Report and recommendations of the Environmental Protection Authority

Yoongarillup Mineral Sands Project

Doral Mineral Sands Pty Ltd

Report 1552

July 2015

Public Environmental Review
Environmental Impact Assessment Process Timelines

Date	Progress stages	Time (weeks)
27/08/2012	Level of assessment set	
22/01/2013	Final Environmental Scoping Document (ESD) approved	21
20/10/2014	Public Environmental Review (PER) document released for public review	95
17/11/2014	Public review period for PER document closed	4
30/3/2015	Proponent's Response To Submissions received	20
21/5/2015	EPA meeting	7
8/7/2015	EPA report provided to the Minister for Environment	7
13/7/2015	Publication of EPA report (three working days after report provided to the Minister)	3 days
27/7/2015	Close of appeals period	2

Timelines for an assessment may vary according to the complexity of the project and are usually agreed with the proponent soon after the level of assessment is determined.

In this case, the Environmental Protection Authority did not meet its timeline objective in the completion of the assessment and provision of a report to the Minister.

Dr Paul Vogel
Chairman

7 July 2015

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Summary and recommendations

This report provides the Environmental Protection Authority's (EPA's) advice and recommendations to the Minister for Environment on the outcomes of its environmental impact assessment of the Yoongarillup Mineral Sands Project.

The proposal is to develop, mine, rehabilitate and decommission the project. The proposal is located approximately 17 kilometres (km) south east of Busselton (Figure 1). The proposal includes: the construction of the mine and associated infrastructure (offices, workshops, laydown area, roads, and ore processing facilities); the mining and processing of heavy mineral concentrate; the backfilling of mined pits; and the rehabilitation and decommissioning of disturbed areas. Heavy mineral concentrate produced at the mine site will be transported offsite by road for further processing.

The Minister has nominated Doral Mineral Sands Pty Ltd as the proponent responsible for the proposal.

Section 44 of the *Environmental Protection Act 1986* (EP Act) requires that the EPA prepare a report on the outcome of its assessment of a proposal and provide this assessment report to the Minister for Environment. The report must set out:

- what the EPA considers to be the key environmental factors identified in the course of the assessment; and
- the EPA's recommendations as to whether or not the proposal may be implemented and, if the EPA recommends that implementation be allowed, the conditions and procedures to which implementation should be subject.

The EPA may also include any other information, advice and recommendations in the assessment report as it thinks fit.

The aims of environmental impact assessment and the principles of environmental impact assessment considered by the EPA in its assessment of this proposal are set out in the *Environmental Impact Assessment (Part IV Divisions 1 and 2) Administrative Procedures 2012.*

Key environmental factors and principles

The EPA identified the following key environmental factors during the course of its assessment:

1. Flora and Vegetation;
2. Terrestrial Fauna;
3. Amenity (Noise and Dust);
4. Rehabilitation and Decommissioning (Integrating Factor); and
5. Offsets (Integrating Factor).

There were other environmental factors identified by the EPA during the course of its assessment of the proposal. The EPA's evaluation of whether an environmental factor is a key environmental factor is in Appendix 3.

The EPA also considered the principles and objectives set out in section 4A of the EP Act and has summarised these in Appendix 3.

Conclusion

Having assessed the proposal to develop, mine, rehabilitate and decommission the Yoongarillup Mineral Sands Project, the EPA considers that the key environmental factors identified can be managed to meet the EPA's objectives. The EPA recommends that the proposal may be implemented, subject to the conditions and procedures set out in Appendix 4 and summarised in Section 5.

Conditions

Having considered the information provided in this report, the EPA has developed a set of conditions that the EPA recommends be imposed if the proposal by Doral Mineral Sands Pty Ltd to develop, mine, rehabilitate and decommission the Yoongarillup Mineral Sands Project is approved for implementation. These conditions are set out in Appendix 4. Matters addressed in the conditions include the following:

(a) The proposal would be developed within a 152 hectare (ha) development envelope as described in Schedule 1 of the recommended statement that the proposal may be implemented (Appendix 4).

(b) The authorised extent of clearing of native vegetation in State forest No. 33 is no more than 8.9 ha as described in Schedule 1 of the recommended statement that the proposal may be implemented.

(c) Condition 6 requires the proponent to prepare and implement a Flora and Vegetation Monitoring Plan to ensure that the impacts of mining (direct and indirect) are contained to the 8.9 ha area cleared of native vegetation within the State forest.

(d) Condition 7 requires the proponent to prepare and implement a Clearing and Rehabilitation Plan for the 8.9 ha of State forest native vegetation to be cleared. The assessment has highlighted the importance of managing the clearing of native vegetation to maximise the retention of topsoil and ensure that topsoil is only stored on areas of cleared vegetation within the 8.9 ha of State forest.

(e) Condition 8 addresses Offsets. Offset are required in view of the significant residual environmental impacts and risks to the environmental values of the area of State forest, impacts to threatened species, priority flora, fauna habitat, and the high diversity floristic community of the Whicher Scarp Forest Ecosystem. The proponent will prepare and implement a Land Acquisition Management Plan.

It should be noted that within the 152 ha development envelope, 88 ha is farmland that will be mined or disturbed. The rehabilitation and decommissioning of farmland areas will be regulated under the *Mining Act 1978* consistent with the Department of Mines and Petroleum and EPA *Guidelines for Preparing Mine Closure Plans*.

Recommendations

That the Minister for Environment notes:

1. that the proposal assessed is to develop, mine, rehabilitate and decommission the Yoongarillup Mineral Sands Project.
2. the key environmental factors identified by the EPA in the course of its assessment set out in Section 3;
3. the EPA has concluded that the proposal may be implemented to meet the EPA's objectives, provided the implementation of the proposal is carried out in accordance with the recommended conditions and procedures set out in Appendix 4 and summarised in Section 5;
4. the EPA's recommendations regarding the conditions and procedures which should apply to the proposal, set out in Appendix 4 of this report; and
5. the EPA's other information, advice and recommendations set out in Section 6 in relation to the Forest Management Plan (2014–2023) and the proposed additions to the Whicher National Park which would help ensure the ongoing conservation and protection of the Whicher Scarp native forest ecosystem.

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1. Introduction and background

This report provides the advice and recommendations of the Environmental Protection Authority (EPA) to the Minister for Environment on the outcome of the EPA's environmental impact assessment of the proposal by Doral Mineral Sands Pty Ltd to develop, mine, rehabilitate and decommission the Yoongarillup Mineral Sands Project. The Yoongarillup Mineral Sands Project would produce Heavy Mineral Concentrate to be transported off-site for further processing. The Minister has nominated Doral Mineral Sands Pty Ltd as the proponent responsible for the proposal

Section 44 of the *Environmental Protection Act 1986* (EP Act) requires that the EPA prepare a report on the outcome of its assessment of a proposal and provide this assessment report to the Minister for Environment. The report must set out:

- what the EPA considers to be the key environmental factors identified in the course of the assessment; and
- the EPA's recommendations as to whether or not the proposal may be implemented and, if the EPA recommends that implementation be allowed, the conditions and procedures to which implementation should be subject.

The EPA may also include any other information, advice and recommendations in the assessment report as it thinks fit.

The aims of environmental impact assessment and the principles of environmental impact assessment considered by the EPA in its assessment of this proposal are set out in the *Environmental Impact Assessment (Part IV Divisions 1 and 2) Administrative Procedures 2012.*

The proponent referred the proposal to the EPA in March 2012. In August 2012 the EPA set the level of assessment at Public Environmental Review (PER) with a four-week public review period. The Environmental Scoping Document for the proposal was approved in January 2013 and the PER was released for public review from 20 October 2014 to 17 November 2014.

The proposal was determined to be a controlled action under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) in September 2012 as it may impact on the following Matters of National Environmental Significance (MNES):

- listed threatened species and communities (section 18 and 18A); and
- wetlands of international importance (sections 16 & 17B) (Ramsar Wetland).

The proposal is being assessed under the bilateral agreement between the Commonwealth and Western Australian governments.

Appendix 5 contains a summary of submissions from the public review period and the proponent's response to submissions (on CD at the back of this report and at www.epa.wa.gov.au). It is included for information only and does not form part of the EPA's report and recommendations. Relevant significant environmental issues identified from this process have been taken into account by the EPA during its assessment of the proposal.

This report provides the EPA advice and recommendations in accordance with section 44 of the EP Act.

2. The proposal

The Yoongarillup Mineral Sands Project is located approximately 17 kilometres (km) south east of Busselton and 250 km south of Perth (Figure 1).

The life-of-mine is expected to be three years, including an initial pre-mine development phase, mining and onsite processing to produce heavy mineral concentrate, backfilling of mine pits, rehabilitation, and decommissioning. The proposal is located within a 152 ha development envelope. Within this development envelope, 8.9 ha is located in State Forest No. 33, requiring the clearing of native vegetation (Figure 2). An additional 88 ha of farmland will be disturbed.

The proponent proposes to extract approximately 4,000,000 tonnes (t) of ore to produce 256,000 t of heavy mineral concentrate. Ore from the deposit will be mined progressively via a series of open-cut pits using dry mining techniques. Dewatering of groundwater inflows into the pit will be required to enable dry mining to occur.

Processing of the ore will occur in-pit and slurry will then be pumped from the feed preparation plant to the wet concentration plant for further processing. Waste clay and sand minerals from processing will be combined and backfilled into the mine voids using co-flocculation where possible. Some material will initially be placed into solar evaporation ponds to allow drying of the clay and recycling of water back to the process water pond, prior to being co-disposed of into mine voids. The mined areas will be back-filled and then rehabilitated back to pasture and/or native vegetation in the State forest, depending on pre-mining conditions.

Heavy mineral concentrate produced at the wet concentrator plant will be stockpiled onsite prior to transport to the proponent's existing Dry Separation Plant. Heavy mineral concentrate product extracted from mining the deposit includes zircon, ilmenite and rutile.

The main characteristics of the proposal are summarised in Tables 1 and 2 below. A detailed description of the proposal is provided in Section 3 of the PER document (Doral 2014).

Table 1: Summary of the proposal

Proposal Title	Yoongarillup Mineral Sands Project
Short Description	The proposal is to develop, mine, rehabilitate and decommission the Yoongarillup Mineral Sands Project. The proposal is located approximately 17 km south east of Busselton (Figure 1). The life-of-mine is expected to be three years, including an initial pre-mine development phase, mining and onsite processing to produce heavy mineral concentrate, backfilling of mine pits, rehabilitation, and decommissioning. The pre-mining development phase includes the construction of associated mine infrastructure (offices, workshops, laydown area, roads, and ore processing facilities).

Table 2: Proposal elements

Element	Location	Extent
Mine Pits and additional disturbance (Indicative)	Figures 2 and 3 and Geographic coordinates as described in Schedule 2	Within a 152 ha development envelope: • clearing no more than 8.9 ha of native vegetation within Area A; and • an additional disturbance of no more than 88 ha.
Area A	Figure 3	Within a 152 ha development envelope: • clearing of no more 8.9 ha.
Dewatering		Abstraction of groundwater for: • dewatering purposes (from the superficial aquifer). • mine water supply (from the Yarragadee aquifer).

The potential impacts of the proposal on the environment identified by the proponent in the PER document (Doral, 2014) and their proposed management are summarised in table ES-2 (Executive Summary) in the PER document.

Six submissions from organisations including Government agencies and 17 individual submissions were received during the public review period. The key issues raised relate to:

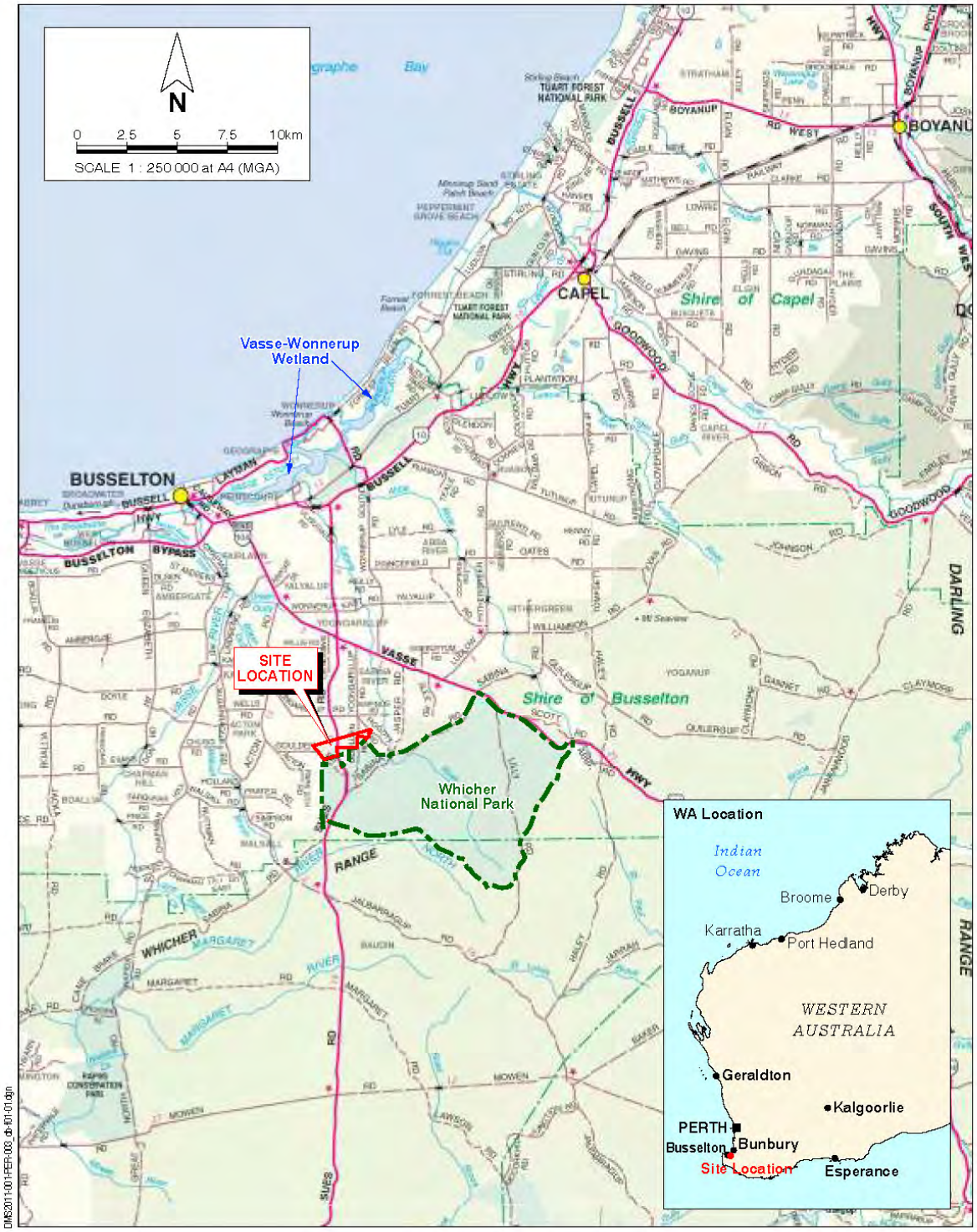
- the potential impacts from clearing of native vegetation on flora and fauna values and the State forest;
- whether rehabilitation of native vegetation within the State forest and farmland would achieve similar environmental and agricultural values that currently exists before the area is mined;
- the adequacy of proposed offsets;

- the potential deleterious impacts of noise and light of a 24-hour, seven days/week mining proposal on adjacent and nearby residences;
- the potential impacts of dust emissions on nearby residences and commercial and hobby farm land uses;
- the potential hydrological impacts of the proposal on other users in terms of abstraction of water flowing into the mine pits and/or the intent to apply for up to 1.6 GL per annum from the deeper Yarragadee aquifer;
- the potential impacts on visual amenity;
- the potential loss of value of properties due to mining; and
- concerns about the transport routes for the proposal.

Issues raised were addressed by the proponent in the final Response to Submissions document (Appendix 5).

In assessing this proposal, the EPA notes that the proponent has sought to avoid, minimise, and rehabilitate environmental impacts associated with the proposal by:

- reducing clearing of native vegetation in the State forest from 20 ha, as originally proposed, to 8.9 ha;
- revising the proposed mining method and proposed rehabilitation of the State forest area to ensure topsoil is only stored on State forest areas to ensure rehabilitation of native vegetation is less likely to be impacted by weeds (which is a major impediment to rehabilitation success); and
- reviewing and revising the proposed mining method, mitigation and proposed monitoring to minimise the potential impacts of noise and dust on landowners that abut or are nearby the mine.



Doral	Regional Location		
Public Environmental Review Proposed Yoongarillup Mineral Sands Project	Scale: 1:250 000	Projection: Australia MGA94 (50)	Sheet Size: A4
	Figure 1-1		Date: 28/04/2014

Figure 1: Proposal location

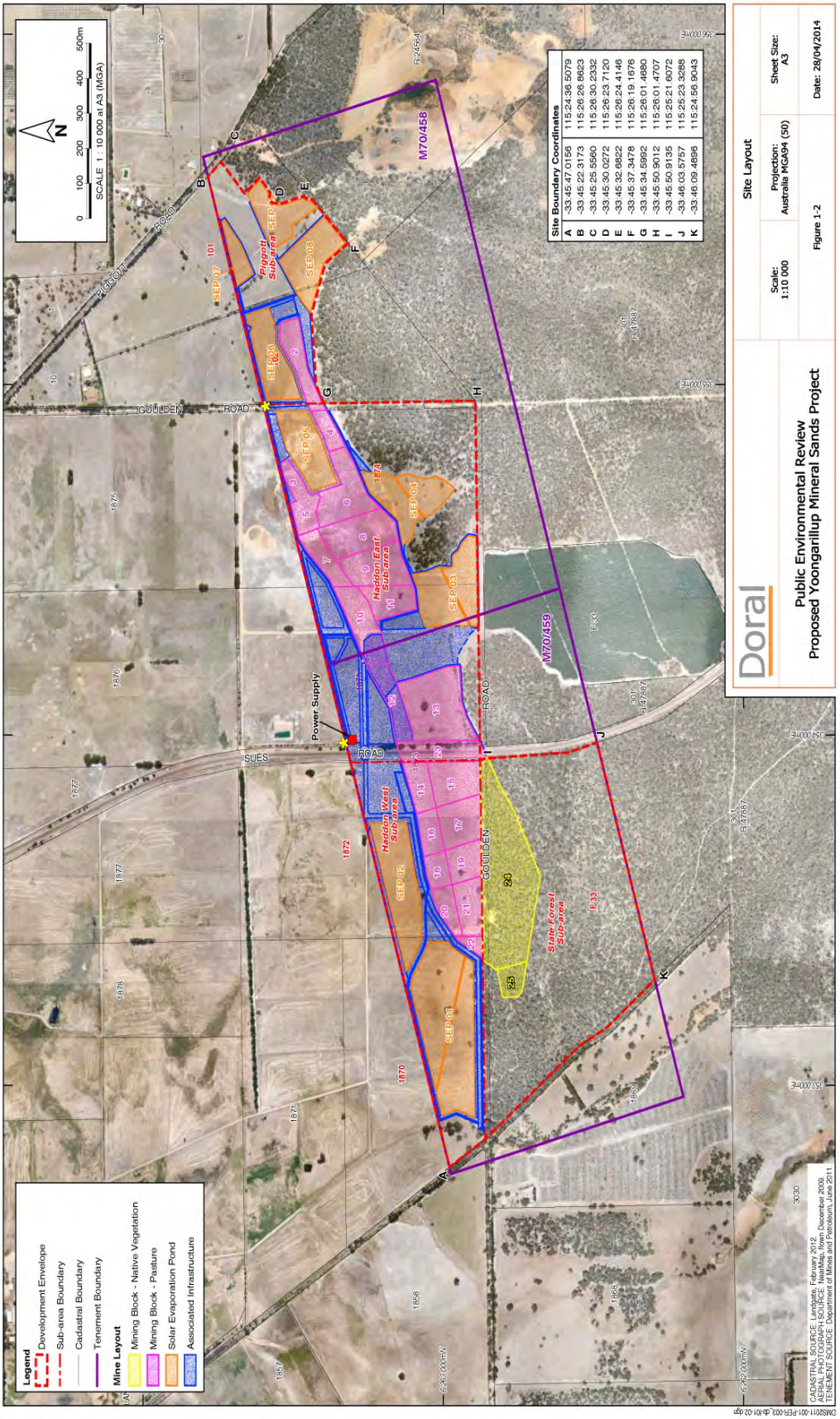


Figure 2: Development envelope with conceptual mine and associated infrastructure layout

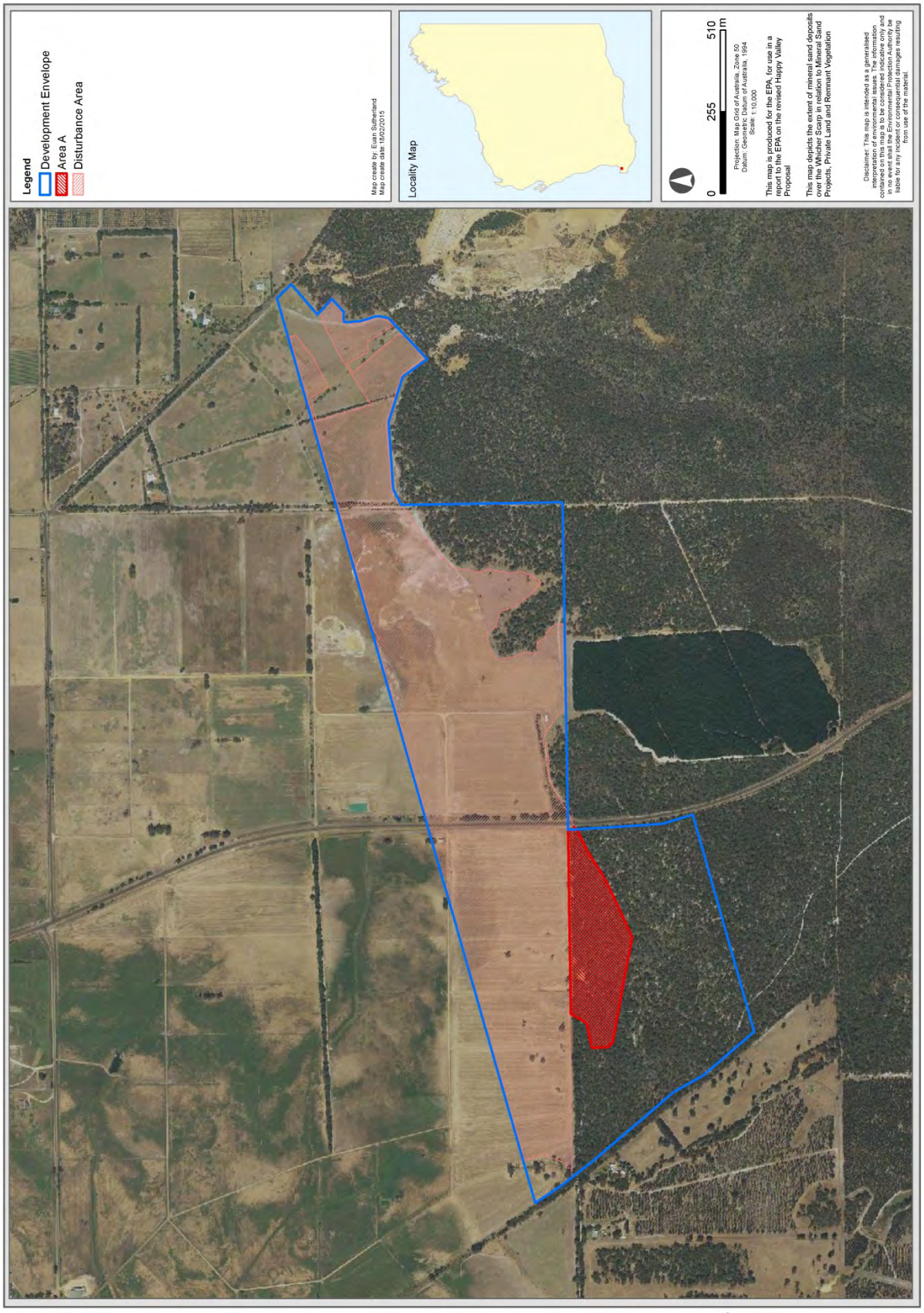


Figure 3: Location of Area A (State forest)

3. Key environmental factors

A number of environmental factors were examined by the proponent and outlined in the PER document that was released for public review. In identifying the key environmental factors for this proposal, the EPA had regard to the PER document, public and agency comments, the proponent's response to submissions, and the EPA's own inquiries. The EPA has identified the following key environmental factors during the course of its assessment of the proposal:

1. **Flora and Vegetation** – impacts from clearing of the Priority One Priority Ecological Community (P1 PEC) 'Central Whicher Scarp Jarrah woodland (Whicher Scarp of coloured sands and laterites community C1)' and the removal of six of the Declared Rare Flora (DRF) *Davesia elongata* subsp. *elongata* within the proposal development envelope;
2. **Terrestrial Fauna** – potential impacts of conservation significant fauna species (including Black Cockatoos), from the loss of habitat due to clearing;
3. **Amenity (Noise and Dust)** – the potential impact of noise and dust emissions on residences that abut or are nearby the mine;
4. **Rehabilitation and Decommissioning (Integrating factor)** – rehabilitation of native vegetation in the State forest and agricultural farmland;
5. **Offsets (Integrating factor)** – to counterbalance the significant residual impacts to natural values associated with the Whicher Scarp native forest ecosystem, including impacts to State forest, the Floristic Community Type (C1) that has a strong representation of a less common group of flora species, Declared Rare Flora, Threatened fauna species and their habitat.

Appendix 3 contains the environmental factors identified through the course of the assessment and the EPA's evaluation of whether an environmental factor is a key environmental factor for this proposal.

The EPA's assessment of the proposal's impacts on the key environmental factors is provided in Sections 3.1 - 3.5. These sections outline the EPA's conclusions as to whether or not the proposal can be managed to meet the EPA's objective for a particular factor and, if so, the recommended conditions and procedures that should apply if the proposal is implemented.

In preparing this report and recommendations, the EPA has had regard for the object and principles contained in s4A of the EP Act. Appendix 3 summarises the EPA's consideration of the principles during its assessment of the proposal.

The EPA is assessing the proposal on behalf of the Commonwealth Government under the Bilateral Agreement. This report includes Section 4 which addresses Matters of National Environmental Significance (MNES).

The EPA has also considered how the proponent has applied the mitigation hierarchy (avoid, minimise, rehabilitate and offset) to the proposal. The extent to which the proponent has applied the mitigation hierarchy for the key environmental factors for the proposal is reflected in the recommended environmental conditions and other advice (to key regulators) for the proposal.

3.1 Flora and Vegetation

The EPA's environmental objective for this factor is *to maintain representation, diversity, viability and ecological function at the species, population and community level.*

The Forest Management Plan 2014–2023 (FMP) approved by the Minister for Environment identifies the Whicher Scarp as a separate native forest ecosystem.

For an area as highly diverse as the Whicher Scarp, the EPA considers that vegetation mapping at the community level is appropriate as it provides knowledge of the conservation status of species and communities that occur on the Whicher Scarp.

The proponent proposes to clear no more than 8.9 ha of native vegetation in State Forest No. 33. When the proposal was initially referred, 20 ha were proposed to be cleared; however, the proponent has, as an outcome of the assessment, minimised the impacts of its proposal by reducing the area to be cleared.

Level 2 Flora and Vegetation surveys were undertaken in November 2011 and September and October 2012. A Threatened and Priority flora species survey was also undertaken in March 2012.

The proponent's flora and vegetation surveys in the area of State forest have identified that the proposal would directly impact the Whicher Scarp Floristic Community Type C1 (FCT C1). While there are other restricted floristic community types located within the larger development envelope in the area of the State forest, they are unlikely to be impacted by mining or ancillary operations.

Whicher Scarp FCT C1 occurs on coloured sands on moderate to gentle slopes of the Central Whicher Scarp. This community has strong representation of a less common group of flora species, increasing the diversity of this area of State forest; however, the flora species are found elsewhere in the Whicher Scarp native forest ecosystem.

The proponent considers that the Whicher Scarp FCT C1 vegetation boundary exceeds the area mapped by the Department of Parks and Wildlife (Parks and Wildlife). However, Parks and Wildlife advised that it considers that this cannot be verified at this time. In light of Parks and Wildlife's advice, the assessment of the impacts on the Whicher Scarp FCT C1 will be based on the Parks and Wildlife boundary.

Data provided by Parks and Wildlife confirms there are seven known occurrences of the Whicher Scarp FCT C1 with a total area of 53.9 ha. The occurrence that is impacted by the proposal has a Parks and Wildlife mapped area of 5.1 ha. The removal of 2.8 ha of the 5.1 ha represents a loss of 55% of this occurrence and would result in the loss of 5.2% of the known mapped extent of entire Whicher Scarp FCT C1. It is also understood that 13.9 ha (25%) of the known occurrences of Whicher Scarp FCT C1 occur within the existing Whicher National Park.

In total, 233 taxa from 44 families were identified in the development envelope. Two Declared Rare Flora (DRF), *Davesia elongata* subsp. *elongata* and V*erticordia densiflora* var. *pedunculata*; one Priority Three and Four, *Conosperum paniculatum*; and *Acacia semitrullata*, respectively were found within the development envelope. The DRF V*erticordia densiflora* var. *pedunculata* is located outside the proposed clearing and therefore will not be impacted. Sixteen plants and two plants of the Priority Three and Four, *Conosperum paniculatum*; and *Acacia semitrullata*, respectively will be cleared. The small number of individuals of these Priority flora species that would be cleared is not considered significant.

The DRF *Davesia elongata* subsp. *elongata* is known from a total population of 1,606 individuals. Six plants are proposed to be cleared, of this total, which equates to approximately 0.4 % of the known individuals. The local population in the area of State forest within the development envelope currently comprises seven plants. It is considered that, due to the majority of plants being cleared and the habitat being removed, this population may be lost. However, the potential loss of this small population is unlikely to lead to the loss of the species.

The EPA notes that the clearing of 8.9 ha of native vegetation is of small scale and was reduced from the initially proposed clearing of 20 ha. The authorised extent of clearing of native vegetation in State Forest No. 33 is no more than 8.9 ha as described in Schedule 1 of the recommended statement that the proposal may be implemented (Appendix 4).

However, given the natural values of the Whicher Scarp native forest ecosystem, and taking into account the threatening processes in the area, incremental losses and/or degradation of the values are of concern. Stringent management measures are therefore required to ensure impacts, both direct and indirect, are not greater than predicted.

The EPA has recommended condition 6 which requires the proponent to monitor the health of the vegetation surrounding the area to be cleared within the State forest to ensure there is no loss of vegetation beyond the clearing boundary. The condition includes the use of triggers to ensure action is taken should the health of vegetation decline and to ensure management measures are put in place which will prevent the loss of flora and vegetation.

The EPA is of the view that the impact to Whicher Scarp FCT C1, a community that has strong representation of a less common group of flora species, increasing the diversity, is significant at a local scale, given that 54% of this occurrence will be removed. However, the clearing of 2.8 ha of this community represents a loss of only 5.2% of the known mapped extent, and the species that comprise this community are found elsewhere on the scarp. It is considered that, given the floristic diversity of the 8.9 ha to be cleared, rehabilitation will not be able to replace all the floristic values of this community and therefore significant residual impacts will result. This is discussed further in Section 3.5 Offsets.

Summary

Having particular regard to the:

(a) highly diverse flora and vegetation values of the Whicher Scarp native forest ecosystem;

(b) small extent of the clearing of native vegetation (8.9 ha) and the limited duration of the proposal;

(c) the impact to Whicher FCT C1, a community that has strong representation of a less common group of flora species, increasing the diversity, is significant at a local scale. However the species found in the community are represented elsewhere on the Whicher Scarp native forest ecosystem;

(d) mitigation and management measures that will be used to minimise the potential impacts on the Whicher Scarp FCT C1 and the DRF; and

(e) an offset being applied to counterbalance the significant residual impacts of the likely loss of State forest values, DRF and flora abundance and diversity in the rehabilitated area,

the EPA considers that the proposal can be managed to meet the EPA's objectives for Flora and Vegetation provided conditions are imposed requiring:

- the authorised extent of clearing of native vegetation in the State forest No.33 is no more than 8.9 ha as described in Schedule 1 of the recommended statement that the proposal may be implemented;
- the proponent to prepare and implement a Flora and Vegetation Plan to monitor the health of native vegetation outside the area of State forest to be cleared and, if required, implement management actions to prevent the loss of native vegetation (condition 6); and
- the implementation of an offset (condition 8) to counterbalance the significant residual impact of the proposal on flora and vegetation.

3.2 Terrestrial Fauna

The EPA's environmental objective for this factor is *to maintain representation, diversity, viability and ecological function at the species, population and assemblage level.*

While the Whicher Scarp has not been comprehensively surveyed for fauna, existing site-based information indicates a high diversity of vertebrates. The Whicher Scarp supports a high number of threatened vertebrate species and a variety of habitat specialist species that have declined or disappeared on the adjacent coastal plain (EPA 2013). The area is also a known breeding area for species which feed on the coastal plain.

A detailed fauna assessment was undertaken by Harewood (2014) to quantify the fauna values of the development envelope and identify the potential presence, distribution, and abundance of specific fauna species of conservation significance.

Twelve fauna habitats were mapped within the development envelope. In total, evidence of 95 species of native vertebrate fauna was obtained during the level 2 survey, comprising 52 native bird species, 14 native mammal species, 25 reptile species, and four amphibian species. This is approximately 53% of the total number of potential native species, based on previous fauna surveys in the area and desktop investigations (Doral 2014).

Based on these previous surveys, database and literature searches from within 20 km of the development envelope, there is the potential for 29 species of conservation significance to occur in the area. Seven of these species have been recorded within the development envelope.

In summary, the following species of conservation significance are likely or are known to occur within the development envelope:

- Forest Red-tailed Black Cockatoo (*Calyptorhynchus banksii naso*) – Schedule 1 and Vulnerable
- Carnaby's Black Cockatoo (*Calyptorhynchus latirostris*) - Schedule 1 and Endangered
- Baudin's Black Cockatoo (*Calyptorhynchus baudinii*) Schedule 1 and Vulnerable
- Rainbow Bee-eater (*Merops ornatus*) – Schedule 1 and Migratory
- Cattle Egret (*Ardea ibis*) – Schedule 3 (JAMBA) and Migratory
- Great Egret (*Ardea alba*) - Schedule 3 (JAMBA) and Migratory
- Southern Brush-tailed Phascogale (*Phascogale tapoatafa* ssp) – Schedule 1
- Coastal Plain Skink (*Ctenotus ora*) – Priority 1
- Western Brush Wallaby (*Macropus irma*) – Priority 4
- Quenda (*Isoodon obesulus fusciventer*) – Priority 5

Species of local significance include the:

- Speckled Stone Gecko (*Diplodactylus polyophthalmus*);
- Black-backed Hooded Snake (*Parasuta nigriceps*); and
- Forest toadlet (*Metacrina nichollsi*).

The Speckled Stone Gecko was recorded within the State forest area outside the disturbance footprint. The presence of this species at this site represents the extreme south west limit of this species range. However, it appears this species is relatively widespread along the Whicher Scarp.

The Black-backed Hooded Snake was also recorded in the State forest outside the disturbance footprint. This species has disappeared from much of the southern Swan Coastal Plain due to clearing and habitat fragmentation. It has, however, been recorded along the Whicher Scarp and also on a nearby section of the coastal plain where adequate habitat extent and connectivity remains.

The Forest toadlet was captured nine times during the survey, with eight records being from trap sites within the Whicher National Park. This can in part be attributed to the generally denser ground vegetation present in these areas, which provides better microhabitat for this ground dwelling species. It appears that a northern range limit is within the vicinity of the development envelope, particularly the Whicher National Park, and that the species is likely to be present in suitable habitat within sections of the Whicher Scarp at least 20 km further to the north east.

The Chain-stripe Heath Ctenotus (*Ctenotus catenifer*) was captured at Yoongarillup (within the National Park). This represents one of the most northern records for this species. The presence of this southern Ctenotus along with two other species, the Odd-striped Ctenotus (*Ctenotus impar*) and the Coastal Plains Ctenotus (*Ctenotus ora*), both of which have been subject to declines on the coastal plain, make this assemblage unique and possibly rare.

Carnaby's Black Cockatoo is listed as Schedule 1 (ranked Endangered) under the *Wildlife Conservation Act 1950* (WC Act) and Endangered under the EPBC Act. The Forest Red-tailed Black Cockatoo is listed as Schedule 1 (ranked Vulnerable) under the WC Act and Vulnerable under the EPBC Act, and Baudin's Black Cockatoo, listed as Schedule 1 (ranked Endangered) under the WC Act and Vulnerable under the EPBC Act.

Given the similar habitat requirement, the three Black Cockatoo species have been grouped together. The 8.9 ha of remnant native vegetation to be cleared represents potential Black Cockatoo habitat, as the area contains plant species documented as foraging habitat. Evidence of all three Black Cockatoo species foraging within the development envelope was found. The habitat to be cleared is known to contain 110 identified Black Cockatoo habitat trees with 40% without hollows, 51% with small hollows and 9% with large hollows.

It is considered that the ten habitat trees with large hollows are considered suitable for nesting. One night-roosting site was also identified.

The breeding season for the three Black Cockatoo species occurs between July and February including an incubation period of 29 days and a nesting period of 70 to 75 days. The proponent has committed, where possible, to undertake staged clearing to avoid the breeding season. Should this not be possible, the EPA is of the view that the proponent should thoroughly inspect the area for breeding activity - in particular, nesting - and seek the advice of Parks and Wildlife. If the area is found to be in use, clearing in the area should be postponed until such time the area is vacated. This requirement has been included in recommended condition 7.

It is the EPA's opinion that a significant residual impact relating to the clearing of native vegetation which supports the foraging, breeding and roosting habitat of the three species of Black Cockatoo remains. This is discussed in Section 6 Offsets.

The clearing of native vegetation has the potential to remove the habitat of the Rainbow Bee-eater. Given the widespread occurrence of this species in the region and within Australia, no significant impacts on this species are anticipated.

No significant impact on the Great Egret and the Cattle Egret or their preferred habitat is expected as these species would be an infrequent and temporary visitor. There is no potential for breeding onsite and they would not utilize the forested areas for any purpose.

The proposed management actions such as:

- staging clearing by initially excluding clearing of habitat trees and any significant habitat areas to allow tree-dwelling fauna and/or fauna occurring in habitat areas to escape overnight to surrounding bushland;
- having a suitably qualified spotter/carer on-site during clearing operations to conduct daily checks of vegetation to be cleared and retrieve fauna if necessary; and
- using logs and other debris from clearing to enhance fauna habitat in untouched and rehabilitated areas,

gives the EPA confidence that impacts to fauna such as the Southern Brush-tailed Phascogale, Western Brush Wallaby and the Quenda are minimised.

The area of State forest impacted by the proposal has a rich fauna. However, with the exception of the three species of Black Cockatoo, where there is likely to be a significant residual impact, the proposal is unlikely to significantly impact fauna species given the small area of State forest impacted and the large areas of State forest surrounding the proposal.

Summary

Having particular regard to the:

(a) highly diverse fauna values of the Whicher Scarp Native Forest Ecosystem;

(b) the small area (8.9 ha) of native vegetation to be cleared;

(c) mitigation and management measures that will be used to minimise the potential impacts on fauna;

(d) large areas of State forest surrounding the proposal that provide contiguous habitat for fauna species

(e) clearing of foraging and potential roosting habitat of the Black Cockatoos, resulting in a significant residual impact;

the EPA considers that the proposal can be managed to meet the EPA's objectives for Terrestrial Fauna provided conditions are imposed requiring the proponent to:

- address the impacts of clearing on Black Cockatoo species breeding (condition 7); and
- counterbalance the significant residual impact on Black Cockatoo species through the implementation of an offset (condition 8).

3.3 Amenity (Noise and Dust)

The EPA's environmental objective for this factor is *to ensure that impacts to amenity are reduced as low as reasonably practicable.*

Noise

Noise from mining operations has the potential to impact residences. The PER included predictive modelling of noise emissions, proposed management and mitigation measures, and an assessment of compliance of the proposed mining operations with the Environmental Protection (Noise) Regulations 1997 (Noise Regulations). The Noise Regulations are administered by the Department of Environment Regulation (DER).

Submissions received on the PER highlighted adjacent and nearby residents' concerns about the potential impacts of noise. The DER highlighted that the noise assessment referred to in the PER predicted non-compliances with the Noise Regulations.

In providing its response to submissions (Appendix 5) the proponent has reviewed its noise assessment and considered alternative design of the mining operations and mining methodologies to minimise and manage noise emissions.

Changes that have been included in the revised noise assessment include:

- additional noise bunding to be constructed within the paddock areas west of Sues Road;
- use of Carry Graders instead of a Dozer for topsoil and subsoil stripping operations within mining pits 24 and 25 (Figure 2);
- construction of a temporary noise bund (utilising topsoil material) within Pit 24 (Figure 2);
- a 6.5 m-high noise barrier to be constructed on the western edge of Pit 25 (Figure 2);
- the construction of a 5.5 m-high noise bund along the northern and eastern edges of Pit 2 (Figure 2);
- the construction of a temporary noise bund, 2.5 m high within pits 7 and 8 (Figure 2);
- an additional four residences modelled; and
- a number of design and operational commitments summarised in section 7.2.4 of the proponent's response to submissions (Appendix 5).

The DER has reviewed and provided advice on Doral's revised predictive noise assessment including the proposed mine design, operational management measures, and revised modelling. The DER has advised that the mitigation measures are considered appropriate for managing the risk of noise impact to neighbours, and noise from the proposed mining operation could be managed to comply with the Noise Regulations.

The EPA notes in particular the proponent's commitment, based upon its experience of mining at Dardanup, that it intends to ensure residents can contact the mine directly regarding concerns about noise. This commitment of the proponent would allow mining operations to respond in a timely manner and adapt to community concerns that may be raised from time to time. Real-time monitoring will also be important to ensure the opportunity exists for the proponent to verify its predictions and to be proactive with regard to noise issues that may emerge due to conditions that may prevail at the time an area is developed or mined.

Noting that the noise assessment is predictive at this stage, the adaptive management measures proposed by the proponent to be implemented at the time an area is mined will be very important to ensure the operations are managed by Doral to achieve compliance with the Noise Regulations. Such measures are understood to include changes in aspects of sequencing of mining, having regard to certain operations that should only occur during the daytime operations. This includes the option of moving away or ceasing operations near sensitive receptors when prevailing conditions exacerbate noise and there are measurable impacts on residents.

The EPA notes the advice provided by the DER and that the proposal would be subject to environmental regulation by the DER under Part V of the EP Act to comply with the Noise Regulations.

Having particular regard to:

- the proponent's revised management and mitigation measures and noise assessment that predicts the proposal could be managed to meet the Noise Regulations;
- advice of the DER that the mitigation measures proposed are considered appropriate for managing the risk of noise impact to neighbours;
- advice from DER that noise from the proposed mining operation can be managed to comply with the Noise Regulations;
- the proponent's commitment to adaptive management measures to respond to community concerns about noise impacts and to achieve compliance with the Noise regulations for the life of the project; and
- the fact that the proposal would be subject to environmental regulation by the DER to comply with the Noise Regulations,

the proposal can be managed to meet the EPA's objectives for Amenity (Noise).

Dust

There is potential for significant dust emissions from land clearing and topsoil stripping, mining excavation, movement of vehicles along roads, and surface lift off from exposed surfaces such as stockpiles. Dust and particulates have the potential to impact amenity of nearby residents. Submissions on the PER identified a number of commercial and hobby-farm land uses that could potentially be impacted by dust emissions.

The proponent has proposed a number of management measures based on its experience of operating in proximity to residences at its existing Dardanup mine. The EPA notes the importance of ensuring the proposed management measures are undertaken along with monitoring and adaptive management to demonstrate dust emissions meet acceptable criteria.

The DER has advised that fugitive dust emissions from the proposal can be regulated, monitored, and enforced under Part V Division 3 of the EP Act.

The proponent would be required to submit a works approval application to the DER before the proposal is constructed. The DER has advised that the proponent would be required to submit a dust management plan, which also outlines the proposed monitoring regime, as part of the works approval application. The DER has advised it will undertake a risk-based assessment of fugitive dust from construction and mining operations to determine what conditions would apply to the subsequent licence that is required to operate the project.

Summary

Having particular regard to:

- the proponent's proposed management and mitigation measures for fugitive dust emissions;
- advice of the DER that fugitive dust emissions from the proposal can be regulated and monitored and enforced under Part V Division 3 of the EP Act.
- the advice of the DER that, in regulating the proposal, it would determine the conditions required on the licence to monitor and regulate fugitive dust emissions,

the EPA considers that the proposal can be managed to meet the EPA's environmental objective for Amenity (Dust).

3.4 Rehabilitation and Decommissioning

The EPA's environmental objective for this factor is *to ensure that premises are decommissioned and rehabilitated in an ecologically sustainable manner.*

The proposal will require areas of State forest and farmland to be rehabilitated following mining.

State forest

As the current manager of State forest, Parks and Wildlife's advice highlighted the need to include the following objectives for the rehabilitation and reintegration of the State forest area impacted by mining:

- The area is made safe, non-polluting and stable.
- Waste and potentially hazardous substances are removed;
- The area is able to support functional landforms, soil profiles, groundwater and surface water systems and ecological communities for State forest vesting, and which are compatible with relevant surrounding land-uses.
- The area can be integrated into management practices of Parks and Wildlife for State forest without the input of additional resources (e.g. fire, dieback, weed management) above that normally expected.
- All built infrastructure is removed.

Parks and Wildlife highlighted the importance of managing topsoil from State forest such that it is only stored within the area of State forest to minimise the introduction of weeds. Dieback management would also be important and careful attention would need to be given to the recovery of timber, and topsoil handling and mining practices, to prevent the introduction or spread of dieback.

The proponent has revised its mining method to address Parks and Wildlife's recommendations. The proponent is now proposing to mine the area of State forest in two stages that would allow topsoil to be stored within the area of State forest native vegetation affected by the proposal. This approach would have the added benefit of ensuring that the area of mining adjacent to the native vegetation would be backfilled as soon as mining is completed, further minimising the risk of any potential hydrological drawdown impacts on the native vegetation.

The EPA recommends condition 7 which requires the preparation and implementation of a Clearing and Rehabilitation Plan. The recommended condition gives effect to the proponent's proposed management. The recommended condition addresses:

(1) ensuring that clearing and mining of the State forest area (Area A in the conditions) is undertaken in stages to ensure progressive rehabilitation;

(2) ensuring that the topsoil removed from the State forest is stored only within the State forest for a maximum of 18 months;

(3) specifying the fencing and access requirements to the State forest;

(4) specifying the clearing method of vegetation, including the retention of any vegetative material for rehabilitation within the State forest;

(5) specifying the topsoil removal, storage (location and time), and respreading procedures within State forest;

(6) specifying the timing of mining and return of soil profile and landforms;

(7) specifying measures to prevent weeds and dieback from establishing in State forest;

(8) specifying the placement of mining infrastructure to ensure that progressive rehabilitation can occur.

The EPA considers that, with these measures, the proponent could rehabilitate native vegetation within the State forest area to be compatible with the surrounding environmental values. However, the rehabilitated areas are unlikely to achieve a level of flora species richness and abundance equivalent to those that existed before mining. As a result there will be a significant residual impact requiring an offset.

Farmland

The EPA notes that mineral sands mining operations have successfully rehabilitated farmland in the local region. The rehabilitation methods proposed are consistent with the methods applied elsewhere in the region.

The mining operations are subject to the requirements of the *Mining Act 1978* and hence the proposal will be subject to the mine closure guidelines prepared jointly by the EPA and the Department of Mines and Petroleum (DMP). The DMP has advised that it will address the rehabilitation of farmland consistent with the requirement of the EPA/DMP guidelines. The

EPA considers that conditions are not required to address the rehabilitation of farmland and this is consistent with advice received from the DMP.

Summary

Having particular regard to the:

(a) rehabilitation of native vegetation in the State forest and farmland proposed by the proponent;

(b) Parks and Wildlife recommendations for rehabilitation of the State forest area;

(c) proponent's proposed topsoil management and mining methods;

(d) advice of the DMP that it will manage the rehabilitation of farmland consistent with the joint EPA/DMP guidelines for mine closure; and

(e) requirement for an offset, given the significant residual impact of the likely loss of flora abundance and diversity in the rehabilitated area,

the EPA considers that the proposal can be managed to meet the EPA's environmental objective for Rehabilitation and Decommissioning provided that condition 7 requiring a Clearing and Rehabilitation Plan is implemented satisfactorily.

3.5 Offsets

The EPA's environmental objective for this factor is *to counterbalance any significant residual environmental impacts or uncertainty through the application of offsets*.

The significant residual impacts of the proposal are:

- loss of values associated with the communities of the Whicher Scarp native forest ecosystem, including DRF;
- impact to State forest (8.9 ha); and
- loss of foraging and potential breeding habitat for *Calyptorhynchus banksii naso* (Forest Red-tailed Black-Cockatoo), *Calyptorhynchus baudinii* (Baudin's Black-Cockatoo) and *Calyptorhynchus latirostris* (Carnaby's Black-Cockatoo) (8.9 ha).

All of these significant residual environmental impacts are associated with the clearing of the State forest component of the proposal.

The proponent prepared a draft offset strategy that was described in the PER. The draft offset strategy considered land acquisition, revegetation and rehabilitation to offset for the significant residual impacts of the proposal.

The EPA recommends condition 8 for the proponent to prepare and implement a Land Acquisition and Management Plan to address the significant residual environmental impacts identified for this proposal. The offset strategy is intended to be implemented in the Whicher Scarp native forest ecosystem. The recommended condition provides flexibility in the

proponent achieving an offset to counterbalance for the significant residual environmental impacts or uncertainty with the proposal. Uncertainty, in this case, mainly relates to the level of success of the rehabilitation of native vegetation in the area of State forest impacted by the proposal. The EPA considers that revegetation of foraging habitat for Black Cockatoos must be a component of the offset strategy to ensure there is no net loss of Black Cockatoo habitat. This is also addressed in the recommended condition.

As the Offset addresses the potential impact on the three species of Black Cockatoos, a matter of MNES, the Commonwealth Government has advised that the recommended condition is not inconsistent with its approach.

Summary

Having particular regard to the:

(a) significant residual impacts of the proposal being the loss of flora and vegetation, and fauna values associated with the Whicher Scarp native forest ecosystem, the impact to the State forest and the loss of foraging and potential breeding habitat for Black Cockatoo species; and

(b) the proponent's proposed approach, which envisages land acquisition, rehabilitation, and revegetation,

the EPA considers that the proposal can be managed to meet the EPA's environmental objective for Offsets provided that condition 8, which requires the preparation of a Land Acquisition and Management Plan, is implemented satisfactorily.

4. Matters of National Environmental Significance

The Commonwealth Minister for the Environment has determined that the proposal is a controlled action under *the Environment Protection Biodiversity Conservation Act 199*9 (EPBC Act) as it is likely to have a significant impact on one or more Matters of National Environmental Significance. It was determined that the proposed action is likely to have a significant impact on the following matters protected by the EPBC Act:

- listed threatened species and communities (section 18 and 18A); and
- wetlands of international importance (sections 16 and 17B).

This proposal is being assessed by way of an accredited process with the EPA under the bilateral agreement with the Commonwealth Government made under section 45 of the EPBC Act. The bilateral agreement allows the State of Western Australia to use the PER process to assess the action under the EPBC Act on behalf of the Commonwealth Minister for the Environment.

The proposed action has been assessed by the EPA in a manner consistent with Schedule 1 of that bilateral agreement and this assessment report satisfies clause 7.3 of Schedule 1.

The assessment report on the proposed action prepared by the EPA and provided to the Western Australia Minister for Environment is forwarded to the Commonwealth Minister for Environment who will then make a decision as to whether or not the proposal should be approved under the EPBC Act. This is separate from any Western Australia approval that may be required.

Surveys and investigations undertaken for the PER identified several species protected under the EPBC Act as being present, or having the potential to be present, within the development envelope.

Species identified as being present within the development envelope include:

- V*erticordia densiflora* var. *pedunculata* – Endangered;
- *Davesia elongata* subsp. *elongata* – Vulnerable;
- Carnaby's Black Cockatoo (*Calyptorhynchus latirostris*) – Endangered;
- Forest Red-tailed Black Cockatoo (*Calyptorhynchus banksii naso*) – Vulnerable;
- Baudin's Black Cockatoo (*Calyptorhynchus baudinii*) – Vulnerable; and
- Rainbow Bee-eater (*Merops ornatus*) – Migratory.

Six *Davesia elongata* subsp. *elongata* plants will be cleared through the implementation of the proposal. The number of individual plants of the species in the region totals 1,606. The loss of six plants represents 0.4% of the known individuals.

Given the similar habitat requirement, the three Black Cockatoo species have been grouped together. Loss of foraging, breeding, and roosting opportunities will occur as a result of the proposal. The remnant native vegetation to be cleared represents potential Black Cockatoo habitat as the area contains plants species documented as foraging habitat. Evidence of all three Black Cockatoo species foraging within the development envelope was found. The habitat to be cleared is known to contain 110 identified Black Cockatoo habitat trees with 40% without hollows, 51% with small hollows and 9% with large hollows. It is considered that the ten habitat trees with large hollows are considered suitable for nesting. One night-roosting site was also identified.

Although no V*erticordia densiflora* var. *pedunculata* individuals will be cleared, there is a risk of weed invasion and that dieback could spread from the potentially infested paddock and/or infested vegetation area on the west and east of the State forest sub-area. The proponent has committed to strict weed hygiene measure and the preparation and implementation of a dieback Management Plan.

The clearing of native vegetation has the potential to remove the habitat of the Rainbow Bee-eater. Given the widespread occurrence of this species in the region and within Australia, no significant impacts on this species are anticipated.

It is considered that no listed threatened species will cease to exist or have its conservation status affected as a result of this proposal.

The Vasse-Wonnerup System is a wetland listed as a Wetland of International Importance under the Ramsar Convention.

The Vasse-Wonnerup System is located approximately 14 km north of the development envelope. Results of groundwater drawdown assessment showed that the maximum extent of drawdown to the north of the development envelope is predicted to extend up to 350 m. The proposed locations for emergency water discharge are located north of the mine. It is expected that the water, which will be of a strict water quality, will move through the paddocks where it is likely to sit and evaporate.

Surface water discharges to the environment are regulated under Part V of the EP Act. The paddock drains are also separate to the major diversion drains in the region. Given the separation distance between the mine and the wetland and that there is no pathway for the discharged water to move into the wetland, no adverse impacts to the Vasse-Wonnerup System are expected as a result of implementation of the proposal.

Summary

No adverse impacts to the Vasse-Wonnerup System, a wetland of international importance, are expected. Impacts from the proposal on the fauna species mentioned above are not expected to result in an unacceptable or unsustainable impact on the conservation status of the listed species and communities. However, there will be significant residual impacts from the clearing of native vegetation on the three species of Black Cockatoo.

The EPA has recommended condition 8 for an offset, in the form of land acquisition with habitat improvement activities, to mitigate for the residual impacts to Black Cockatoo habitat.

5. Conditions

Section 44 of the EP Act requires that this assessment report must set out:

- what the EPA considers to be the key environmental factors identified in the course of the assessment; and
- the EPA's recommendations as to whether or not the proposal may be implemented, and, if the EPA recommends that implementation be allowed, the conditions and procedures to which implementation should be subject.

5.1 Recommended conditions

The EPA has developed a set of conditions that the EPA recommends be imposed if the proposal by Doral Mineral Sands Pty Ltd to develop the Yoongarillup Mineral Sands Project is approved for implementation.

These conditions are presented in Appendix 4. Matters addressed in the conditions include the following:

(a) The proposal would be developed within a 152 ha development envelope as described in Schedule 1 of the recommended statement that the proposal may be implemented (Appendix 4).

(b) The authorised extent of clearing of native vegetation in State Forest No. 33 is no more than 8.9 ha as described in Schedule 1 of the recommended statement that the proposal may be implemented.

(c) Condition 6 requires the proponent to prepare and implement a Flora and Vegetation Monitoring Plan to ensure that the impacts of mining (direct and indirect) are contained to the 8.9 ha area cleared of native vegetation within the State forest.

(d) Condition 7 requires the proponent to prepare and implement a Clearing and Rehabilitation Plan for the 8.9 ha of State forest native vegetation to be cleared. The assessment has highlighted the importance of managing the clearing of native vegetation to maximise the retention of topsoil and ensure that topsoil is only stored on areas of cleared vegetation within the 8.9 ha of State forest.

(e) Condition 8 addresses Offsets. Offset are required in view of the significant residual environmental impacts and risks to the environmental values of the area of State forest, impacts to threatened species, priority flora, fauna habitat, and the high diversity floristic community of the Whicher Scarp native forest ecosystem. The proponent will prepare and implement a Land Acquisition Management Plan.

It should be noted that, within the 152 ha development envelope, 88 ha is farmland that will be mined or disturbed. The rehabilitation and decommissioning of farmland areas will be regulated under the *Mining Act 1978* consistent with Department of Mines and Petroleum and EPA *Guidelines for Preparing Mine Closure Plans*.

Recommendations

That the Minister for Environment notes:

1. that the proposal assessed is to develop, mine, rehabilitate and decommission the Yoongarillup Mineral Sands Project;
2. the key environmental factors identified by the EPA in the course of its assessment set out in Section 3;
3. the EPA has concluded that the proposal may be implemented to meet the EPA's objectives, provided the implementation of the proposal is

carried out in accordance with the recommended conditions and procedures set out in Appendix 4 and summarised in Section 5;

4. the EPA's recommendations regarding the conditions and procedures which should apply to the proposal, set out in Appendix 4 of this report; and
5. the EPA's other information, advice and recommendations set out in Section 7 in relation to the Forest Management Plan (2014-2023) and the proposed additions to the Whicher National Park which would help ensure the ongoing conservation and protection of the Whicher Scarp native forest ecosystem.

It should be noted that, within the 152 ha development envelope, 88 ha is farmland that will be mined and/or disturbed. The rehabilitation and decommissioning of farmland areas will be regulated under the *Mining Act 1978* consistent with the Department of Mines and Petroleum and EPA *Guidelines for Preparing Mine Closure Plans*.

5.2 Consultation

In developing these conditions, the EPA consulted with the proponent and the relevant decision-making authority agencies, being the departments of Environment Regulation, Mines and Petroleum, Parks and Wildlife, and Water. The EPA consulted on matters of fact, technical feasibility and potential difficulties with implementation. Minor changes, which did not change the intent or scope, were made to conditions 6, 7 and 8 relating to ensuring agencies with statutory responsibilities are consulted during the preparation of relevant plans. Schedule 2 of the conditions, which specifies the location and authorised extent of the physical and operational elements, was amended to be consistent with the final proposal to be implemented by the proponent, and was also amended to address the potential for regulatory overlap in relation to the regulation of groundwater abstraction by the DoW under the *Rights in Water and Irrigation Act 1914.*

6. Other advice

The EPA considered the relative impact of clearing 8.9 ha of Whicher Scarp native forest ecosystem in the context of the proposed addition of 2,370 ha of this ecosystem into the Whicher National Park under the Forest Management Plan 2014–2023.

In addition, the EPA previously provided a report and recommendations on the Happy Valley Titanium Minerals Project (EPA Report 1383). The EPA concluded in the Happy Valley assessment that the Whicher Scarp native forest ecosystem was in need of protection.

The proposed additions to the Whicher National Park in the Forest Management Plan 2014–2013 now include areas that were part of the Happy Valley assessment.

The EPA stresses that acting on the proposed additions to the Whicher National Park will help ensure the ongoing conservation and protection of this important native forest ecosystem.

7. Recommendations

That the Minister for Environment notes:

1. that the proposal assessed is for the construction, operation, rehabilitation, and decommissioning of the Yoongarillup Mineral Sands Project.
2. the key environmental factors identified by the EPA in the course of its assessment set out in Section 3;
3. the EPA has concluded that the proposal may be implemented to meet the EPA's objectives, provided the implementation of the proposal is carried out in accordance with the recommended conditions and procedures set out in Appendix 4 and summarised in Section 5;
4. the EPA's recommendations regarding the conditions and procedures which should apply to the proposal, set out in Appendix 4 of this report; and
5. the EPA's other information, advice and recommendations set out in Section 6 in relation to the Forest Management Plan 2014-2023 and the proposed additions to the Whicher National Park, which would help ensure the ongoing conservation and protection of the Whicher Scarp native forest ecosystem.

Appendix 1

List of Submitters

Organisations:
Busselton Dunsborough Environment Centre
Department of Aboriginal Affairs
Department of Environment Regulation
Department of Mines and Petroleum
Department of Parks and Wildlife
Department of Water
Forest Products Commission
Wildflower Society of Western Australia Inc.

Individuals:
Chidgey/George family
Ron Collett
Kim Espinos
Trevor Espinos
Samuel Forestier
P & J Frost
T & L Koroveshi
Libby Mettam MLA
BD & FD Piggott
Ian Slee
Stuart Smith
K & E Stewart
Michael Tichbon
Elizabeth Wood
Confidential submission 1
Confidential submission 2
Confidential submission 3

Appendix 2

References

Doral 2014. *Yoongarillup Mineral Sands Project, Public Environmental Review,* October 2014.

Doral 2015. *Yoongarillup Mineral Sands Project, Public Environmental Review, Response to Public Submissions,* June 2015.

Environmental Protection Authority 2013. *Environmental Protection Bulletin No. 6 - The Natural Values of the Whicher Scarp*, EPA, Perth, WA.

Harewood G 2014. *Phase 1 and 2 Seasonal Fauna Surveys (Level 2), Yoongarillup Mineral Sands Project*. (unpublished)

Keighery BJ, Keighery GJ, Webb A, Longman VM and Griffin EA. 2008. *A Floristic Survey of the Whicher Scarp*. A report for the Department of Environment and Conservation as part of the Swan Bioplan Project. Department of Environment and Conservation, Government of Western Australia, Perth.

Appendix 3

Summary of Identification of Key Environmental Factors and Principles

Preliminary environmental factors	Description of the proposal's likely impacts on the environmental factor	Government agency and public comments	Evaluation of whether a factor *is* a key environmental factor
LAND			
Flora and Vegetation	• Direct loss through clearing of clearing 8.9 ha of native vegetation. • Direct loss of six of the known 1,606 individual plants of *Daviesia elongata* subs. *elongata.* • Potential indirect loss of vegetation through edge effects (degradation of vegetation through increase of interface between State Forest No. 33 and adjacent cleared areas). • Potential indirect loss of vegetation resulting from changes to hydrological regimes (groundwater drawdown). • Potential indirect (and potentially ongoing) loss / degradation of vegetation should dieback or weeds be introduced into previously uninfested areas. • If rehabilitation is unsuccessful	<u>Government Agencies:</u> • The proposal will result in further impacts on the Whicher Scarp forest ecosystem, which has already been reduced by 58%. • Recognising the current level of cumulative impacts on the Whicher Scarp native forest ecosystem and the EPA's previous interest in this area, it may be appropriate for the assessment to give further consideration to the appropriate level of formal protection of this ecosystem in reserves, and to a possible Government position on the current formal reserve proposals, as outlined in the *Forest Management Plan 2014 – 2023*. • That the significance of the impact on WHSFCT C1 be considered in the assessment. The proposal will result in significant residual impacts on this floristic community type. • That the significance of the impact of the proposal on the DRF *Daviesia elongata* subsp. *elongata* be suitably addressed in the assessment of the proposal. • That the following conditions be applied to any environmental approval for this proposal: - The proponent shall ensure that dieback disease is not spread beyond its current extent as a direct or indirect result of the proposal into the protectable areas within State forest; - Prior to project implementation, a Dieback	**This is considered to be a key environmental factor and is discussed in Section 3.1.**

Preliminary environmental factors	Description of the proposal's likely impacts on the environmental factor	Government agency and public comments	Evaluation of whether a factor *is* a key environmental factor
	there will be a permanent loss / degradation of vegetation and fauna habitat.	Management Plan is finalised in consultation with Parks and Wildlife to the satisfaction of Parks and Wildlife's CEO and made publically available; and - Implement the Dieback Management Plan during the construction and operation of the proposal. • That the proponent ensures that no new weed taxa are introduced to or spread beyond the current extent within the disturbed and adjacent areas of State forest, as a direct or indirect result of the proposal. <u>Busselton Dunsborough Environment Centre</u> • The cumulative effects of allowing this mining proposal to proceed present too high a risk to the recognised values of the Whicher Scarp. • The proposal area has been identified in the Draft System 1 Report (74) as being High Conservation Value. <u>Wildflower Society</u> • Assessing the proposal as acceptable would be inconsistent with the intent of *Environmental Protection Bulletin No. 6 – The Natural Values of the Whicher Scarp*. <u>Public</u> • Submissions covered the many of the same matters raised by government agencies and the non-government organisations (NGOs).	

Preliminary environmental factors	Description of the proposal's likely impacts on the environmental factor	Government agency and public comments	Evaluation of whether a factor *is* a key environmental factor
Terrestrial Fauna	Direct loss of fauna habitat from the clearing of 8.9 ha of native vegetation including: • significant residual impact on Black Cockatoo habitat as a result of the clearing of 110 habitat trees, 10 of which contain potential nesting hollows; and • indirect (and potentially ongoing) loss / degradation of fauna habitat should dieback or weeds be introduced into previously un-infested areas. There is potential for a significant residual impact on fauna if rehabilitation is unsuccessful and/or weeds and/or dieback are introduced.	<u>Busselton Dunsborough Environment Centre</u> • The proposed clearing would impact on a suite of threatened fauna. <u>Public:</u> • The proposal would impact native fauna residing in the area proposed to be cleared. • The proposed clearing would have an impact on the recovery of black cockatoo populations. • The reduction in black cockatoo habitat may result in an increased foraging by black cockatoos within their horticultural crops. • The proposed clearing may result in the displacement of kangaroos and emus onto their agricultural properties.	**This is considered to be a key environmental factor and is discussed in Section 3.2.**
Rehabilitation	• There is potential for a significant residual impact if rehabilitation is unsuccessful and there is a loss / degradation of vegetation and fauna habitat. • Consequences of failure to	<u>Government Agencies:</u> • There is a relatively low probability of the proponent being able to satisfactorily restore the full range of affected State forest values in the medium to long term. • There is a relatively high probability of rehabilitation areas in this environment being adversely affected by weeds and dieback.	**This is considered to be a key environmental factor and is discussed in Section 3.4.**

Preliminary environmental factors	Description of the proposal's likely impacts on the environmental factor	Government agency and public comments	Evaluation of whether a factor *is* a key environmental factor
	rehabilitate natural ecosystems to appropriate standards can include: - Reduction in the quality and quantity of habitats for plants, animals, fungi and microbes resulting in net loss of biodiversity. - Reductions in essential ecosystem functions such as carbon sequestration, water table stabilisation, etc. - Impacts on adjacent natural vegetation due to weed invasion, changes to hydrology, loss of connectivity, etc. - Environmental hazards and management costs that must be borne by society. - Loss of visual amenity and heritage values. - Failure to meet environmental conditions/commitments requiring additional remediation work.	<u>Public</u> • Submissions covered the same matters as raised by government agencies.	

Preliminary environmental factors	Description of the proposal's likely impacts on the environmental factor	Government agency and public comments	Evaluation of whether a factor *is* a key environmental factor
Offsets	Direct loss of highly diverse flora, vegetation and fauna habitat from the clearing of 8.9 ha of native vegetation. Significant residual impacts include: • loss of values associated with the communities of the Whicher Scarp native forest ecosystem, and general fauna values (2.8 ha); • impact to State Forest (8.9 ha); and • loss of foraging and potential breeding habitat for Carnaby's Cockatoo and Forest Red-tailed Black Cockatoo (8.9 ha).	<u>Government Agencies</u> • That the final offset for the proposal, if found environmentally acceptable, reflects the reality that the rehabilitation of State forest is unlikely to achieve high quality native vegetation outcomes for WHSFCT C1 or conservation flora and fauna, and will likely result in a highly modified and compromised native vegetation outcome with significant residual impact on conservation values of the affected State forest area. <u>Public</u> • Offsetting and buying more land does not add habitat. More is just lost.	**This is considered to be a key environmental factor and is discussed in Section 3.5.**
Terrestrial Environmental Quality	*DIEBACK* • The proposal may result in the spread of dieback outside its current known extent. • Indirect (and potentially ongoing) loss / degradation of vegetation should dieback be introduced into previously	*DIEBACK* <u>Government Agencies</u> • That the following conditions be applied to any environmental approval for this proposal: - The proponent shall ensure that dieback disease is not spread beyond its current extent as a direct or indirect result of the proposal into the protectable areas within State forest;	The potential impacts of dieback are discussed under the factor Terrestrial Flora and Vegetation. The proponent has committed to developing and implementing an

Preliminary environmental factors	Description of the proposal's likely impacts on the environmental factor	Government agency and public comments	Evaluation of whether a factor *is* a key environmental factor
	uninfested areas. *ACID SULFATE SOILS (ASS)* ASS can lead to localised impacts on water quality, soil condition and vegetation growth	- Prior to project implementation, a Dieback Management Plan is finalised in consultation with Parks and Wildlife to the satisfaction of Parks and Wildlife's CEO and made publicly available; and - Implement the Dieback Management Plan during the construction and operation of the proposal. <u>Busselton Dunsborough Environment Centre</u> • concerns that the proposal would result in the spread of dieback into areas previously mapped un-infested. <u>Public</u> • concern over the spread of dieback. *ACID SULFATE SOILS* <u>Government Agencies</u> • There is the potential for dewatering to interfere with ASS. • The main groundwater resource condition impacts are the potential oxidation of sulfidic material, associated sulfate plume and the formation of acidic conditions. This is required to be monitored and the rehabilitation progressed to remediate any plume from expanding down hydraulic gradient and impacting on other groundwater users and GDEs.	Acid Sulfate Soil Management Plan to the satisfaction of the DER. The DER would require the potential impacts of ASS to be addressed as part of the works approval requirements under Part V of the EP Act. The impacts to Terrestrial Environmental Quality are not considered likely to have a significant effect on the environment as they can be managed to meet the EPA's environmental objective. **Not considered to be a key environmental factor.** **Factor does not require further EPA evaluation.**

Preliminary environmental factors	Description of the proposal's likely impacts on the environmental factor	Government agency and public comments	Evaluation of whether a factor *is* a key environmental factor
		Public • There is the potential for dewatering to interfere with ASS.	
WATER			
Hydrological Processes	Changes to groundwater regimes from dewatering operations may affect: • Native vegetation within the State Forest sub-area and Whicher National Park; • Potential acid sulfate soil material located below the mine pit floor at a number of locations with the project area; and • Discharge of water in emergency situations may have a localised adverse effect on the receiving environment.	Government Agencies • Queried the validity of the hydrological modelling undertaken by the proponent. • The proponent will need to establish additional monitoring bores around the perimeter of, and south of, the mine pit to enable improved groundwater data collection. This will to allow for improved monitoring of groundwater levels during operations and will provide reference data that will assist in the validation of the groundwater model. • Dewatering activities may result in the oxidation of potential acid sulphate soil material. • Changes to groundwater regimes may impact on native vegetation within the State Forest sub-area, outside of the area proposed to be cleared. • There is the potential to change groundwater regimes within the pine plantation, resulting in possible detrimental effects on the health of the trees within the plantation. • The proposal had the potential to impact on the Vasse-Wonnerup Ramsar System Wetland.	The DoW has advised that the proposal will require a dewatering licence under section 5C of the *Rights in Water and Irrigation Act 1914* (RIWI Act). The DoW has reviewed the proponent's response to submissions. The proponent's response to the DoW's concerns about the groundwater modelling is considered acceptable at this stage of the investigations. The proponent's groundwater modelling predicts that there is potential for temporary

Preliminary environmental factors	Description of the proposal's likely impacts on the environmental factor	Government agency and public comments	Evaluation of whether a factor *is* a key environmental factor
		Busselton Dunsborough Environment Centre Changes to groundwater regimes may impact on native vegetation within the State Forest sub-area, outside of the area proposed to be cleared. Public • Submissions covered many of the same matters as raised by government agencies and NGOs. • Concern that the proposal will result in the lowering of groundwater levels, resulting in an impact on their domestic and agricultural water supply availability and quality.	minor groundwater drawdown at three private bores. All the bores are located within the proponent's development envelope. Groundwater modelling does not predict any adverse impacts from the mining operations on adjacent landholder bores. The proponent has committed to monitor the Yarragadee, Leederville and superficial aquifers. Monitoring would be required by the DoW. The RIWI Act requires the proponent to make good water supplies that are confirmed as being affected by the mining operations.

Preliminary environmental factors	Description of the proposal's likely impacts on the environmental factor	Government agency and public comments	Evaluation of whether a factor *is* a key environmental factor
			Not considered to be a key environmental factor. **Factor does not require further EPA evaluation.**
PEOPLE			
Amenity (Noise, Dust & Visual)	*NOISE* • Excessive noise can significantly impact on local communities, particularly where it disturbs sleep at night. • Ongoing noise disturbance can impact on human health *DUST* • Deposition of dust may occur inside local residences. • Deposition of dust on fabrics	*NOISE* <u>Government Agencies</u> • The proponent should justify the overall benefits of the construction of the proposed noise bunds. • Seek amenity agreements with residences where predicted noise levels exceed noise regulations. <u>Public</u> • Existing background noise levels are low, being a rural agricultural area. • Noise from the proposal will impact on the amenity of local residences. • The proponent should construct a 7.5 m high earthen bund along the northern perimeter of the proposal (east of Sues Road). *DUST* <u>Public</u> • The impact of dust on residents who suffer from asthma and other health concerns.	**Noise and dust emissions are considered to be a key environmental factor and are discussed in Section 3.3.**

Preliminary environmental factors	Description of the proposal's likely impacts on the environmental factor	Government agency and public comments	Evaluation of whether a factor *is* a key environmental factor
	(i.e. drying washing on line). • Deposition of dust on house roofs, and the potential for that dust to be transported to water tanks during rain. *VISUAL AMENITY* • The proposal is likely to have some short-term visual impacts on the scenic values of the State Forest sub-area located west of Sues Road.	• Impact on the quality of water captured in rainwater tanks from roof collection systems and used for domestic water supply. • Risk of inhalation of radioactive material. • The impact on local grass and horticultural crops. • The level of dust modelling / assessment undertaken. *VISUAL AMENITY* <u>Government Agencies</u> • The proposed mine will impact the scenic values of this section of the Whicher Scarp. The clearing, mine void and years of regenerating rehabilitation on an elevated scarp adjacent to cleared paddocks and a major transport corridor will be clearly visible for a considerable distance, negatively impacting the scenic value of the scarp landform and the adjoining National Park when viewed from the north. <u>Public</u> • That the proposal will be visible from surrounding properties, affecting their visual amenity. • That lighting from the proposal: - will be visible from their properties. - will disrupt the "night sky". - may disrupt sleeping patterns. - may disrupt the sleeping patterns of native fauna. - may disrupt sleeping patterns of agricultural and	The impacts on visual amenity and from additional lighting are not considered to be significant in view of the short duration of the proposal and the proponent's commitments to construct a 3 m high bund to provide a visual screen and to comply with *Australian Standard AS 4282-1997 Control of Obtrusive Effects of Outdoor Lighting*.

Preliminary environmental factors	Description of the proposal's likely impacts on the environmental factor	Government agency and public comments	Evaluation of whether a factor *is* a key environmental factor
		domesticated animals.	
Human Health	The proposal has the potential to impact on human health from the emission of radiation. All mineral sands are considered to be Naturally-Occurring Radioactive Materials (NORM), due to the presence of thorium and uranium in mineral grains.	<u>Government Agency</u> • the PER has not assessed radiological impacts from the proposal.	The Mineral Sands industry within the south west of WA has well established methods of operation, regulation, monitoring and research in the management of NORM with no resulting adverse radiological effects. The proponent has committed to develop and implement a Radiation Management Plan and a Radioactive Waste Management Plan to the satisfaction of the DMP. The potential impacts to Human Health are regulated by the DMP and can be managed to meet the EPA's environmental objective. **Not considered to be a key environmental**

Preliminary environmental factors	Description of the proposal's likely impacts on the environmental factor	Government agency and public comments	Evaluation of whether a factor *is* a key environmental factor
			factor. **Factor does not require further EPA evaluation.**

PRINCIPLES		
Principle	**Relevant Yes/No**	**If yes, Consideration**
Environmental principles of the EP Act		
1. The precautionary principle *Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.* *In application of this precautionary principle, decisions should be guided by –* *a) careful evaluation to avoid, where practicable, serious or irreversible damage to the environment; and* *b) an assessment of the risk-weighted consequences of various options.*	Yes	The proposal will impact the high value vegetation, flora and fauna habitat from clearing, and there is the potential for significant residual impact. Condition 6 has been recommended which requires the proponent to prepare a Flora and Vegetation Monitoring Plan to ensure the proposal does not result in the loss of vegetation beyond the boundary of the 8.9 ha of native vegetation to be cleared in the State forest. Condition 7 has been recommended which requires the proponent to prepare a Clearing and Rehabilitation Plan to ensure the area of native vegetation to be cleared maximizes the retention and condition of topsoil in the State forest and specifies the type and method of works that must be undertaken during rehabilitation, their timing, the monitoring methods to be used, and contingency actions. The Clearing and Rehabilitation Plan will determine the criteria by which rehabilitation success will be measured. Condition 8 has been recommended which allows for the development and implementation of offsets in view of the significant residual impacts and risks to the environmental values of the State forest including impacts to Declared Rare Flora and Threatened fauna species.

2. The principle of intergenerational equity *The present generation should ensure that the health, diversity and productivity of the environment is maintained and enhanced for the benefit of future generations.*	Yes	Condition 8 has been recommended which allows for the development and implementation of offsets in view of the significant residual impacts and risks to the environmental values of the State forest including impacts to Declared Rare Flora and Threatened fauna species. This aims to counterbalance any significant residual impacts to ensure there are net benefits in the future.
3. The principle of the conservation of biological diversity and ecological integrity *Conservation of biological diversity and ecological integrity should be a fundamental consideration.*	Yes	The proposal will impact high value vegetation, flora and fauna habitat from clearing. To avoid, minimize, rehabilitate and offset these impacts, the EPA has developed a set of conditions. The matters addressed in the conditions include the following: (f) The authorised extent of clearing of native vegetation in State Forest No. 33 is no more than 8.9 ha. (g) The proponent is to prepare and implement a Flora and Vegetation Monitoring Plan to ensure that the impacts of mining (direct and indirect) are contained to the 8.9 ha area of native vegetation to be cleared within the State forest. (h) The proponent is to prepare and implement a Clearing and Rehabilitation Plan for the 8.9 ha of State forest native vegetation to be cleared. (i) The proponent is to prepare and implement a Land Acquisition Management Plan to offset the significant residual environmental impacts and risks to the

		environmental values.
4. Principles relating to improved valuation, pricing and incentive mechanisms *(1) Environmental factors should be included in the valuation of assets and services.* *(2) The polluter pays principles – those who generate pollution and waste should bear the cost of containment, avoidance and abatement.* *(3) The users of goods and services should pay prices based on the full life-cycle costs of providing goods and services, including the use of natural resources and assets and the ultimate disposal of any waste.* *(4) Environmental goals, having been established, should be pursued in the most cost effective way, by establishing incentive structure, including market mechanisms, which enable those best placed to maximise benefits and/or minimize costs to develop their own solution and responses to environmental problems.* *(5)*	N/A	
5. The principle of waste minimisation *All reasonable and practicable measures should be taken to minimise the generation of waste and its discharge into the environment.*	N/A	

Environmental principles of the EPA		
1. Best practice *When designing proposals and implementing environmental mitigation and management actions, the contemporary best practice measures available at the time of implementation should be applied.*	Yes	Section 2 lists the management measures proposed by the proponent to avoid, minimise and rehabilitate environmental impacts associated with the design, construction, operation, and decommissioning of the proposal.
2. Continuous Improvement *The implementation of environmental practices should aim for continuous improvement in environmental performance.*	N/A	

Appendix 4

Identified Decision-making Authorities and Recommended Environmental Conditions

Identified Decision-making Authorities

Section 44(2) of EP Act specifies that the EPA's report must set out (if it recommends that implementation be allowed) the conditions and procedures, if any, to which implementation should be subject. This Appendix contains the EPA's recommended conditions and procedures.

Section 45(1) requires the Minister for Environment to consult with decision-making authorities, and if possible, agree on whether or not the proposal may be implemented, and if so, to what conditions and procedures, if any, that implementation should be subject.

The following decision-making authorities have been identified for this consultation:

Decision making authority	**Approval**
1. Minister for Aboriginal Affairs	*Aboriginal Heritage Act 1972*
2. Minister for Environment	*Wildlife Conservation Act 1950* Taking of flora and fauna
3. Minister for Water	*Rights in Water and Irrigation Act 1914* Water extraction licence
4. Minister for Lands	*Land Administration Act 1997*
5. Director General Department of Environment Regulation	*Environmental Protection Act 1986* • Works approvals and licencing
6. Department of Mines and Petroleum	*Mines Safety and Inspection Act 1994*
7. Commissioner of Main Roads	Approval to realign Sues Road
8. City of Busselton	Planning approval

Note: In this instance, agreement is only required with DMAs 1-4 since these DMAs are Ministers.

Statement No. xxx

RECOMMENDED ENVIRONMENTAL CONDITIONS

STATEMENT THAT A PROPOSAL MAY BE IMPLEMENTED
***(Environmental Protection Act 1986*)**

YOONGARILLUP MINERAL SANDS PROJECT

Proposal:	The proposal is to develop, mine, rehabilitate and decommission the Yoongarillup Mineral Sands Project. The proposal is located approximately 17 kilometres south east of Busselton. The proposal includes the construction of associated mine infrastructure (offices, workshops, laydown area, roads, and ore processing facilities), the backfilling of mined pits and the rehabilitation and decommissioning of disturbed areas.
Proponent:	Doral Mineral Sands Pty Ltd Australian Company Number 096 342 451
Proponent Address:	Lot 7 Harris Road, Picton WA 6229
Assessment Number:	1938

Report of the Environmental Protection Authority: 1552

Pursuant to section 45 of the *Environmental Protection Act 1986* it has been agreed that the proposal described and documented in Table 1 and 2 of Schedule 1 may be implemented and that the implementation of the proposal is subject to the following implementation conditions and procedures:

Words and expressions used in this Statement shall have the same respective meanings as in the Act or as provided for in Schedule 1 of this Statement.

1 Proposal Implementation

1-1 When implementing the proposal, the proponent shall not exceed the authorised extent of the proposal as defined in Table 2 in Schedule 1, unless amendments to the proposal and the authorised extent of the proposal have been approved under the EP Act.

2 Contact Details

2-1 The proponent shall notify the CEO of any change of its name, physical address or postal address for the serving of notices or other correspondence within twenty eight (28) days of such change. Where the proponent is a corporation or an association of persons, whether incorporated or not, the

postal address is that of the principal place of business or of the principal office in the State.

3 Time Limit for Proposal Implementation

3-1 The proponent shall not commence implementation of the proposal after five (5) years from the date on this Statement, and any commencement, prior to this date, must be substantial.

3-2 Any commencement of implementation of the proposal, on or before five (5) years from the date of this Statement, must be demonstrated as substantial by providing the CEO with written evidence, on or before the expiration of five (5) years from the date of this Statement.

4 Compliance Reporting

4-1 The proponent shall prepare, submit and maintain a Compliance Assessment Plan to the CEO at least six (6) months prior to the first Compliance Assessment Report required by condition 4-6, or prior to implementation, whichever is sooner.

4-2 The Compliance Assessment Plan shall indicate:

(1) the frequency of compliance reporting;

(2) the approach and timing of compliance assessments;

(3) the retention of compliance assessments;

(4) the method of reporting of potential non-compliances and corrective actions taken;

(5) the table of contents of Compliance Assessment Reports; and

(6) public availability of Compliance Assessment Reports.

4-3 After receiving notice in writing from the CEO that the Compliance Assessment Plan satisfies the requirements of condition 4-2 the proponent shall assess compliance with conditions in accordance with the Compliance Assessment Plan required by condition 4-1.

4-4 The proponent shall retain reports of all compliance assessments described in the Compliance Assessment Plan required by condition 4-1 and shall make those reports available when requested by the CEO.

4-5 The proponent shall advise the CEO of any potential non-compliance within seven (7) days of that non-compliance being known.

4-6 The proponent shall submit to the CEO the first Compliance Assessment Report fifteen (15) months from the date of issue of this Statement addressing

the twelve (12) month period from the date of issue of this Statement and then annually from the date of submission of the first Compliance Assessment Report, or as otherwise agreed in writing by the CEO.

The Compliance Assessment Report shall:

(1) be endorsed by the proponent's Chief Executive Officer or a person delegated to sign on the Chief Executive Officer's behalf;

(2) include a statement as to whether the proponent has complied with the conditions;

(3) identify all potential non-compliances and describe corrective and preventative actions taken;

(4) be made publicly available in accordance with the approved Compliance Assessment Plan; and

(5) indicate any proposed changes to the Compliance Assessment Plan required by condition 4-1.

5 Public Availability of Data

5-1 Subject to condition 5-2, within a reasonable time period approved by the CEO of the issue of this Statement and for the remainder of the life of the proposal the proponent shall make publicly available, in a manner approved by the CEO, all validated environmental data (including sampling design, sampling methodologies, empirical data and derived information products (e.g. maps)) relevant to the assessment of this proposal and implementation of this Statement.

5-2 If any data referred to in condition 5-1 contains particulars of:

(1) a secret formula or process; or

(2) confidential commercially sensitive information;

the proponent may submit a request for approval from the CEO to not make these data publicly available. In making such a request the proponent shall provide the CEO with an explanation and reasons why the data should not be made publicly available.

6 Flora and Vegetation

6-1 The proponent shall ensure that the proposal does not result in any loss of native vegetation beyond the boundary of Area A as shown in Figure 3 and delineated by the co-ordinates specified in Table 5 of Schedule 2.

6-2 Prior to ground disturbing activities the proponent shall prepare a Flora and Vegetation Monitoring Plan in consultation with the Department of Parks and

Wildlife, and submit the plan to the CEO. The Flora and Vegetation Monitoring Plan shall:

(1) when implemented, substantiate and ensure that condition 6-1 is being met;

(2) identify and spatially define reference sites including the scientific rationale for the proposed locations;

(3) include baseline vegetation health and abundance parameters;

(4) detail the proposed vegetation health (including impact from changes in groundwater level) monitoring methodology;

(5) detail the proposed frequency and timing of monitoring;

(6) specify criteria (trigger criteria) that will trigger the implementation of management and/or contingency actions to prevent loss of vegetation outside Area A; and

(7) specify management and/or contingency actions to be implemented in the event that the trigger criteria required by condition 6-2(6) have been reached.

6-3 After receiving notice in writing from the CEO, that the Flora and Vegetation Monitoring Plan satisfies the requirements of condition 6-2, the proponent shall:

(1) monitor in accordance with the requirements of the Flora and Vegetation Monitoring Plan; and

(2) continue to monitor in accordance with the requirements of the Flora and Vegetation Monitoring Plan until the CEO has confirmed, on the advice of the Department of Parks and Wildlife, by notice in writing that it has been demonstrated that the outcome in condition 6-1 is being and will continue to be met and therefore monitoring is no longer required.

6-4 In the event that the monitoring indicates that the trigger criteria specified in the Flora and Vegetation Monitoring Plan have been reached the proponent shall:

(1) immediately implement the management and/or contingency actions specified in the Flora and Vegetation Monitoring Plan on advice from the Department of Parks and Wildlife and continue implementation of those actions until the trigger criteria are being met, or until the CEO has confirmed by notice in writing that it has been demonstrated that the outcome in condition 6-1 is being, and will continue to be met, and implementation of the management and/or contingency actions is no longer required;

(2) investigate to determine the likely cause of the trigger criteria being reached, and to identify any additional contingency actions required to prevent the trigger criteria being reached in the future; and

(3) provide a report to the CEO within 7 days of an event referred to in condition 6-4 occurring. The report shall include:

(a) details of management and/or contingency actions implemented; and

(b) the findings of the investigation required by condition 6-4(2).

6-5 The proponent may review and revise the Flora and Vegetation Monitoring Plan, in consultation with the Department of Parks and Wildlife.

6-6 The proponent shall review and revise the Flora and Vegetation Monitoring Plan as and when directed by the CEO.

6-7 The proponent shall implement the latest revision of the Flora and Vegetation Monitoring Plan in consultation with the Department of Parks and Wildlife, which the CEO has confirmed, by notice in writing, satisfies the requirements of condition 6-2.

7 Clearing and Rehabilitation of State forest

7-1 The proponent shall ensure that Area A, as shown in Figure 3 and delineated by the co-ordinates specified in Table 5 of Schedule 2, is decommissioned and rehabilitated to support functional landforms, soil profile, ground and surface water systems and ecological communities, that are suitable for continued use of this area as State forest.

7-2 Prior to ground disturbing activities the proponent shall prepare a Clearing and Rehabilitation Plan in consultation with the Department of Parks and Wildlife, and submit this plan to the CEO. The Rehabilitation Plan shall:

(1) ensure that clearing and mining of the Area A is undertaken in stages to ensure progressive rehabilitation;

(2) ensure that if clearing is to be undertaken during July to February, the proponent shall thoroughly inspect the area for Black Cockatoo breeding activity, in particular nesting, and if the area is found to be in use, clearing in the area shall be postponed until such time as determined suitable, on the advice of the Department of Parks and Wildlife;

(3) ensure that the topsoil removed from Area A is stored only within Area A, and is stored for a maximum of 18 months;

(4) specify the fencing and access requirements to Area A;

(5) specify the method of clearing vegetation, including the retention of any vegetative material for rehabilitation within Area A;

(6) specify the topsoil removal, storage (location and time), and respreading procedures within Area A;

(7) specify the timing of mining, and return of soil profile and landforms;

(8) specify measures, including the timing of operations, to prevent weeds and dieback from establishing in Area A;

(9) specify the placement of mining infrastructure to ensure that progressive rehabilitation can occur;

(10) specify measurable, achievable, realistic and timing specific completion criteria, to ensure the management objective in condition 7-1 is achieved;

(11) specify the monitoring program to report on completion criteria progress;

(12) specify any other management actions that will be implemented to ensure the management objective in condition 7-1 is achieved; and

(13) be consistent with the Department of Mines and Petroleum and EPA Guidelines for Preparing Mine Closure Plans.

7-3 After receiving notice in writing from the CEO that the Clearing and Rehabilitation Plan satisfies the requirements of condition 7-2, the proponent shall:

(1) implement the management actions and monitor in accordance with the requirements of the Clearing and Rehabilitation Plan; and

(2) continue to implement the Clearing and Rehabilitation Plan until the CEO has confirmed by notice in writing that it has been demonstrated that the objective in condition 7-1 has been met and therefore the implementation of the management actions and monitoring is no longer required.

7-4 The proponent may review and revise the Clearing and Rehabilitation Plan, in consultation with the Department of Parks and Wildlife.

7-5 The proponent shall review and revise the Clearing and Rehabilitation Plan as and when directed by the CEO.

7-6 The proponent shall implement the latest revision of the Clearing and Rehabilitation Plan, in consultation with the Department of Parks and Wildlife, which the CEO has confirmed by notice in writing, satisfies the requirements of condition 7-2.

8 Offsets

8-1 In view of the significant residual impacts and risks to the environmental values of State forest within Area A, including impacts to threatened species, priority flora, fauna habitat and the high diversity community of the Whicher Scarp Forest Ecosystem as a result of implementation of the proposal, the proponent shall undertake the following requirements relating to offsets as outlined in conditions 8-2 to 8-3.

8-2 Prior to ground disturbing activities, the proponent shall prepare a Land Acquisition and Management Plan, in consultation with the Department of Parks and Wildlife, and submit the plan to the CEO. The Land Acquisition and Management Plan shall:

(1) identify an area of at least 19 ha to be protected and managed for conservation;

(2) identify the environmental attributes of the area(s) to be acquired which must:

a) contain known foraging and breeding habitat for *Calyptorhynchus banksii naso* (Forest Red-tailed Black-Cockatoo), *Calyptorhynchus baudinii* (Baudin's Black-Cockatoo) and *Calyptorhynchus latirostris* (Carnaby's Black-Cockatoo).

b) have native forest ecosystem values (including condition attributes) similar to those being impacted by the proposal;

c) include no more than 3 ha of cleared land for revegetation; and

d) be located on the Whicher Scarp Native Forest Ecosystem, unless otherwise agreed by the CEO.

(3) if any of the vegetation in the area(s) identified is in a degraded condition, or if any area is cleared and identified for revegetation:

a) outline the objectives and targets to be achieved, including completion criteria and timeframes for completion;

b) identify improvement actions and a timeframe for the actions to be undertaken to improve the condition of native vegetation, in that area;

c) detail the on-ground activities that will be undertaken, with associated completion criteria;

d) detail the funding arrangements and timing of funding for activities; and

e) detail the monitoring requirements for offset activities.

(4) identify the role of the proponent and detail any agreements with third parties; and

(5) identify the mechanism by which the land will be provided for management under the *Conservation and Land Management Act 1984,* and timeframes for this to occur.

8-3 After receiving notice in writing, on the advice of the Department of Parks and Wildlife, from the CEO that the Land Acquisition and Management Plan satisfies the requirements of condition 8-2, the proponent shall:

(1) implement the actions in accordance with the requirements of the approved Land Acquisition and Management Plan; and

(2) continue to implement the approved Land Acquisition and Management Plan until the CEO has confirmed, on the advice of the Department of Parks and Wildlife, by notice in writing that it has been demonstrated that the completion criteria in the Land Acquisition and Management

Plan have been met, and therefore the implementation of the actions is no longer required.

8-4 The proponent may review and revise the Land Acquisition and Management Plan, in consultation with the Department of Parks and Wildlife.

8-5 The proponent shall review and revise the Land Acquisition and Management Plan as and when directed by the CEO.

8-6 The proponent shall implement the latest revision of the Land Acquisition and Management Plan, which the CEO has confirmed by notice in writing, satisfies the requirements of condition 8-2.

8-7 The Land Acquisition and Management Plan required by condition 8-2 shall be made publicly available once approved by the CEO.

Schedule 1

Table 1: Summary of the Proposal

Proposal Title	Yoongarillup Mineral Sands Project
Short Description	The proposal is to develop, mine, rehabilitate and decommission the Yoongarillup Mineral Sands Project. The proposal is located approximately 17 kilometres southeast of Busselton (Figure 1). The life of mine is expected to be three years, including an initial pre-mine development phase, mining and onsite processing to produce heavy mineral concentrate, backfilling of mine pits, rehabilitation and decommissioning. The pre mining development phase includes the construction of associated mine infrastructure (offices, workshops, laydown area, roads, and ore processing facilities).

Table 2: Location and authorised extent of physical and operational elements

Element	Location	Authorised Extent
Mine Pits and additional disturbance (Indicative)	Figures 2 and 3 and Geographic coordinates as described in Schedule 2	Within a 152 ha development envelope: • clearing no more than 8.9 hectares of native vegetation within Area A; and • an additional disturbance of no more than 88 ha.
Area A	Figure 3	Within a 152 ha development envelope: • Clearing of no more 8.9 ha.

Table 3: Abbreviations and Definitions

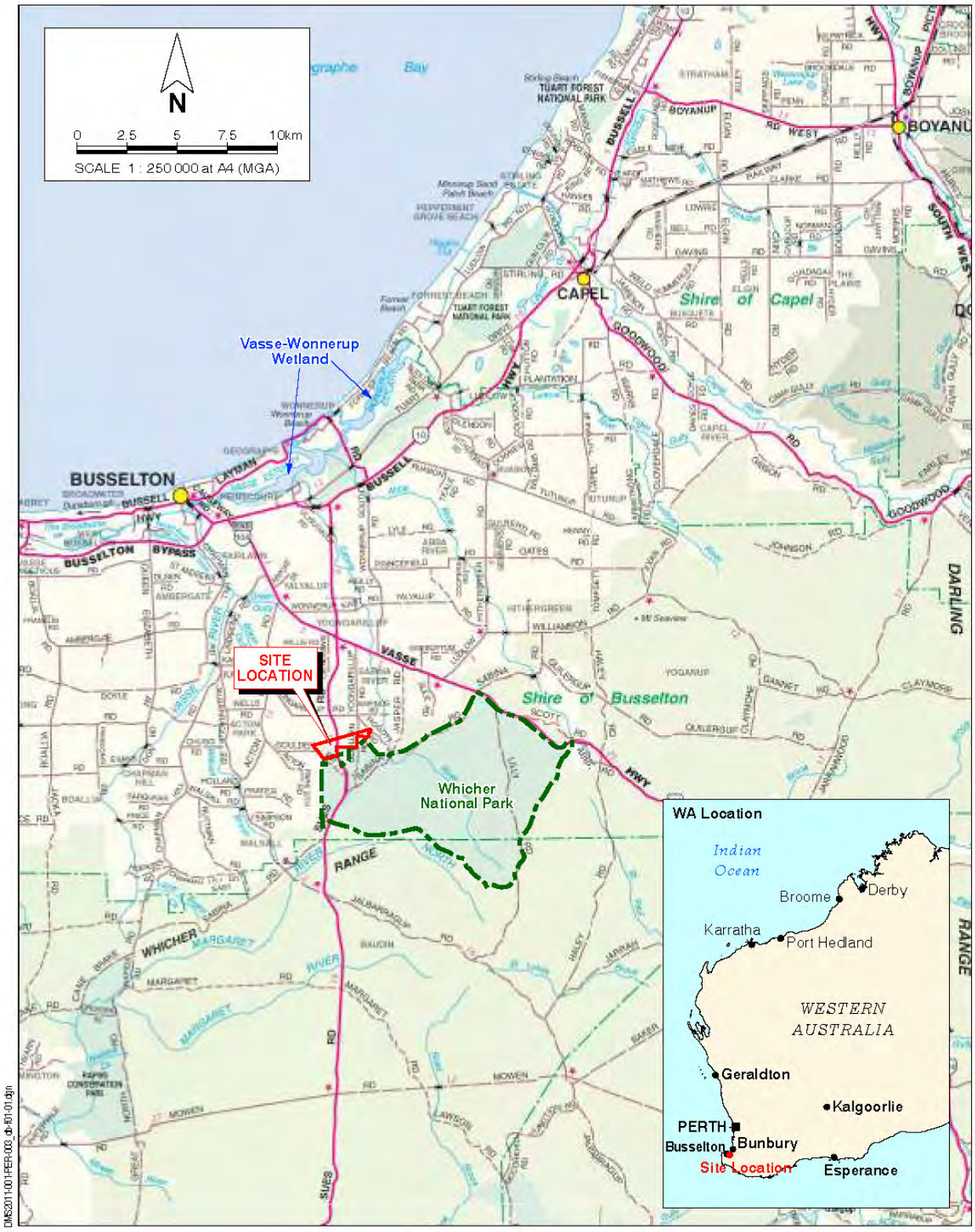
Acronym or Abbreviation	Definition or Term
CEO	The Chief Executive Officer of the Department of the Public Service of the State responsible for the administration of section 48 of the *Environmental Protection Act 1986*, or his delegate.
EPA	Environmental Protection Authority
EP Act	*Environmental Protection Act 1986*
OEPA	Office of the Environmental Protection Authority
ha	hectare

Figures

Figure 1 Proposal Location.

Figure 2 Development envelope with conceptual mine layout (This figure is a representation of the coordinates shown in Table 4 of Schedule 2).

Figure 3 Location of Area A (This figure is a representation of the coordinates shown in Table 5 of Schedule 2).



Doral	Regional Location		
Public Environmental Review Proposed Yoongarillup Mineral Sands Project	Scale: 1:250 000	Projection: Australia MGA94 (50)	Sheet Size: A4
	Figure 1-1		Date: 28/04/2014

Figure 1: Regional Location

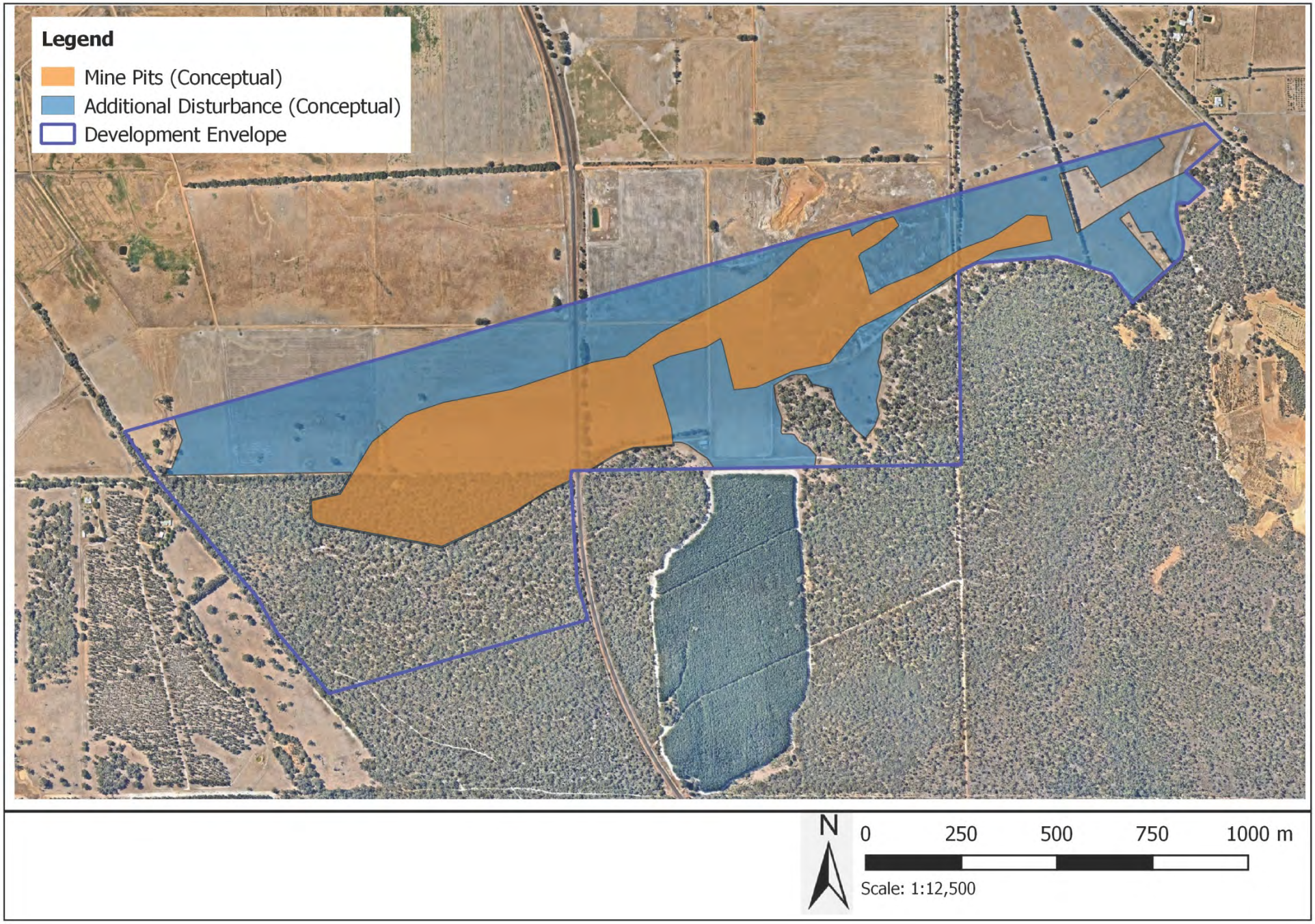


Figure 2: Development envelope with conceptual mine and associated infrastructure layout

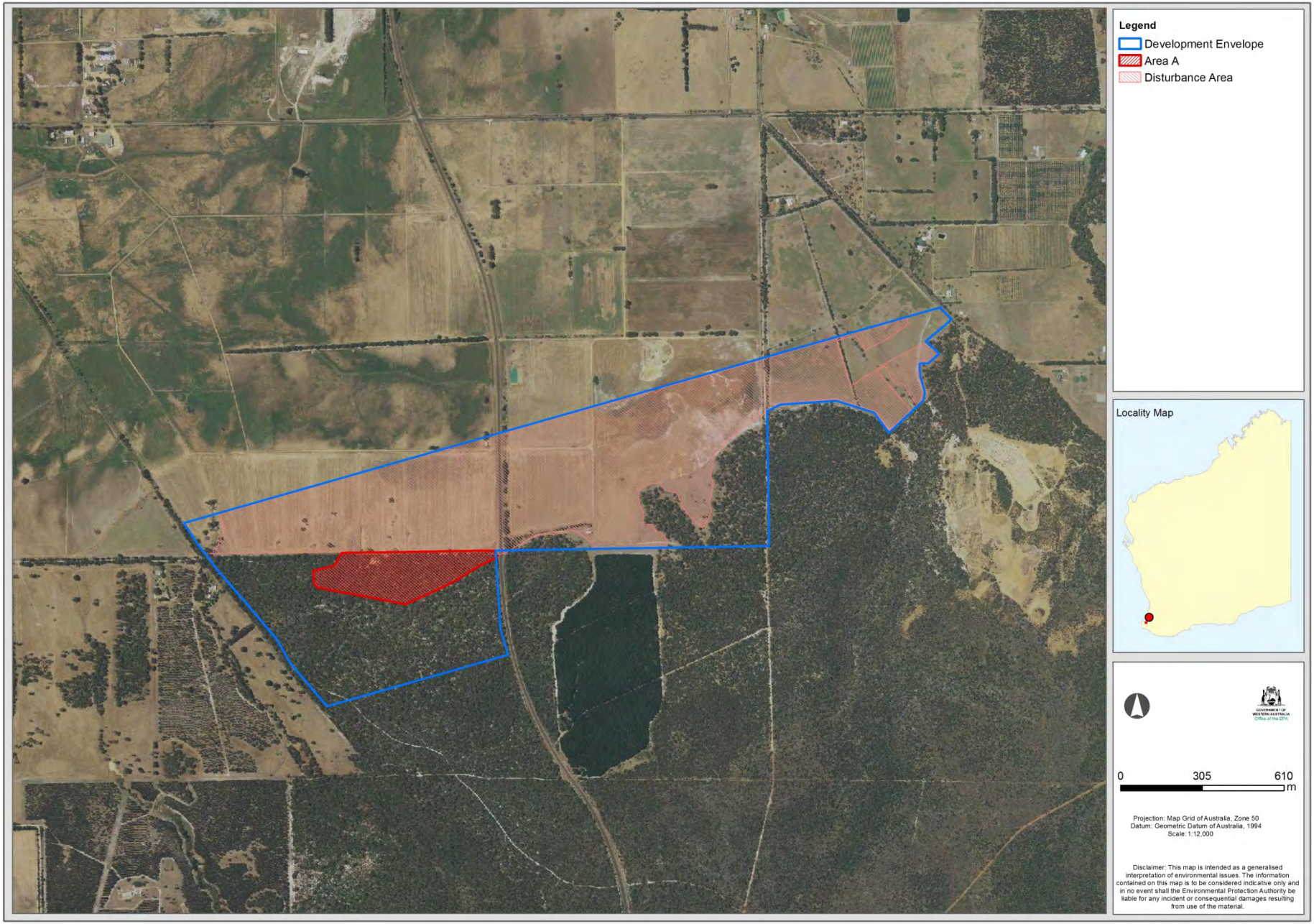


Figure 3: Location of Area A

Schedule 2

Table 4: Development Envelope Coordinates (MGA Zone 50)

Coordinate No	Easting	Northing
1	352766.34	6262979.48
2	355592.10	6263785.52
3	355635.24	6263740.67
4	355539.97	6263659.04
5	355589.08	6263613.32
6	355547.59	6263576.07
7	355528.97	6263577.76
8	355517.11	6263575.22
9	355516.27	6263565.91
10	355519.65	6263525.27
11	355527.40	6263499.17
12	355534.89	6263475.31
13	355534.05	6263459.22
14	355529.05	6263436.93
15	355401.64	6263316.49
16	355346.09	6263392.34
17	355204.69	6263436.36
18	355003.86	6263422.95
19	354994.34	6263421.04
20	354946.24	6263396.92
21	354954.69	6262894.00
22	353931.64	6262877.33
23	353943.70	6262687.65
24	353950.17	6262583.17
25	353978.75	6262487.67
26	353301.92	6262295.07
27	353163.85	6262456.47
28	353113.77	6262545.97
29	353023.37	6262652.18
30	352895.34	6262802.59
31	352823.56	6262894.24
32	352786.23	6262949.84
33	352766.34	6262979.48

Table: 5 Area A Coordinates (MGA Zone 50)

Coordinate No	Easting	Northing
1	353941.2	6262858
2	353933.4	6262855
3	353933.4	6262855
4	353933.7	6262849
5	353869	6262819
6	353781.7	6262764
7	353709.2	6262728
8	353601.7	6262679
9	353596.7	6262676
10	353468.8	6262701
11	353370.4	6262719
12	353354.3	6262721
13	353354.1	6262721
14	353351.9	6262722
15	353268.2	6262738
16	353253.4	6262752
17	353250.6	6262802
18	353257.9	6262804
19	353328.1	6262820
20	353329.6	6262822
21	353346	6262849
22	353357.6	6262868
23	353363.2	6262868
24	353425.5	6262869
25	353597.6	6262872
26	353676.9	6262873
27	353704	6262874
28	353832.3	6262876
29	353928.4	6262877
30	353933	6262858
31	353941.2	6262858

All coordinates are in metres, listed in Map Grid of Australia Zone 50 (MGA Zone 50), datum of Geocentric Datum of Australia 1994 (GDA94).

Appendix 5

Summary of Submissions and
Proponent's Response to Submissions

Provided on CD in hardcopies of this report and on the EPA's website at www.epa.wa.gov.au