Environmental impact assessment process timelines

<table>
<thead>
<tr>
<th>Date</th>
<th>Progress stages</th>
<th>Time (weeks)</th>
</tr>
</thead>
<tbody>
<tr>
<td>22/03/2017</td>
<td>EPA decided to assess – level of assessment set</td>
<td></td>
</tr>
<tr>
<td>26/02/2018</td>
<td>EPA approved Environmental Scoping Document</td>
<td>49</td>
</tr>
<tr>
<td>17/09/2019</td>
<td>EPA accepted Environmental Review Document</td>
<td>29</td>
</tr>
<tr>
<td>01/10/2019</td>
<td>Environmental Review Document released for public review</td>
<td>2</td>
</tr>
<tr>
<td>29/10/2019</td>
<td>Public review period for Environmental Review Document closed</td>
<td>4</td>
</tr>
<tr>
<td>22/04/2020</td>
<td>EPA accepted proponent’s Response to Submissions</td>
<td>27</td>
</tr>
<tr>
<td>23/04/2020</td>
<td>EPA board considered assessment</td>
<td>1 day</td>
</tr>
<tr>
<td>22/05/2020</td>
<td>EPA provided report to the Minister for Environment</td>
<td>4</td>
</tr>
<tr>
<td>27/05/2020</td>
<td>EPA report published</td>
<td>3 days</td>
</tr>
<tr>
<td>10/06/2020</td>
<td>Close of appeals period</td>
<td>2</td>
</tr>
</tbody>
</table>

Timelines for an assessment may vary according to the complexity of the proposal and are usually agreed with the proponent soon after the Environmental Protection Authority (EPA) decides to assess the proposal and records the level of assessment.

In this case, the EPA met its timeline objective to complete its assessment and provide a report to the Minister.

Dr Tom Hatton
Chairman

22 May 2020

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Assessment No. 2117
Summary

This document is an assessment report for Western Australia’s Minister for Environment. It describes the outcomes of an Environmental Protection Authority (EPA) environmental impact assessment of the Ravensthorpe Gold Project, located about 17 kilometres south east of Ravensthorpe, in the southern Goldfields-Esperance region. The proponent is ACH Minerals Pty Ltd.

Proposal

The proposal involves the development and operation of a gold and copper mine at the Kundip mine site. The proposal includes mining from multiple open-cut pits and underground, a processing facility, waste rock landforms, a tailings storage facility and associated infrastructure.

Background and context

Originally named the Phillips River Gold Project, an earlier proponent, Tectonic Resources NL, referred the Project to the EPA and the Commonwealth Department of Environment in 2005. The Commonwealth determined the Project to be “Not a Controlled Action”.

The Phillips River Gold Project was assessed by the EPA (Assessment Number 1618, EPA Report 1213) and Ministerial Statement 716 was published on 22 March 2006. By 2011 the proponent had not substantially commenced the project, as required by condition 4 of the statement, and declined to request an extension to the timeframe for implementing the proposal.

The current proponent referred the Ravensthorpe Gold Project to the EPA on 13 December 2016. On 22 March 2017 the EPA decided to assess the proposal and set the level of assessment at Public Environmental Review (PER) with a four week public review period.

The Ravensthorpe Gold Project varied from the Phillips River Gold Project in the following ways:

- processing to be undertaken at the Kundip site as opposed to the Rav8 site originally proposed
- the extent of clearing required for the proposal at the Kundip site has increased by 110.4 hectares (ha).

On the 14 December 2017, the proponent requested the following changes to the Ravensthorpe Gold Project during assessment under section 43A of the EP Act:

- decrease of the development envelope from 516 ha to 512 ha
- decrease of the Kundip mine site disturbance footprint from 252 ha to 152 ha
- decrease of the Myamba mine site disturbance footprint from 64 ha to 46 ha.
The EPA approved the above changes under s. 43A of the *Environmental Protection Act 1986* (EP Act) on 17 January 2018.

Following this change, the Environmental Scoping Document was prepared by the proponent and approved by the EPA on 26 February 2018.

The proponent submitted a request to undertake minor or preliminary work on 6 March 2018 for sterilisation drilling. The EPA approved the request under s. 41A(3) of the EP Act on 11 June 2018.

On the 26 September 2018, the proponent submitted a further request for change to proposal during assessment, which included:

- decrease of the Kundip mine site development envelope from 512 ha to 428.4 ha
- increase of the Kundip mine site disturbance footprint from 197 ha to 244.7 ha
- removal of the Myamba mine site development envelope (149 ha) and disturbance footprint (45.2 ha) from the proposal
- increase in clearing for the tailing storage facility by 5.2 ha, and an increase in volume by 0.5 million cubic metres
- correction to the groundwater abstraction volume (made in error) and increase to 0.8 gigalitres per annum.

The EPA approved the above changes under s. 43A of the EP Act on 19 October 2019.

**Public submissions**

Seven agency submissions and 43 public submissions were received during the public review period of the Environmental Review Document. The key issues raised relate to:

- clearing of flora and vegetation in an area of high biodiversity and endemism
- potential impact on significant flora
- potential impact to threatened fauna and loss of habitat
- uncertainty about the impact on short range endemic fauna species
- potential impact on surface and groundwater due to the construction of the waste rock landforms and tailings storage facility
- adequacy of the closure plan for the operation
- provision of offsets.
Key environmental factors and relevant principles

The EPA identified the following key environmental factors (see section 4) during the course of its assessment:

1. **Flora and Vegetation** – direct and indirect impacts to priority flora, Priority Ecological Communities, and a Commonwealth listed Threatened Ecological Community

2. **Terrestrial Fauna** – direct and indirect impact to threatened fauna habitat including Carnaby’s cockatoo, malleefowl, chuditch and western whipbird (western mallee)

3. **Terrestrial Environmental Quality** – potential impact to soil and surface water flows through acid and metalliferous drainage from waste rock stockpiles and tailings storage

4. **Inland Waters** – potential impacts to ground and surface water from seepage from the tailings storage facility, acid and metalliferous drainage from waste rock landforms, deterioration of pit lake water quality, and run off from exposed areas

5. **Social Surroundings** – potential impact to European heritage sites and disruption of public access to heritage listed sites and walk trail.

In identifying the key environmental factors, the EPA had regard to the objectives and principles set out in s. 4A of the EP Act. The EPA considered that the following principles were particularly relevant to this assessment:

1. The precautionary principle
2. The principle of intergenerational equity
3. The principle of the conservation of biological diversity and ecological integrity
4. Principles relating to improved valuation, pricing and incentive mechanisms.

Conclusion and recommendations

Having assessed the proposal, the EPA has taken the following into account in its assessment of the proposal as a whole:

- impacts to all the key environmental factors
- EPA’s confidence in the proponent’s proposed mitigation measures
- relevant EP Act principles and the EPA’s objectives for the key environmental factors
- EPA’s view that the impacts to the key environmental factors are manageable, provided the recommended conditions are imposed.

Having assessed the proposal, the EPA recommends that the proposal may be implemented subject to the conditions recommended in Appendix 5.
The EPA recommends that the Minister for Environment notes:

1. That the proposal assessed is for ACH Minerals, Ravensthorpe Gold Project involving the development and operation of a gold and copper mine at the Kundip mine site, located about 17 kilometres south east of Ravensthorpe.

2. The key environmental factors identified by the EPA in the course of its assessment are Flora and Vegetation, Terrestrial Fauna, Terrestrial Environmental Quality, Inland Waters and Social Surroundings, as set out in section 4.

3. The EPA has recommended that the proposal may be implemented, provided the implementation of the proposal is carried out in accordance with the recommended conditions and procedures set out in Appendix 5. Matters addressed in the conditions include the following:

   a) environmental management plan to minimise impacts to significant flora and vegetation
   b) environmental management plan to minimise the impact to conservation significant fauna
   c) dieback management plan
   d) offset strategy to counterbalance the significant residual impact to threatened fauna habitat and Threatened Ecological Communities
   e) heritage management requirements and a plan to ensure further consultation occurs and impacts to the Hopetoun-Ravensthorpe Railway Heritage Walk trail are minimised.
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1. Introduction

This report provides the advice and recommendations of the Environmental Protection Authority (EPA) to the Minister for Environment on the outcomes of the EPA’s environmental impact assessment of the Ravensthorpe Gold Project (the proposal). The proponent for the proposal is ACH Minerals Pty Ltd. The proposal is to construct and operate a gold and copper mine about 17 kilometres (km) south east of Ravensthorpe in the southern Goldfields-Esperance region.

Originally named the Phillips River Gold Project, an earlier proponent, Tectonic Resources NL, referred the Project, to the EPA and the Commonwealth Department of Environment in 2005 (Figure 1). The Commonwealth determined the Phillips River Gold Project to be “Not a Controlled Action”. The Project was assessed by the EPA (Assessment Number 1618, EPA Report 1213) and Ministerial Statement 716 was published on 22 March 2006. By 2011, Tectonic Resources NL had not substantially commenced the project, as required by condition 4 of the statement, and declined to request an extension to the timeframe for implementing the proposal. The current proponent referred the Ravensthorpe Gold Project to the EPA on 13 December 2016. The Ravensthorpe Gold Project varies from the Phillips River Gold Project in the following ways:

- processing to be undertaken at the Kundip site as opposed to the Rav8 site
- extent of clearing required at the Kundip site has increased by 110.4 hectares.

The EPA has prepared this report in accordance with s. 44 of the *Environmental Protection Act 1986* (EP Act). This section of the EP Act requires the EPA to prepare a report on the outcome of its assessment of a proposal and provide this assessment report to the Minister for Environment. The report must set out:

(a) what the EPA considers to be the key environmental factors identified during the assessment

(b) the EPA’s recommendations as to whether or not the proposal may be implemented and, if the EPA recommends that implementation be allowed, the conditions and procedures to which implementation should be subject.

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

The proponent referred the proposal to the EPA on 13 December 2016. On 22 March 2017 the EPA decided to assess the proposal and set the level of assessment at Public Environmental Review with a four week public review period. The EPA approved the Environmental Scoping Document for the proposal on 26 February 2018. The Environmental Review Document (ERD) was released for public review from 1 October 2019 to 29 October 2019.

**EPA procedures**

The EPA followed the procedures in the *Environmental Impact Assessment (Part IV Divisions 1 and 2) Administrative Procedures 2016* (State of Western Australia 2016) and the *Environmental Impact Assessment (Part IV Divisions 1 and 2) Procedures Manual* (EPA 2020a).
Figure 1: Phillips River Gold Project and Ravensthorpe Gold Project
2. The proposal

The proponent proposes to develop and operate a gold and copper mine, located about 17 km south east of Ravensthorpe in the southern Goldfields-Esperance region (Figure 2).

The development envelope (Figure 3) is 428.4 hectares (ha). Clearing within the development envelope is 244.7 hectares (ha), of which 195.4 ha is native vegetation and 49.3 ha is previously disturbed land. The proposal has an expected life of mine of eight years.

The key elements of the proposal include:

- open pit mining from the Kaolin, Harbour View and Flag pits using conventional drill and blast methods
- underground mining at the Harbour View and Flag deposits
- processing of about 3 million tonnes of ore to produce 0.5 million ounces of gold, 0.4 million ounces of silver and 11,300 tonnes of copper
- construction of two Waste Rock Landforms (WRL) to permanently store about 29.4 million tonnes of waste rock (both non acid forming and potentially acid forming)
- construction of a Tailings Storage Facility (TSF) for the permanent disposal of up to 2 million cubic metres (about 3 million tonnes) of tailings
- associated mine infrastructure, including haul and access roads, administration facilities, workshops and hydrocarbon management systems, laydown and storage areas, water storage infrastructure, processing plant, diesel storage, explosives magazine, landfill, workshops, pipelines, powerlines, electrical generators and other miscellaneous infrastructure.

The proposal would require up to 0.8 gigalitres per annum of water for processing, accommodation, and dust suppression. During the initial three years of operation, the water supply will be sourced from the Rav8 pit. Rav8 is a closed mine with an open pit lake located about 13 km north east of the proposal (Figure 2). Following this initial period, pit dewatering will supply the operational water needs.

Mine pits will remain open at the end of operations and the WRL, TSF and other infrastructure areas will be rehabilitated to native vegetation.

The key characteristics of the proposal are summarised in Tables 1 and 2 below. A detailed description of the proposal is provided in section 2.3 of the ERD (ACH 2019).
Table 1: Summary of the proposal

<table>
<thead>
<tr>
<th>Proposal title</th>
<th>Ravensthorpe Gold Project</th>
</tr>
</thead>
<tbody>
<tr>
<td>Short description</td>
<td>The proposal involves the development and operation of a gold and copper mine at the Kundip Mine Site about 17 km south east of Ravensthorpe. The proposal involves mining from multiple open-cut pits and underground, a processing facility, waste rock landforms, a tailings storage facility and associated infrastructure.</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Element</th>
<th>Location</th>
<th>Authorised Extent</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Physical elements</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mine and associated infrastructure</td>
<td>Figure 2</td>
<td>Clearing of no more than 195.4 ha of native vegetation and 49.3 ha of previously disturbed land within the 428.4 ha development envelope.</td>
</tr>
<tr>
<td><strong>Operational elements</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water supply</td>
<td>-</td>
<td>Up to 0.8 gigalitres per annum of water abstraction from dewatering</td>
</tr>
<tr>
<td>Tailings storage</td>
<td>-</td>
<td>Up to 2 million cubic metres of tailings</td>
</tr>
</tbody>
</table>
Figure 2: Regional location
Figure 3: Development envelope and disturbance footprint
2.1 Changes to the proposal during assessment

During preparation of the Environmental Scoping Document, the proponent requested the EPA consent to a change to the proposal during assessment on 14 December 2017. The proposed change included:

- decrease of the development envelope at Kundip mine site from 516 ha to 512 ha
- decrease of the Kundip mine site disturbance footprint from 252 ha to 152 ha
- decrease of Myamba mine site disturbance footprint from 64 ha to 46 ha.

The Chairman, as a delegate of the EPA, concluded that the changes were unlikely to significantly increase any impact that the proposal may have on the environment and gave consent under s. 43A of the EP Act to the change on 17 January 2018.

During preparation of the ERD, the proponent submitted another request to change the proposal during assessment. The nature of the proposed change consisted of:

- decrease of the Kundip mine site development envelope from 512 ha to 428.4 ha
- increase of the Kundip mine site disturbance footprint from 197 ha to 244.7 ha
- removal of the Myamba mine site development envelope (149 ha) and disturbance footprint (45.2 ha) from the proposal
- increase of clearing for the TSF by 5.2 ha and volume by 0.5 million cubic metres
- correction to the groundwater abstraction volume (made in error) and increase to 0.8 gigalitres per annum.

The Chairman, as a delegate of the EPA, concluded that the changes were unlikely to significantly increase any impact that the proposal may have on the environment and gave consent under s. 43A of the EP Act to the change on 19 October 2019.

These changes are reflected in Tables 1 and 2 above.

2.2 Context

The proposal is located within the Shire of Ravensthorpe. Several mines operate within the area, with the main resources being nickel, cobalt and lithium. There are also abandoned mines in the region including Elverdton, which has been selected as a pilot site for the Department of Mines, Industry Regulation and Safety’s Abandoned Mines Program, located about 6 km north of the proposal.

The proposal is located in the Kundip area of the Shire of Ravensthorpe. The town of Kundip (now abandoned) was established to support mining in the early 1900s. The current proposal incorporates some of the historic mine workings.

The Ravensthorpe region is considered a biologically diverse area. The proposal lies within the Fitzgerald sub-region of the Interim Biogeographic Regionalisation for Australia (IBRA), Esperance Plains bioregion and the Ravensthorpe Range. The Fitzgerald River National Park is located 15 km to the west (Figure 2) and is one of the most botanically significant areas in Australia. The Kundip Nature Reserve (Figure 2) is less than 1 km south of the proposal.
3. Consultation

The EPA advertised the referral information for the proposal for public comment from 16 January 2017 to 22 January 2017 and received three submissions. All three submissions requested ‘Assess – Public Environmental Review’.

The proponent consulted with state government agencies and key stakeholders during the preparation of the ERD. The agencies and stakeholders consulted, the issues raised and the proponent’s response are detailed in Table 3-2 of the ERD (ACH 2019).

The ERD was released for public comment for four weeks between 1 October and 29 October 2019. Five agency and 43 public submissions were received during the public review period. The key issues raised related to:

- clearing of flora and vegetation in an area of high biodiversity
- impact on conservation significant flora
- impact to threatened fauna and loss of habitat
- uncertainty of the impact on short range endemic fauna species
- impact on surface and groundwater due to the construction of the WRL and TSF
- adequacy of the closure plan for the operation
- no provision of offsets.

The proponent has addressed the issues raised in the Response to Submissions document (ACH 2020).

The EPA considers that the consultation process has been appropriate and that reasonable steps have been taken to inform the community and stakeholders about the proposed development. Relevant significant environmental issues identified from this process were taken into account by the EPA during its assessment of the proposal.
4. Key environmental factors

In undertaking its assessment of the proposal and preparing this report, the EPA had regard for the objectives and principles in s. 4A of the EP Act to the extent relevant to the particular matters that were considered.

The EPA considered the following information during its assessment:

- proponent’s referral information and ERD
- public comments received on the referral, stakeholder comments received during the preparation of the proponent’s documentation and public and agency comments received on the ERD
- proponent’s response to submissions raised during the public review of the ERD
- EPA’s own inquiries
- Statement of Environmental Principles, Factors and Objectives (EPA 2020b)
- relevant principles, policy and guidance referred to in the assessment of each key environmental factor in sections 4.1 to 4.5.

Having regard to the EP Act principles, the EPA considered the following principles were particularly relevant to its assessment of the proposal:

1. The precautionary principle – the EPA has considered whether the proponent’s investigations into the biological and physical environment provide the means to assess risk and identify measures to avoid or minimise impacts. Where greater certainty regarding risk to flora and vegetation, terrestrial fauna and social surroundings is required, the EPA has recommended conditions to ensure that certainty is provided.

2. The principle of intergenerational equity – the EPA has considered whether the health, diversity and productivity of the environment would be maintained or enhanced during the implementation of the proposal, with particular regard to the diversity and productivity of flora and vegetation and terrestrial fauna. The EPA has recommended conditions to ensure the biological environment is maintained for the benefit of future generations.

3. The principle of the conservation of biological diversity and ecological integrity – the EPA has considered the impacts on flora and vegetation and terrestrial fauna with particular regard to listed threatened and priority species. The EPA has recommended conditions to manage the impacts on conservation significant flora and fauna so that biological diversity is maintained.

4. Principles relating to improved valuation, pricing and incentive mechanisms – the costs relating to environmental management including waste and pollution, avoidance, monitoring, containment, decommissioning, rehabilitation and closure are intrinsic to the operation and shall be borne by the proponent.
Appendix 2 of this report provides a summary of the principles and how the EPA considered these principles in its assessment.

Having regard to the above information, the EPA identified the following key environmental factors during the course of its assessment of the proposal:

- **Flora and Vegetation** – loss of flora and vegetation communities including priority species and a Commonwealth listed Threatened Ecological Community, from clearing, and indirect impacts.

- **Terrestrial Fauna** – death, injury and displacement of vulnerable and threatened fauna species and loss/fragmentation of habitat, vehicle strikes, entrapment in trenches or similar structures and the pit lake, and interactions with feral animals.

- **Terrestrial Environmental Quality** – impacts on stream flow through diversion around waste rock landforms and open pits, potential soil contamination through seepage from waste rock landforms and seepage from the tailings storage.

- **Inland Waters** – impact on surface and groundwater flows and quality through the construction of and potential seepage from waste rock landforms, tailings storage facility and mine voids as well as the potential impact from the transfer of process water and waste slurries around the project site.

- **Social Surroundings** – potential impact due to operational noise and dust, impacts to the Hopetoun-Ravensthorpe Railway Heritage Trail Walk and consultation on heritage matters.

The EPA considered other environmental factors during the course of its assessment of the proposal. These factors, which were not identified as key environmental factors, are discussed in the proponent’s ERD (ACH 2019). Appendix 3 of this report contains an evaluation of why these other environmental factors were not identified as key environmental factors.

The EPA’s assessment of the proposal’s impacts on the key environmental factors is provided in sections 4.1 to 4.5. These sections outline whether or not the EPA considers that the impacts on each factor are manageable. Section 8 provides the EPA’s recommendation as to whether or not the proposal may be implemented.

In its assessment of the proposal, the EPA considered and gave due regard to, where relevant, its current environmental impact assessment policy and guidance documents, unless otherwise stated. The EPA consulted with the proponent on the application of the current environmental impact assessment policy and guidance documents relevant to its environmental review and the EPA’s assessment of the proposal.

**Assessment on behalf of Commonwealth**

The proposal has not been assessed as a bilateral or accredited assessment. The EPA has considered commonwealth policy, where it was determined to be appropriate to its assessment, noting that the proponent is responsible for its obligations under the *Environment Protection and Biodiversity Conservation Act 1999*. The proponent has outlined its reasons for not referring the proposal in its response to submissions document (ACH 2020).
4.1 Flora and Vegetation

The EPA’s environmental objective for this factor is to protect flora and vegetation so that biological diversity and ecological integrity are maintained.

Relevant policy and guidance

The EPA considers the following current environmental policy and guidance is relevant to its assessment of the proposal for this factor:

- *Environmental Factor Guideline – Flora and Vegetation* (EPA 2016b)
- *WA Environmental Offsets Policy* (Government of Western Australia 2011)
- *WA Environmental Offsets Guidelines* (Government of Western Australia 2014).

The considerations for environmental impact assessment for this factor are outlined in *Environmental Factor Guideline – Flora and Vegetation* (EPA 2016b).

EPA assessment

Existing environment

The proposal is located in the Fitzgerald IBRA subregion and within the biologically diverse Ravensthorpe Range. It is located about 15 km east of the Fitzgerald River National Park and less than 1 km north of the Kundip Nature Reserve.

There has been considerable survey work undertaken since the inception of the Phillips River Gold Project in 2004. These surveys include:

- assessment of local surveys for declared rare and Priority flora and vegetation mapping, and targeted declared rare flora surveys of the Kundip Mining Leases by G.F. Craig in 2004
- declared rare and Priority flora surveys of the Kundip waste dump and haul road areas by G.F. Craig in 2005
- Kundip Mining lease quadrat vegetation mapping by E. Hickman in 2007
- regional vegetation mapping survey of the Ravensthorpe Range from Mt Short to South Coast Highway by Craig et al in 2007
- regional vegetation mapping survey of the Ravensthorpe Range from Mt Short to Kundip by Craig et al in 2008
- floristic survey of the Ravensthorpe Range by Kearn et al in 2007
- further quadrat monitoring of the Kundip site for declared rare and Priority flora E. Hickman in 2009
- targeted and regional survey for *Melaleuca* sp Kundip and *Melaleuca stramentosa* by N. McQuoid in 2009
- floristic community vegetation mapping of the Ravensthorpe Range by Markey et al in 2012.
Additional surveys were conducted by Animal Plant Mineral as part of the current proposal, including:

- ground truthing of existing vegetation mapping by Craig (2004) quantifying the extent of historic and recent disturbance, establishment of quadrats and targeted conservation significant flora surveys in August 2016
- targeted surveys for conservation significant flora and surveys to update the general flora and vegetation attributes of the proposal in May and August of 2017
- survey for *Hydrocotyle tuberculata* and proteaceous and myrtaceous species in August 2018.

The surveys were undertaken mostly in accordance with the standards set out in *Technical Guidance – Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA 2016c) and *Environmental Factor Guideline – Flora and Vegetation* (EPA 2016b). The use of multiple surveys across different seasons and by different botanists provides confidence in the overall identification of species and communities. In response to comments from the Department of Biodiversity, Conservation and Attractions (DBCA) on the ERD, the proponent also completed additional targeted surveys for flora, which provided further assurance that surveys were appropriate. These surveys are included in the Response to Submissions document (ACH 2020).

Field surveys for this proposal included 95 quadrats within the region, which identified 243 taxa (species, sub species and varieties) belonging to 126 genera and 49 families.

Seventeen species of weeds were recorded with one weed of national significance – Bridal Creeper (*Asparagus aspasagoides*) located within the development envelope.

**Threatened and Priority species**

There were no threatened species listed under the *Biodiversity Conservation Act 2016* (BC Act) identified during field surveys. Eighteen Priority (P) species were recorded within the areas surveyed, including:

- *Acacia* sp. Ravensthorpe Range (B.R. Maslin 5463) (P1)
- *Calothamnus roseus* (P1)
- *Lepidosperma* sp. Elverdon (R. Jasper *et al.* LCH 16844) (P1)
- *Lepidosperma* sp Maydon (S. Kern, R. Jasper, H. Hughes LCH 17844) (P1)
- *Lepidosperma* sp. Mt Short (S. Kern *et al.* LCH 17510) (P1)
- *Melaleuca sophisma* (P1)
- *Hydrocotyle tuberculata* (P2)
- *Thoma* sp. Hopetoun (K.R. Newbey 4896) (P2)
- *Dampiera* sp. Ravensthorpe (G.F. Craig 8277) (P3)
- *Grevillea fulgens* (P3)
- *Pultenaea cragiana* (P3)
- *Acacia argutifolia* (P4)
- *Eucalyptus desmondensis* (P4)
- *Eucalyptus stoatei* (P4)
- *Marianthus mollis* (P4)
- *Pultenaea calycina* subsp. *Proxena* (P4)
- *Stachystemon vinosus* (P4)
- *Thysanotus parviflorus* (P4).

Of these, only nine were found within the development envelope, and are likely to be impacted by the proposal. The Priority species with the greatest impact and concern are listed below.

It was identified that 3,200 of the 4,700 known plants (equating to 68%) of *Calothamnus roseus* (P1) occurs within the development envelope.

A total of 327 individuals of *M. sophisma* (P1) were recorded within the development envelope which represents less than 1% of the known population.

A total of 44 individuals of *Thomasia* sp Hopetoun (K.R. Newbey 4896 (P2) were recorded within the development envelope. This population represents 18% of all known plants. Other known populations are found within secure land tenure such as the Fitzgerald River National Park.

No individuals of *H. tuberculata* and *Dampiera* sp Ravensthorpe (G.F. Craig 8277) were recorded in the development envelope.

There is one known location of *Lepidosperma* sp. Elverdton (R. Jasper *et al.* LCH 16844) (P1) within the development envelope. There are two other known locations for this species (Kern *et al.* 2008), both within 5 km of the proposal.

**Vegetation communities**

Vegetation mapping has been undertaken across the development envelope with surveys undertaken by Craig *et al.* (2008) and by Animal Plant Mineral in 2016 as part of the current proposal. Vegetation mapping undertaken by Craig *et al.* (2008) identified 25 communities. The Animal Plant Mineral survey resulted in only minor amendments to these classifications, so the original work by Craig *et al.* (2008) has been considered appropriate and used by the proponent for this impact assessment.

Vegetation condition mapping by Animal Plant Mineral identified 71.7 ha of Completely Degraded vegetation, 3.7 ha of Good to Degraded vegetation and 542.1 ha of Very Good to Excellent vegetation within the development envelope and immediate surrounds.

Of the mapped vegetation communities, there were no Threatened Ecological Communities (TECs) listed under the BC Act.
Four Priority Ecological Communities (PEC) were identified within the survey area:

- **Very open Mallee over Melaleuca sophisma dense heath** (P1) (formerly *Melaleuca*. sp Kundip)
- **Banksia laevigata – Banksia lemanniana** proteaceous thicket (P1)
- Heath on Komatiite of the Ravensthorpe area (P3)
- Proteaceae dominated Kwongkan shrublands of the Southeast Coastal Floristic Province of Western Australia (P3).

Both Very open Mallee over *Melaleuca sophisma* dense heath (P1) (formerly *M*. sp Kundip) and Proteaceae dominated Kwongkan shrublands of the Southeast Coastal Floristic Province of Western Australia (P3) are known to occur within the development envelope.

**Very open Mallee over Melaleuca sophisma dense heath**

There is 34.2 ha of this PEC within the development envelope—1.2 ha is likely to be directly impacted by the proposal. This represents 3.5 per cent of the PEC within the region.

**Proteaceae dominated Kwongkan shrublands of the Southeast Coastal Floristic Province of Western Australia**

There is 76.7 ha of this PEC within the development envelope – 38.4 ha will be directly impacted by clearing, with an additional 10 ha of potential indirect impact. This represents 50.1 per cent disturbance to the PEC within the development envelope and less than 0.1 per cent of the PEC within the region.

As well as being listed as a P3 PEC, the Proteaceae dominated Kwongkan shrublands of the Southeast Coastal Floristic Province of Western Australia is listed as Endangered under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) (Commonwealth listed Threatened Ecological Community).

The proponent has identified other (non-threatened or priority) vegetation communities (Craig et al. 2008) where there is significant impact at a regional level (greater than 20 per cent impact). These are:

- *Eucalyptus cernua/Eucalyptus clivicola* – with a direct and indirect impact of 22.5 ha (51 per cent regional impact)
- *Melaleuca stramentosa* – with a direct and indirect impact of 27.6 ha (28.7 per cent regional impact)
- *Eucalyptus flocktoniae/Eucalyptus* species – with a direct and indirect impact of 42.3 ha (23.7 per cent regional impact)
- *Eucalyptus leptacalyx/Melaleuca rigidifolia* – with a direct and indirect impact of 2.1 ha (21.7 per cent regional impact).
Potential impacts
Flora and vegetation could be potentially impacted, either directly or indirectly through:
- clearing of vegetation
- introduction of weeds
- dust generation and use of hypersaline water for dust suppression
- changes to fire regimes
- introduction of dieback and feral animals.

Mitigation and management
The EPA notes that in designing the proposal, the proponent has applied the mitigation hierarchy, in accordance with the Environmental Factor Guideline – Flora and Vegetation (EPA 2016b).

No threatened flora were found within the development envelope. Of the 18 Priority species located with the survey area, 12 were located within the development envelope, with three not likely to be impact by the proposal. Of the remaining nine Priority species, those with the larger impacts and the mitigation approach are outlined below.

The proponent has proposed an exclusion zone to protect the population of *Calothamnus roseus* (P1), thereby avoiding impacts to this species.

*Lepidosperma* sp. Elverdton (R. Jasper et al. LCH 16844) will be impacted by the proposal. There is one known location of this species within the development envelope which occurs in the southern WRL footprint. Database searches indicate that there are only two other records known for the species within 5 km of the proposal. An estimate of impact to the species has not been provided.

Impact on the remaining Priority species are not likely to alter their conservation significance, particularly in a regional extent with most found in nearby national parks and nature reserves.

The proponent considers that on a regional scale, the impact on the PECs – Very open Mallee over *Melaleuca sophisma* dense heath and Proteaceae dominated Kwongkan shrublands of the Southeast Coastal Floristic Province of Western Australia would be minor.

The proponent has recognised the potential impact of dieback (*Phytophthora* spp) and prepared a Disease Hygiene Management Plan which contains measures to be implemented to reduce the risk of introduction and spread of dieback.

The proponent proposes to manage weeds through mapping of existing infestations, implementation of weed hygiene and ground disturbance procedures and the implementation of weed control measures (physical and chemical control). These would be implemented through a Flora and Vegetation Management Plan.
EPA consideration of impacts and mitigation

The EPA notes that the proposal will be developed partially on disturbed land that has been historically mined at the Kundip site. This affords an opportunity to reduce the existing impacts associated with historic mines through rehabilitation.

The EPA acknowledges the proposed exclusion zone for the protection of the P1 species Calothamnus roseus. The EPA considers that impacts on P1 species Lepidosperma sp Mt Short (S. Kern et al. LCH 17510) can also be minimised through avoidance. The EPA notes that impacts on Melaleuca sophisma and Lepidosperma sp Maydon (S. Kern, R. Jasper, H. Hughes LCH 17844) are unlikely to be significant due to their known extent outside the development envelope.

The impact on Lepidosperma sp. Elverdton (R. Jasper et al. LCH 16844) would not result in the loss of this species, but could change its conservation status. The EPA has included a condition to minimise impacts to this species, noting there are two populations outside the development envelope.

In accordance with the WA Environmental Offset Guidelines (Government of Western Australia 2014) and consistent with other proposals, there is likely to be a significant residual impact from the proposal through the loss of 38.4 ha of direct and 10 ha of indirect impacts to Proteaceae dominated Kwongkan shrublands of the Southeast Coastal Floristic Province of Western. This vegetation community is considered endangered under the EPBC Act and the EPA considers that this, coupled with issues raised below in Terrestrial Fauna (section 4.2) concerning loss of fauna habitat for significant species, warrants the provision of an offset which will need to be prepared by the proponent (refer to section 5).

The proponent is currently updating its Mine Closure Plan, in accordance with the Department of Mines, Industry Regulation and Safety (DMIRS) Statutory Guideline for Mine Closure Plans (2020). This will be submitted as part of the DMIRS Mining Proposal approval process. The EPA considers that activities associated with rehabilitation and closure can be managed under the Mining Act 1978 but has provided other advice on the final post closure land-use of the mine.

The EPA considers that the proponent has made achievable attempts to avoid impacts to conservation significant flora and vegetation communities and the proposed measures to minimise impacts are reasonable. However, the EPA considers that a significant residual impact remains, and has recommended a condition for a Flora Offsets Strategy. The EPA has also recommended condition 6 to prepare and implement a Flora and Vegetation Management Plan and condition 9 to prepare and implement a Disease Hygiene Management Plan.

Summary

The EPA has paid particular attention to:

- Environmental Factor Guideline – Flora and Vegetation (EPA 2016b)
- no impacts proposed to threatened flora
• priority and conservation status of the significant flora and vegetation to be impacted
• proponent’s application of the mitigation hierarchy to avoid and minimise clearing of conservation significant flora and vegetation
• avoidance of impacts through the proposed application of exclusion zones for Calothamnus roseus
• impacts to Lepidosperma sp. Elverdton (R. Jasper et al. LCH 16844).

The EPA considers, having regard to the relevant EP Act principles and environmental objective for Flora and Vegetation that the impacts to this factor are manageable and would no longer be significant, provided there is:

• a limit on the clearing of native vegetation through the authorised extent in schedule 1 of the Recommended Environmental Conditions (Appendix 5)
• implementation of a Disease Hygiene Management Plan through condition 9
• implementation of measures to ensure objectives of condition 6-1 are met through the implementation of a Flora and Vegetation Management Plan (condition 6)
• implementation of an offsets strategy (see section 5, condition 10) to counterbalance the significant residual direct and indirect impacts of clearing of 48.4 ha of Proteaceae dominated Kwongkan shrublands of the Southeast Coastal Floristic Province of Western Australia.

4.2 Terrestrial Fauna

The EPA’s environmental objective for this factor is to protect terrestrial fauna so that biological diversity and ecological integrity are maintained.

Relevant policy and guidance

The EPA considers the following current environmental policy and guidance is relevant to its assessment of the proposal for this factor:

• Environmental Factor Guideline – Terrestrial Fauna (EPA 2016d)
• Technical Guidance – Sampling methods for terrestrial vertebrate fauna (EPA 2010)
• Technical Guidance – Terrestrial Fauna Surveys (EPA 2004)
• Technical Guidance – Sampling of short range endemic invertebrate fauna (EPA 2009)
• WA Environmental Offsets Policy (Government of Western Australia 2011)
• WA Environmental Offsets Guidelines (Government of Western Australia 2014).

The considerations for environmental impact assessment for this factor are outlined in Environmental Factor Guideline – Terrestrial Fauna (EPA 2016d).
EPA assessment

Existing environment

The proponent identified three broad habitat types within the development envelope:

- **Damplands and Drainage Lines** – featuring eucalypt over story over a diverse myrtaceous mid story with sedges, grasses and herbs comprising the understory (about 11.5 per cent of the development envelope)

- **Low Dense Forest** – occurring on low gradient slopes featuring Mallee over story with some melaleuca and other shrubs and ground story comprised mostly of sedges (about 7.7 per cent of the development envelope)

- **Low Woodland Mallee Heath** – featuring a broad variety of eucalypt species occurring over rises and hills with a diverse proteaceous and myrtaceous shrub layer (about 65.5 per cent of the development envelope).

Historical disturbance makes up the remaining 15.3 per cent of the development envelope and is primarily associated with historic mining activity including roads, sumps and other cleared areas.

Fauna surveys were undertaken for the original Phillips River Gold Project. Additional surveys were completed as part of this assessment in 2016 and 2017. Searches of DBCA databases conducted in 2016 and 2019 identified 193 vertebrate fauna species as being expected to occur within 10 km of the proposal.

Vertebrate fauna

Field surveys conducted in 2016 and 2017 recorded 101 vertebrate fauna species within the development envelope including 54 birds, 29 reptiles, six amphibians and 12 mammals (including 3 introduced species). In addition, four species of bats have been identified through recording of acoustic signatures.

Database searches identified 38 species of conservation significant vertebrates likely to occur in the development envelope. Of these, 20 are not likely to be found within the development envelope due to the lack of suitable habitat or have not been recorded during surveys.

Field surveys conducted between 2004 and 2017 have recorded nine vertebrate fauna species of conservation significance within the development envelope. These are outlined in Table 3 below.

Proposed clearing for the proposal includes 167.5 ha of habitat for four species listed in the above table including:

- 150.3 ha of Carnaby’s cockatoo foraging and roosting habitat
- 150.3 ha of malleefowl habitat
- 150.3 ha of western whipbird (western mallee) habitat
- 17.2 ha of chuditch habitat.
Table 3. Conservation significant fauna found during field surveys

<table>
<thead>
<tr>
<th>Common name</th>
<th>Species</th>
<th>Conservation status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carnaby's cockatoo</td>
<td><em>Calyptorhynchus latirostris</em></td>
<td>EN EN</td>
</tr>
<tr>
<td>Malleefowl</td>
<td><em>Leipoa ocellata</em></td>
<td>VU VU</td>
</tr>
<tr>
<td>Western bristlebird</td>
<td><em>Dasyornis longirostris</em></td>
<td>EN EN</td>
</tr>
<tr>
<td>Western whipbird (western mallee)</td>
<td><em>Psophodes nigrogularis moberon</em></td>
<td>VU P4</td>
</tr>
<tr>
<td>Peregrine falcon</td>
<td><em>Falco peregrinus</em></td>
<td>- OS</td>
</tr>
<tr>
<td>Ravensthorpe Range slider</td>
<td><em>Lerista viduata</em></td>
<td>- P1</td>
</tr>
<tr>
<td>Chuditch</td>
<td><em>Dasyurus geoffroii</em></td>
<td>VU VU</td>
</tr>
<tr>
<td>Tammar wallaby</td>
<td><em>Notamacropus eugenii derbianus</em></td>
<td>- P4</td>
</tr>
<tr>
<td>Western brush wallaby</td>
<td><em>Notamacropus irma</em></td>
<td>- P4</td>
</tr>
</tbody>
</table>

The habitat for birds listed above overlap in the development envelope. Impacts to the two wallaby species, Ravensthorpe Range slider and Peregrine falcon are less significant in nature and are unlikely to result in these species being listed as Threatened.

Short range endemic fauna

One potential short range endemic fauna, a land snail from the genus *Bothriembryon*, was identified during surveys undertaken in 2004. A single specimen was collected in Low Dense Forest/Forest habitat.

The surveys undertaken in 2004 also recorded two species of mygalomorph spiders, *Aname mainae* and *Chenistonia tepperi* (now *Proshermacha tepperi*) in the development envelope. Both species have wider known distributions and are not limited to the development envelope.

Potential impacts

Terrestrial fauna may be directly and indirectly impacted through:

- direct clearing of vegetation including habitat for foraging and roosting
- further fragmentation of native vegetation
- risk of injury from vehicle strikes
- consumption of tailings liquor
- feral animals
- changes to fire regimes.
Mitigation and management

The EPA notes that in designing the proposal, the proponent has applied the mitigation hierarchy, in accordance with the *Environmental Factor Guideline – Terrestrial Fauna* (EPA 2016d).

To avoid direct impacts to malleefowl, the proponent has proposed a 250 metre buffer around any active malleefowl mounds.

The proponent has also proposed an exclusion zone around habitat where the specimen of *Bothriembryon* sp was previously collected, until further surveys have been completed.

Instances of fauna fatalities from interaction with tailings liquor containing cyanide are well known. To mitigate this potential impact, the proponent has selected a cyanide destruction process to be employed within the production circuit. This is designed to reduce the weak acid dissociable cyanide to below 50 milligrams per litre. This level is considered safe for fauna (Department of Industry, Science, Energy and Resources 2008).

The proponent has submitted a draft Fauna Management Plan as part of the assessment. This plan includes mitigation measures in addition to those mentioned above to reduce the impact on fauna and includes:

- incremental clearing as required
- rehabilitation of disturbed areas as soon as reasonably practicable
- field demarcation of areas to be cleared to prevent over clearing
- fencing of water storage infrastructure to prevent entry by wildlife
- fauna egress points on water storage infrastructure
- pre-clearing surveys to be undertaken for priority species by suitably qualified persons
- further inspection to be completed no more than 72 hours prior to clearing.

The proponent has committed to update this plan on the advice of DBCA.

EPA consideration of impacts and mitigation

The EPA recognises that the proponent has taken measures to reduce the impact on terrestrial fauna through avoidance and minimisation where possible.

The EPA notes the lack of scientific knowledge of SRE’s on *Bothriembryon* sp genus and the proponent’s willingness to avoid habitat clearing and undertake further surveys.

The EPA acknowledges that the proponent has developed a draft Fauna Management Plan which includes enough information to consider that impacts may be appropriately managed. The EPA notes that the proponent has committed to updating the plan on the advice of DBCA.
The EPA notes the clearing of habitat for conservation significant fauna (Carnaby’s cockatoo, malleefowl, western whipbird and chuditch) will still occur as a result of implementing the proposal, which would result in a significant residual impact. The proponent has not proposed an offset for this residual impact. The WA Environmental Offsets Guidelines (Government of Western Australia 2014) describes that an offset would be required to mitigate the risk of the loss of fauna habitat and the Commonwealth listed Threatened Ecological Community identified in section 4.1 above.

Summary
The EPA has paid particular attention to:

- clearing of habitat for conservation significant fauna species including Carnaby’s cockatoo, chuditch, malleefowl and western whipbird (western mallee)
- Environmental Factor Guideline – Terrestrial Fauna (EPA 2016d)
- WA Environmental Offsets Policy (Government of Western Australia 2011)
- proposed 250 metre exclusion zones around active malleefowl mounds
- proposed exclusion zone around Bothriembryon sp habitat
- proponent’s commitments to minimise impacts to terrestrial fauna through the implementation of a Fauna Management Plan.

The EPA considers, having regard to the relevant EP Act principles and environmental objective for Terrestrial Fauna that the impacts to this factor are manageable and would no longer be significant, provided there is:

- control through authorised extent of clearing in schedule 1 of the Recommended Environmental Conditions (Appendix 5)
- implementation of measures to ensure condition 7-1 objectives are met through the implementation of a Fauna Management Plan (condition 7)
- provision of offsets (see section 5, condition 10) to counterbalance the significant residual impact of loss of the listed species Carnaby’s cockatoo, chuditch, malleefowl and western whipbird (western mallee) habitat.

4.3 Terrestrial Environmental Quality

The EPA’s environmental objective for this factor is to maintain the quality of land and soils so that environmental values are protected.

Relevant policy and guidance
The EPA considers the following current environmental policy and guidance is relevant to its assessment of the proposal for this factor:

- Environmental Factor Guideline – Terrestrial Environmental Quality (EPA 2016e)

The considerations for environmental impact assessment for this factor are outlined in Environmental Factor Guideline – Terrestrial Environmental Quality (EPA 2016e).
EPA assessment

Existing environment
The town of Kundip (now abandoned) was established to support mining in the area in the early 1900s. Since then mining has been sporadic with some retreatment of old tailings occurring in the 1980s. The historic mining activities have left a partially disturbed landscape of about 49.3 ha within the development envelope, which includes areas potentially contaminated by mercury and cyanide as a result of historic ore processing.

Soil sampling in the vicinity of the Harbour View deposits was undertaken by the proponent as this area had historically been used for mercury treatment of ore and cyanide reprocessing of tailings. Results returned elevated levels of heavy metals including mercury, however these were demonstrated to be below national soil contamination criteria (ACH 2019).

Additional soil surveys undertaken across the development envelope indicate that the topsoil is generally slightly acidic to neutral, is low in salinity and non-dispersive (Outback Ecology 2004).

Potential impacts
The development of the proposal will include:

- construction of four open cut mine pits
- construction of two permanent WRL
- construction of a permanent TSF
- other infrastructure such as water storage facilities, Run Of Mine (ROM) pad and site support areas which will be rehabilitated at the end of the mine life.

This has the potential to result in the following impacts:

- instability of final landforms leading to erosion
- contamination of soils and water by seepage from the TSF
- contamination of soils and water by acid and metalliferous drainage from the WRL
- contamination of soils from saline water and chemical spills.

Mitigation and management
The proponent has considered the comments made by the Department of Water and Environmental Regulation (DWER) and DMIRS regarding the TSF during the public review period, and has improved the design and seepage management measures by:

- reducing TSF catchment to reduce the volume of runoff entering the TSF
- installing underdrainage and a collection sump
- constructing a cut off trench to intercept seepage
• relocating the decant pond away from embankment wall
• committing to a low permeability floor with the use of imported clay material if required
• rehabilitating the outer embankment wall during operation to reduce erosion risk
• capping the TSF with a minimum of 2 metres of non-acid forming material and an improved cap design.

Additional operation controls include:
• subaerial deposition of tailings to promote air drying, through the use of thin lifts
• maintaining a small decant pond away from the embankment
• monitoring of pore pressure development within and downstream of the main embankment to detect potential failure and seepage
• monitoring of groundwater levels and quality immediately downstream of the main embankment.

The proponent has responded to comments received from DMIRS regarding the management of impacts associated with waste rock material by undertake further work, particularly in relation to how potential acid forming material will be encapsulated by non-acid forming material. These details will be included in the Mining Proposal, which will be submitted to DMIRS for approval under the Mining Act 1978.

EPA consideration of impacts and mitigation

In response to comments received on the ERD, the proponent has taken steps to improve the design and management of the TSF. After consideration of these improvements and an assessment of the potential impacts, the EPA considers that the impacts from the TSF can be appropriately managed. It is noted that the proponent will be required to obtain a Works Approval and Licence issued under Part V of the EP Act which will include further assessment of the impacts associated with the operation of the TSF and appropriate management and monitoring requirements.

During the review of the ERD, DMIRS raised questions regarding the mass balance of material to encapsulate the potential acid forming waste rock. The proponent responded by committing to undertake further work to quantify the mass balance further and provide DMIRS with an updated Mine Closure Plan. DMIRS has noted that the updated mass balance and Mine Closure Plan can be considered further during the assessment of the Mining Proposal. The EPA considers that DMIRS is best placed to regulate and manage these aspects of the mine under the Mining Act 1978.
Summary
The EPA has paid particular attention to:

- *Environmental Factor Guideline – Terrestrial Environmental Quality* (EPA 2016e)
- improved design of the WRL and the TSF
- monitoring and contingency measures proposed for the TSF and WRL
- advice from the DMIRS that the suitability of design, materials balance and appropriateness of closure objectives for the final landforms can be regulated under the *Mining Act 1978*
- advice from the DWER that licensing of emissions and discharges will be regulated under Part V of the EP Act
- application of the mitigation hierarchy by the proponent, including reduction in catchment of the TSF and installation of additional measures to prevent seepage.

The EPA considers, having regard to the relevant EP Act principles and environmental objective for Terrestrial Environmental Quality that the impacts to this factor are manageable and would no longer be significant, provided there is control through authorised extent in schedule 1 of the Recommended Environmental Conditions (Appendix 5).

In addition, the EPA notes:

- advice from the DMIRS that the TSF and WRL would be regulated under the *Mining Act 1978*.
- advice from DWER that licensing of emissions and discharges would be regulated under Part V of the EP Act.

It is the EPA’s view that the proposal can be adequately regulated through the *Mining Act 1978* and Part V of the EP Act, rather than a condition under Part IV of the EP Act.

4.4 Inland Waters

The EPA’s environmental objective for this factor is *to maintain the hydrological regimes and quality of groundwater and surface water so that environmental values are protected*.

Relevant policy and guidance
The EPA considers the following current environmental policy and guidance is relevant to its assessment of the proposal for this factor:

- *Environmental Factor Guideline – Inland Waters* (EPA 2018)

The considerations for environmental impact assessment for this factor are outlined in *Environmental Factor Guideline – Inland Waters* (EPA 2018).
**EPA assessment**

**Existing environment**

The proposal is located across the boundary of two river catchments, the Steere and Jerdacuttup Rivers. The majority of the development Envelope sits within the Steere River catchment which flows to the Culham Inlet located west of Hopetoun. The remaining catchment, including the TSF, drains to the Jerdacuttup River which flows to the Jerdacuttup Lakes east of Hopetoun. About 26 per cent of both catchments has been cleared for agriculture, with the remainder being native vegetation.

Upstream of the proposal, in the Steere River catchment, is the abandoned Elverdtton Mine which has had an impact on the surface water quality due to the erosion of its tailings stockpile.

Surface water flows are intermittent in both catchments and generally follow rainfall events. Water quality in both the Steere and Jerdacuttup Rivers is generally brackish to saline due to the transportation of soil borne salts. The pH of the water is typically neutral to alkaline.

There are no major users of groundwater nearby. The closest Public Drinking Water Source Area (PDWSA) is 15 km upstream, supplying the town of Ravensthorpe; and the PDWSAs at Springfield Wellfield and Town Wellfield south of the proposal, supplying Hopetoun 22 km and 29 km south respectively.

Groundwater flow is generally in a southerly direction but flows through fractured aquifers, which can create perched aquifer systems and reduces the transmissivity of the aquifers. Groundwater is generally saline and occurs at depths ranging from approximately 17 to 58 metres below ground level.

Water supply for the proposal will be sourced initially from the existing Rav8 pit located north east of the proposal. This water will be trucked to site for about the first three years, decreasing in volume over this time. As the mine develops and groundwater is intercepted in the pits, process water needs will be met from pit dewatering. About 0.65 to 0.8 gigalitre per annum is required, and a water abstraction licence will need to be obtained.

**Potential impacts**

Potential impacts to surface and groundwater from the proposal include:

- alteration of surface water flows in the catchments
- degradation of surface water quality in the Steere and Jerdacuttup Rivers and downstream receptors through seepage from the TSF and sedimentation
- deterioration of water quality through leachate of potential AMD from the WRL
- development of pit lakes post closure

**Mitigation and management**

As mentioned in section 4.3, the proponent has altered the design of the TSF to reduce the risk of impacts on ground and surface water. These additional measures
will reduce the potential for seepage from the TSF to reach the ground and surface water, whilst also facilitating early detection of any seepage. Monitoring wells are to be installed around the TSF to monitor water levels and quality.

To manage the potential impacts on surface water quality the proponent has proposed a number of measures including:

- the construction of sediment basins to control off site runoff water quality
- storage of process chemicals and hydrocarbons in purpose built facilities which meet appropriate Australian Standards.

The proponent has undertaken surface water modelling to determine the areas likely to be inundated as a result of the permanent structures remaining post-closure. No material change to surface water flows in the Steere and Jerdacuttup Rivers is predicted, however the localised surface water regime within the development envelope will be impacted as a result of the final landform. To mitigate this, the proponent will design and construct water diversion structures to ensure surface water flows are maintained.

There are no impacts likely from dewatering or via sourcing water from the Rav8 pit. Dewatering would be licensed through the Rights in Water and Irrigation Act 1914 (RiWI Act).

**EPA consideration of impacts and mitigation**

The EPA considers that the proponent has undertaken measures to avoid and minimise impacts to Inland Waters. The proponent has improved the design of the TSF and WRL and committed to the implementation of groundwater and surface water monitoring and the installation of seepage detection systems. The EPA received advice from DWER that the impacts associated with potential seepage from the TSF and WRL, along with monitoring of surface water and groundwater, can be regulated under Part V of the EP Act. The EPA considers the proposed mitigation and monitoring procedures to be reasonable, and notes that they would be refined further during assessment of the works approval and licence required under Part V of the EP Act.

The EPA notes the water quality in the pit lakes may change over time after closure of the mine. The salinity of most of the pit voids will mirror the baseline groundwater for some time, but will eventually increase in salinity higher than baseline concentrations due to evapo-concentration. The EPA notes that due to the fractured and saline nature of the aquifer, the impact on groundwater and surface water resources is not considered significant as there are no groundwater users in the area, and impacts will be contained locally (for example, the pit voids will act as a groundwater sink). The presence of salinity is not likely to represent an unacceptable risk to fauna, as it will inhibit consumption. The EPA has nonetheless provided advice to DMIRS on the post-closure management of these pit lakes, as DMIRS is best placed to regulate closure of the mine site under the Mining Act 1978.

The EPA notes that water abstraction will be low for this proposal and will be regulated through a 5C licence under the RiWI Act.
Summary

The EPA has paid particular attention to:

- *Environmental Factor Guideline – Inland Waters* (EPA 2018)
- improvement of the TSF and WRL designs
- application of the mitigation hierarchy by the proponent to employ measures to prevent seepage from the TSF
- advice from the DWER that licensing of emissions and discharges will be required under Part V of the EP Act
- the requirement for a water abstraction licence under the RiWI Act
- advice from the DMIRS that it can regulate the construction of the TSF and closure of the site under the *Mining Act 1978*

The EPA considers, having regard to the relevant EP Act principles and environmental objective for Inland Waters that the impacts to this factor are manageable and would no longer be significant, provided there is control through authorised extent in schedule 1 of the Recommended Environmental Conditions (Appendix 5).

In addition, the EPA notes there is a requirement for:

- regulation of closure and post-closure aspects of the site by DMIRS through the *Mining Act 1978*
- licensing of water abstraction by the DWER under the RiWI Act
- licensing of emissions and discharges by the DWER under Part V of the EP Act.

4.5 Social Surroundings

The EPA’s environmental objective for this factor is *to protect social surroundings from significant harm*.

**Relevant policy and guidance**

The EPA considers the following current environmental policy and guidance is relevant to its assessment of the proposal for this factor:

- *Environmental Factor Guideline – Social Surroundings* (EPA 2016f)

The considerations for environmental impact assessment for this factor are outlined in *Environmental Factor Guideline – Social Surroundings* (EPA 2016f).
EPA assessment

Existing environment
The Kundip area has been a centre for mining since the late 1800s. A railway link between Ravensthorpe and Hopetoun was established to transport goods from the coast and service the inland areas including Kundup. This railway is now abandoned and has become a walk trail (Hopetoun Ravensthorpe Railway Heritage Walk Trail).

According to database searches undertaken by the proponent in 2018, there is one heritage listed place within the development envelope. Harbour View (Heritage Place No. 14027) is currently listed, however following the Heritage Councils Assessment and Registration Programme conducted in 2005, the Register Committee determined that the site did not warrant entry into the register of Heritage Places as it was not of state significance.

The proposal is within the Wagyl Kaip Southern Noongar People Indigenous Land Use Agreement area. A search of the Aboriginal Heritage Inquiry System did not identify any registered sites within the development envelope. The proponent entered into a Noongar Standard Heritage Agreement in 2016 for the proposal.

The nearest sensitive receptors to the site are four permanent dwellings located within 10 km of the operation, with the closest 7 km north west of the site.

Potential impacts
Potential impacts to Social Surroundings associated with the proposal include:
- Aboriginal heritage
- disruption to the use of the Railway Heritage Walk Trail
- removal of Harbor View
- dust, noise and light.

Mitigation and management
Comments were raised on the ERD regarding the adequacy of surveys for Aboriginal heritage. The proponent noted that there have been heritage surveys conducted in 2003 and 2008 which covered the entire development envelope. The proponent has noted that the 2003 survey concluded that the informants who undertook the ethnographic survey understood the extent of the survey area and cleared the leases for mining.

To mitigate the potential impact on European Heritage, the proponent has proposed to commission an archive record, including an archaeological survey of the Harbour View Heritage Place. Whilst the Harbour View Heritage place will be directly impacted by the proposal, the commissioned survey will provide a permanent record of the site.

During the public comment period for the ERD, the Ravensthorpe Historical Society expressed concerns over the proposals impact on Hopetoun-Ravensthorpe Railway Heritage Walk Trail. A 450 metre portion of the trail runs within the development
envelope at the toe of the northern WRL. In its response to submissions, the proponent recognised these concerns and has committed to:

- avoiding development near the trail
- closure of the trail during operations to manage walker safety
- clearing vegetation where the trail intersects the roads to improve walker visibility
- establishing a rest area with interpretive display at the Kundip Battery
- salvaging any old mine infrastructure believed to be of value by the Historical Society and delivery of that infrastructure to a location of their choosing.

There are four permanent dwellings located within 10 km of the operation with the closest 7 km north west of the site. These residences could potentially be directly impacted by noise and dust emissions from the proposed operation. However due to the distance to the proposed operation and the surrounding topography, it is unlikely that there will be significant impact from either noise or dust on these residences.

**EPA consideration of impacts and mitigation**

The EPA notes that the Department of Planning, Lands and Heritage (DPLH) considered that the Aboriginal Heritage matters associated with the proposal had been addressed. DPLH also noted that any potential impacts to previously unidentified Aboriginal Heritage sites or places from the proposal can be addressed through the provisions of the *Aboriginal Heritage Act 1972*. Noting this and the comments on the ERD, the EPA has recommended a condition (condition 8-1) that the proponent undertake further consultation with traditional owners prior to project commencement.

The EPA considers that the proponent’s measures to mitigate the impacts associated with the Harbour View site and the Hopetoun-Ravensthorpe Railway Heritage Walk Trail are sufficient to meet the objective of the key environmental factor Social Surroundings. The EPA considers that impacts to the Hopetoun-Ravensthorpe Railway Heritage Walk Trail should be avoided where possible. The EPA acknowledges temporary closure may occur due to safety reasons but impacts to the trail can be minimised and reopening would occur when safe to do so. The EPA has recommended a condition (condition 8-2) for this purpose and requires the proponent to consult further with the community and provide alternative access should temporary closure be prolonged.

The EPA notes that the nearest sensitive receptor is 7 km away and impacts on this receptor from noise, dust and light are unlikely given the topography. The EPA notes that these elements can be regulated through Part V of the EP Act and the Environmental Protection (Noise) Regulations 1997.

The proponent has indicated that it will continue to consult with stakeholders in the area and will seek to introduce a community reference group. The EPA advises that the proponent should continue to engage with local stakeholders so that potential impacts associated with Social Surroundings are minimised.
Summary

The EPA has paid particular attention to:

- Environmental Factor Guideline – Social Surroundings (EPA 2016f)
- advice received from the DPLH on Aboriginal Heritage matters, which indicated that any unforeseen impacts to Aboriginal Heritage can be managed via provisions in the Aboriginal Heritage Act 1972
- application of the mitigation hierarchy by the proponent, to minimise impacts to the Hopetoun-Ravensthorpe Railway Heritage Walk Trail (though access will be temporarily restricted)
- the 7 km distance to the nearest sensitive receptor.

The EPA considers, having regard to the relevant EP Act principles and environmental objective for Social Surroundings that the impacts to this factor are manageable and would no longer be significant, provided there is:

- control through authorised extent in schedule 1 of the Recommended Environmental Conditions (Appendix 5)
- implementation of a Heritage Management Plan as recommended in condition 8.

In addition, the EPA notes there is a requirement for:

- regulation of noise by DWER in accordance with the Environmental Protection (Noise) Regulations 1997
- licensing of emissions and discharges by the DWER under Part V of the EP Act.
5. Offsets

Relevant policy and guidance

The EPA considers the following policy and guidance is relevant to its assessment of offsets for the proposal:

- **WA Environmental Offsets Policy** (Government of Western Australia 2011)
- **WA Environmental Offset Guidelines** (Government of Western Australia 2014)

EPA Assessment

Environmental offsets are actions that provide environmental benefits which counterbalance the significant residual impacts of a proposal. The EPA may apply environmental offsets where it determines that a proposal’s residual impacts are significant, after avoidance, minimisation and rehabilitation have been pursued.

The proponent has not proposed an offset strategy for this proposal, having considered the current proposal to not be significantly different to that of the approved Phillips River Gold Project (PRGP) (EPA Assessment 1213, Ministerial Statement 716). The PRGP was assessed by both the EPA and the Commonwealth and in that assessment it was determined that offsets were not appropriate for the project. However, in its Response to Submission document (ACH 2020) and following further discussion with the EPA, the proponent has acknowledged that an offset condition is appropriate.

The proponent of the PRGP committed to a Conservation Offset in the form of a Proponent’s Environmental Management Commitment (Schedule 2 of Ministerial Statement 716), which included:

- rehabilitation of historically disturbed areas within the Kundip site
- purchase of a 60 ha parcel of vegetated land for contribution to the conservation estate
- contribution of $10,000 per year to the Western Shield project to allow fox baiting of the entire Ravensthorpe range for five years
- contribution of $10,000 towards a targeted survey of *Melaleuca stramentosa*
- contribution of $10,000 towards a regional survey of the proposed *Melaleuca* – over-mallee Threatened Ecological Community
- contribution of 10 per cent or 10,000 seeds where practicable, of seeds collected from each native species to the Millennium Seed Bank.

Since approval of the PRGP in 2006, the Western Australian Offset Policy has changed, and under the current policy and guidelines the PRGP would have required the provision of offsets.
Specifically, when applying the Clearing Principle (d) – *Threatened Ecological Communities*, of the Residual Impact Significance Model outlined in the *WA Environmental Offsets Guidelines* (Government of Western Australia 2014), the PRGP and the current proposal would result in an impact to “environmentally sensitive areas under the EP Act or listed as threatened ecological communities under the EPBC Act” and therefore warrants an offset. Similarly, Clearing Principle (b) – *Habitat for fauna*, applies to the loss of habitat for species “specially protected under the Wildlife Conservation Act (1950) (now BC Act) or listed as threatened species under the EPBC Act”.

Mitigation measures have been assessed under the relevant key environmental factor (see section 4.1 – Flora and Vegetation and section 4.2 – Terrestrial Fauna). In applying the Residual Impact Significance Model, the EPA considers that the proposal would have a significant residual impact from:

- 48.4 ha of direct and indirect impacts to Proteaceae dominated Kwongan Shrublands of the Southeast Coastal Floristic Province of WA (Endangered – EPBC Act, P3 PEC BC Act)
- Approximately 167.5 ha (bird habitats overlap) of direct impacts to habitat for conservation significant fauna which occur within the proposal footprint:
  - 150.3 ha of foraging and roosting habitat for Carnaby’s cockatoo (EN),
  - 150.3 ha of breeding and foraging habitat for malleefowl (VU)
  - 150.3 ha of breeding and foraging habitat for western whipbird (western mallee) (VU/P4)
  - 17.2 ha of breeding and foraging habitat for chuditch / western quoll (VU) – foraging habitat.

In this current assessment, and after application of the current Offset Policy and Guidelines (Government of Western Australia 2011 and 2014), the EPA considers that the proponent is required to implement an offset strategy which is equivalent to the Conservation Offset proposed for the PRGP, and which addresses the significant residual risk to the area of impacted vegetation and fauna habitat additional to that of the original PRGP. This strategy should include provision of offsets for the significant residual impacts listed above.

**Summary**

The EPA recommends that an offset condition be imposed (condition 10) which requires the proponent to implement an offset strategy which is equivalent to the Conservation Offset proposed for the PRGP (Ministerial Statement 716) and which counterbalances the significant residual impacts of the current proposal which are in addition to the PRGP.

The EPA recommends that the offset strategy is prepared by the proponent, to the satisfaction of the EPA and on advice from DBCA.
6. Other advice

The EPA notes that many of the potential emissions and discharges assessed in this report will be regulated under Part V of the EP Act via the implementation of a licence. The DWER will assess the emissions and discharges in detail, and mitigation and monitoring conditions are expected to be applied to the proposal. The EPA notes that, in relation to monitoring the potential ground and surface water impacts associated with seepage from the TSF, the proponent proposed additional monitoring locations in its Response to Submissions (ACH 2020). The EPA considers that, at a minimum, these additional locations should be incorporated into the monitoring program required under a licence to be issued under Part V EP Act.

The EPA notes that regulation of impacts related to waste rock materials will be via the implementation of an approved Mining Proposal and Mine Closure Plan. The DMIRS will assess the risk associated with waste rock management further, and mitigation and monitoring conditions are expected to be applied to manage these materials and landforms. The EPA considers that the backfilling of the pits to pre-mining groundwater levels with waste rock should be considered as part of the Mine Closure Plan to mitigate risks associated with pit lake water quality, final landform stability and the area of native vegetation clearing required for landform construction. Due to the location of the site, and its biodiversity values, DMIRS should consider revegetation with native vegetation as the first choice when determining of the final landuse. The chosen species should be those with the highest potential for providing habitat and foraging resources for the conservation significant fauna listed in this report.
7. Conclusion

The EPA has considered the proposal by the proponent for the Ravensthorpe Gold Project, a gold and copper mine at the Kundip Mine Site about 17 km south east of Ravensthorpe, in the southern Goldfields-Esperance region.

Application of mitigation hierarchy

Consistent with relevant policies and guidance, the proponent has addressed the mitigation hierarchy by identifying measures to avoid, minimise and rehabilitate environmental impacts including:

- avoiding impact on the Priority 1 flora species, *Calothamnus roseus* via the implementation of an exclusion zone
- avoiding impact on the short range endemic fauna species, *Bothriembryn* sp via the implementation of an exclusion zone to protect the species habitat.
- avoiding active mallee mounds by imposing a 250 metre buffer around them
- minimising the impacts to surface and groundwater by implementing underdrainage and seepage interception in the TSF
- managing impacts to flora and fauna through management plans
- further consultation on Aboriginal heritage prior to ground disturbance
- minimising impacts to the Hopetoun-Ravensthorpe Railway Heritage Walk Trail.

Offsets

The EPA considers that the proposal would have a significant residual impact from:

- 48.4 ha of direct and indirect impacts to *Proteaceae dominated Kwongkan Shrublands of the Southeast Coastal Floristic Province of WA* (Endangered – EPBC Act, P3 PEC BC Act)
- Approximately 167.5 ha of direct impacts to habitat for conservation significant fauna including:
  - 150.3 ha of foraging and roosting habitat for Carnaby’s cockatoo (EN),
  - 150.3 ha of breeding and foraging habitat for mallee mallee (VU/P4)
  - 17.2 ha of breeding and foraging habitat for chuditch/western quoll (VU) – foraging habitat.

The EPA has recommended condition 10 which includes the provision for a Flora and Fauna Offset Strategy to offset the significant residual impact to significant flora, vegetation and fauna.
Conclusion

The EPA has taken the following into account in its assessment of the proposal as a whole:

- impacts to all the key environmental factors
- EPA’s confidence in the proponent’s proposed mitigation measures
- relevant EP Act principles and the EPA’s objectives for the key environmental factors
- EPA’s view that the impacts to the key environmental factors are manageable, provided the recommended conditions are imposed.

Given the above, the EPA recommends that the proposal may be implemented subject to the conditions recommended in Appendix 5.
8. Recommendations

The EPA recommends that the Minister for Environment notes:

1. The proposal assessed is for ACH Minerals Pty Ltd, Ravensthorpe Gold Project involving the development and operation of a gold and copper mine at the Kundip mine site about 17 km south east of Ravensthorpe.

2. The key environmental factors identified by the EPA in the course of its assessment are Flora and Vegetation, Terrestrial Fauna, Terrestrial Environmental Quality, Inland Waters and Social Surroundings, set out in section 4.

3. The EPA has recommended that the proposal may be implemented, provided the implementation of the proposal is carried out in accordance with the recommended conditions and procedures set out in Appendix 5. Matters addresses in the conditions include the following:

   a) Environmental Management Plan to minimise impacts to conservation significant flora and vegetation and Commonwealth listed Threatened Ecological Community (condition 6)

   b) Environmental Management Plan to minimise the impact to conservation significant fauna (condition 7)

   c) Heritage Management Plan to ensure impacts to the Hopetoun-Ravensthorpe Railway Heritage Walk Trail are minimised (condition 8)

   d) Disease Hygiene Management Plan (condition 9).

   e) Offset Strategy to counterbalance the significant residual impact to the loss of Threatened fauna habitat and Commonwealth listed Threatened Ecological Community (condition 10).
References


EPA 2009, Technical Guidance – Sampling of Short Range Endemic Invertebrate Fauna, Environmental Protection Authority, Perth, WA.

EPA 2010, Technical Guidance – Sampling Methods for Terrestrial Vertebrate Fauna, Environmental Protection Authority, Perth, WA.

EPA 2013, Technical Guidance – Subterranean Fauna Survey, Environmental Protection Authority, Perth, WA.

EPA 2016b, Environmental Factor Guideline – Flora and Vegetation, Environmental Protection Authority, Perth, WA.

EPA 2016c, Technical Guidance – Flora and Vegetation Surveys for Environmental Impact Assessment, Environmental Protection Authority, Perth, WA.

EPA 2016d, Environmental Factor Guideline – Terrestrial Fauna, Environmental Protection Authority, Perth, WA.
EPA 2016e, *Environmental Factor Guideline – Terrestrial Environmental Quality*, Environmental Protection Authority, Perth, WA.

EPA 2016f, *Environmental Factor Guideline – Social Surroundings*, Environmental Protection Authority, Perth, WA.

EPA 2016g, *Environmental Factor Guideline – Subterranean Fauna*, Environmental Protection Authority, Perth, WA.

EPA 2018, *Environmental Factor Guideline – Inland Waters*, Environmental Protection Authority, Perth, WA.


EPA 2020b, *Statement of Environmental Principles, Factors and Objectives*, Environmental Protection Authority, Perth, WA.

EPA 2020c, *Environmental Factor Guideline – Air Quality*, Environmental Protection Authority, Perth, WA.


Government of Western Australia 2011, *WA Environmental Offsets Policy*, Government of Western Australia, Perth, WA.

Government of Western Australia 2014, *WA Environmental Offsets Guidelines*, Government of Western Australia, Perth, WA.


Appendix 1: List of submitters

Agencies and organisations
Department of Biodiversity, Conservation and Attractions (DBCA)
Department of Mines, Industry Regulation and Safety (DMIRS)
Department of Planning Lands and Heritage (DPLH)
Department of Water and Environmental Regulation (DWER)
Main Roads Western Australia
Ravensthorpe Historical Society
Jerdacuttup Working Group
Cocanarup Conservation Alliance Inc.
South West Aboriginal Land and Sea Council
Gondwana Link
Shire of Ravensthorpe

Individuals
Individual 1 - ANON-E5P7-Z8S9-Y
Individual 2 - ANON-E5P7-Z8SU-U
Individual 3 - ANON-E5P7-Z8SC-9
Individual 4 - ANON-E5P7-Z8SJ-G
Individual 5 - ANON-E5P7-Z8SM-K
Individual 6 - ANON-E5P7-Z8SQ-Q
Individual 7 - ANON-E5P7-Z8SA-7
Individual 8 - ANON-E5P7-Z8S9-X
Individual 9 - ANON-E5P7-Z8S1-Q
Individual 10 - ANON-E5P7-Z8SP-P
Individual 11 - ANON-E5P7-Z8SX-X
Individual 12 - ANON-E5P7-Z8SW-W
Individual 13 - ANON-E5P7-Z8SB-8
Individual 14 - ANON-E5P7-Z8ST-T
Individual 15 - ANON-E5P7-Z8SS-S
Individual 16 - ANON-E5P7-Z8SY-Y
Individual 17 - ANON-E5P7-Z8S6-V
Individual 18 - ANON-E5P7-Z8SZ-Z
Individual 19 - ANON-E5P7-Z8SN-M
Individual 20 - ANON-E5P7-Z8SE-B
Individual 21 - ANON-E5P7-Z8S3-S
Individual 22 - ANON-E5P7-Z8SR-R
Individual 23 - ANON-E5P7-Z8S2-R
Individual 24 - ANON-E5P7-Z8SD-A
Individual 25 - ANON-E5P7-Z8SF-C
Individual 26 - ANON-E5P7-Z8S5-U
Individual 27 - ANON-E5P7-Z8SV-V
Individual 28 - ANON-E5P7-Z8SH-E
Individual 29 - ANON-E5P7-Z8S7-W
Individual 30 - ANON-E5P7-Z8VU-X
Individual 31 - ANON-E5P7-Z8VC-C
Individual 32 - ANON-E5P7-Z8VM-P
Individual 33 - ANON-E5P7-Z8V8-1
Individual 34 - ANON-E5P7-Z8V1-T
Individual 35 - ANON-E5P7-Z8VP-S
Individual 36 - ANON-E5P7-Z8VW-Z
Individual 37 - ANON-E5P7-Z8VB-B
### Appendix 2: Consideration of Environmental Protection Act principles

<table>
<thead>
<tr>
<th>EP Act Principle</th>
<th>Consideration</th>
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<tbody>
<tr>
<td><strong>1. The precautionary principle</strong></td>
<td>This principle is a fundamental and relevant consideration for the EPA when assessing and considering the impacts of the proposal on the environmental factors of Flora and Vegetation, Terrestrial Fauna, Terrestrial Environmental Quality and Inland Waters.</td>
</tr>
</tbody>
</table>

*Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation. In application of this precautionary principle, decisions should be guided by –*

a) *careful evaluation to avoid, where practicable, serious or irreversible damage to the environment; and*

b) *an assessment of the risk-weighted consequences of various options.*

The EPA notes that the proponent has identified measures to avoid or minimise impacts including the implementation of exclusion zones for *Calothamnus roseus* and the *Bothrimbryon* sp. The EPA has considered these measures during its assessment.

The EPA has recommended conditions to ensure that environmental protection outcomes are achieved and that Management Plans for Flora and Vegetation and Fauna are finalised (in consultation with relevant agencies) to the satisfaction of the CEO of DWER.

The potential impact on *Lepidosperma* sp Elverdton has been recognised by the EPA and a condition has been set to minimise the impact on the population of this species.

The EPA has also recommended an offsets strategy be prepared by the proponent to counterbalance the significant residual impact to:

- 48.4 ha of direct and indirect impacts to Proteaceae dominated Kwongkan Shrublands of the Southeast Coastal Floristic Province of WA (Endangered – EPBC Act, P3 PEC BC Act)
- 167.5 ha of direct impacts to habitat for conservation significant fauna including:
  - 150.3 ha of foraging and roosting habitat for Carnaby’s cockatoo (EN)
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<tr>
<th>EP Act Principle</th>
<th>Consideration</th>
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<tr>
<td></td>
<td>o 150.3 ha of breeding and foraging habitat for malleefowl (VU)</td>
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<td></td>
<td>o 150.3 ha of breeding and foraging habitat for western whipbird (western mallee) (VU/P4)</td>
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<td></td>
<td>o 17.2 ha of breeding and foraging habitat for chuditch/ western quoll (VU) – foraging habitat.</td>
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</table>

The EPA notes that the proponent has responded to comments made concerning the construction of the TSF and has altered the design to include improved measures for seepage control and management.

From its assessment of this proposal the EPA has concluded there is no threat of serious or irreversible harm provided that the recommended conditions are implemented.

<table>
<thead>
<tr>
<th>2. The principle of intergenerational equity</th>
<th>Consideration</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>The present generation should ensure that the health, diversity and productivity of the environment is maintained and enhanced for the benefit of future generations.</em></td>
<td>In considering this principle, the EPA notes that Flora and Vegetation, Terrestrial Fauna and Social Surroundings could be significantly impacted by the proposal. The assessment of these impacts is provided in this report.</td>
</tr>
<tr>
<td></td>
<td>The EPA notes that the proponent has identified measures to avoid or minimise impacts including additional measures to prevent impacts from the TSF, and avoidance of the Hopetoun-Ravensthorpe Railway Heritage Walk Trail. The EPA has considered these measures during its assessment.</td>
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<tr>
<td></td>
<td>In assessing this proposal, the EPA has recommended conditions to manage impacts to Flora and Vegetation, Terrestrial Fauna and Heritage.</td>
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<td></td>
<td>The EPA had regard to potential impacts to the Proteaceae dominated Kwongkan shrublands of the Southeast Coastal Floristic Province of Western Australia, and conservation significant fauna habitat and has recommended a condition on offsets.</td>
</tr>
<tr>
<td>EP Act Principle</td>
<td>Consideration</td>
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<tr>
<td>The EPA notes that the proponent has committed to implement a Mine Closure Plan to ensure that the proposal is closed in a manner to ensure that the environment is maintained for the benefit of future generations.</td>
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<tr>
<td>From its assessment of this proposal, the EPA has concluded that the environmental values will be protected and that the health, diversity and productivity of the environment will be maintained for the benefit of future generations.</td>
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<tr>
<td>3. The principle of the conservation of biological diversity and ecological integrity</td>
<td>This principle is a fundamental and relevant consideration for the EPA when assessing and considering the impacts of the proposal on the environmental factors of Flora and Vegetation and Terrestrial Fauna. This principle is also relevant to the EPA consideration of the proposed offset strategy.</td>
</tr>
<tr>
<td>Conservation of biological diversity and ecological integrity should be a fundamental consideration.</td>
<td>In considering this principle, the EPA notes that Flora and Vegetation and Terrestrial Fauna could be significantly impacted by the proposal. The assessment of these impacts is provided in this report.</td>
</tr>
<tr>
<td></td>
<td>The proponent has undertaken comprehensive baseline studies to understand and assess potential threats to biological diversity and ecological integrity. The EPA notes that the proponent has identified measures to avoid or minimise impacts to these factors. The EPA has considered these measures during its assessment (provided in this report), and has recommended an offset strategy for the significant residual impact on Flora and Vegetation and Terrestrial Fauna.</td>
</tr>
<tr>
<td></td>
<td>Furthermore, the EPA has recommended conditions relating to these factors. From its assessment of this proposal the EPA has concluded that the proposal would not compromise the biological diversity and ecological integrity of the affected areas.</td>
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<tr>
<td>EP Act Principle</td>
<td>Consideration</td>
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<tr>
<td><strong>4. Principles relating to improved valuation, pricing and incentive mechanisms</strong></td>
<td>In considering this principle, the EPA notes that the proponent would bear the cost relating to management and monitoring of environmental impacts during operation and the management and monitoring of closure activities including earth works, rehabilitation and ongoing monitoring to demonstrate performance against completion criteria. The EPA has had regard to this principle during the assessment of the proposal.</td>
</tr>
<tr>
<td>(1) <em>Environmental factors should be included in the valuation of assets and services.</em></td>
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<tr>
<td>(2) <em>The polluter pays principles – those who generate pollution and waste should bear the cost of containment, avoidance and abatement.</em></td>
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<tr>
<td>(3) <em>The users of goods and services should pay prices based on the full life-cycle costs of providing goods and services, including the use of natural resources and assets and the ultimate disposal of any waste.</em></td>
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<tr>
<td>(4) <em>Environmental goals, having been established, should be pursued in the most cost effective way, by establishing incentive structure, including market mechanisms, which enable those best placed to maximise benefits and/or minimize costs to develop their own solution and responses to environmental problems.</em></td>
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<tr>
<td><strong>5. The principle of waste minimisation</strong></td>
<td>In considering this principle, the EPA notes that the proponent proposes to minimise waste through establishment of waste recycling programmes, minimisation of chemical use and packaging through bulk storage, reuse of process water, use of suitable bulk storage facilities to reduce impacts of spills and investigate further waste minimisation opportunities. The EPA has had regard to this principle during the assessment of the proposal.</td>
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<tr>
<td><em>All reasonable and practicable measures should be taken to minimise the generation of waste and its discharge into the environment.</em></td>
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</tbody>
</table>
## Appendix 3: Evaluation of other environmental factors

<table>
<thead>
<tr>
<th>Environmental factor</th>
<th>Description of the proposal’s likely impacts on the environmental factor</th>
<th>Government agency and public comments</th>
<th>Evaluation of why the factor is not a key environmental factor</th>
</tr>
</thead>
</table>
| Land Subterranean Fauna | Mining at the Kundip deposit will extend below the watertable and require pit dewatering. There are no proposed production bores. Potential impact on subterranean fauna will arise from:  
- interception of potential subterranean fauna habitat at the Kundip and Flag West pits  
- dewatering of the Kundip and Flag West pits. | **Public comments**  
It was noted that no field studies had been undertaken and that the assessment of Subterranean Fauna had been based on two desktop studies. It was noted that conclusions were based on the determination that geologies likely to support subterranean fauna being outside the proposed pit areas. A map showing the pit outlines overlaid with the potential subterranean fauna habitat was required. | Subterranean Fauna was not identified as a preliminary key environmental factor when the EPA decided to assess the proposal or in the Environmental Scoping Document (ESD), but was identified as an “Other factor”. Having regard to:  
- the low permeability of the mineralised zone in the area  
- the subterranean desktop studies which found that it was unlikely that the geology of the area would support significant subterranean fauna populations  
- the high salinity of the groundwater making it unlikely to support stygofauna (22,000 to 38,000 mg/L TDS)  
- the absence of stygofauna collected in surveys conducted at nearby projects (within 50 km)  
- historic dewatering of old mine workings in the area  
- comments on the proposal  
- *Environmental Factor Guideline – Subterranean Fauna* (*EPA 2016g*) |
<table>
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<tr>
<th>Environmental factor</th>
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<th>Evaluation of why the factor is not a key environmental factor</th>
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</thead>
<tbody>
<tr>
<td>Air Quality</td>
<td>Air quality has the potential to be directly impacted through:</td>
<td>Public comments</td>
<td>• significance considerations in the Statement of Environmental Principles, Factors and Objectives (EPA 2020b), the EPA considers it is unlikely that the proposal would have a significant impact on Subterranean Fauna and that the impacts to this factor are manageable. Accordingly, the EPA did not consider Subterranean Fauna to be a key environmental factor at the conclusion of its assessment.</td>
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<td></td>
<td>• particulate (dust) emissions from mining operations including but not limited to: vehicle movement, construction activities, blasting activities, stockpiling material, and transport</td>
<td>One comment was received on this factor during public consultation. The submitter noted the potential for dust from the TSF in the event of dryer than average years or if the site was placed into care and maintenance.</td>
<td>Dust emissions will be managed through established strategies, including applying water (or dust suppressants) to roads, working surfaces and stockpiles as required, maintaining a damp surface to the TSF, minimising exposed surfaces by minimising clearing, and rehabilitating disturbed areas no longer in use. The proponent has committed to monitoring of dust emissions to enable dust management performance to be continually assessed. Strategies to manage dust emissions would be refined where necessary.</td>
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<td>• wind erosion in cleared areas.</td>
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<td>Having regard to:</td>
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<tr>
<td>Environmental factor</td>
<td>Description of the proposal's likely impacts on the environmental factor</td>
<td>Government agency and public comments</td>
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<tr>
<td>Greenhouse Gas Emissions</td>
<td>Scope 1 greenhouse gas emissions, including those from clearing are likely to be less than 100,000 tpa CO₂-e.</td>
<td>Public comments</td>
<td>The proponent has committed to the management of greenhouse gas emissions in accordance with relevant legislation and national and state strategies relating to greenhouse gas emissions. Greenhouse gas emissions will be managed in accordance with the <em>Clean Energy Act 2011</em> (Cwth) and</td>
</tr>
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</table>

Accordingly, the EPA did not consider the factor *Air Quality* to be a key environmental factor at the conclusion of its assessment.

In addition, and as outlined under the Key Environmental Factor Social Surroundings, dust emissions can be regulated under Part V of the EP Act.
<table>
<thead>
<tr>
<th>Environmental factor</th>
<th>Description of the proposal’s likely impacts on the environmental factor</th>
<th>Government agency and public comments</th>
<th>Evaluation of why the factor is not a key environmental factor reported under the <em>National Greenhouse and Energy Reporting Act 2007</em> (Cwth).</th>
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<td>Having regard to:</td>
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<td>• significance considerations in the <em>Statement of Environmental Principles, Factors and Objectives</em> (EPA 2020b)</td>
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<td>• the Scope 1 emissions do not exceed 100,000 tpa CO2-e</td>
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<td>• <em>Environmental Factor Guideline – Greenhouse Gas Emissions</em> (EPA 2020d),</td>
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<td>the EPA considers it is unlikely that the proposal would have a significant impact on Greenhouse Gas Emissions and that the impacts to this factor are manageable.</td>
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<td></td>
<td>Accordingly, the <strong>EPA did not consider the factor Greenhouse Gas Emissions to be a key environmental factor</strong> at the conclusion of its assessment.</td>
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</tbody>
</table>
Appendix 4: Identified Decision-Making Authorities and Recommended Environmental Conditions

Identified Decision-Making Authorities

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

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

The following decision-making authorities have been identified:

<table>
<thead>
<tr>
<th>Decision-Making Authority</th>
<th>Legislation (and Approval)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Minister for Environment</td>
<td><em>Biodiversity Conservation Act 2016</em> (Section 40 Taking of protected flora and fauna)</td>
</tr>
<tr>
<td>2. Minister for Water</td>
<td><em>Rights in Water and Irrigation Act 1914</em> (Groundwater abstraction licence)</td>
</tr>
<tr>
<td>4. Minister for Aboriginal Affairs</td>
<td><em>Aboriginal Heritage Act 1972</em> (Section 18 clearances)</td>
</tr>
<tr>
<td>5. Chief Executive Officer, Department of Water and Environmental Regulation</td>
<td><em>Environmental Protection Act 1986</em> (Part V Works Approval and Licence and Clearing Permit)</td>
</tr>
<tr>
<td>6. Executive Director, Environmental Resources and Environmental Compliance Division, Department of Mines, Industry Regulation and Safety</td>
<td><em>Mining Act 1978</em> (Mining Proposal and Mine Closure Plan)</td>
</tr>
<tr>
<td>7. Mining Registrar, Department of Mines, Industry Regulation and Safety</td>
<td><em>Mining Act 1978</em> (Mining Proposal, Mine Closure Plan and Miscellaneous Licences)</td>
</tr>
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<td></td>
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<tr>
<td>---</td>
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</tr>
</tbody>
</table>
| 10. Chief Health Officer, Department of Health | *Health Act 1911*  
(Health (Treatment of Sewerage and Disposal of Effluent and Liquid Waste) Regulations 1974) |
| 11. Chief Executive Officer, Shire of Ravensthorpe | *Planning and Development Act 2005*  
(Planning Approval) |

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

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

RAVENSTHORPE GOLD PROJECT

Proposal: Proposal to develop and operate a gold and copper mine at the Kundip mine site approximately 17 km south east of Ravensthorpe in the southern Goldfields-Esperance region.

Proponent: ACH Minerals Pty Ltd
Australian Company Number 609 225 023

Proponent Address: Suite 5, 11 Ventnor Avenue, West Perth, WA 6005

Assessment Number: 2117

Report of the Environmental Protection Authority: 1677

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

1 Proposal Implementation

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

2 Contact Details

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

3 Time Limit for Proposal Implementation

3-1 The proponent shall not commence implementation of the proposal after five (5) years from the date of this Statement, and any commencement, prior to this date, must be substantial.
Any commencement of implementation of the proposal, on or before five (5) years from the date of this Statement, must be demonstrated as substantial by providing the CEO with written evidence, on or before the expiration of five (5) years from the date of this Statement.

4 Compliance Reporting

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

4-2 The Compliance Assessment Plan shall indicate:

(1) the frequency of compliance reporting;
(2) the approach and timing of compliance assessments;
(3) the retention of compliance assessments;
(4) the method of reporting of potential non-compliances and corrective actions taken;
(5) the table of contents of Compliance Assessment Reports; and
(6) public availability of Compliance Assessment Reports.

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

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

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

4-6 The proponent shall submit to the CEO the first Compliance Assessment Report fifteen (15) months from the date of issue of this Statement addressing the twelve (12) month period from the date of issue of this Statement and then annually from the date of submission of the first Compliance Assessment Report, or as otherwise agreed in writing by the CEO.

The Compliance Assessment Report shall:

(1) be endorsed by the proponent’s Chief Executive Officer or a person delegated to sign on the Chief Executive Officer’s behalf;
(2) include a statement as to whether the proponent has complied with the conditions;

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

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

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

5 Public Availability of Data

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

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

(1) a secret formula or process; or

(2) confidential commercially sensitive information,

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

6 Flora and Vegetation Management Plan

6-1 The proponent shall implement the proposal to meet the following environmental objectives:

(1) avoid where possible, otherwise minimise, direct and indirect impacts to conservation significant flora and vegetation communities within the development envelope delineated in Figure 2 of Schedule 1 during ground disturbing activities and during all phases of mining activities, as far as practicable;

(2) ensure there is no proposal-related direct or adverse indirect impacts to flora within the exclusion zones as shown on Figure 2 and delineated by coordinates in Schedule 2; and
(3) impact on no more than 10% of all known individuals of *Lepidosperma* sp. 
Elverdton (R. Jasper *et al.* LCH 16844) from implementation of the proposal.

6-2 In order to meet the requirements of condition 6-1, prior to ground disturbing 
activities within the development envelope delineated in Figure 2 of Schedule 1, 
unless otherwise agreed by the CEO, the proponent shall prepare and have approved by the CEO, a Flora and Vegetation Management Plan to the requirements of the CEO. The Flora and Vegetation Management Plan shall:

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

(2) include details of the timing and methods of preclearance surveys and demonstrate how the findings of the survey(s) would be considered, including provision of mitigation measures;

(3) present objectives for priority flora and vegetation communities to minimise direct or indirect impacts;

(4) specify trigger criteria that will trigger the implementation of management and/or contingency actions to prevent further direct or indirect impacts to flora and vegetation;

(5) specify threshold criteria to demonstrate compliance with 6-1;

(6) specify monitoring to determine if trigger criteria and threshold criteria have been met;

(7) specify management and/or contingency actions to be implemented if trigger criteria required by condition 6-2(4) have not been met; and

(8) provide the format and timing for the reporting of monitoring results against trigger criteria and threshold criteria to demonstrate that condition 6-1 has been met over the reporting period in the Compliance Assessment Report required by condition 4-6.

6-3 The proponent shall implement the most recent version of the Flora and Vegetation Management Plan which the CEO has confirmed by notice in writing, addresses the requirements of condition 6-1.

6-4 In the event that monitoring, or investigations indicates exceedance of threshold criteria specified in the Flora and Vegetation Management Plan, the proponent shall:
(1) report the exceedance in writing to the CEO within seven (7) days of the exceedance being identified;

(2) implement the threshold contingency actions specified in the Flora and Vegetation Management Plan within twenty-four (24) hours of the exceedance being reported as required by condition 6-4(1) and continue implementation of those actions until the CEO has confirmed by notice in writing that it has been demonstrated that the threshold criteria are being met and the implementation of the threshold contingency actions is no longer required;

(3) investigate to determine the cause of the threshold criteria being exceeded;

(4) investigate to provide information for the CEO to determine potential environmental harm or alteration of the environment that occurred due to threshold criteria being exceeded;

(5) provide a report to the CEO within twenty-one (21) days of the exceedance being reported as required by condition 6-4(1). The report shall include:

   (a) details of threshold contingency actions implemented;

   (b) the effectiveness of the threshold contingency actions implemented against the threshold criteria;

   (c) the findings of the investigations required by conditions 6-4(3) and 6-4(4);

   (d) measures to prevent the threshold criteria being exceeded in the future;

   (e) measures to prevent, control or abate the environmental harm which may have occurred; and

   (f) justification of the threshold remaining, or being adjusted based on better understanding, demonstrating that objectives will continue to be met.

6-5 The proponent:

(1) may review and revise the Flora and Vegetation Management Plan; or

(2) shall review and revise the Flora and Vegetation Management Plan as and when directed by the CEO.
6-6 The proponent shall continue to implement the Flora and Vegetation Management Plan, or any subsequent revisions as approved by the CEO in condition 6-3, until the CEO has confirmed by notice in writing that the plan meets the objective specified in condition 6-1.

7 Fauna Management Plan

7-1 The proponent shall implement the proposal to meet the following environmental objectives:

(1) avoid where possible, otherwise minimise, direct and indirect impacts to conservation significant fauna within the development envelope delineated in Figure 2 of Schedule 1 during ground disturbing activities and during all phases of mining activities, as far as practicable;

(2) ensure there are no proposal-related direct or adverse indirect impacts to fauna within the exclusion zones as shown on Figure 2 and delineated by coordinates in Schedule 2; and

(3) ensure there is no removal of active malleefowl mounds within the development envelope and that a 250 metre radius buffer zone is imposed on all active mounds.

7-2 In order to meet the requirements of condition 7-1, prior to ground disturbing activities within the mine development envelope delineated in Figure 2 of Schedule 1, unless otherwise agreed by the CEO, the proponent shall prepare and have approved by the CEO, a Fauna Management Plan to the requirements of the CEO. The Fauna Management Plan shall:

(1) outline how the pre-clearance surveys will be undertaken;

(2) outline protocols for the relocation of threatened fauna prior to habitat clearing;

(3) specify trigger criteria that must provide an early warning that the environmental objectives identified in condition 7-1 may not be met;

(4) specify threshold criteria to demonstrate compliance with the environmental objectives specified in condition 7-1;

(5) specify monitoring to determine if trigger criteria and threshold criteria are exceeded;

(6) specify trigger level actions to be implemented in the event that trigger criteria have been exceeded;
(7) specify threshold contingency actions to be implemented in the event that threshold criteria are exceeded; and

(8) provide the format and timing for the reporting of monitoring results against trigger criteria and threshold criteria to demonstrate that condition 7-1 has been met over the reporting period in the Compliance Assessment Report required by condition 4-6.

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

(1) implement the provisions of the Fauna Management Plan; and

(2) continue to implement the Fauna Management Plan until the CEO has confirmed by notice in writing that the proponent has demonstrated the objectives specified in conditions 7-1 have been met.

7-4 In the event that monitoring, tests, surveys or investigations indicates exceedance of threshold criteria specified in the Fauna Management Plan, the proponent shall:

(1) report the exceedance in writing to the CEO within seven (7) days of the exceedance being identified;

(2) implement the threshold contingency actions specified in the Fauna Management Plan within twenty-four (24) hours of the exceedance being reported as required by condition 7-4(1) and continue implementation of those actions until the CEO has confirmed by notice in writing that it has been demonstrated that the threshold criteria are being met and the implementation of the threshold contingency actions is no longer required;

(3) investigate to determine the cause of the threshold criteria being exceeded;

(4) investigate to provide information for the CEO to determine potential environmental harm or alteration of the environment that occurred due to threshold criteria being exceeded; and

(5) provide a report to the CEO within twenty-one (21) days of the exceedance being reported as required by condition 7-4(1). The report shall include:

(a) details of threshold contingency actions implemented;

(b) the effectiveness of the threshold contingency actions implemented against the threshold criteria;
(c) the findings of the investigations required by conditions 7-4(3) and 7-4(4);

(d) measures to prevent the threshold criteria being exceeded in the future;

(e) measures to prevent, control or abate the environmental harm which may have occurred; and

(f) justification of the threshold remaining, or being adjusted based on better understanding, demonstrating that objectives will continue to be met.

7-5 The proponent:

(1) may review and revise the Fauna Management Plan; or

(2) shall review and revise the Fauna Management Plan as and when directed by the CEO.

7-6 The proponent shall implement the latest revision of the Fauna Management Plan, which the CEO has confirmed by notice in writing, satisfies the requirements of condition 7-2.

8 Heritage Management

8-1 Prior to the commencement of ground disturbing activities the proponent shall:

(1) consult with the relevant Traditional Owners group(s) and ensure compliance with obligations under the Aboriginal Heritage Act 1972; and

(2) ensure contractors are made aware of their obligations under the Aboriginal Heritage Act 1972.

8-2 The proponent must implement the proposal to meet the following environmental objective:

(1) minimise direct and indirect impacts to social, cultural and heritage values within and surrounding the development envelope, including, but not limited to:

(a) developing an alternative safe route for the Hopetoun-Ravensthorpe Railway Heritage Walk Trail in consultation with the Shire of Ravensthorpe for when extended closure of the walk trail occurs;

(b) demonstrating that access to the Hopetoun-Ravensthorpe Railway Heritage Walk Trail is safe through the provision of a geotechnical
report, or other appropriate report, after any extended closure of the trail;

(c) re-establishing access to the Hopetoun-Ravensthorpe Railway Heritage Walk Trail after extended closure of the trail, as soon as practicable, once it has been demonstrated access is safe; and

(d) at all times when access is allowed, ensuring there are no risks to the safety of persons using the trail from the mining operations.

8-3 In order to meet the requirements of condition 8-2, prior to ground disturbing activities within the development envelope delineated in Figure 2 of Schedule 1, unless otherwise agreed by the CEO, the proponent shall prepare and have approved by the CEO, a Heritage Management Plan to the requirements of the CEO on advice of the Shire of Ravensthorpe and Department of Mines, Industry Regulation and Safety. The Heritage Management Plan shall:

(1) when implemented, substantiate and ensure that condition 8-2 is being met;

(2) present objectives and monitoring protocols; and

(3) specify management and/or contingency actions.

8-4 The proponent shall implement the most recent version of the Heritage Management Plan which the CEO has confirmed by notice in writing, addresses the requirements of condition 8-2.

8-5 The proponent shall continue to implement the Heritage Management Plan, or any subsequent revisions as approved by the CEO in condition 8-4, until the CEO has confirmed by notice in writing that the plan meets the objective specified in condition 8-2.

8-6 In the event that monitoring, surveys or investigations indicates that the objectives of condition 8-2 and the Heritage Management Plan required by condition 8-3 have not been met, the proponent shall:

(1) report the exceedance in writing to the CEO within seven (7) days of the exceedance being identified;

(2) implement contingency actions specified in Heritage Management Plan within twenty-four (24) hours of the incident being reported as required by condition 8-6(1) and continue implementation of those actions until the CEO has confirmed by notice in writing that it has been demonstrated that the objectives are being met and the implementation of the contingency actions is no longer required;

(3) investigate to determine the cause of the incident;
investigate to provide information for the CEO to determine potential impacts to social surrounding or alteration of the environment that occurred due to the incident; and

provide a report to the CEO within twenty-one (21) days of the incident being reported as required by condition 8-6(1). The report shall include:

(a) details of contingency actions implemented;

(b) the effectiveness of the contingency actions implemented against the objectives of condition 8-2;

(c) the findings of the investigations required by conditions 8-6(3) and 8-6(4);

(d) measures to prevent a reoccurrence of the incident in the future;

(e) measures to prevent, control or abate the environmental harm which may have occurred; and

(f) justification of the control remaining, or being adjusted based on better understanding, demonstrating that objectives will continue to be met.

8-7 The proponent:

(1) may review and revise the Heritage Management Plan; or

(2) shall review and revise the Heritage Management Plan as and when directed by the CEO.

8-8 The proponent shall implement the most recent version of the Heritage Management Plan which the CEO has confirmed by notice in writing, addresses the requirements of condition 8-2.

8-9 The proponent shall continue to implement the Heritage Management Plan, or any subsequent revisions as approved by the CEO in condition 8-8, until the CEO has confirmed by notice in writing that the plan meets the objective specified in condition 8-2.

9 Disease Hygiene Management

9-1 The proponent shall implement the proposal to meet the following environmental objective:
(1) The proponent shall minimise impacts from the implementation of the proposal to flora and vegetation from Dieback (*Phytophthora spp*).

9-2 In order to meet the requirements of condition 9-1, prior to ground disturbing activities within the development envelope delineated in Figure 2 of Schedule 1, unless otherwise agreed by the CEO, the proponent shall prepare and have approved by the CEO, a Disease Hygiene Management Plan to the requirements of the CEO. The Disease Hygiene Management Plan shall:

(1) when implemented, substantiate and ensure that condition 9-1 is being met:

(2) present objectives and monitoring protocols to ensure impacts from *Phytophthora spp* are minimised;

(3) specify trigger criteria that must provide an early warning that the environmental objective identified in condition 9-1 may not be met;

(4) specify threshold criteria to demonstrate compliance with the environmental objective specified in condition 9-1;

(5) specify monitoring to determine if trigger criteria and threshold criteria are exceeded;

(6) specify trigger level actions to be implemented in the event that trigger criteria have been exceeded;

(7) specify threshold contingency actions to be implemented in the event that threshold criteria are exceeded; and

(8) provide the format and timing for the reporting of monitoring results against trigger criteria and threshold criteria to demonstrate that condition 9-1 has been met over the reporting period in the Compliance Assessment Report required by condition 4-6.

9-3 In the event that monitoring, tests, surveys or investigations indicates exceedance of threshold criteria specified in the Disease Hygiene Management Plan, the proponent shall:

(1) report the exceedance in writing to the CEO within seven (7) days of the exceedance being identified;

(2) implement the threshold contingency actions specified in the Disease Hygiene Management Plan within twenty-four (24) hours of the exceedance being reported as required by condition 9-3(1) and continue implementation of those actions until the CEO has confirmed by notice in
writing that it has been demonstrated that the threshold criteria are being met and the implementation of the threshold contingency actions is no longer required;

(3) investigate to determine the cause of the threshold criteria being exceeded;

(4) investigate to provide information for the CEO to determine potential environmental harm or alteration of the environment that occurred due to threshold criteria being exceeded; and

(5) provide a report to the CEO within twenty-one (21) days of the exceedance being reported as required by condition 9-3(1). The report shall include:

(a) details of threshold contingency actions implemented;

(b) the effectiveness of the threshold contingency actions implemented against the threshold criteria;

(c) the findings of the investigations required by conditions 9-3(3) and 9-3(4);

(d) measures to prevent the threshold criteria being exceeded in the future;

(e) measures to prevent, control or abate the environmental harm which may have occurred; and

(f) justification of the threshold remaining, or being adjusted based on better understanding, demonstrating that objectives will continue to be met.

9-4 The proponent:

(1) may review and revise the Disease Hygiene Management Plan; or

(2) shall review and revise the Disease Hygiene Management Plan as and when directed by the CEO.

9-5 The proponent shall implement the most recent version of the Disease Hygiene Management Plan which the CEO has confirmed by notice in writing, addresses the requirements of condition 9-1.

9-6 The proponent shall continue to implement the Disease Hygiene Management Plan, or any subsequent revisions as approved by the CEO in condition 9-5, until
the CEO has confirmed by notice in writing that the plan meets the objective specified in condition 9-1.

10 Offset Strategy

10-1 The proponent shall undertake offsets with the objective of counterbalancing the significant residual impact on the following environmental values:

(1) clearing of 167.5 ha of conservation significant fauna habitat comprised of:

(a) 150.3 ha of Carnaby’s cockatoo (*Calyptorhynchus latirostris*) foraging and roosting habitat

(b) 150.3 ha of habitat for malleefowl (*Leipoa ocellata*)

(c) 150.3 ha of western whipbird (western mallee) – (*Psophodes nigrogularis oberon*) habitat;

(d) 17.2 ha of chuditch (*Dasyurus geoffroii*) habitat; and

(2) direct and indirect impacts to 48.4 ha of Proteaceae dominated Kwongkan shrublands of the Southeast Coastal Floristic Province of Western Australia,

as a result of the implementation of the proposal, as defined in Table 2 of Schedule 1 and delineated by coordinates in Schedule 2.

Threatened Fauna Offset Strategy

10-2 Within twelve (12) months of the publication of this Statement, or otherwise agreed to by the CEO, the proponent shall prepare and submit a Threatened Fauna Offset Strategy to the requirements of the CEO.

10-3 The Threatened Fauna Offset Strategy, as required by condition 10-2, shall:

(1) identify an initially unprotected area, or areas, to be acquired and protected for conservation that contains Carnaby’s cockatoo, malleefowl, western whipbird (western mallee) and chuditch foraging and breeding habitat, in consultation with the Department of Biodiversity, Conservation and Attractions;

(2) demonstrate how the proposed offset counterbalances the significant residual impact to 150.3 ha of foraging and breeding habitat for Carnaby’s cockatoo, 150.3 ha of habitat for malleefowl, 150.3 ha of habitat for western whipbird (western mallee), and 17.2 ha of habitat for chuditch, as identified in condition 10-1, through application of the principles and completion of the WA Offsets Template, as described in the WA *Environmental Offsets Guidelines* 2014, or any approved update of these guidelines, to
demonstrate how the proposed offset counterbalances the significant residual impact to Carnaby’s cockatoo, malleefowl, western whipbird (western mallee) and chuditch, as identified in condition 10-1;

(3) demonstrate how the proposed offset aligns with the National Recovery Plans for Carnaby’s cockatoo (Calyptorhynchus latirostris), malleefowl (Leipoa ocellata) and the chuditch (Dasyurus geoffroii), and the South Coast Threatened Birds Recovery Plan for the Western Whipbird (western mallee) (Psophodes nigrogularis oberon), or any subsequent revisions of these plans;

(4) identify the environmental values of the offset area(s);

(5) identify and commit to a protection mechanism for any area(s) of land acquisition, being either the area(s) is ceded to the Crown for the purpose of management for conservation, or the area(s) is managed under other suitable mechanisms for the purpose of conservation as agreed by the CEO;

(6) if any land is to be ceded to the Crown for the purpose of management for conservation, the proponent will identify:

(a) the quantum of, and provide funds for, the upfront works associated with establishing the conservation area;

(b) the quantum of, and provide a contribution of funds for, the management of this area for seven (7) years after completion of purchase; and

(c) an appropriate management body for the ceded land;

(7) detail the monitoring, reporting and evaluation mechanisms for management and/or rehabilitation actions; and

(8) define the role of the proponent and/or any relevant management authority.

10-4 Within six (6) months of receiving notice in writing from the CEO, on advice of the Department of Biodiversity, Conservation and Attractions, that the Threatened Fauna Offset Strategy satisfies the requirements of conditions 10-2 and 10-3, the proponent shall implement the approved Threatened Fauna Offset Strategy.

10-5 The proponent:

(1) may review and revise the Threatened Fauna Offset Strategy; or

(2) shall review and revise the Threatened Fauna Offset Strategy as and when directed by the CEO.
10-6 The proponent shall implement the latest version of the Threatened Fauna Offset Strategy, which the CEO has confirmed by notice in writing, satisfies the requirements of condition 10-3.

Flora Offset Strategy

10-7 Within twelve (12) months of the publication of this Statement, or otherwise agreed to by the CEO, the proponent shall prepare and submit a Flora Offset Strategy to the requirements of the CEO.

10-8 The Flora Offset Strategy required by condition 10-7 shall:

(1) identify an area, or areas, to be protected, managed and/or rehabilitated for conservation that contains the flora values identified in condition 10-1 on advice of the Department of Biodiversity, Conservation and Attractions;

(2) demonstrate how the proposed offset counterbalances the significant residual impact to 48.4 ha of Proteaceae dominated Kwongkan shrublands of the Southeast Coastal Floristic Province of Western Australia, as identified in condition 10-1 through application of the principles and completion of the WA Offsets Template, as described in the WA Environmental Offsets Guidelines 2014, and the Environment Protection and Biodiversity Conservation Act 1999 Environmental Offsets Policy Assessment Guide (October 2012), or any approved updates of these guidelines;

(3) identify the environmental values of the offset area(s);

(4) identify and commit to a protection mechanism for any area(s) of land acquisition, being either the area(s) is ceded to the Crown for the purpose of management for conservation, or the area(s) is managed under other suitable mechanisms for the purpose of conservation as agreed by the CEO;

(5) if any land is to be ceded to the Crown for the purpose of management for conservation, the proponent will identify:

(a) the quantum of, and provide funds for, the upfront works associated with establishing the conservation area;

(b) the quantum of, and provide a contribution of funds for, the management of this area for seven (7) years after completion of purchase; and

(c) an appropriate management body for the ceded land;

(6) where rehabilitation and/or other on-ground actions are proposed, state the objectives and targets to be achieved, including completion criteria, which demonstrate;
(a) how on-ground management or rehabilitation actions will result in a tangible improvement to the environmental value(s) being offset; and

(b) the consistency of the objectives and targets with the objectives of any relevant Recovery Plans or area management plans;

(7) detail the management and/or rehabilitation actions and a timeframe for the actions to be undertaken;

(8) detail any funding arrangements and timing of funding for conservation activities;

(9) detail the monitoring, reporting and evaluation mechanisms for management and/or rehabilitation actions; and

(10) define the role of the proponent and/or any relevant management authority.

10-9 Within six (6) months of receiving notice in writing from the CEO, on advice of the Department of Biodiversity, Conservation and Attractions, that the Flora Offset Strategy satisfies the requirements of conditions 10-7 and 10-8, the proponent shall substantially commence implementation of the actions within the approved Flora Offset Strategy.

10-10 The proponent shall continue to implement the approved Flora Offset Strategy until the CEO has confirmed by notice in writing that it has been demonstrated that the objectives and targets in the Flora Offset Strategy have been met and therefore the implementation of the actions is no longer required.

10-11 The proponent:

(1) may review and revise the Flora Offset Strategy; or

(2) shall review and revise the Flora Offset Strategy as and when directed by the CEO.

10-12 The proponent shall implement the latest version of the Flora Offset Strategy, which the CEO has confirmed by notice in writing, satisfies the requirements of condition 10-8.
Table 1: Summary of the proposal

<table>
<thead>
<tr>
<th>Proposal Title</th>
<th>Ravensthorpe Gold Project</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Short Description</strong></td>
<td>The proposal involves the development and operation of a gold and copper mine at the Kundip Mine Site approximately 17 kilometres south east of Ravensthorpe. The proposal involves mining from multiple open-cut pits and underground, a processing facility, waste rock landforms, a tailings storage facility and associated infrastructure.</td>
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Table 2: Location and authorised extent of physical and operational elements

<table>
<thead>
<tr>
<th>Column 1</th>
<th>Column 2</th>
<th>Column 3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Element</strong></td>
<td><strong>Location</strong></td>
<td><strong>Authorised Extent</strong></td>
</tr>
<tr>
<td><strong>Physical elements</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mine and associated infrastructure</td>
<td>Figure 2</td>
<td>Clearing of no more than 195.4 ha of native vegetation and 49.3 ha of disturbed land within the 428.4 ha development envelope</td>
</tr>
<tr>
<td><strong>Operational elements</strong></td>
<td></td>
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<tr>
<td>Water supply</td>
<td></td>
<td>Up to 0.8 gigalitres per annum of combined water abstraction from dewatering</td>
</tr>
</tbody>
</table>

Table 3: Abbreviations and Definitions

<table>
<thead>
<tr>
<th>Acronym or Abbreviation</th>
<th>Definition or Term</th>
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<tbody>
<tr>
<td>CEO</td>
<td>The Chief Executive Officer of the Department of the Public Service of the State responsible for the administration of section 48 of the Environmental Protection Act 1986, or his delegate.</td>
</tr>
<tr>
<td>EP Act</td>
<td>Environmental Protection Act 1986</td>
</tr>
<tr>
<td>Extended Closure</td>
<td>The closure of some or all of the Hopetoun-Ravensthorpe Railway Heritage Walk Trail within the Development Envelope, that is as a result of activities associated with the project and is for a period of greater than three (3) months duration.</td>
</tr>
<tr>
<td>Ground Disturbing Activities</td>
<td>Activities that are associated with the substantial implementation of the proposal including but not limited to, earthmoving, vegetation clearing, grading, construction of new or widening of existing roads and tracks. Ground disturbing activities does not include Geotechnical investigations (including potholing for services and the installation of piezometers) and other preconstruction activities where no clearing of vegetation is required.</td>
</tr>
<tr>
<td>ha</td>
<td>Hectare</td>
</tr>
<tr>
<td>Social Surroundings</td>
<td>The natural and historical heritage and the amenity of the area within and surrounding the Development Envelope.</td>
</tr>
<tr>
<td>Significant flora and vegetation communities</td>
<td>Species that are listed under the Environment Protection and Biodiversity Conservation Act 1999 or Biodiversity Conservation Act 2016. Wildlife Conservation Act 1950, and Department of Biodiversity Conservation and Attractions listed Priority species.</td>
</tr>
</tbody>
</table>
Figure 1: Regional location
Coordinates defining the development envelope are held by the Department of Water and Environmental Regulation, Document Reference Number 2020 – DWERDT276846

Coordinates defining the flora (Calothamnus roseus) exclusion zone are held by the Department of Water and Environmental Regulation, Document Reference Number 2020 – DWERDT276804

Coordinates defining the fauna (Bothriembryon sp) exclusion zone development envelope are held by the Department of Water and Environmental Regulation, Document Reference Number 2020 – DWERDT276803

All co-ordinates are in metres, listed in Map Grid of Australia Zone 51 (MGA Zone 51), datum of Geocentric Datum of Australia 1994 (GDA94).

Notes
The following notes are provided for information and do not form part of the implementation conditions of the Statement:

- No conditions have been included as part of the implementation conditions of the Statement to manage impacts associated with the tailings storage facility (TSF). Emissions and discharges from the TSF are to be regulated under Part V of the Environmental Protection Act 1986 by the Department of Water and Environmental Regulation.

- No conditions have been included as part of the implementation conditions of the Statement to manage impacts associated with the TSF, waste rock landforms and pit lakes post-closure. The Department of Mines, Industry Regulation and Safety (DMIRS) is the key regulator and decision-making authority for mining projects under the Mining Act 1978. DMIRS has the role of regulating the industry to ensure that closure conditions applied and commitments made are implemented during the life of the mining project. The Mining Act 1978 requires a Mine Closure Plan to be submitted to the DMIRS for assessment and approval as part of the Mining Proposal assessment and approval process.