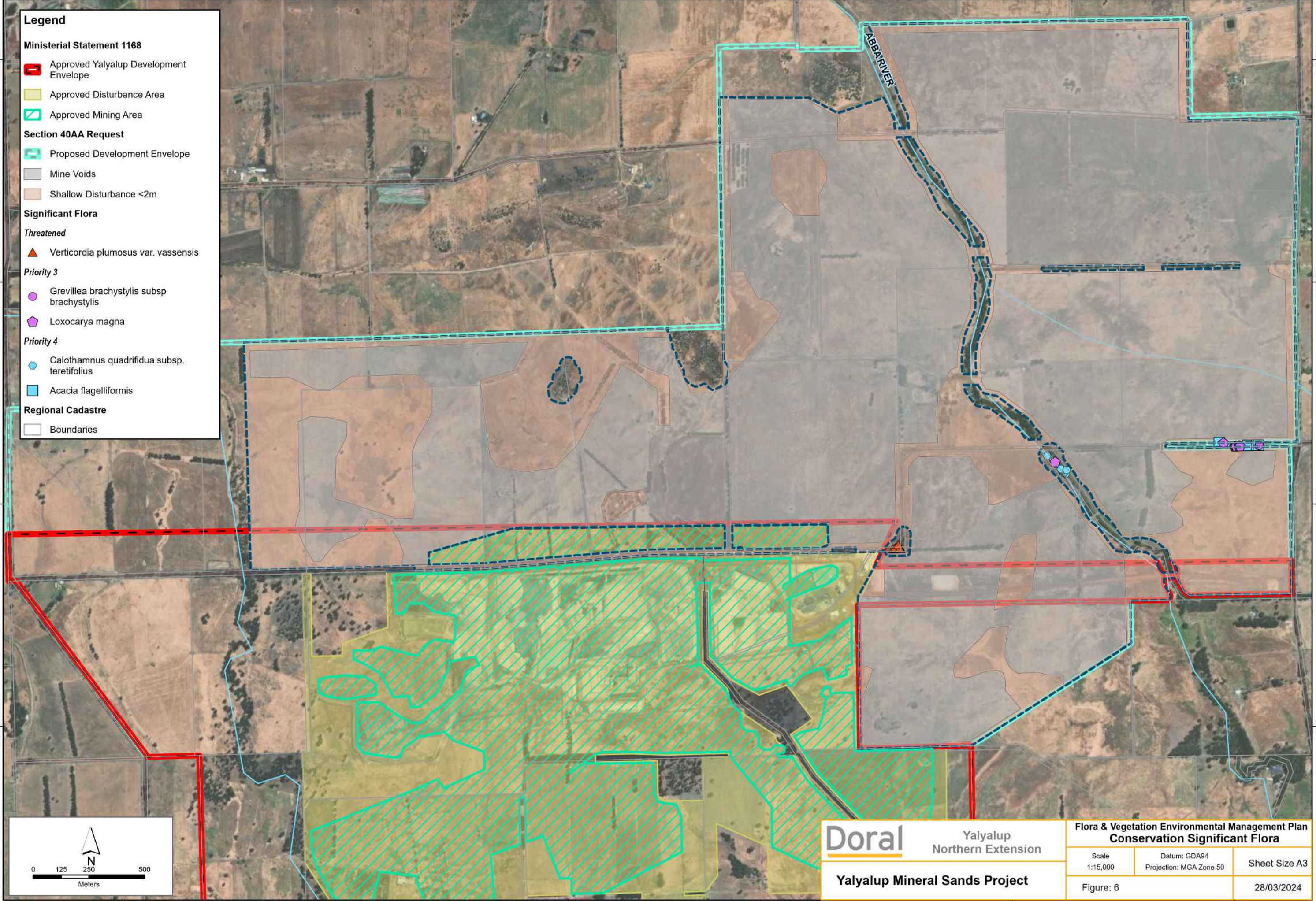
- Grevillea brachystylis subsp. brachystylis
- Loxocarya magna

*Priority 4*

- Calothamnus quadrifidua subsp. teretifolius
- Acacia flagelliformis

**Regional Cadastre**

- Boundaries



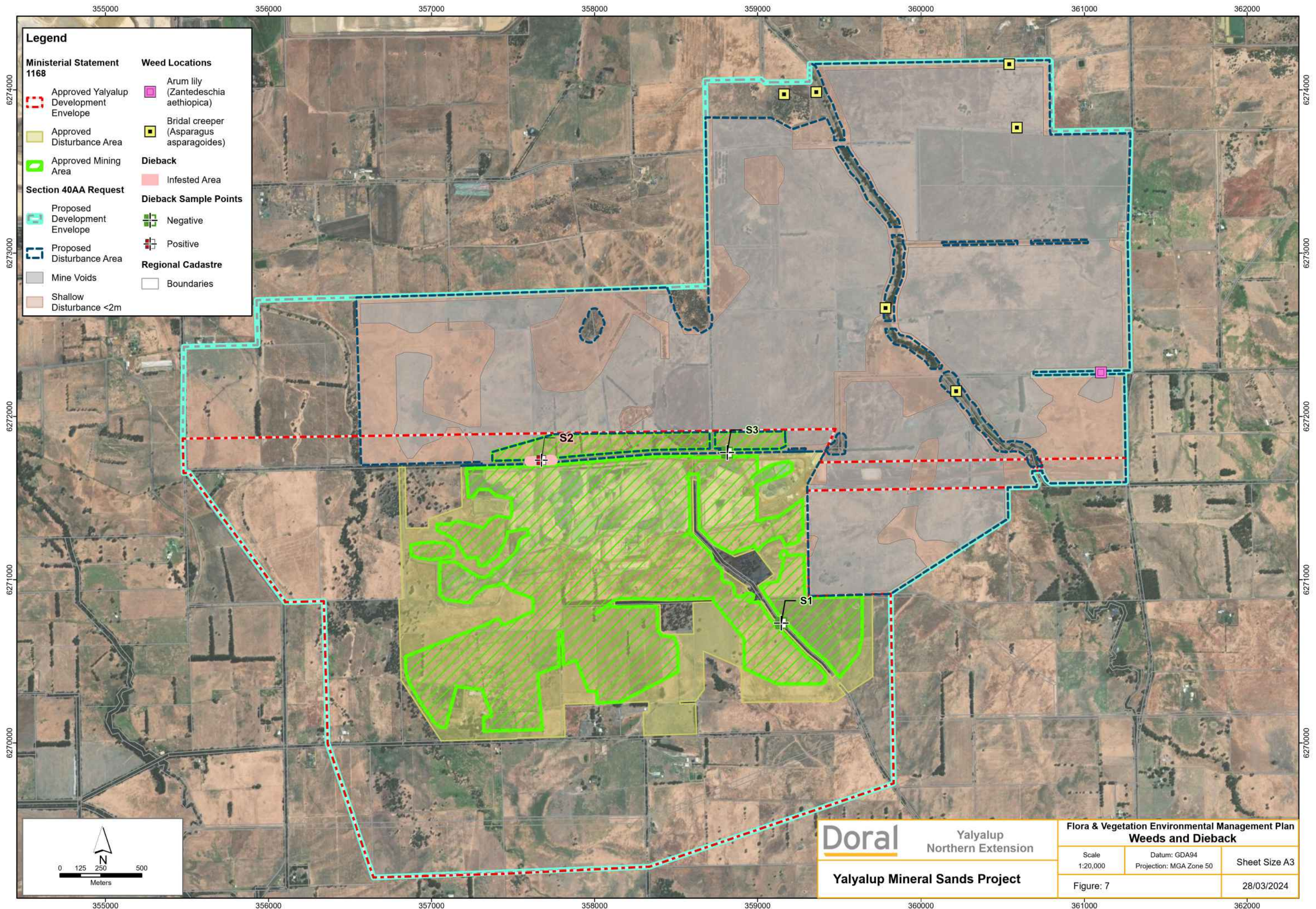
**Doral** Yalyalup Northern Extension

**Yalyalup Mineral Sands Project**

Flora & Vegetation Environmental Management Plan Conservation Significant Flora		
Scale 1:15,000	Datum: GDA94 Projection: MGA Zone 50	Sheet Size A3
Figure: 6	28/03/2024	

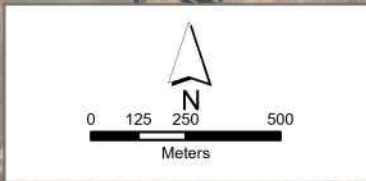
356000 357000 358000 359000 360000 361000

## FIGURE 7: WEEDS AND DIEBACK



**Legend**

<b>Ministerial Statement 1168</b>	<b>Weed Locations</b>
Approved Yalyalup Development Envelope	Arum lily ( <i>Zantedeschia aethiopica</i> )
Approved Disturbance Area	Bridal creeper ( <i>Asparagus asparagoides</i> )
Approved Mining Area	<b>Dieback</b>
<b>Section 40AA Request</b>	Infested Area
Proposed Development Envelope	<b>Dieback Sample Points</b>
Proposed Disturbance Area	Negative
Mine Voids	Positive
Shallow Disturbance <2m	<b>Regional Cadastre</b>
	Boundaries



**Doral** Yalyalup Northern Extension

**Yalyalup Mineral Sands Project**

<b>Flora &amp; Vegetation Environmental Management Plan Weeds and Dieback</b>		
Scale 1:20,000	Datum: GDA94 Projection: MGA Zone 50	Sheet Size A3
Figure: 7	28/03/2024	

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