



Appeals Convenor
Environmental Protection Act 1986

**REPORT TO THE
MINISTER FOR ENVIRONMENT**

**APPEALS IN OBJECTION TO THE CONTENT OF, AND RECOMMENDATIONS
IN, AN ENVIRONMENTAL PROTECTION AUTHORITY REPORT**

EPA REPORT 1552: YOONGARILLUP MINERAL SANDS PROJECT

PROPONENT: DORAL MINERAL SANDS PTY LTD

Appeal Numbers 037 to 048 and 066 of 2015

April 2016

Appeals Summary

This report addresses the appeals lodged in objection to the content of, and recommendations in, the report of the Environmental Protection Authority (EPA) in relation to the proposal by Doral Mineral Sands Pty Ltd (the proponent) to develop, mine, rehabilitate and decommission the Yoongarillup Mineral Sands Project (the proposal).

The appellants raised a range of issues in relation to the proposal, which have been broadly summarised as follows: flora and vegetation; fauna; groundwater and surface water; amenity; acid sulphate soils; rehabilitation; offsets; previous decisions of EPA, policy and guidance; and stakeholder consultation and availability of environmental management plans.

The EPA advised that in assessing the proposal it took into consideration:

- Application of the mitigation hierarchy during the assessment process, reducing the proposed clearing within the State Forest from 20 to 8.9 ha;
- Limited duration of impact;
- Clearing will be staged and progressively rehabilitated;
- Large area of State Forest surrounding the proposal;
- Revised mining methods, mitigation and proposed monitoring to minimise the potential impacts of noise and dust on landowners that abut or are near the mine; and
- Ability of other regulatory processes to manage impacts.

Having regard to the information presented in respect to the appeal and the advice from relevant Government agencies and the proponent, it is considered that the EPA had sufficient information to assess the proposal and that this assessment was consistent with section 44 of the *Environmental Protection Act 1986* (the EP Act).

Based on the advice of the EPA, it is noted there is an established regulatory framework under Part V of the EP Act which provides confidence that potential impacts related to noise and dust from the proposal, as raised by appellants, can be adequately managed.

However, having had regard for all of the information presented it is recommended that the appeals be allowed to the extent that the conditions should be amended as set out below and for the reasons detailed in the report.

Recommendations

For the reasons set out in this report, it is recommended that the appeals be allowed to the extent that:

1. The title of Condition 7 '*Clearing and Rehabilitation of State Forest*' and the '*Clearing and Rehabilitation Plan*' referred to in Condition 7 are amended to '*State Forest - Area A*' and '*State Forest – Area A Management Plan*' respectively;
2. Condition 7 is amended to require that a qualified spotter thoroughly inspects terrestrial fauna habitat areas (including black cockatoo habitat) daily prior to clearing operations and retrieve fauna if necessary;
3. Condition 7-2(2) is amended to reflect the EPA's recommendations regarding the removal of reference to specific breeding months and the application of mitigation and management measures prior to any clearing (if threatened fauna is identified), on the advice of Parks and Wildlife;

4. Flora and Vegetation Monitoring Plan required by Condition 6 to be prepared in consultation with Department of Water, in addition to Parks and Wildlife;
5. Life of mine of three years is added to Schedule 1, Table 2 of the EPA's recommended Conditions;
6. A groundwater abstraction element is included into Schedule 1, Table 2 of the EPA's recommended Conditions;
7. Condition 8-1 is amended to be consistent with Condition 7-1 in Ministerial Statement 1022, to provide that the proponent shall undertake an offset with the objective of counterbalancing the significant residual impact to 8.9 ha of the Whicher Scarp Forest Ecosystem, including impacts to 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), the DRF *Davesia elongata* subsp. *Elongata*, Priority Ecological Community Whicher Scarp FCT C1 and the high diversity community of the Whicher Scarp Forest Ecosystem; and
8. The title of Condition 5 is amended to '*Public Availability of Data and Plans*' and the words '*and plans*' be included on Line 4 of sub-condition 5-1 after the following phrase '*...all validated environmental data*'.

The precise wording of the conditions should be finalised through the consultation process under section 45 of the EP Act.

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INTRODUCTION

This report addresses appeals lodged in objection to the content of, and recommendations in, the report of the Environmental Protection Authority (EPA) in relation to the proposal by Doral Mineral Sands Pty Ltd (the proponent) to develop, mine, rehabilitate and decommission the Yoongarillup Mineral Sands Project (the proposal).

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 that commenced on 20 October 2014.

In July 2015, the EPA released its report and recommendations to the Minister for Environment on its assessment of the proposal (EPA Report 1552), where it concluded that the key environmental factors identified for the proposal can be managed to meet the EPA's objectives and recommended that the proposal may be implemented subject to the conditions and procedures set out in EPA Report 1552.

The proposal was determined to be a controlled action under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) in September 2012 due to the proposal's potential impacts to Matters of National Environmental Significance (MNES): listed threatened species and communities and wetlands of international importance.

Thirteen appeals were lodged against the report and recommendations of the EPA for the proposal by:

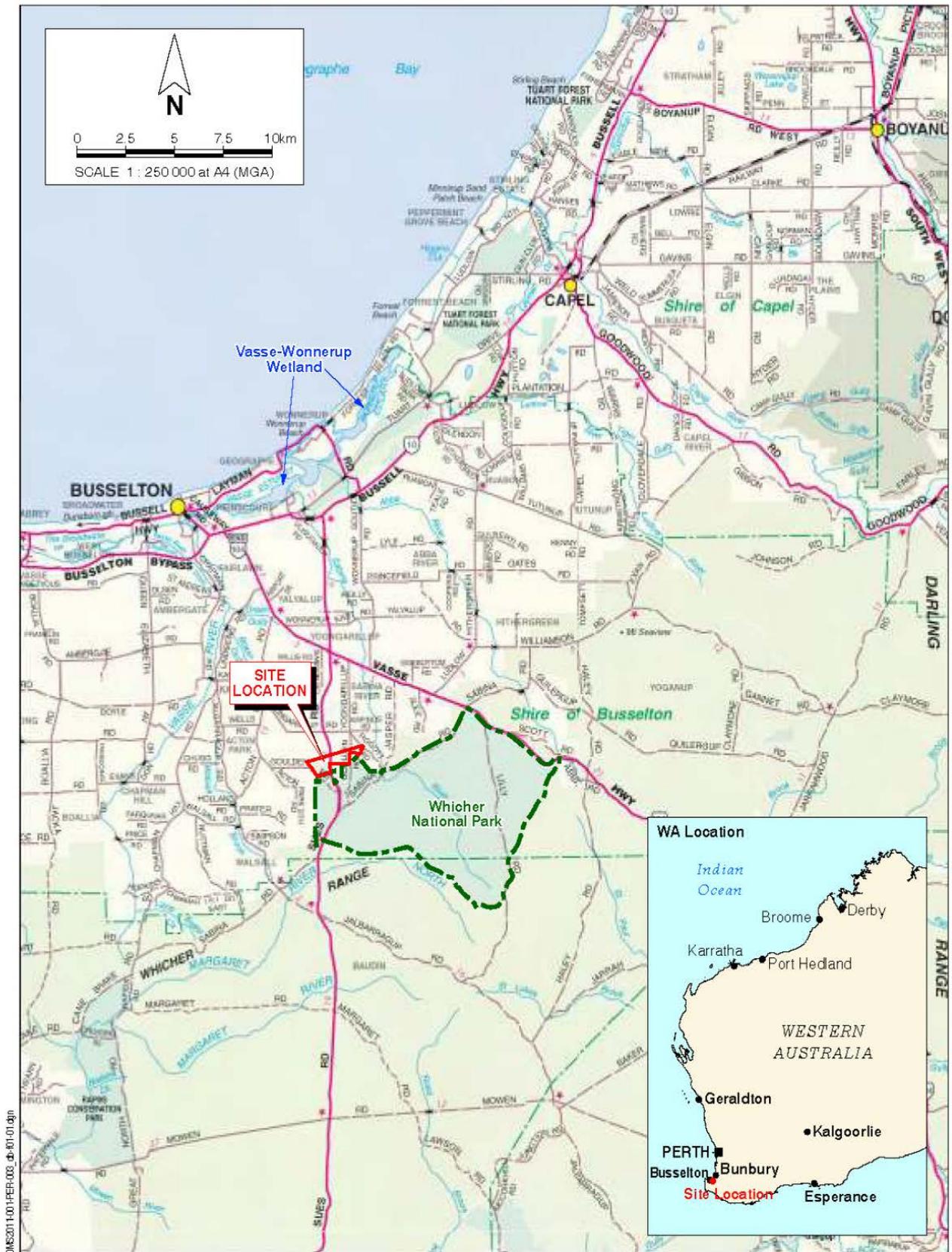
- Busselton Water;
- Busselton-Dunsborough Environment Centre;
- Fiona Hill Wood;
- Jenifer and John George;
- Louise Korovesi;
- Hon Libby Mettam MLA;
- Margaret River Regional Environment Centre Inc;
- Ron Collet;
- Suzanne and Edward Chidgey;
- Stuart Smith;
- South-west Forests Defence Foundation Inc;
- Wendy Slee; and
- Helen Jones.

This document is the Appeals Convenor's formal report to the Minister for Environment under section 109(3) of the *Environmental Protection Act 1986* (EP Act).

THE PROPOSAL

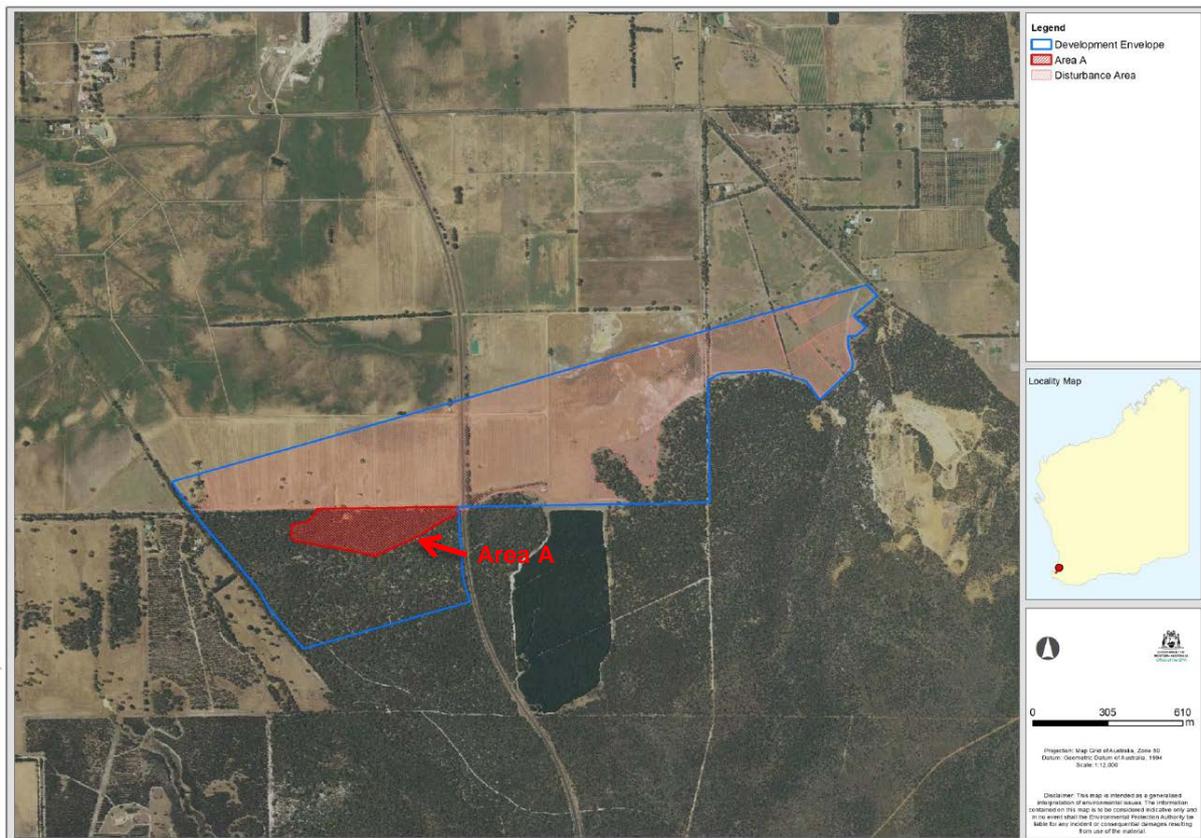
The proposal is located approximately 17 kilometres (km) south east of Busselton along Sues Road (see Figure 1). Within the development envelope of 152 hectares (ha), 8.9 ha (Area A) is located within State Forest No.33 (State Forest) and 88 ha within previously cleared land used for farming activities (see Figure 2).

Figure 1 – Proposal location



(Source: adapted from EPA Report 1552)

Figure 2 – Disturbance Boundary



(Source: adapted from EPA Report 1552)

The life-of-mine is expected to be three years where the extraction of 4,000,000 tonnes of ore is proposed to produce 256,000 tonnes of heavy mineral concentrate, including zircon, ilmenite and rutile. The proposal has been broadly summarised into the following components:

- Life of mine includes an initial pre-mine development phase, mining and onsite processing to produce heavy mineral concentrate, backfilling of mine pits, rehabilitation and decommissioning;
- Ore will be mined progressively via a series of open-cut pits using dry mining techniques, where groundwater inflows will be dewatered;
- Ore will be processed 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; and
- 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.

KEY ENVIRONMENTAL FACTORS

The EPA advised that it assessed the proposal in accordance with the *Environmental Impact Assessment (Part IV Divisions 1 and 2) Administrative Procedures 2012*, and during its assessment had regard for the principles and objectives set out in section 4A of the EP Act.

The EPA advised that the following guidelines set out the basis for the EPA's determination on what it considers are key environmental factors, and to form its recommendation on whether or not a proposal should be implemented, and if so, the recommended conditions:

- EPA (revised 2015) Environmental Assessment Guideline 8 – Environmental principles, factors and objectives;
- EPA (2013a) Environmental Assessment Guideline 9 – Application of a significance framework in the EIA process

The EPA identified that the following key environmental factors were relevant to the proposal:

- Flora and vegetation;
- Terrestrial fauna;
- Amenity (noise and dust);
- Rehabilitation and decommissioning (integrating factor); and
- Offsets (integrating factor).

OVERVIEW OF APPEAL PROCESS

In accordance with section 106 of the EP Act, a report was obtained from the EPA in relation to the issues raised in the appeals. The proponent was also given the opportunity to respond to appeal issues raised. As part of the investigation of the appeal, the Office of the Appeals Convenor undertook a site visit and discussed the appeals with the appellants and the proponent. Additional advice was also sought from the EPA in relation to a number of the matters raised in the appeals.

The environmental appeals process is a merits based process. For appeals in relation to an EPA report and recommendations, the Appeals Convenor normally considers the environmental merits of the assessment by the EPA, based on objectives as set by the EPA as well as other environmental factors. The appeals process considers environmental significance, relevance of factors, additional information not considered by the EPA, technical errors and attainment of policy objectives.

In determining appeals, the following decisions are available to the Minister, he may either dismiss the appeals; or allow the appeals in full or part by remitting the proposal for assessment, further assessment or reassessment by the EPA, or by changing the implementation Conditions recommended by the EPA.

OUTCOMES SOUGHT BY APPELLANTS

Broadly the appellants sought for the proposal not to be approved or for the proposal to be remitted to the EPA for further assessment. A number of appellants sought for the State Forest component (Area A) to be excised from the proposal.

GROUNDINGS OF APPEAL

The appellants raised a number of common concerns, which have been broadly summarised under the following grounds:

- Flora and vegetation;
- Fauna, including black cockatoos;
- Groundwater and surface water;
- Amenity;
- Acid sulphate soils;
- Aboriginal heritage;
- Rehabilitation;
- Offsets;
- Previous EPA decisions, policy and guidance documents; and
- Stakeholder consultation and availability of environmental management plans

The appellants also raised issues which did not relate specifically to EPA Report 1552. These matters are described at other matters.

GROUND 1: FLORA AND VEGETATION

Appellants referred to EPA Bulletin No.6 (EPA, 2009) in highlighting that the vegetation within the area is geographically distinct, endemic, has high species richness and is recognised as a local biodiversity hotspot. Key concerns raised in relation to this ground of appeal have been broadly summarised under the following headings:

- Basis of the EPA's assessment;
- The EPA's assessment of direct impacts; and
- The EPA's assessment of indirect impacts.

Basis of EPA's assessment

An appellant contended that:

- The EPA did not apply its policies, specifically the definition of '*community*' as set out in the EPA Guidance Statement 51 - Terrestrial Flora and Vegetation Surveys for Environmental Impact Assessment in Western Australia (EPA, 2004a) (GS 51) in its assessment; and
- The proponent and EPA had inadequately identified and described the specific flora and vegetation values of the proposal area.

The appellant provided detailed technical information to support their contention.

Consideration

The EPA determined that flora and vegetation was a key environmental factor for the proposal where the environmental objective is '*To maintain representation, diversity, viability, and ecological function at the species, population and community level.*'

The EPA advised that in this objective, the term community is used in a broad sense covering vegetation at a range of scales. The intent is to see that regional and local significance of vegetation units is identified to enable assessment of the significance of impacts.

The EPA advised that, in undertaking its assessment, the EPA needs to be satisfied it has adequate flora and vegetation information to judge whether its environmental objective for the environmental factor of flora and vegetation is likely to be met.

GS 51 identifies information required from vegetation surveys to assist the EPA in determining whether flora and vegetation is a key environmental factor in an assessment, and in forming its recommendation on whether or not a proposal should be implemented, and if so, the recommended Conditions. In particular, under '*determining the extent and level of survey required*', section 3.2.5 of GS 51 sets out:

Vegetation should be addressed below the regional to sub-regional scale, e.g. vegetation complexes, alliances and formations, and land systems. Mapping at the population or community level is preferable. However, in larger areas this may not be feasible.

Section 6.1 of GS 51 defines '*community*' as follows:

Community (compare with assemblage and ecological community) – A general term applied to any grouping of populations of different organisms found living together in a particular environment (Allaby 1992). Plant community – an assemblage of plants at any given locality Beard (1990).

The term '*community*' has been applied at a range of scales in general use (as have ecosystems, habitat and vegetation). In this document '*community*' is usually used to refer to all populations of all plant species at a locality. This is a details approach to plant diversity, with good resolution of the make-up of vegetation. Beard's regional mapping was several levels coarser than this.

In relation to this appeal ground, the EPA advised that the definition of '*community*' in GS 51 does not set a fixed scale to be applied to assessments and the term has been applied at a range of scales. The EPA considered that the scale to be applied to the assessment would depend on a range of factors including the extent of potential impacts and the availability of regional information at or below the sub-regional scale to contextualise the impacts.

With regard to its assessment the EPA advised that the Environmental Scoping Document (EPA, 2013b) for the assessment set out the survey requirements to be undertaken for the assessment referring to GS 51.

The proponents level 2 Flora and Vegetation surveys were conducted in November 2011 and September and October 2012, and a threatened and priority flora species survey in March 2012.

The EPA advised that the proponent's mapped vegetation units (Doral, 2014) were considered to be equivalent to communities as defined in GS 51.

The EPA also advised that there were limitations in the proponent's survey work, including the extent to which it met the requirements of the Environmental Scoping Document. The EPA advised that in this case it considered that the existing flora and vegetation information available for the area was sufficient (in conjunction with the proponent's information) to assess the proposal and judge whether its objective could be met.

The EPA advised that in forming this view, it recognised that there is a difference of approach between vegetation classification based on dominant species and structure, which vegetation communities are generally based on, and analysis of floristic composition data, which Floristic Community Types are based on. In this case the EPA considered that the existing Department of Parks and Wildlife (Parks and Wildlife) Floristic Community Types mapping for the Whicher Scarp provided a good basis for assessing significance of

vegetation units below the sub-regional scale, particularly given the small extent of clearing, and was therefore adequate for its assessment.

The Appeals Convenor sought advice from Parks and Wildlife in relation to the appellant's contentions that the EPA inadequately identified the flora and vegetation values of the proposal area, vegetation mapping and floristic analysis and conservation significant flora. Parks and Wildlife noted that there was not an examination of variations in floristic composition between occurrences of the mapped Whicher Scarp Floristic Community Type C1 Priority Ecological Community (PEC) within and beyond the proposal area, but advised that Parks and Wildlife did not consider that such an examination was necessary for the EPA to judge whether it considered its environmental objective for flora and vegetation could be met.

Having regard to the above information, it is considered that the EPA had regard to their policies, and had sufficient information to assess the proposal. It is recommended that this aspect of the appeal ground be dismissed.

EPA's assessment of direct impacts

Appellants submitted that the EPA's report failed to adequately consider direct impacts to flora species and vegetation communities located within an international biodiversity hotspot. Appellants raised concerns regarding the EPA's assessment of the impacts the project would have, including:

- Native vegetation of very good to excellent quality and impacts to the Yelverton Vegetation Complex do not meet Commonwealth national targets and objectives for biodiversity conservation or EPA targets for reservation;
- Declared rare flora (DRF) *Davesia elongata* subsp. *Elongata*, particularly the EPA's assessment of the loss of six individual plants, asserting that the impacts to this DRF were of greater consequence than the EPA had concluded given its conservation status;
- Whicher Scarp Floristic Community Type C1 (FCT C1) PEC, particularly:
 - The significance of the loss of 55% (2.8 ha of 5.1 ha) of this occurrence of the PEC;
 - The EPA did not consider community level variation between the occurrence of PEC impacted by the proposal and other occurrences of this PEC; and
 - The EPA did not apply the precautionary principle in its assessment of impacts on the this PEC as it relied on Parks and Wildlife mapped PEC boundary (5.1 ha) as opposed to the larger inferred boundary in the proponent's PER (8.2 ha).

Consideration

In its assessment the EPA concluded that its objective could be met, noting that the clearing of Area A (see Figure 2):

- Would result in the clearing of 8.9 ha of the Whicher Scarp forest ecosystem at a sub-regional scale, that is, approximately 0.09% of that remaining extent of this system (9,960 ha); and
- represent 0.3% of the extent of the forest ecosystem proposed to be included in formal reserves, noting that the area to be cleared by this proposal is not proposed to be included in the formal reserve system.

In its response to the appeal, the EPA referred to EPA Position Statement No.2 (Environmental Protection of Native Vegetation in Western Australia) (EPA, 2000), in stating that one of the EPA's expectations for areas outside the agricultural area is:

...a proposal would demonstrate that the vegetation removal would not compromise any vegetation type by taking it below the "threshold level" of 30% of the pre-clearing extent of the vegetation type...

National Objectives and Targets for Biodiversity Conservation 2001–2005 (Canberra, 2001) include as a target:

By 2003, all jurisdictions: have clearing controls in place that prevent clearance of ecological communities with an extent below 30 per cent of that present pre-1750; ...

Based on existing information, the EPA advised that the pre-European vegetation of Yelverton is 9,046 ha, with 3,477 ha (38%) remaining. The EPA advised that the proposal would impact 0.2% of the remaining extent of this vegetation complex. On this basis, it is considered that the Yelverton Vegetation Complex will not be below the EPA's threshold level nor the objective of the national target as a result of this proposal.

With regards to concerns relating to the direct impacts on DRF *Davesia elongata* subsp. *elongata*, the EPA noted that the implementation of the proposal will result in the clearing of approximately six of the seven *Davesia elongata* subsp. *elongata* plants that make up the local population, an overall loss of 0.4% from the total known population of 1,606 individuals. The EPA stated in its report: '*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.*'

It is noted that while the EPA did not consider this impact to be of a magnitude that would make the project unacceptable, it did consider it to be a significant residual impact requiring an offset. Offsets are discussed further at Appeal Ground 8.

With respect to the appellants concerns regarding Whicher Scarp FCT C1, it is noted that data provided by Park and Wildlife confirms there are seven known occurrences of the PEC with a total area of 53.9 ha.

The EPA advised that it had identified the significance of, and potential impacts on, the Whicher Scarp FCT C1 as being the key issue for the assessment of flora and vegetation, as it was listed by Parks and Wildlife as a Priority One PEC.

The proposal would result in the clearing of 2.8 ha of Whicher Scarp FCT C1. This represents a loss of 55% of this occurrence (5.1 ha) and a loss of 5.2% of the known mapped extent of the Whicher Scarp FCT C1.

In response to appellant concerns that this loss represents an unacceptable impact, the EPA advised that:

- Whicher Scarp FCT C1 is a floristic community that has strong representation of a less common group of flora species, increasing the diversity of this area of State Forest. The PEC is significant at a local scale due to this diversity; however the flora species found in the community are represented elsewhere on the Whicher Scarp Native Forest ecosystem; and
- While the impact to Whicher Scarp FCT C1 is significant at the local scale, the overall reduction of 5.2% in the regional context is not as significant, as the species that comprise this community are found elsewhere on the Scarp, with 13.9 ha or 25% of the PEC being located and reserved within the Whicher National Park area.

The EPA considered that as rehabilitation would not be able to replace all the floristic values of the Whicher Scarp FCT C1 (particularly its flora diversity), a significant residual impact would result. On this basis, the EPA recommended an offset to counterbalance the significant residual impacts arising from the partial clearing of the PEC. Offsets are discussed further at Ground 8.

With regards to the appellant's concern that the assessment did not properly assess the variation within Whicher Scarp FCT C1, it is understood that the appellant considered that the impact should be assessed on different communities present in this FCT not on the whole as if it were uniform.

The EPA's approach to assessing whether a proposal can meet its environmental objective for flora and vegetation is discussed above. While it is recognised that the appellant has a different view on how such an assessment should be conducted, it is considered that the EPA's assessment was consistent with its policies and normal practice.

With regard to the EPA's decision to use the Parks and Wildlife mapped PEC boundary (5.1 ha) as opposed to the larger inferred boundary in the proponent's PER (8.2 ha), it is noted that EPA Report 1552 explained the rationale for that decision as follows:

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 Parks and Wildlife boundary.

In this regard, Parks and Wildlife also advised that it considered *'that the decision for defining the community extent was broadly based on a precautionary approach'*.

The EPA advised that while there will be direct impacts to conservation significant flora species and vegetation communities, it was confident that its objective for this factor could be met through implementation of Condition 6 (limiting loss of native vegetation to the 8.9 ha of Area A and requiring a Flora and Vegetation Monitoring Plan) and Condition 7 (requiring a Clearing and Rehabilitation Plan for Area A). Consistent with its policies, the EPA has recommended Condition 8 to offset the significant residual impact that will result.

On this basis and noting the scale of the proposal, it is considered that the EPA appropriately assessed potential impacts to conservation significant flora species and vegetation communities. Therefore it is recommended that this element of the appeal be dismissed.

EPA's assessment of indirect impacts

Appellants raised concerns regarding the EPA's assessment of indirect impacts on flora and vegetation including:

- The impact on vegetation from mine dewatering lowering groundwater levels;
- That indirect impacts may occur in 3.8 ha of the FCT C1 located outside Area A, which could impact a further 5% of mapped PEC;
- Changes to microclimatic conditions, including increased average wind speed, increased isolation and decreased moisture levels;
- That the adaptive management measures recommended by the EPA were unlikely to protect vegetation once obvious signs of deterioration have been observed;
- That the proposed flora and vegetation management plans should be developed with local specialists; and

- The introduction and spread of dieback (*Phytophthora cinnamomi*) and weeds to State Forest.

Consideration

The issues raised by appellants in relation to groundwater and impacts to vegetation beyond the boundary of the proposal from potential groundwater drawdown effects are discussed at ground 3 (Groundwater and surface water).

In its advice to the Appeals Convenor on flora and vegetation matters, Parks and Wildlife indicated that, in its submission to the PER that it had provided advice to the EPA regarding indirect impacts (including edge effects, weeds, dieback, dust, changes in hydrology and fragmentation) and advised '*of the potential for up to 12 per cent of the local Whicher Scarp FCT C1 community to be indirectly impacted by the proposal and noted that experience with previous Whicher Scarp mining operations indicates that mining almost inevitably leads to impacts on native vegetation adjacent to the clearing footprint.*'

With respect to indirect impacts outside Area A, in its report the EPA noted its concern regarding incremental losses and/or degradation of the values of the Whicher Scarp native forest arising from threatening processes in the area and recommended Conditions to limit the impacts to vegetation to the 8.9 ha of Area A: Condition 6 (limiting loss of native vegetation to the 8.9 ha of Area A and requiring a Flora and Vegetation Monitoring Plan) and Condition 7 (requiring a Clearing and Rehabilitation Plan for Area A).

While it is noted that the Parks and Wildlife's view about the significance of impacts, including management and probable extent of indirect impacts, was more conservative than the EPA's, it is noted that Parks and Wildlife also advised that:

Parks and Wildlife does not consider there to be any significant issues with the information or conclusions relating to species level impacts in the EPA Report that would materially affect decisions around project acceptability.

With respect to the concern that adaptive management measures recommended by the EPA were unlikely to protect vegetation once obvious signs of deterioration have been observed, the EPA advised that recommended Condition 6 requires impacts to be limited to the 8.9 ha of Area A, and preparation of a Flora and Vegetation Monitoring Plan. The plan requires the proponent to specify relevant trigger criteria that will be monitored, and specific management and/or contingency actions to be implemented in the event that the trigger criteria required by the condition have been reached. In its response to the appeal, the EPA advised that it is aware that there are viable contingency actions such as using infiltration trenches to maintain soil moisture profiles in the event that trigger criteria are reached.

With respect to input from local specialists in the development of the management plans, it is noted that Conditions 6 and 7 require the proponent to develop the plans in consultation with Parks and Wildlife. This is consistent with the EPA's Environmental Assessment Guideline No.17 (Preparation of Management Plans under Part IV of the *Environmental Protection Act 1986*), and will provide the opportunity for specialist advice and the development of appropriate triggers and management actions.

In relation to dieback, the EPA's report noted that there is a risk '*that dieback could spread from the potentially infested paddock and/or the infested vegetation on the west and east of the State Forest sub-area*'. The EPA advised that the proponent has amended its mining plans so that the State Forest area is mined in two stages, allowing topsoil to be retained within the disturbance boundary of Area A, reducing contamination risk and the time the topsoil is left exposed. The EPA recommended Condition 7 to ensure the necessary

planning and management measures are undertaken to give effect to the proponent's commitments, including clauses intended to address the risks from dieback and weeds:

- Topsoil removed from Area A is stored only in Area A, and is stored for a maximum of 18 months; and
- Specific measures, including timing of operations, to prevent weeds and dieback from establishing in Area A.

It is noted that EPA Report 1552 states that:

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.

Based on this advice, it is considered that the management of dieback at all stages of the proposal's implementation is important, including clearing, operations and rehabilitation. However, Condition 7, which contains the specifications regarding dieback, is titled '*Clearing and Rehabilitation of State Forest*' and furthermore the plan required under the Condition is the '*Clearing and Rehabilitation Plan*', neither indicates the inclusion of the operations component of the proposal.

In order to provide clarity regarding the intention of the Condition to manage the risk from dieback and weeds through all stages of the project, and to provide for consistent terminology, it is recommended that the appeal ground be allowed to the extent that the title of Condition 7 '*Clearing and Rehabilitation of State Forest*' and the '*Clearing and Rehabilitation Plan*' referred to in Condition 7 are amended to '*State Forest - Area A*' and '*State Forest – Area A Management Plan*' respectively, so that the Condition is not limited to clearing and rehabilitation activities.

Summary for Ground 1

For the reasons described above it is recommended that the first two elements of this ground (the basis for the EPA's assessment; and the EPA's assessment of direct impacts) be dismissed. It is recommended that the third element of this ground (the EPA's assessment of indirect impacts) is upheld to the extent that the Condition 7 is amended to clarify the intent of the Condition to include management of the risk from dieback and weeds at all project stages, and to provide for consistent terminology.

GROUND 2: FAUNA

The appellants raised a number of concerns in relation to potential impacts to fauna which have been summarised under the following headings: black cockatoos and impacts to other fauna species.

Black Cockatoos

Appellants raised a number of concerns regarding the EPA's assessment of black cockatoos including Carnaby's Black Cockatoo (*Calyptorhynchus latirostris*), Forest Red-tailed Black Cockatoo (*Calyptorhynchus banksii naso*) and Baudin's Black Cockatoo (*Calyptorhynchus baudinii*) which have been summarised as follows:

- Black cockatoos no longer leave the local area as they once did;
- Staged clearing will not be effective as birds will not stay in a noisy area;
- Black cockatoos can nest in jarrah trees where suitable hollows are available;

- There should be an assessment undertaken to verify whether tree hollows are used for breeding by black cockatoos;
- The breeding season for each of the three species of black cockatoos overlaps and encompasses most times of the year, which is contrary to Condition 7 recommended by the EPA, which states that the breeding season is July to February;
- Given the conservation status of the black cockatoos, no further loss of foraging and breeding habitat is acceptable; and
- Expectations of the capacity of mine rehabilitation to provide foraging resources for black cockatoos (i.e. within eight years) is overstated, and experience suggests 20 years growth is required before the vegetation is likely to be successful in attracting black cockatoo species.

Consideration

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.

The EPA noted in its report that there is evidence of all three black cockatoo species foraging within the development envelope, and that the area to be cleared contains 110 identified suitable black cockatoo habitat trees. It is also noted that ten of the identified habitat trees had large hollows that were considered suitable for nesting.

The EPA advised that the proponent has committed, where possible, to undertake clearing to avoid the breeding seasons of the black cockatoo species. The EPA considered that given the breeding and nesting patterns of the black cockatoo are known and understood, adequate forward planning should be achievable through the proponent's Clearing and Rehabilitation Plan, required through the EPA's recommended Condition 7.

In its response to the appeals, the EPA acknowledged the appellants' concerns surrounding the breeding periods of black cockatoos, but advised that it is confident in the breeding period that was outlined in the EPA Report. The EPA advised that the breeding period it specified was a composite of the published records for all three species (Johnstone and Storr (1998) *Western Australian Birds* Volume 1):

- Baudin's eggs laid October (shortest season);
- Carnaby's eggs laid early July to mid-October; and
- Forest Red-tail Black Cockatoo eggs laid October and November.

The EPA advised that adult birds assume possession of a hollow some time prior to egg laying and chicks fledge approximately 70 days post hatching.

If clearing during the breeding season is unavoidable, the EPA advised that it had recommended Condition 7 which requires the proponent to '*thoroughly inspect*' the area for breeding (particularly nesting) black cockatoos and seek the advice of the Parks and Wildlife prior to ground disturbing activities.

In response to appellant's concerns, the EPA recommended that the reference to specific months in Condition 7 be removed and that Condition 7-2(2) is amended to read '*ensure that when the clearing is to be undertaken, 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 mitigation and management measures are applied, on the advice of the Department of Parks and Wildlife'.

The EPA concluded 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 cockatoos remains. It is noted that the EPA did not consider that rehabilitation would mitigate this significant residual impact, and recommended that it would need to be addressed through an offset. Offsets are considered further under Appeal Ground 8.

Having regard to the information above, it is considered that the EPA's assessment of the potential impacts to the black cockatoos was appropriate. However, to address appellant's concerns regarding uncertainty of the combined potential breeding season for the three species of black cockatoo it is recommended that this element of the appeal is allowed to the extent that Condition 7-2(2) is amended to reflect the EPA's recommendations regarding the removal of reference to specific breeding months and the application of mitigation and management measures prior to any clearing (if breeding activity is identified), on the advice of Parks and Wildlife.

Impacts to other fauna species

In addition to black cockatoos discussed above, the appellants also raised the following concerns in relation to the EPA's assessment of impacts to fauna including:

- Impacts to threatened fauna species, including Forest Toadlet, Speckled Stone Gecko and the Black Backed Snake;
- Chuditch and Western Ringtail Possum are known in the local area and therefore impacts (including indirect) should have been considered;
- The potential presence of the Thylacine in the local area should have been considered. One appellant provided a descriptive account of experiences of the Thylacine on its property local to the proposal. The appellant asserted that the evidence, although largely anecdotal from numerous unrelated people over decades, should not be dismissed or denied;
- Fauna will move from the cleared area into surrounding properties causing impacts to surrounding crops, shrubs and trees; and
- Impacts to fauna from noise and light were not considered in the assessment.

Consideration

EPA Report 1552 notes that 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.

The proponent's PER reported that a detailed fauna investigation was undertaken which included:

- Level 1 fauna assessment;
- Level 2 seasonal Fauna Survey undertaken in December 2011 and March 2012;
- Chuditch Trapping Program; and
- Western Ringtail Possum Targeted Surveys.

The EPA advised that it undertook a technical review of the draft PER and concluded that the fauna surveys for the proposal were generally undertaken in accordance with the requirements of the Environmental Scoping Document which included the requirement to

undertake a survey in accordance with Guidance Statement No.56 (EPA, 2004b). The results of these investigations were published as Appendix 7 to the PER (Harewood, 2014) and summarised in the PER.

Having regard to these investigations, the EPA concluded that seven conservation significant fauna were likely or known to occur within the development area (not including black cockatoos):

- 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; and
- Quenda (*Isoodon obesulus fusciventer*) – Priority 5.

The EPA advised that three species of local significance were found during surveying, these include the Speckled Stone Gecko (*Diplodactylus polyophthalmus*), Black-backed Hooded Snake (*Parasuta nigriceps*) and Forest Toadlet (*Metacrina nichollsi*). The EPA Report noted that these species were recorded outside the disturbance footprint (except for one of the eight Forest Toadlets recorded). The EPA concluded that given the records of these species elsewhere on the Whicher Scarp, the small area of native vegetation to be cleared and the large area of State Forest proximate to the proposal, the impacts upon these species were unlikely to be significant.

It is noted that the Chuditch trapping program and targeted Western Ringtail Possum surveys did not find evidence of these species being present within the study area and consequently the EPA's Report 1552 did not consider them as likely or known to occur in the development area.

While Chuditch and Western Ringtail Possum are not expected to be present, it is noted that the proponent's proposed management actions to minimise impacts on other conservation significant terrestrial fauna (such as Southern Brush-tailed Phascogale, Western Brush Wallaby and the Quenda) would also serve to minimise impacts on Western Ringtail Possum and Chuditch if present. The PER (at section 7.5.2) indicates that these measures include:

- Staged clearing where practical. This involves the initial clearing of vegetation excluding habitat trees and any significant habitat areas identified in the pre-clearing surveys. These areas are left overnight allowing tree—dwelling fauna and /or fauna occurring in habitat areas to escape overnight to surrounding bushland;
- A suitably qualified fauna spotter/carer will be on site during clearing operations to conduct daily checks of vegetation to be cleared and retrieve fauna if necessary. The fauna spotter will be responsible for all activities related to the protection and welfare of individual fauna; and
- No dead, standing or fallen timber will be removed from site unnecessarily. Logs and other debris resulting from land clearing will be used to enhance fauna habitat in untouched and rehabilitated areas.

In its response to the appeals, the EPA advised that in consideration of the likely impacts to significant fauna that it recommended Condition 7 (requiring preparation and implementation of a Clearing and Rehabilitation Plan) which is to be prepared in consultation with Parks and

Wildlife. Noting the proponent's clear identification of the necessary management actions to be included in the Clearing and Rehabilitation Plan, and Parks and Wildlife's expertise in conservation management, it is considered that the EPA adequately considered these matters and the approach is appropriate.

However, it is noted that the proponent's commitment to have a suitably qualified spotter inspect trees for black cockatoos prior to clearing (expressed in similar terms to the commitment for terrestrial fauna) has been incorporated into recommended Condition 7-2 (2), outlining a requirement for a spotter for black cockatoos. As the management commitment is considered equally important for other types of fauna, it is considered appropriate to convey a similar level of detail for threatened terrestrial fauna by including a specific clause in Condition 7-2.

With regards to the appellants' assertion regarding the presence of the Thylacine marsupial, the EPA advised that the presence of this species is unsubstantiated by surveys conducted in the area.

In relation to appellants concerns regarding clearing and impacts of fauna entering private land following clearing, it is noted that Condition 7 requires staged clearing, which the EPA advised is intended to allow fauna to escape overnight to the large area of State Forest surrounding the proposal.

In respect to the appellants' concern regarding raised noise and light impacts to fauna species the EPA advised that given the small scale of the operation and the significant area of adjacent native forest, it considered that that these issues are unlikely to be significant impacts.

Having regard to the information above, it is considered that the EPA has appropriately assessed the potential impacts to fauna, however, it is recommended that this element of the appeal ground be allowed to the extent that Condition 7 is amended to require a qualified spotter on-site during the clearing operations to inspect potential terrestrial fauna habitat areas prior to clearing and retrieve fauna if necessary.

Summary for Ground 2

It is recommended that this ground of appeal be upheld to the extent that Condition 7-2 is amended to:

- Include an additional Condition that clarify that a suitably qualified spotter is required to thoroughly inspect potential terrestrial fauna habitat areas (in addition to black cockatoo habitat) daily prior to clearing operations and retrieve of fauna if necessary; and
- Reflect the recommendations of the EPA regarding the removal of reference to specific breeding months for Black Cockatoos, such that the Condition requires consultation with Parks and Wildlife regarding mitigation and management actions if threatened fauna is identified (regardless of the time of the year).

GROUND 3: GROUNDWATER AND SURFACE WATER

A range of issues were raised under this ground. Key concerns raised in relation to this ground of appeal relate to:

- The adequacy of groundwater modelling;
- The impact of water abstraction on flora;
- The impact of water abstraction on water resources and local water users;
- Surface water issues; and

- Potential contamination of water.

The adequacy of groundwater modelling

Appellants submitted that the proponent's groundwater modelling was inadequate, raising concerns including:

- Information for the water tables were from 1936 and rainfall is much less now;
- The Mowen Member is not consistently regarded as either a aquifer or aquitard;
- Modelling undertaken did not include an estimation of impacts on offsite water supplies;
- Cumulative impact assessment or seasonality of water drawdown was not undertaken;
- Limited data available regarding hydraulic conductivity, water levels and stratigraphy of the superficial aquifer, aquitards and perched water tables, especially within the State Forest (Area A);
- Groundwater bores were not adequately established as part of the groundwater study (i.e. appropriately screened); and
- There were errors in the hydrogeological assessment which indicated an underestimation of potential induced drawdowns within the mine pit and adjacent to the pit walls.

Consideration

The Department of Water (DoW) is the State's water resources manager, responsible for regulating abstraction of groundwater through the *Rights in Water and Irrigation Act 1914* (RIWI Act), a role which includes evaluating applicant's hydrogeological information and modelling and making determinations about the acceptability of water abstraction in the context of neighboring water users (both human and natural).

In its submissions to the PER, DoW identified concerns about the proponent's groundwater modeling. Doral responded to these concerns, publishing further information in its Response to Submissions (Doral, 2015).

In regards to the concern raised about the treatment of the Mowen Member in the PER, it is noted that the Mowen Member is identified as the upper part of the Leederville Aquifer and is consistently referred to as an aquitard. The groundwater studies in the PER characterise the Mowen Member as the upper, predominantly shaly section of the Leederville Aquifer, in which the Vasse Member is the aquifer and the Mowen Member is a confining layer. There does not appear to be inconsistent characterisation of the Mowen Member.

With regard to impacts on water supplies, Doral's Response to Submission's advises that groundwater modelling does not predict any impacts to private bores located outside the development envelope.

In response to concerns about the seasonality of drawdown, Doral provided relevant figures showing seasonal groundwater fluctuations in several bores in Appendix 8 of their Response to Submissions.

Regarding the technical details of hydrogeology, hydraulic connectivity, radius of drawdown and appropriate screening of bores, in its response to the appeal process, the EPA indicated that it had sought DoW's advice during the assessment process. DoW had advised that it has reviewed the proponent's response to submissions and advised that the proponent's groundwater modelling is acceptable at this stage of investigations and noted that the proponent's groundwater modelling predicts that there is potential for temporary minor

groundwater drawdown at three private bores located within the proponent's development envelope and that there will not be any adverse impacts from the mining operations to adjacent landholder bores.

Noting that the proposal will require a licence from the DoW under section 5C of the RIWI Act to dewater the mine (and to abstract water from the Yarragadee aquifer as a source of process water) it is considered that DoW will have a further role in evaluating more detailed hydrogeological information and modelling to assess impacts and proposed management responses through the process of assessing the application for a water extraction licence. The proponent has committed to reviewing and validating the groundwater model after six months of operation. At such time, an additional 12-18 months of data will be available to be incorporated into the model, along with data from the eleven additional monitoring bores Doral proposes to construct (Section 6.6 of the Response to Submissions).

Doral advise that where the validation varies from the current model, an assessment as to the impacts of the variations identified will be undertaken and if required, changes to the groundwater licence operating strategy will be undertaken in consultation with the DoW, Department of Environment Regulation (DER) and Parks and Wildlife.

Noting the above information, particularly DoWs advised that the modelling is adequate at this stage of investigations, and that there will be a review and validation of the model after six months, it is considered that EPA had appropriate regard for the information available and it is recommended that this element of the ground of appeal be dismissed.

The impact of water abstraction on flora

Appellants submitted that the potential impact from mine dewatering to groundwater dependant vegetation in the vicinity of the pits was not properly considered. In addition to concerns related to the proponent's groundwater modelling (discussed above), appellants considered that:

- The hydrogeological assessment did not consider the potential impacts on vegetation supported by superficial aquifers and local aquitards and substantial limitations were noted in the hydrological studies;
- No field investigation of plant water-relations or ecophysiology was undertaken;
- Groundwater drawdown would put additional pressures on the direct loss of 55% of Whicher scarp FCT C1 PEC, including disruption of the soil sequence. Approximately one third of the rare and conservation significant individuals are within the predicted drawdown, however there is no specific information about the tolerance these species have to groundwater drawdown; and
- There will be groundwater drawdown impacts within the State Forest.

Consideration

The EPA advised that dewatering of groundwater is required to enable safe and dry mining conditions, and will result in localised groundwater drawdown adjacent to the mining operations. The EPA also advised that dewatering the mine will require a licence from DoW under section 5C of the RIWI Act.

Regarding the appellant's concerns that potential impacts on vegetation dependent on groundwater was not considered and that field studies of plant water-relations were not undertaken, the EPA advised that the proponent's groundwater modelling predicted that drawdown should not lead to significant impacts on native vegetation outside of the 8.9 ha of disturbance. This is due to the shallow depth of mining (10 metres) and that the dominant flora species are not groundwater dependent, drawing water from deeper in the soil profile.

The proponent's studies (published in its response to submissions) also identified a potential groundwater dependent ecosystem (a dampland) near the southern border of the project area. The study noted that the potential groundwater dependent ecosystem is more than 200 m from the proposed mine pit and over 70 m from the predicted 0.1 m drawdown zone. The proponent concluded that there is not likely to be any indirect impact on this community. The proponent noted that the potential groundwater dependent ecosystem near the southern boundary of the Project Area (but generally not located outside of it) was evidence of a perched aquifer.

With respect to potential impacts on the Whicher scarp FCT C1 PEC, the proponent's response to submissions noted that while dampland species are scattered over much of the Project Area, few are situated within the area mapped as Whicher scarp FCT C1. The proponent considered that the absence of dampland species was likely to be because the surface soils in this community are mainly sands or loamy sands several metres deep.

The EPA advised that it considered that groundwater modelling predicted that drawdown should not lead to significant impacts on native vegetation outside of the 8.9 ha of disturbance. To minimise the risk of impacts outside Area A, the EPA recommended Condition 6 which requires:

- Preparation and implementation a Flora and Vegetation Monitoring Plan, to be developed in consultation with Parks and Wildlife, to monitor the health of native vegetation outside the area of State Forest to be cleared; and
- Specification of management and/or contingency actions to be implemented in the event that the specified trigger criteria required by Condition have been reached.

In advice to EPA, DoW outlined that while it had concerns about the potential risk of dewatering on vegetation communities within the State Forest, it considered that the development of the Flora and Vegetation Monitoring Plan required by Condition 6 and inclusion of specific management actions could manage the potential risks to vegetation.

The EPA also noted that DoW advised that the Flora and Vegetation Monitoring Plan should be developed concurrently with the groundwater licence operating strategy to ensure that appropriate monitoring, trigger and response actions are included to manage potential impacts arising from dewatering. DoW requested that it be provided an opportunity to review and comment upon the draft Flora and Vegetation Monitoring Plan.

Noting DoW's regulatory role, and the goal of aligning regulatory requirements where possible, it is recommended that the Flora and Vegetation Monitoring Plan required by Condition 6 should be prepared in consultation with the DoW, in addition to Parks and Wildlife.

In response to the appeals, the EPA advised that the duration of dewatering would be limited, as mined pits are rapidly backfilled in mineral sands mining, and as such the duration that the native vegetation is exposed to potential groundwater drawdown impacts is limited. Notwithstanding this, the EPA recommended that the appeal is partially allowed to the extent that the life of mine of three years be added to Schedule 1, Table 2 of the EPA's recommended Conditions.

Having consideration to the broad concerns expressed through public submissions to the PER and the appeals process, and to highlight DoW's key regulatory role (involving further assessment, monitoring and compliance) in the management of potential dewatering impacts, the EPA recommended that a dewatering element be included into Schedule 1, Table 2 of the EPA recommended Conditions. Noting DoW's support and advice regarding

such an element, it is recommended that Table 2 be modified to include an additional element as follows¹:

| Element | Location | Extent |
|-------------------------|----------|--|
| Groundwater abstraction | Figure 3 | Abstraction of groundwater from the superficial aquifer for dewatering purposes, subject to authorisation by the Department of Water . Abstraction of up to 1.6 giga litres per annum from the Yarragadee aquifer for mine water supply, subject to authorisation by the Department of Water. |

It is recommended that this element of this ground of appeal be upheld to the extent that:

- Schedule 1, Table 2 of the EPA's recommended Conditions is modified to include the three year life of mine;
- Schedule 1, Table 2 of the EPA's recommended Conditions is modified to include an element for groundwater abstraction as set out above; and
- Condition 6 is modified to require the Flora and Vegetation Monitoring Plan be prepared in consultation with the DoW, in addition to Parks and Wildlife.

The impact of water abstraction on water resources and local water users

The appellants contended that the south west Yarragadee aquifer is fully allocated with no water available for mining purposes. The appellants objected to the extraction of 1.6 gigalitres of water per annum from public drinking water reserve for the purpose of mining. The appellants stated that challenges of an increasing population and the risks climate change poses to public drinking water and considered that it is prudent to preserve the existing buffer and security provided by the drinking water reserve. In raising the concerns a number of appellants referred to the following reports:

- Department of Water (2015) Securing water resources for the South West; and
- Water Corporation. Water forever: South west.

A number of the appellants are local land users who highlighted that bore water is the only water supply.

Consideration

The EPA noted DoW's '*South West – Groundwater Allocation Plan*', released in 2009. The EPA considered that this document outlines that the State Government and the DoW have reserved groundwater for high value public water supplies to 2036 for the South West Region. The EPA noted that the document outlines a considered management and allocation approach for water supply in the South West Region, including temporary access to public water supply reserves. The EPA advised that this provided confidence that the DoW is able to adequately manage aspects around this proposal relating to water use and allocation.

In its response to the appeals, the EPA referred to advice received from the DoW during the assessment process. The DoW advised that:

¹ The groundwater abstraction element includes requirements for dewatering (this element of the ground of appeal) and abstraction of groundwater from the Yarragadee aquifer for mine supply (discussed as the next element of this ground of appeal).

- The proposal will require a licence from DoW under section 5C of the RIWI Act to dewater the mine and to abstract water from the Yarragadee aquifer as a source of process water;
- The proponent's groundwater modelling predicts that there is potential for temporary minor groundwater drawdown at three private bores located within the proponent's development envelope and that there will not be any adverse impacts from the mining operations to adjacent landholder bores; and
- The RIWI Act requires the proponent to make good water supplies that are confirmed as being affected by the mining operations.

The EPA also noted that the proponent has committed to monitor the Yarragadee, Leederville and superficial aquifers and provisions would be included under the groundwater licence operating strategy to address any potential risk to neighbouring bores.

Based on this information, the EPA considered that any potential impacts associated with the implementation of this proposal on other water users groundwater, can be adequately managed by other regulatory processes.

The addition of a dewatering element into Schedule 1, Table 2 of the EPA recommended Conditions was discussed above (The impact of water abstraction on flora). As the recommended drafting of that element is relevant to abstraction that may impact upon other water users' supplies, it is also included here:

| Element | Location | Extent |
|-------------------------|----------|--|
| Groundwater abstraction | Figure 3 | Abstraction of groundwater from the superficial aquifer for dewatering purposes, subject to authorisation by the Department of Water . Abstraction of up to 1.6 giga litres per annum from the Yarragadee aquifer for mine water supply, subject to authorisation by the Department of Water. |

Having regard to the information above, it is considered that the EPA's evaluation of groundwater abstraction issues (particularly that the DoW's regulatory processes under the RIWI Act can manage these issues) was appropriate.

It is recommended that this element of this ground of appeal be upheld to the extent that Schedule 1, Table 2 of the EPA's recommended Conditions is modified to include an element for groundwater abstraction as set out above.

Surface water

Appellants raised concerns that:

- Surface water monitoring has not been undertaken;
- Potential impacts to surface water values, including Vasse-Wonnerup Wetlands, had not been considered; and
- Proposed surface water monitoring sites are on private land, which the proponent does not have access to.

Consideration

With regard to the appellants concerns regarding a lack of surface water monitoring, the EPA advised that given the absence of any natural significant drainage lines running through

the project area, it is unlikely that any pathway for significant surface water impacts exists. If necessary, the EPA advised that emergency discharge of water would occur over paddocks and would be regulated by DER.

With regards to nearby wetlands, the EPA considered that given the separation distance between the proposal and the wetland (Vasse-Wonnerup system), there is no pathway for the discharged water to move into the wetland and as a result no adverse impacts are envisaged on the Vasse-Wonnerup system. On this basis, the EPA considered that the potential impacts to surface water were not significant and can be adequately regulated through other statutory processes under the EP Act.

With regard to the concern about surface water monitoring sites on private land, it is noted that the sites identified in Appendix 8C of the PER (Surface water assessment for the proposed Yoongarillup Mineral Sands Project) refers to stream gauging stations operated by the DoW.

Having regard to the information above, it is recommended that this element of this ground of appeal be dismissed.

Potential water contamination

Appellants raised concerns regarding potential contamination to groundwater and surface water from:

- Onsite disposal of tailings that contain concentrated minerals including radioactive elements thorium and uranium; and
- Polyacrylamide flocculent used in ore processing that will be deposited in solar evaporation ponds, with residue left onsite.

Consideration

In relation to the concerns regarding groundwater contamination from tailings, including radiological contamination and the use of flocculants, the EPA advised that the management of radiation and waste in the mineral sands industry is regulated by the Department of Mines and Petroleum (DMP). The EPA advised that the DMP has confirmed the following with the EPA:

The Yoongarillup Mineral Sand Project is on Mining Act 1978 tenure and will require a Mining Proposal and Mine Closure Plan. A Mining Proposal is submitted to the Department of Mines and Petroleum (DMP) to assess the environmental impacts of the proposed mining operation and must be in accordance with the Guidelines for Mining Proposals in Western Australia (2006).

Information must be provided on the mining operations and ore processing such as:

- Provide a description of ore treatment and processing activities with a flow diagram.
- Describe the waste streams, tailings, effluents and emissions produced as a result of processing activities.
- Confirm whether a works approval is required from the DER and if so, provide status update on application.

The proponent must identify the potential impacts to groundwater from the mining operation, including from tailings, and declare the environmental management commitments necessary to minimise, control, ameliorate and rehabilitate significant impacts. The commitments then become part of the company's annual environmental reporting program once the project has received DMP approval.

Within this context, the EPA advised that it considers that the mineral sands industry within the south west of WA has well established methods of operations, regulation, monitoring and research in the management of Naturally Occurring Radiological Materials. The EPA noted that 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 EPA concluded that these regulatory processes could manage the potential impacts to meet the EPA's environmental objective for human health and as such the factor did not require further EPA evaluation.

Similarly with regards to the potential contamination of surface water from the use of flocculants, the EPA noted that this agent is currently widely used in the mineral sands industry and DER regulates the discharge of emissions to the environment through Part V of the EP Act.

Having regard to the above information, it is considered that the EPA's evaluation that other regulatory processes could manage these potential issues was appropriate. As such it is recommended that this element of this ground of appeal be dismissed.

Summary for Ground 3

It is recommended that this ground of appeal be upheld to the extent that:

- Condition 6 is amended to require consultation with DoW in the development of the Flora and Vegetation Monitoring Plan;
- Schedule 1 of Table 2 of the EPA's recommended Conditions is amended by adding the mine life of three years; and
- Schedule 1 of Table 2 of the EPA's recommended Conditions is amended by adding an element setting out groundwater abstraction management requirements for the project.

GROUND 4: AMENITY

Under this ground of appeal, appellants expressed concern that the proposal posed risks of unacceptable impacts to the amenity of nearby residences, including impacts from noise, dust, visual and light.

Noise

Appellants raised concerns relating to noise impacts, focusing on the noise modelling and assessment that had been undertaken and the management measures proposed which included:

- Residences are located in close vicinity to the site and will be subject to unacceptable noise impacts through the day and night;
- Appellants considered it was unclear whether the noise modelling was appropriate and sufficient, including whether the following was taken into consideration: noise funnelling around bunds; tonal noise relating to sleep disturbance; vehicle braking and engine changes; wind down and wind up studies; noise readings, both static and moving; topography of the ground (LIDAR); boundaries of all residences (three residences were not included); clad house construction materials; Sues Road input as a major arterial road; noise emissions from machinery working on the solar evaporation ponds; noise impacts from rehabilitation; the use of generators in the scenario of a power outage; noise from water carts and cumulative noise impacts;
- The proposal does not meet the EPA's Guidance for the assessment of environmental factors – Separation distances between industrial and sensitive land uses (EPA, 2005);
- Empty sea containers are not acceptable noise bunds;

- There have been noise complaints at the proponent's site in Dardanup; and
- Unclear of the procedures and monitoring that will be undertaken to ensure that the proponent is compliant.

Consideration

In its assessment the EPA identified noise as a key environmental factor. It is noted that the EPA's environmental objective for Amenity (Noise and Dust) is to ensure that impacts to amenity are reduced to as low as reasonably practicable. Environmental Assessment Guideline No.13 (Consideration of environmental impacts from noise) (EPA, 2014) states that '*the EPA's objective, in the first instance, is that proposals will demonstrate compliance with the noise regulations...*'

With regard to the appellants concerns regarding the noise assessment undertaken, it is noted that the original noise assessment referred to in the PER predicted non-compliances with the *Environmental Protection (Noise) Regulations 1997* (Noise Regulations), a matter highlighted by DER in its submission to the PER.

The EPA in Report 1552 advised that the proponent reviewed its noise assessment presented in the PER and considered alternative design of the mining operations and mining methodologies to minimise and manage noise emissions. The EPA advised that changes included in a revised noise assessment that comprised:

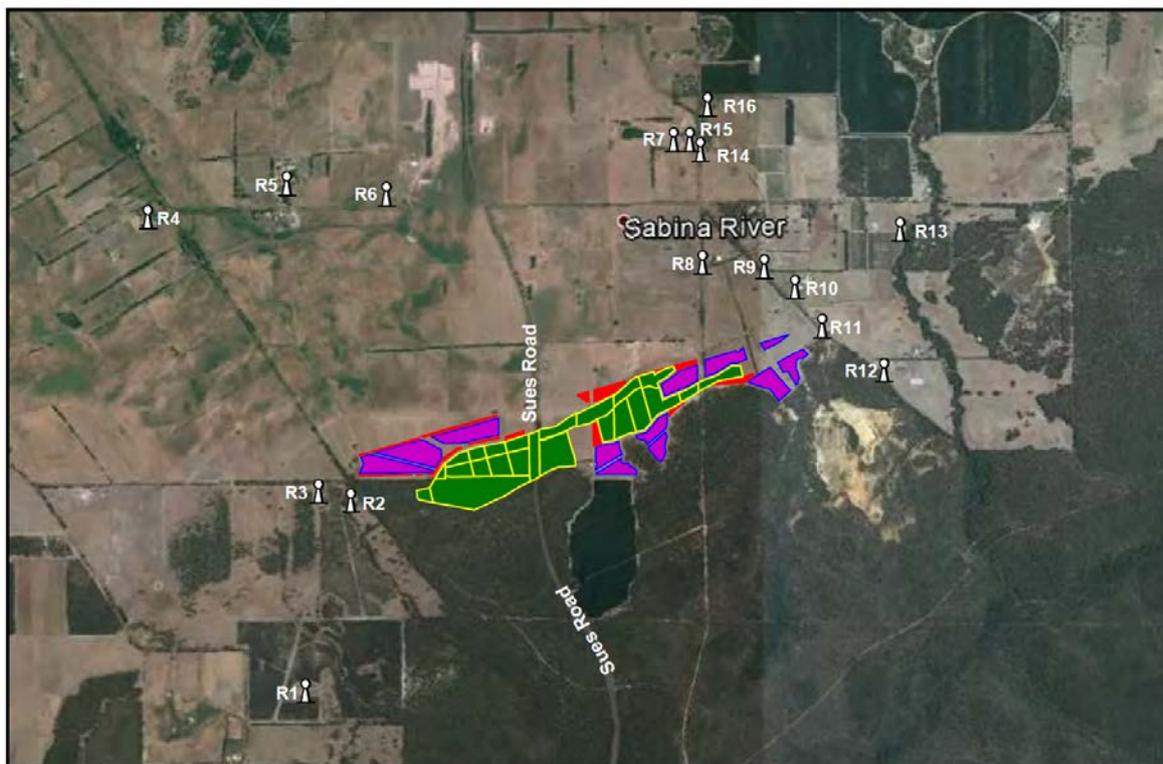
- Additional noise bunding to be constructed within the paddock areas west of Sues Road;
- Use of Carry Graders instead of a Dozer for topsoil and subsoil stripping operations within mining Pits 24 and 25;
- Construction of a temporary noise bund (utilising topsoil material) within Pit 24;
- A 6.5 m high noise barrier to be constructed on the western edge of Pit 25;
- Construction of a 5.5 m high noise bund along the northern and eastern edges of Pit 2;
- Construction of a temporary noise bund, 2.5 m high within pits 7 and 8;
- 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 document (Doral, 2015).

It is noted that the revised noise assessment modelled noise levels at 16 of the nearest noise sensitive (residential) locations, within 2 km of the mining pits and solar evaporation ponds (Figure 3). The noise assessment advises that R2 is the closest residence to the proposal, located approximately 391 m from Pit 25 and 155 m from a topsoil stockpile and solar evaporation ponds.

In relation to the scope of the noise modelling undertaken as raised by the appellants, the proponent advised that it:

- Was undertaken by suitably qualified engineering consultants;
- Incorporated topographical data for the site and surrounding areas; and
- Related to noise levels predicted within 15 metres of a building associated with a noise sensitive use and therefore the values presented are noise values external to the residence, for which the type of construction materials should not be applicable.

Figure 3 – Aerial view of proposed mine site and surrounding area including the closest residences



(Source: Doral, 2015 (Appendix 9))

With regard to the separation distances, it is noted that EPA Guidance Statement 3 (Separation distances between industrial and sensitive land uses) (EPA, 2005) states that separation distances are a tool to assist in the determination of suitable distances between industry and sensitive land uses where industry may have the potential to affect the amenity of a sensitive land use. It is noted that the separation distances to some of these residences are less than the generic separation distances set out in Guidance Statement 3.

Section 4.4.1 of Guidance Statement 3 (EPA, 2005) provides that:

Where the separation distance is less than the generic distance, a scientific study based on site- and industry-specific information must be presented to demonstrate that a lesser distance will not result in unacceptable impacts.

If the distance from the industrial land use to the sensitive land use is less than the recommended separation distance, and it cannot be demonstrated that unacceptable environmental impacts are likely to be avoided, then other options should generally be pursued. These may include:

- modifying the project to reduce emissions via engineering controls such as process design, process enclosure or other means; and
- pursuing land use planning and management controls (e.g. land acquisition, rezoning) to reduce environmental impacts to acceptable levels.

In this context the EPA has advised (as detailed above) that alternative design of the mining operations and mining methodologies to minimise and manage noise emissions was undertaken. The EPA advised that this approach is also consistent with EPA Environmental Assessment Guideline No.13 – Consideration of environmental impacts from noise (EPA, 2014).

In addition, noting the amendments to the design, the EPA sought DER's advice regarding the revised noise assessment. DER advised that it considered the revised mitigation measures appropriate for managing the risk of noise impacts to neighbours, and that noise from the proposed mining operation could be managed to comply with the Noise Regulations.

In response to concerns raised regarding the management of noise the proponent advised that it will undertake the following to manage noise impacts:

- Establish noise monitoring equipment in accordance with the requirements of DER;
- Develop a Noise Management Plan, including a noise compliant procedure, which will be provided to adjacent landholders; and
- Develop a Communication Management Plan that will outline the communication paths open to the public should they need to contact key staff.

The EPA noted the proponent's commitment to ensure residents can contact the mine directly regarding concerns about noise, which is based upon its experience of mining at Dardanup. The EPA considered that this commitment would allow mining operations to respond in a timely manner and adapt to community concerns that may be raised from time to time. The EPA advised that the inclusion of real-time monitoring is central to the proponent's ability to verify predictions and to be proactive with regard to noise issues that may emerge due to conditions that could prevail during implementation of the proposal.

In summary the EPA advised that while it considered noise to be a key significant environmental factor, the EPA was satisfied that it could be managed to meet the EPA's objective through other regulatory processes. The EPA advised that this was consistent with Environmental Assessment Guideline No.9 (Application of a significance framework in the EIA process) and Environmental Assessment Guideline No.13 (Consideration of environmental impacts from noise). In forming this view the EPA advised that it had particular regard to the following:

- The proponent's revised (in consultation with the DER) management and mitigation measures and noise assessment that predicts the proposal could be managed to meet the Noise Regulations;
- Advice of DER that the mitigation measures proposed are considered appropriate for managing the risk of noise impact to neighbours;
- 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
- Enforcement of the assigned noise levels is managed by DER in accordance with the Noise Regulations.

Considering the information above, it is considered that the assessment of noise was appropriate and it is recommended that this element of this ground of appeal be dismissed. In addition it is noted that recommendation for Appeal Ground 3 includes addition of the Life of Mine of 3 years to Schedule 1, Table 2 of the EPA's recommended Conditions. It is considered that this will also clarify the duration of impacts relating to amenity.

Dust and Air Quality

Appellants raised concerns relating to the management of dust emissions and potential impacts, including:

- Whether air quality testing has been undertaken and a health action plan was in place;

- Dust impacts on: roof spaces, rain tanks, washing, outdoor living area, personal crops, local wine grapes and olives and health, including asthma;
- Dust mitigation does not take into account the unique meteorological conditions known at the Whicher Scarp;
- Construction period is scheduled for the driest part of the year;
- Use of confetti holding material should be considered rather than water carts;
- How cumulative impacts will be assessed;
- Dust Management Plan is not publicly available and it's not clear how dust complaints will be managed; and
- Compliance obligations on the proponent, what are they and how are they enforced.

Consideration

In its assessment the EPA identified dust as a key environmental factor and noted that 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.

The EPA advised that 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 acknowledged the importance of ensuring the proposed management measures are undertaken along with monitoring and adaptive management, to demonstrate dust emissions meet acceptable criteria.

Through the appeals process, the EPA advised that it had sought DER's advice regarding regulation and monitoring of fugitive dust emissions from the proposal, and that DER advised that:

- Fugitive dust emissions from the proposal can be regulated, monitored, and enforced by DER under Part V Division 3 of the EP Act;
- A works approval application for this proposal may require a Dust Management Plan which outlines a proposed monitoring regime; and
- DER will undertake a risk-based assessment of fugitive dust from construction and mining operations to determine what conditions would apply.

It is noted that the appellants concerns focus on specific management measures, which based on the advice above will be considered and determined through Part V of the EP Act. However, it is noted that the proponent (PER) considered that the risk of significant off site impacts to any residence is considered low due to the proven performance of the dust management strategies at the Dardanup Mine, which would be implemented for this Proposal and include:

- Inform all employees and contractors of the importance of reducing the creation of dust generating activities;
- Restrictions on the areas open at any one time to ensure safe and efficient operations;
- The retention and removal of pasture and understorey species together with the topsoil;
- Scheduling topsoil stripping to avoid periods of high winds;
- When necessary, stripping operations are to be suspended under particularly high wind conditions;

- Watering all high traffic and haulage areas on a routine basis for dust suppression ensuring that there is no runoff into vegetated areas. Up to three water carts will be available for use at any one time;
- Spreading stockpiles, noise control bunds and pond embankments with fine clay solution such that dust control and soil erosion measures are achieved;
- Minimising the number and size of stockpiles. This involves the direct use of overburden as backfill and the direct replacement of topsoil, wherever possible;
- Encouraging vegetative cover on stockpiles, especially the topsoil stockpiles. Many of these vegetative species generate from stored seed to minimise dust generation;
- The management and monitoring of ore loading and unloading operations such that dust generation is minimised and controlled;
- Spraying HMC stockpiles at the mine with water if they dry to the extent dust generation occurs. HMC stockpiles generally have a moisture content of between 5 to 9% and are not vulnerable to the adverse effects of strong winds causing dust;
- The co-disposal of sand tails and clay tails into pit backfill areas. This homogenous mixing increases the average particle size and reduces the potential for dust generation;
- When and where necessary, spraying with water or other dust suppression measures (e.g. emulsion spray, erection of wind barriers) is employed; and
- Employ routine maintenance and housekeeping practices to ensure that waste materials in and around the mine voids and infrastructure do not accumulate and lead to the generation on unacceptable airborne particulates.

In summary the EPA advised it had particular regard to the following points in respect to dust impacts:

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

The EPA concluded that the proposal can be adequately managed under Part V of the EP Act and did not require further assessment by the EPA or additional Conditions under Part IV of the EP Act.

Having regard to the above information, it is considered that the assessment of dust emissions from the proposal was appropriate noting the regulatory mechanisms available under Part V of the EP Act, and it is recommended that this element of this ground of appeal be dismissed.

Visual and light impacts

With regard to visual impacts, the appellants considered that the proposal was not compatible with the surrounding Whicher Scarp or local farming and tourism activities. Numerous appellants highlighted that Sues Road is a gateway to the Great Southern, also noting that Busselton airport is being upgraded.

Appellants considered that the visual assessment undertaken was inadequate and objected to the lack of aerial images and the quality of the images and angles used in the assessment. Appellants objected to the proponent's intention to use screen fencing, a 3 m

high bund wall and sea containers (noise management) based on the visual intrusion they pose.

Appellants asserted light pollution from the proposal would impact surrounding land users and native fauna. Two residences in close proximity to the proposal considered that three years was not a short duration and raised concerns regarding light emissions potentially disrupting sleeping patterns.

Consideration

The EPA did not consider visual impacts to be a key environmental factor for the proposal. In response to the appellants concerns the EPA referred to Appendix 3 of EPA Report 1552, where it acknowledged that 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, and considered comments on visual impacts by Government agencies and the public arising from the submissions.

It is noted that the proponent has committed (in the proponent's Response to Submissions (Doral, 2015)) to minimise and manage the visual impacts of the proposal, which included:

- Locate the in-pit hopper and screen plant below the natural surface level minimising nuisance light overspill from active mining areas;
- Utilise mobile lighting towers so active mining areas are only illuminated on an as needs basis and lights from these towers will be aligned to minimise the impact on neighbours, general public and forested areas;
- Undertake rehabilitation works to restore the pre-mining vista as soon as is practicable after mining operations have been completed; and
- Consulting with landholders to discuss visual screening options presented in the Visual Impact Assessment.

The EPA advised that in making its assessment against this factor, it applied the risk based approach detailed in the Environmental Assessment Guideline 9 (Application of a significance framework in the environmental impact assessment process) (EPA, 2013a) and concluded that, given the short duration of the proposal, the proponent's visual impact management actions and compliance with Australian Standard 4282-1997 Control of Obtrusive effects of Outdoor Lighting, the EPA considered that the impacts to visual amenity and additional lighting did not warrant further assessment.

Noting that no new, relevant information was presented during the appeals process to significantly alter this view, the EPA maintained its position with regard to this environmental factor.

Having regard to the above information, it is considered that the EPA's assessment of potential visual impacts associated with the proposal was appropriate. It is recommended that this element of this ground of appeal be dismissed.

Summary for Ground 4

It is recommended that this ground of appeal be dismissed. It is noted that the recommendation for Appeal Ground 3 includes addition of the Life of Mine of 3 years to Schedule 1, Table 2 of the EPA's recommended Conditions. It is considered that this will also clarify the duration of impacts relating to amenity.

GROUND 5: ACID SULPHATE SOILS

Appellants raised the following concerns regarding acid sulphate soils (ASS), focusing on the assessment undertaken:

- Insufficient testing conducted in the State Forest to say there is a low chance of ASS;
- The ASS assessment was based on colour and no attempt was made to determine soil mineralogy, thickness or volume;
- Potential impacts of ASS to surrounding landholders had not been considered; and
- A dewatering plan should be required prior to mining.

Consideration

In response, the EPA advised that issue of ASS was raised through submissions to the PER. The EPA determined that ASS was not a key environmental factor, setting out its evaluation in Appendix 3 of the EPA's report.

In its Response to Submissions (Doral, 2015) the proponent acknowledged that the incorrect version of the ASS assessment was included in the PER documentation released for public review. As a result, insufficient information was provided to reviewers to undertake a preliminary assessment of the potential for the proposal to impact on ASS.

The proponent published the correct information in its Response to Submissions.

The proponent advised that its ASS assessment did not identify any ASS soils within the project area, and concluded that there is a low risk of the mine pits interfacing with ASS. The proponent's assessment identified an area of Potential ASS that may be indirectly affected by the proposed dewatering activities, however, concluded that the risk that dewatering activities will oxidise Potential ASS material was also low.

To ensure that proactive measures are put in place prior to any potential issues of Potential ASS arising during the delivery of this proposal, the proponent advised that it has committed to the development of an ASS Management Plan that will be submitted to DER for review as part of the application for a Works Approval under Part V of the EP Act.

The EPA noted the proponent's commitment to submit an ASS management plan to DER as part of its works approval application, and DER's capacity to appropriately regulate potential ASS impacts as part of the works approval requirements under Part V of the EP Act. The EPA therefore concluded that no further assessment was required.

Having regard to the information above, and noting DER's statutory role in the management of ASS it is considered that the EPA appropriately considered the potential impacts from ASS from the proposal. It is recommended that this ground of the appeal is dismissed.

GROUND 6: REHABILITATION

Appellants considered that the rehabilitation of the State Forest component of the proposal was unlikely to achieve pre-mining conditions due to the nature of the vegetation complexes and the soil structure present. The appellants' considered that as the Rehabilitation and Clearing Plan was not available, it was difficult to understand what will be required of the proponent. Specific issues raised included:

- Rehabilitation for black cockatoos had been underestimated. Rehabilitation of the State Forest could take a minimum of 50 to 65 years to regenerate to provide suitable habitat and approximately 130 to 200 years before breeding habitat sufficient for black cockatoos could be replaced;

- The proposed rehabilitation could not achieve the species richness and similar floristic composition to that which existed pre-mining primarily based on the complexity and nature of the vegetation complexes and soil structure present;
- Stockpiling of topsoil within the State Forest will not save seed, the natural seed bank within the soil will most likely be lost as it will be put back deeper and will never germinate; and
- Altered soil profiles have not been addressed, which was a concern in the EPA's report for the Happy Valley Titanium Project.

Consideration

In its assessment the EPA identified rehabilitation and decommissioning (integrating factor) as a key environmental factor. It is noted that the EPA's objective for rehabilitation and decommissioning is to ensure that premises are decommissioned and rehabilitated in an ecologically sustainable manner.

In its assessment of the proposal, the EPA noted that the proponent revised its mining method to address recommendations made by Parks and Wildlife. This included mining the area of State Forest in two stages and allowing topsoil to be stored within the area of State Forest native vegetation affected by the proposal. The EPA considered that this approach would have the 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 and increasing the probability of improved early stages of rehabilitation.

In relation to the proponent's rehabilitation obligations, it is noted that the EPA recommended Condition 7 requiring the preparation and implementation of a Clearing and Rehabilitation Plan, which it considers gives effect to the proponent's proposed management of rehabilitation. The EPA advised that it consulted Parks and Wildlife on the objectives for the rehabilitation and reintegration of the State Forest area impacted by mining. The EPA advised that those objectives and requirements provided by Parks and Wildlife have been included in the Conditions, as well as additional requirements identified during the assessment.

The EPA considered that, with the implementation of the measures outlined in the recommended Condition 7, the proponent could rehabilitate native vegetation within the State Forest area to be compatible with the surrounding environmental values. Through recommending the Condition for clearing and rehabilitation the EPA advised that it had considered EPA Guidance Statement No.6 – Rehabilitation of Terrestrial Ecosystems, where relevant.

The EPA acknowledged, as raised by the appellants, that 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 the EPA advised that there will be a significant residual impact requiring an offset (offsets are discussed under Appeal Ground 8).

With regard to the appellants concerns regarding proposed rehabilitation measures, namely stockpiling of soils and altered soil profiles, it is noted that the Clearing and Rehabilitation Plan is to be prepared in consultation with Parks and Wildlife, which the EPA considered to be the appropriate body to advise on these matters. It is expected the detail of the rehabilitation will be contained within this plan which will be consistent with EAG 17 (Preparation of management plans under Part IV of the EP Act), EPA (2015). The public availability of environmental management plans is discussed further under Appeal Ground 10.

For rehabilitation of areas outside of the State Forest, the EPA noted that mineral sands mining operations have successfully rehabilitated farmland in the local region and that the rehabilitation methods proposed are consistent with the methods applied elsewhere in the region. The EPA advised that the mining operations will also be 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 DMP. On this basis, the EPA considered that a formal implementation Condition in the Ministerial Statement is not required to address the rehabilitation of farmland and this is consistent with advice received from the DMP.

Noting the information above, including the requirements of recommended Conditions 7 and 8 including consultation with Parks and Wildlife, it is considered that the EPA's assessment of this factor was appropriate. On this basis it is recommended that the ground of the appeal is dismissed.

GROUND 7: OFFSETS

Appellants objected to the application of offsets to residual impacts associated with clearing in the State Forest and recommended it be excised from the proposal. The appellants considered that the offset package was inadequate, raising the following concerns:

- The offset area is unknown and therefore there is uncertainty of the environmental values. Clearing of 3.20 ha very good and 5.48 ha excellent condition vegetation, offset by 16 ha of good condition is not 'like for like', especially when the suitability is not known as the proposed land purchase has not been inspected;
- Revegetation of the agricultural land and the State Forest should not be considered as part of the offset package;
- Offset area needs to demonstrate breeding cockatoos, otherwise it cannot be determined that the final agreed offset would provide equivalent foraging, roosting and breeding opportunities;
- The offset does not provide a net environmental benefit;
- Land Acquisition and Management Plan is not available for public scrutiny;
- There is public uncertainty regarding provisions of offsets as the Conditions contain '*unless otherwise agreed by the CEO*' and '*The proponent may review and revise the plan in consultation with DPaW*';
- The EPA had not applied its own offset policies in relation to the proposal; and
- The likelihood of acquiring ecologically appropriate land on the Whicher Scarp that replicates the PEC is considered to be low.

Consideration

In its assessment the EPA identified offsets as a key environmental factor. The EPA advised that offsets have been applied to the proposal consistent with State Government's Offset Policy and that the proposal can be managed to meet its objectives for offsets which is '*To counterbalance any significant residual environmental impacts or uncertainty through the application of offsets*'.

It is noted that the EPA identified the following significant residual impacts associated with clearing of the State Forest (Area A) component of the proposal:

- Loss of values associated with the communities of the Whicher Scarp native forest ecosystem, including the DRF *Davesia elongata* subsp. *elongata* and Priority Ecological Community Whicher Scarp FCT C1 (see Ground 1);

- Impact to State Forest (8.9 ha); and
- Loss of foraging and potential breeding habitat for Forest Red-tailed Black-Cockatoo, Baudin's Black-Cockatoo and Carnaby's Black-Cockatoo (8.9 ha).

The EPA noted that the proponent prepared a draft offset strategy that was described in the PER document and was made available during the public review of the PER. The draft offset strategy considered multiple options including land acquisition, revegetation and rehabilitation to offset for the significant residual impacts of the proposal.

The EPA advised that it developed recommended Condition 8 to address offsets for the proposal, which requires the proponent to prepare and implement a Land Acquisition and Management Plan to address the significant residual environmental impacts. Therefore whilst the offset area has not been identified as raised by the appellants, it is noted that the Condition requires the proponent to identify an offset of at least 19 ha that:

- a) contains 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) has native forest ecosystem values (including condition attributes) similar to those being impacted by the proposal;
- c) includes no more than 3 ha of cleared land for revegetation; and
- d) is located on the Whicher Scarp Native Forest Ecosystem, unless otherwise agreed by the Chief Executive Officer (CEO).

It is noted that the Land Acquisition and Management Plan requires the approval of the CEO, on advice of the Parks and Wildlife. Parks and Wildlife is considered the appropriate department to provide advice on such matters and provides confidence that the area and environmental values of land selected for the offset will be appropriate.

The EPA considered that recommended Condition 8 will ensure that the proponent achieves an offset to counterbalance the significant residual environmental impacts from the proposal. The EPA also noted that as the offset addresses the potential impact on the three species of black cockatoos, which is a matter of NES and that the Commonwealth Government has advised that the recommended Condition is consistent with its approach.

With regard to policy and guidance, the EPA advised that the following were applied in the preparation of EPA Report 1552:

- WA Environmental Offsets Policy (September, 2011);
- WA Environmental Offsets Guidelines (August 2014); and
- Environmental Protection Bulletin No.1 - Environmental Offsets (2014).

The EPA advised that the proponent's documentation, including the PER and the Response to Submissions, outlined how the proponent applied the mitigation hierarchy to the proposal. Furthermore, the EPA in Report 1552 (Page 4) summaries the actions taken, or to be taken, to avoid, minimise and rehabilitate environmental impacts associated with the proponent.

As part of the assessment process, in February 2015 EPA members visited the Yoongarillup site with the proponent to better understand the proposal and proponent's commitments to avoid, minimise and rehabilitate the potential environmental impacts. Having considered the application of the mitigation hierarchy, the EPA then discussed the potential significant residual impacts of the proposal, including impacts to the PEC (Whicher FCT C1), the declared rare flora and fauna species; the State Forest, and viewed the proponent's

proposed offsets, which were intended to counterbalance the significant residual impacts. At subsequent EPA meetings (February and April 2015) the EPA further discussed the significant residual impacts and whether the impacts could be offset.

Finally, at its May 2015 meeting, the EPA considered significant residual impacts and the Office of EPA's advice that the proposed offset meets the WA Environmental Offsets Policy and the WA Environmental Offsets Guidelines, as well as aligning with the previous position of the EPA on other similar proposals.

Consistent with the Guideline, the EPA advised that the significant residual impacts of the proposal were considered to be of a nature that would require an offset but that the proposal was not environmentally unacceptable.

In relation to transparency and public certainty regarding the offset, the EPA advised that the Western Australian Government Environmental Offsets Policy has recently provided for the development and implementation of a public Environmental Offsets Register as part of the government's commitment to approvals reform. The Environmental Offsets Register provides a central public record of all offset agreements in Western Australia, contributing to the broader objectives of transparency and accountability. The register can be found at <https://offsetsregister.wa.gov.au>. The EPA advised that the required offsets associated with this proposal will be available to the public on the Environmental Offsets Register during the implementation of the proposal. Furthermore, the public availability of environmental management plans is discussed further under Appeal Ground 10.

While it is considered that the EPA had appropriate regard for its policy and guidelines in determining that an offset is required, it is considered appropriate that Condition 8 is amended to more clearly identify the significant residual impacts associated with the proposal.

Therefore, in order to provide certainty regarding the intention of the offset, it is recommended this ground of the appeal is allowed to the extent that Condition 8-1 is amended, consistent with Condition 7-1 in Ministerial Statement 1022. It is recommended that Condition 7-1 be amended to provide that the proponent shall undertake an offset with the objective of counterbalancing the significant residual impact to 8.9 ha of the Whicher Scarp Forest Ecosystem, including impacts to 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, the DRF *Davesia elongata* subsp. *Elongata*, Priority Ecological Community Whicher Scarp FCT C1 and the high diversity community of the Whicher Scarp Forest Ecosystem.

GROUND 8: PREVIOUS EPA DECISIONS, POLICY AND GUIDANCE DOCUMENTS

Several appellants raised concerns in relation to advice provided in previous EPA and other published reports, policy and guidance documents relating to the environmental values of the proposal area and the Whicher Scarp. Appellants were of the view that the EPA's recommendations in relation to this proposal were contrary to advice provided in:

- EPA (2009) Environmental Protection Bulletin No.6. The Natural Values of the Whicher Scarp. August 2009 (reviewed December 2013);
- EPA (2011) Happy Valley Titanium Mineral Project. BEMAX Resources Limited. Report and recommendations of the EPA. Report 1383, February 2011;
- EPA (2013c) Proposed Forest Management Plan 2014-2023. Conservation Commission of Western Australia. Report 1483. July 2013; and
- Environmental Protection Bulletin No.8 – SW Regional Ecological Linkages.

It should be noted that other relevant policies and guidance documents raised by appellants have been discussed under the appropriate appeal ground.

Appellants contended that this area of land has been recognised for its unique and exceptional biodiversity values for the past 40 years, where numerous recommendations had been made for its inclusion into formal reserve and yet it is still not protected, including *Conservation Through Reserves Report 1974*, *State Cabinet Endorsement of EPA recommendations October 1976*, *Reserves (National Parks, Conservation Parks and other Reserves) Act 2004* and the *Forest Management Plan 2014-2023*. Appellants highlighted that only 3.4% of Whicher Scarp soil/landscape systems protected in formal reserves, highlighting the vulnerability of this unique system within a biodiversity hotspot.

Appellants noted that the EPA had 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 FMP 2014-2023 (EPA, 2013c). In relation to this proposed addition, appellants noted that the FMP states that such additions would be subject to legislative and government policy requirements, including consultation with the DMP and the Minister for Mines and Petroleum. On this basis and noting the number of mining leases on the Whicher Scarp, the appellants considered there was no certainty in relation to inclusion into the formal reserve system.

Consideration

The EPA noted that the EPA (2009) Environmental Protection Bulletin No.6. The Natural Values of the Whicher Scarp, outlines the natural values of the Whicher Scarp in relation to landforms, vegetation, flora and fauna. The EPA advised that the relevant considerations for the assessment are:

- the remaining area of native vegetation meets the six criteria for regionally significant natural areas;
- the significance of the natural values of the Whicher Scarp are recognised across a range of biodiversity characteristics at the genetic, species and community levels, and the small overall extent of the Whicher Scarp environments;
- assessment of proposed developments on an individual basis; and
- where a proposal is likely to pose significant risk to the values, it will be formally assessed, and/or may be considered environmentally unacceptable.

The EPA advised that its formal assessment recognised the significance of the values of the Whicher Scarp. In its assessment, in concluding that the impact to the values of the Whicher Scarp was considered acceptable, the EPA stated that it had regard to the small area (8.9 ha) of clearing of native vegetation in relation to the 9,960 ha of native vegetation remaining within the Whicher Scarp forest ecosystem. Additionally, the EPA noted that only 5.2% of the known mapped extent of floristic community type (FCTC1) would be lost and that this community type is represented elsewhere on the Whicher Scarp. Noting that rehabilitation would not be able to replace all of the floristic values to be removed, the EPA further identified the need to counterbalance the significant residual impacts of the natural values associated with the Whicher Scarp. Hence, as part of the proposed offset Condition (Condition 8), the EPA recommended that an area of least 19 ha within the Whicher Scarp forest ecosystem be protected and managed for conservation.

In response to the appellants concerns regarding the perceived inconsistencies in the approach taken by the EPA with this proposal and the Happy Valley Titanium Minerals Project (EPA Report 1383 released February 2011), the EPA considered that the impacts of

the Yoongarillup Mineral Sands Project were vastly different to the Happy Valley Project, which it found to be environmentally unacceptable. The EPA provided a comparison of the two proposals in Table 1.

Table 1 – Comparison of the Happy Valley Titanium Minerals Project and the Yoongarillup Mineral Sands Project

| Element | Happy Valley (EPA Report 1383) | Yoongarillup (EPA Report 1552) |
|---|---|---|
| Duration | 7 years | 3 years |
| Tenure | State Forest / Private Land | State Forest / Private Land. |
| Clearing of Native Vegetation | 146 ha | 9 ha of native vegetation 88 ha of pasture |
| Position in the landscape | Predominantly in native vegetation on private land and State Forest. Mining pits intrude significantly into vegetated areas of the Whicher Scarp. | Predominantly on cleared pasture. Small area (8 ha) intrudes into the Whicher Scarp. |
| Depth of Mine Pits | 8-24 m below ground surface | Maximum 10 m below ground level |
| Flora and Vegetation | Proposal has potential to impact on: <ul style="list-style-type: none"> • Floristic Community Types (FCT) C2, A1, 1a and 21b - recognised as the most species diverse of the Whicher Scarp • Declared Rare, Priority and Conservation Significant Flora • DRF - <i>Daviesia elongata</i> subsp. <i>elongata</i>. The proposal would result in the removal of the majority (approximately 92%) of the <i>Daviesia elongata</i> subsp. <i>elongata</i> | Proposal has the potential to impact on FCT C1 which is floristically diverse. Impacts to DRF species <i>Daviesia elongata</i> subsp. <i>elongata</i> limited to six individuals. |
| Terrestrial Fauna | Impacts to: vertebrate fauna assemblage; threatened and priority fauna; and conservation significant fauna. These include: <ul style="list-style-type: none"> • all three species of threatened Black-cockatoos • Western Ringtail Possum • Brushtailed Phascogale • Chuditch | Impacts to Black Cockatoo |
| Rehabilitation and Decommissioning | Mining (146 ha) unlikely to be rehabilitated to similar values to those that currently exist. | Likely similar conclusion however the impacts on the State Forest are over a much smaller area (8 ha) and proponent management measures |
| Offsets | EPA considered that no offset package can adequately counterbalance the loss of conservation values of the area | Offset condition - ~19ha with specific environmental requirements. |

(Source: EPA section 106 advice)

The EPA concluded in EPA Report 1383 that the Happy Valley Titanium Minerals proposal is environmentally unacceptable as it could not be managed to meet the EPA's objectives in relation to flora and vegetation, conservation significant fauna and habitat, rehabilitation and noise.

Following the Happy Valley Titanium Mineral Project, the FMP was released. The FMP proposes the addition of 2,370 ha of the Whicher Scarp Forest ecosystem into the Whicher National Park. The Yoongarillup Project area is not included within this proposed Whicher National Park. It is noted that the areas that were part of the Happy Valley Titanium Mineral Project have been included in the proposed additions to the Whicher National Park.

It is noted that the EPA, in Report 1552, stressed 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.

It is noted that Environmental Protection Bulletin No.8 – SW Regional Ecological Linkages has been withdrawn.

In summary the EPA has advised that in making its assessment, it considered relevant published reports, policy and guidance documents. In relation to the Happy Valley Project, the EPA considered that the impacts of the Yoongarillup proposal were vastly different to the Happy Valley Project, which it found to be environmentally unacceptable.

On this basis, it is considered that the EPA has considered those matters raised by the appellants and it is recommended that the ground of the appeal be dismissed.

GROUND 9: STAKEHOLDER CONSULTATION AND AVAILABILITY OF ENVIRONMENTAL MANAGEMENT PLANS

Appellants asserted that the proponent did not actively engage with impacted residents prior to the release of the PER, which contained errors and omissions. One appellant considered that there was a lot of local knowledge in the community which had not been included in the assessment process through lack of consultation.

An appellant noted that the response to submissions included substantial new information and considered that this should have been included in the PER and subject to public review. One appellant contended that the PER was released during the busiest farming period of the year and the EPA would not extend the submission time for the public to make comments.

One appellant submitted that the level of consultation undertaken with Traditional Owners was insufficient.

Appellants also considered that the response to submissions document did not adequately address the issues raised, instead referring to environmental management plans which are yet to be developed. A number of appellants objected that the environmental management plans referred to in the EPA's report were not available for public scrutiny.

Consideration

In response to this ground of appeal, the EPA considered that consistent with the Environmental Impact Assessment Administrative Procedures 2012, the environmental impact assessment process should be designed to be transparent and accountable and comprise specific stages for public involvement, which includes the public review of all PER documents. The EPA considered that the public review of proponent documents gives stakeholders, including government agencies and the community, an opportunity to become informed about and comment on a proposal. The EPA advised that these comments are

considered by the proponent and the EPA before its report and recommendations are submitted to the Minister.

The EPA advised that the PER (Doral, 2014) was advertised on the EPA's consultation hub on 20 October 2014 and was open for comment for a period of four weeks, consistent with the EPA Environmental Impact Assessment Administrative Procedures 2012.

The proponent acknowledged that it did not actively engage the wider public during the development of the PER document, waiting until the PER document had been finalised prior to commencing wider consultation. The proponent advised that it made a hardcopy of the PER document available, and provided an opportunity for the landholders to meet with Doral representatives to discuss the proposal face to face. The proponent stated that it also included opportunities for landholders to visit Doral's existing Dardanup operation to see how a mineral sands mine operates.

In relation to appellants concerns in relation to consultation with traditional owners, the EPA advised that a review of the Register of Aboriginal Sites and the Department of Aboriginal Affairs (DAA) Aboriginal Heritage Database confirmed there are no known Aboriginal heritage sites within the area to which the proposal relates. The EPA considered that any impacts can be managed by the DAA under the *Aboriginal Heritage Act 1972*.

With regards to the information presented in the response to submissions document, the EPA acknowledged that the proponent subsequently considered the public submissions and, in some instances, modified the proposal or developed management actions to further avoid, minimise, rehabilitate or offset potential impacts. It is noted that this included a commitment to develop a Stakeholder Management Plan that would document future consultation processes and mechanisms for the community to provide feedback on the proposal during its operation. The EPA considered that the proponent's consultation process for the assessment was appropriate and adhered to the EPA's procedures.

With regard to the availability of management plans, the EPA acknowledged that the plans outlined in the EPA report and recommendations to the Minister, for the most part, do not yet exist. As the Conditions require them to be developed in consultation with other government agencies, the EPA advised that it is not possible for them to be made public during the assessment process.

The EPA further advised that the required environmental management plans will be subject to requirements of the EPA's latest Environmental Assessment Guideline No.17 (Preparation of Management Plans under Part IV of the *Environmental Protection Act 1986*) (EPA, 2015) and will be assessed by the Office of the EPA in consultation with appropriate regulatory authorities or decision making authorities.

The EPA considered that the Ministerial Statement should be clear on the requirement to make the plans publicly available once approved by the CEO and therefore recommended that the title of recommended Condition 5 be amended to articulate to the public that the required management plans will be made public. As such it is recommended that, Condition 5 be changed to '*Public Availability of Data and Plans*'. The EPA also recommended that the words '*and plans*' be included on Line 4 of sub-condition 5-1 after the following phrase '*...all validated environmental data*'.

Therefore, noting the advice of the EPA that community consultation was undertaken in accordance with its procedures designed to be transparent and accountable, it is considered that the consultation process for the assessment was appropriate. The EPA's recommendations for amendments to Condition 5 are supported as they clarify expectations of that plans will be made publicly available. Therefore it is recommended that consistent

with the advice of the EPA the appeal ground is allowed to the extent that: Condition 5 be amended to '*Public Availability of Data and Plans*' and the words '*and plans*' be included on Line 4 of sub-condition 5-1 after the following phrase '*...all validated environmental data*'.

OTHER MATTERS

Appellants also raised other matters, which did not relate specifically to EPA Report 1552 and are considered to be outside of the scope of appeals process to resolve including:

- Alternative proposals have not been considered; and
- Absence of a Road Management Plan and Fire Management Plan. With the proposed closure of Goulden Road, fire exit for a nearby landholder has been restricted to one route which is susceptible to closure from large trees falling across the road.

Consideration

The proponent advised that it considered alternatives to the proposal in the PER which is consistent with the EPA's Guidelines for Preparing a PER. It is noted that the EPA can only consider proposals put before it. The EP Act does not allow the EPA to consider the merits of one proposal over the merits of another that is not before it for assessment.

It is expected that road and fire safety will be addressed by the proponent in accordance with the relevant legislation. In this regard the proponent has advised it would ensure there was an emergency access route to the property.

CONCLUSIONS AND RECOMMENDATIONS

In Report 1552, the EPA advised that the proposal may be implemented to meet the EPA's objectives, provided the proposal is carried out in accordance with the recommended Conditions and procedures.

The EPA advised that in the course of its assessment it identified the following key environmental factors for the proposal, which were: flora and vegetation; terrestrial fauna; amenity (noise and dust); rehabilitation and decommissioning (integrating factor); and offsets (integrating factor). In assessing the proposal, the EPA took into consideration:

- Application of the mitigation hierarchy during the assessment process, reducing the proposed clearing within the State Forest from 20 to 8.9 ha;
- Limited duration of impact;
- Staged clearing and progressive rehabilitation;
- Large area of State Forest surrounding the proposal;
- Revised mining methods, mitigation and proposed monitoring to minimise the potential impacts of noise and dust on landowners that abut or are near the mine; and
- Ability of other regulatory processes to manage impacts.

Having regard to the information presented in respect to the appeal and the advice from relevant Government agencies, appellants and the proponent, it is considered that the EPA had sufficient information about the proposal, its environmental impacts and proposed management in relation to the key environmental factors to appropriately assess the proposal and that this assessment was consistent with section 44 of the EP Act.

It is noted that, consistent with the advice of the EPA, the presence of the established regulatory framework under Part V of the EP Act provides confidence that potential impacts

related to noise and dust from the proposal, as raised by appellants, can be adequately managed.

However, for the reasons set out in this report, it is recommended that the appeals be allowed to the extent that the conditions are amended as follows:

1. The title of Condition 7 '*Clearing and Rehabilitation of State Forest*' and the '*Clearing and Rehabilitation Plan*' referred to in Condition 7 are amended to '*State Forest - Area A*' and '*State Forest – Area A Management Plan*' respectively;
2. Condition 7 is amended to require that a qualified spotter thoroughly inspects terrestrial fauna habitat areas (including black cockatoo habitat) daily prior to clearing operations and retrieve fauna if necessary;
3. Condition 7-2(2) is amended to reflect the EPA's recommendations regarding the removal of reference to specific breeding months and the application of mitigation and management measures prior to any clearing (if threatened fauna is identified), on the advice of Parks and Wildlife;
4. Flora and Vegetation Monitoring Plan required by Condition 6 to be prepared in consultation with Department of Water, in addition to Parks and Wildlife;
5. Life of mine of three years is added to Schedule 1, Table 2 of the EPA's recommended conditions;
6. A groundwater abstraction element is included into Schedule 1, Table 2 of the EPA's recommended conditions;
7. Condition 8-1 is amended to be consistent with Condition 7-1 in Ministerial Statement 1022, to provide that the proponent shall undertake an offset with the objective of counterbalancing the significant residual impact to 8.9 ha of the Whicher Scarp Forest Ecosystem, including impacts to 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), the DRF *Davesia elongata* subsp. *Elongata*, Priority Ecological Community Whicher Scarp FCT C1 and the high diversity community of the Whicher Scarp Forest Ecosystem; and
8. The title of Condition 5 is amended to '*Public Availability of Data and Plans*' and the words '*and plans*' be included on Line 4 of sub-condition 5-1 after the following phrase '*...all validated environmental data*'.

It is expected that the precise wording of the Conditions would be finalised through the consultation process under section 45 of the EP Act.

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APPEALS CONVENOR

Investigating Officers:

Chris Ryan, Principal Environmental Officer and Lorna Davies, Senior Environmental Officer

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