



# Report and recommendations of the Environmental Protection Authority



## Greenbushes Lithium Mine Expansion

Talison Lithium Australia Pty Ltd

Report 1635

May 2019

## Environmental impact assessment process timelines

Date	Progress stages	Time (weeks)
01/08/2018	EPA decides to assess – level of assessment set	
19/12/2019	Environmental Referral released for public review	16
21/01/2019	Public review period for Environmental Review Document closed	4
13/03/2019	EPA received final information for assessment	5
21/03/2019	EPA completed its assessment	2
01/05/2019	EPA provided report to the Minister for Environment	6
08/05/2019	EPA report published	3 days
22/05/2019	Close of appeals period	2

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

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



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Chairman

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## Executive Summary

The Greenbushes Lithium Mine Expansion (the proposal) was referred to the Environmental Protection Authority (EPA) by the proponent, Talison Lithium Australia Pty Ltd, in June 2018.

The proposal involves undertaking Stage 3 and 4 expansions at the existing Greenbushes Lithium Mine in the Shire of Bridgetown-Greenbushes. The proposed expansion will produce an anticipated 2.8 million tonnes of lithium mineral concentrate per annum. Lithium mineral concentrates from the operation will continue to be transported to the ports of Bunbury and Fremantle (limited volumes) for export as per current arrangements and will also supply the Albemarle Lithium Plant in the Kemerton Strategic Industrial Area north of Bunbury and the Tianqi Lithium Plant in the Kwinana Industrial Area.

The EPA conducted an Environmental Impact Assessment on the proposal, which included a four-week public review period, and has concluded the proposal is environmentally acceptable and can be implemented subject to certain conditions. The EPA has assessed the impacts of the proposal in the context of the environmental and social values of the surrounding area, particularly the loss of 350 hectares (ha) of conservation significant terrestrial fauna habitats.

The EPA examined potential impacts on six key environmental factors: Flora and Vegetation, Terrestrial Fauna, Terrestrial Environmental Quality, Inland Waters, Air Quality and Social Surroundings. The EPA has recommended conditions (listed in Appendix 4) which include requirements for management plans to ensure the proposal will avoid or minimise impacts to conservation significant terrestrial fauna habitats and visual amenity. To mitigate the unavoidable loss of 350 ha of conservation significant terrestrial fauna habitat the EPA has recommended a condition that requires the proponent to prepare an offsets strategy within 12 months of the issue of the Ministerial Statement.

Furthermore, the EPA recommends the proponent will need to continue to work closely with government departments to ensure impacts to the conservation significant terrestrial fauna are further minimised and future management decisions ensure long-term sustainability of the conservation significant terrestrial fauna species.



# 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 proposal by Talison Lithium Australia Pty Ltd. The proposal is to increase the production of spodumene ore and lithium mineral concentrate from the existing Greenbushes mining and processing operation located approximately 250 kilometres (km) south east of Perth, Western Australia (Figure 1).

The EPA has prepared this report in accordance with section 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:

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

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

The proponent referred the proposal to the EPA in June 2018. On 1 August 2018, the EPA decided to assess the proposal and set the level at Referral Information with a three-week public review (with an additional week added due to the release of the report over the holiday season). The draft Referral Document was updated with additional information and released for public review from 18 December 2018 to 21 January 2019.

Following further consultation with government agencies, the proponent submitted final additional information documents on 13 March 2019. During the EPA's assessment of the proposal, the proponent's draft Referral Document, proposed management plans and environmental studies have been taken into consideration.

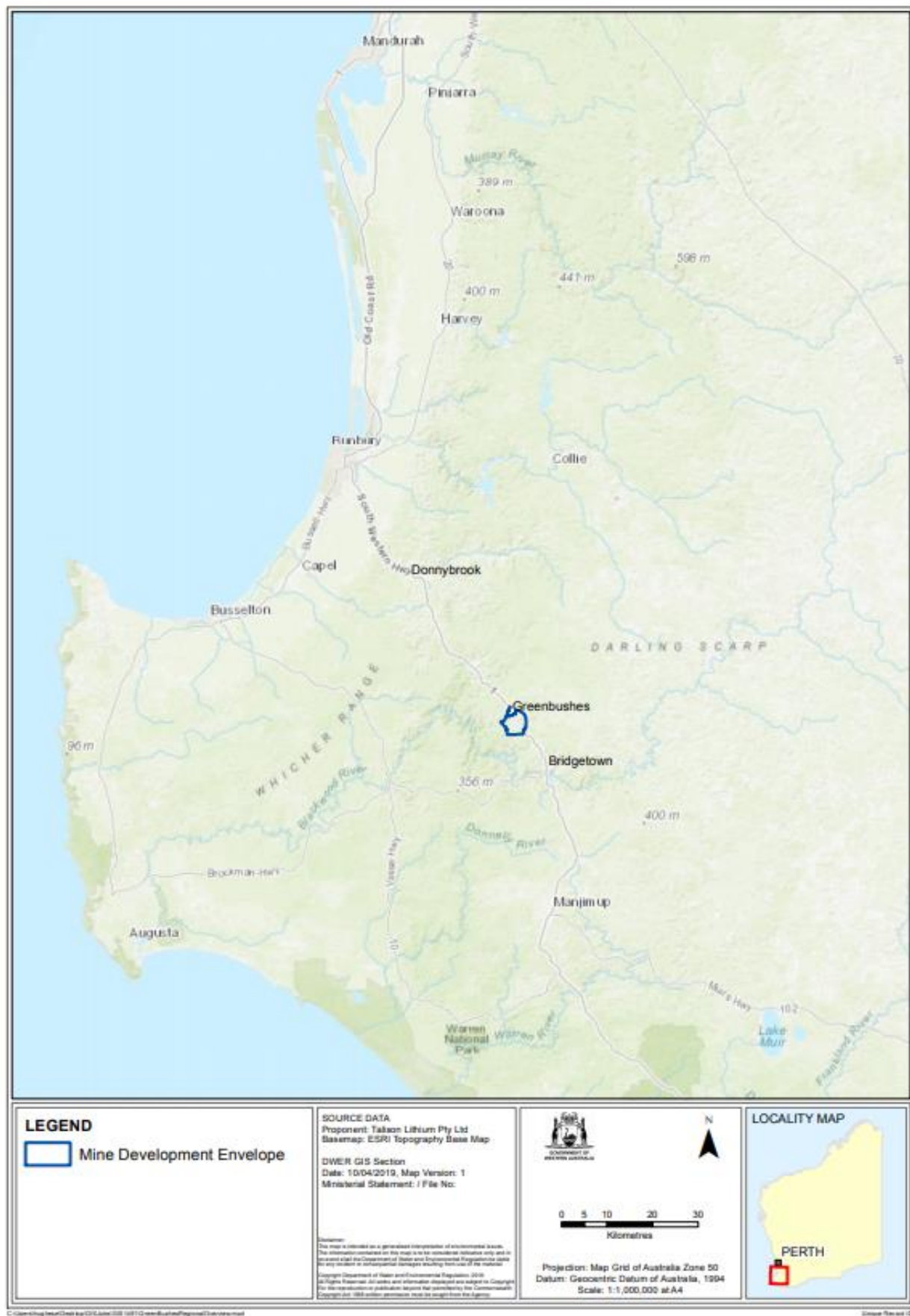


Figure 1: Regional location



## 1.1 EPA procedures

The EPA followed the procedures in the *Environmental Impact Assessment (Part IV Divisions 1 and 2) Administrative Procedures 2016* (EPA, 2016a) and the *Environmental Impact Assessment (Part IV Divisions 1 and 2) Procedures Manual 2016* (EPA, 2016b).

During the assessment period the *Biodiversity Conservation Act 2016* (BC Act) replaced the *Wildlife Conservation Act 1950* (State). All references to State biodiversity conservation matters in this report are referred to as the BC Act.

## 1.2 Assessment on behalf of the Commonwealth

The proposal was determined to be a controlled action by a delegate of the Commonwealth Minister for the Environment under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) on 17 June 2018 as it will, or is likely to have, a significant impact on the following Matters of National Environmental Significance (MNES):

- Listed threatened species and communities (section 18 and 18A).

The proposal is not being assessed under the Bilateral Agreement. On 19 August 2018, the delegate under the EPBC Act determined that the proposal would be assessed by accredited assessment under the EP Act.

## 2. The proposal

### 2.1 Proposal summary

The Greenbushes Lithium Mine is located immediately south of the Greenbushes town site approximately 250 km south of Perth, and 80 km south-east of Bunbury in Western Australia (WA) (Figure 1). The proposed expansion will produce an anticipated 2.8 million tonnes per annum (Mtpa) of lithium mineral concentrate. Lithium mineral concentrates from the operation will continue to be transported to the ports of Bunbury and Fremantle (limited volumes) for export as per current arrangements and will also supply the Albemarle Lithium Plant in the Kemerton Strategic Industrial Area north of Bunbury and the Tianqi Lithium Plant in the Kwinana Industrial Area.

The proponent has nominated a mine development envelope of 1,989 ha, within which all native vegetation clearing required for the proposal will be implemented (Figure 2). The expansion requires 350 ha of native vegetation clearing within State Forest 20 (located within the proponent's tenements). The State Forest is a *Conservation and Land Management Act 1984* (CALM Act) public reserve land vested with the Conservation and Parks Commission and managed by Department of Biodiversity, Conservation and Attractions (DBCA). Under the CALM Act, State Forest has multiple purposes including conservation, recreation, timber production, water catchment protection or another purpose prescribed by the associated regulations. The State Forest within the proposal area is part of a larger expansive stretch of State Forest that extends throughout the southwest from Margaret River to Denmark.

The area of State Forest affected by this proposal is managed by DBCA in a manner consistent with the *Forest Management Plan 2014-2023* (FMP). The FMP includes the key goal of maintaining the overall area of native forest and plantation available for providing forest produce and also includes key performance indicators focused on maintaining the biodiversity and ecological integrity of forest areas. State Forest 20 has previously been subject to logging and some areas are used as a plantation.

The key characteristics of the proposal are summarised in Tables 1 and 2 below. A detailed description of the proposal is provided in section 2.2 of the Environmental Referral Additional Information (Talison Lithium Australia Pty Ltd, 2018a).

**Table 1: Summary of the proposal**

<b>Proposal title</b>	Greenbushes Lithium Mine Expansion
<b>Short description</b>	<p>The proposal is to undertake Stage 3 and Stage 4 expansion of the existing Greenbushes Lithium Mine in the Shire of Bridgetown - Greenbushes. The proposal includes the following:</p> <ul style="list-style-type: none"> <li>• Developing an expanded open pit;</li> <li>• Establishment of two additional chemical grade processing plants, a plant for retreatment of tailings, an additional crusher and expansion of a centralised Run of Mine (ROM);</li> <li>• Establishment of a new mine services area and explosives storage and handling infrastructure;</li> <li>• Expansion of the existing Floyds Waste Rock Landform (WRL);</li> <li>• Construction of an additional Tailings Storage Facility (TSF); and</li> <li>• Establishment of additional linear infrastructure corridors (bypass road, powerline, pipeline and road corridors).</li> </ul>

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

<b>Element</b>	<b>Location</b>	<b>Proposed extent</b>
<b><i>Physical elements</i></b>		
Mine and associated infrastructure including the waste rock landform, tailings storage facility, processing infrastructure, and other mine site supporting infrastructure.	Figure 2	Clearing of up to 350 ha of native vegetation within a mine development envelope of 1,989 ha.
<b><i>Operational elements</i></b>		
Mine Pit	Figure 2	Mining rate of up to 25 million cubic metres per annum from approximately 180 ha that is predominantly already disturbed.

Tailings Storage	Figure 2	Increase to approximately 9 Mtpa disposed of in new fourth Tailings Storage Facility (TSF4).
<b>Element</b>	<b>Location</b>	<b>Proposed extent</b>
Ore Processing	Figure 2	Three additional process plants, CGP3, CGP4 and tailings retreatment plant to increase processing capacity to approximately 9.5 Mtpa ore and 2.1 Mtpa recovered tailings.
Transport Routes	Port of Bunbury, Kemerton Strategic Industrial Area, Kwinana Industrial Area, Fremantle Port.	2.8 Mtpa of lithium mineral concentrate.



Figure 2: Mine Development Envelope

## 2.2 Changes to the proposal during assessment

The proponent (Talison Lithium Australia Pty Ltd) submitted two applications on 19 November 2018 and 29 January 2019 under section 43A of the EP Act to the EPA for consent to change the proposal during the assessment process.

The requested changes included:

- inclusion of a tailings retreatment plant within the final disturbance footprint of fourth Tailings Storage Facility (TSF4), which resulted in an increase to tailings production from 8 to 9 Mtpa;
- increase in the rate of ore processing from 9.5 to 11.6 Mtpa due to the inclusion of the tailings retreatment plant which will increase production capacity of lithium mineral concentrate from 2.3 to 2.8 Mtpa;
- revision of the description of the mining rate (the maximum annual mining rate of 25 Million bank cubic metres (Mbcm) is provided instead of the 16 Mbcm that represents average annual mining rate over the life of mine);
- change in the crusher description from three-stage to a two-stage crusher; and
- revision of the mine development envelope to include supporting linear road infrastructure, including the mine access road and access road to the proposed tailings retreatment plant.

The changes did not affect the area of disturbance or clearing of native vegetation.

The EPA 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 section 43A of the EP Act to the change on 29 November 2018 and 7 March 2019, respectively. On 2 April 2019, the proposal was also varied under the EPBC Act to reflect these changes.

## 2.3 Mine History

Mining at the site commenced following the discovery of tin in 1886. Mining has continued since 1888, with tin, tantalum and lithium all having been mined at various times. Open cut mining commenced in the 1940s and has continued until present. Historic mining activity means that approximately two thirds of the mine development envelope has been disturbed by mining, forestry and ancillary infrastructure. Comparison of aerial photography from the 1970s and 2019 shows that many areas of historical disturbance have been revegetated (Talison Lithium Australia Pty Ltd, 2018b).

The EPA notes the mine history and pre-existing impacts and rehabilitation in relation to Flora and Vegetation and Social Surroundings.

## 2.4 Existing Approvals

Historic environmental approvals for mining operations and regulation of activities have been under the *Mining Act 1978* (Mining Act), Part V of the EP Act and the Environmental Protection (Noise) Regulations 1997 (Noise Regulations). The existing project is regulated under a series of Mining Proposals and a Mine Closure Plan under the Mining Act and the EP Act (Part V) Operating Licence L4247/1991/13 and Regulation 17 Approval for Greenbushes Operation (WA Government Gazette, 27 February 2015, No. 31).

Clearing within the current project area is authorised and managed under a Native Vegetation Clearing Permit (CPS 5056/2) issued under Part V of the EP Act and allows for clearing of 120 ha across the project area. Clearing of 1,591 ha of ground disturbance had historically been authorised under the Mining Act.

Clearing for the current approved extent of the Floyds Waste Rock Landform (WRL) was referred to and deemed by the Department of the Environment and Energy (DoEE) to be a Controlled Action due to the potential impact of the clearing on MNES (Black Cockatoos). Clearing of this area was subsequently authorised and managed under the EPBC 2013/6904.

The tantalum and other minerals assets (primary and secondary tantalum processing plants and crusher) and mining rights are currently owned and operated by a different proponent and do not form part of the scope of this proposal.

The EPA notes the existing approvals and regulatory mechanisms used to manage activities at the Greenbushes Lithium Mine site.

## 3. Consultation

The EPA advertised the referral information for the proposal for public comment in July 2018 and received seven submissions. One submission requested 'Do Not Assess', and six submissions requested 'Assess – Public Environmental Review'.

The level of assessment was set on 1 August 2018 at 'Referral Information (with additional information required under section 40(2)(a) of the *Environmental Protection Act 1986*'. The required additional information, was published on the EPA website for a four-week public review period during December 2018 and January 2019. Four public comments were received and the key issues raised related to:

- transport of product from the site
- clearing of native vegetation and impacts to terrestrial fauna
- impacts from noise, light spill, vibration and dust
- impacts on surface and ground water.

The proponent has responded to those comments to clarify and provide supplementary information. The comments and responses are provided as Appendix A to the proponent's submission.

The proponent consulted with government agencies and key stakeholders during the preparation of the supplementary reports. The agencies and stakeholders consulted, the issues raised and the proponent's response are detailed in Table 3-1 of the proponent's supplementary report (Talison Lithium Australia Pty Ltd, 2019).

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 this proposal and preparing this report, the EPA had regard for the object and principles contained in s4A of the EP Act to the extent relevant to the particular matters that were considered.

The EPA considered the following information during its assessment:

- the proponent's referral information and supplementary information provided by the proponent (Talison Lithium Australia Pty Ltd, 2019)
- 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 supplementary information provided by the proponent
- the proponent's response to submissions raised during the public review of the supplementary information provided by the proponent
- the changes to the proposal submitted by the proponent
- the EPA's own inquiries
- the EPA's *Statement of environmental principles, factors and objectives*
- the 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 above information, the EPA identified the following key environmental factors during the course of its assessment of the proposal:

- **Flora and Vegetation** – direct loss of up to 350 ha of native vegetation and priorities species as well as potential indirect impacts to vegetation and flora.
- **Terrestrial Environmental Quality** – impacts from potential contamination of soil from tailings and waste storage
- **Terrestrial Fauna** – clearing of 350 ha of native vegetation known to contain or represent habitat for Matters of National Environmental Significance
- **Inland Waters** – potential impacts to surface and groundwater quality through mining operations



- **Air Quality** – potential impacts from dust emissions and changes to air quality
- **Social Surroundings** – potential impacts from changes to visual amenity, vibration levels, and noise.

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 original referral documentation and updated additional information (Talison 2019). Appendix 3 contains an evaluation of why these other environmental factors were not identified as key environmental factors.

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

1. **The precautionary principle** – Biological and physical investigations have been carried out by the proponent to provide certainty in its assessment of potential impacts. The proponent has identified suitable mitigation measures, avoiding and minimising impacts where practical.
2. **The principle of intergenerational equity** – The EPA notes the proponent has taken measures to avoid and minimise impacts and this (together with the recommended conditions) will ensure the quality of terrestrial environment is maintained for future generations.
3. **The principle of the conservation of biological diversity and ecological integrity** – The EPA has concluded that, provided the recommended conditions are imposed on the implementation of the proposal, the proposal would not compromise biological diversity or ecological integrity.
4. **Principles relating to improved valuation, pricing and incentive mechanisms** – The proponent would bear the cost relating to waste and pollution, including avoidance, containment, decommissioning, rehabilitation and closure.

Appendix 2 provides a summary of the principles and how the EPA considered these principles in its assessment.

The EPA's assessment of the proposal's impacts on the key environmental factors is provided in sections 4.1 – 4.5. These sections outline whether or not the EPA considers that the impacts on each factor are manageable. Section 7 provides the EPA's conclusion as to whether or not the proposal as a whole is environmentally acceptable.

### **Changes to EPA environmental policy and guidance**

The EPA introduced a new suite of environmental guidance for environmental impact assessment on 13 December 2016. 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. The EPA consulted the proponent on the application of the current environmental impact assessment policy and guidance documents relevant to the EPA's assessment of the proposal.

## **Assessment on behalf of the Commonwealth**

The proposal is not being assessed under the Bilateral Agreement. On 19 August 2018, the delegate under the EPBC Act determined that the proposal would be assessed by accredited assessment under the EP Act.

## **4.1 Terrestrial Fauna**

### **EPA objective**

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

- *Environmental Factor Guideline – Terrestrial Fauna* (EPA, 2016c)
- *Technical Guidance – Sampling Methods for Terrestrial Vertebrate Fauna* (EPA, 2010)
- *Technical Guidance – Sampling of Short Range Endemic Invertebrate Fauna* (EPA, 2009)
- *Technical Guidance – Terrestrial Fauna Surveys* (EPA, 2016d)
- *WA Environmental Offsets Policy* (Government of Western Australia, 2011)
- *WA Environmental Offsets Guidelines* (Government of Western Australia, 2014).

### **EPA assessment**

#### ***Existing environment***

The expansion activities require 350 ha of native vegetation clearing within State Forest 20 (located within the proponent's tenements). The State Forest is a CALM Act public reserve land vested with the Conservation and Parks Commission and managed by the DBCA. Under the CALM Act, State Forest has multiple purposes including conservation, recreation, timber production, water catchment protection or another purpose prescribed by regulations. The State Forest within the proposal area is part of a larger expansive stretch of State Forest that extends throughout the southwest from Margaret River to Denmark.

Terrestrial fauna surveys have been undertaken since 2011 to support potential expansion activities. Recent survey work was undertaken in 2018 by the proponent's consultant, which included targeted survey for vertebrate fauna of conservation significance and short range endemic invertebrates. The surveys provide a detailed understanding of the mine development envelope and surrounding environment adequate to assess the impacts to terrestrial fauna.

The proponent's survey work has identified the following aspects within the proposal area:

- seven conservation-significant terrestrial fauna species listed under the WC Act and EPBC Act, including:
  - Forest Red-tailed Black Cockatoo (*Calyptorhynchus banksia naso*). Vulnerable under both State and Federal Acts
  - Carnaby's Black Cockatoo (*Calyptorhynchus latirostris*). Endangered under both State and Federal Acts.
  - Baudin's Black Cockatoo (*Calyptorhynchus baudinii*). Endangered under both State and Federal Acts.
  - Western Ringtail Possum (*Pseudocheirus occidentalis*). Critically endangered under both State and Federal Acts.
  - Western Quoll/Chuditch (*Dasyurus geoffroii*). Vulnerable under both State and Federal Acts.
  - Numbat (*Myrmecobius fasciatus*). Endangered under both State and Federal Acts.
  - Wambenger Brush-tailed Phascogale (*Phascogale tapoatafa wambenger*). Conservation Dependant (State).

The vegetation within the revised proposal area was assessed to be in “Good to very good” condition. The FMP includes the key goal of maintaining the overall area of native forest and plantation available for providing forest produce and also includes key performance indicators focused on maintaining the biodiversity and ecological integrity of forest areas. State Forest 20 has previously been subject to logging and some areas are used as a plantation.

The EPA notes that a number of habitat types were mapped within the mine development envelope, including two natural and five anthropogenic habitats. The terrestrial fauna habitats defined are reported to be well represented in the immediate vicinity of the mine development envelope and the broader Blackwood district.

## Impacts

Terrestrial fauna could potentially be impacted through the direct clearing of up to 350 ha of native vegetation. The vegetation is Black Cockatoo habitat (comprising approximately 30 hollows, including seven known breeding hollows and a further seven suitable breeding hollows and up to 2,100 potential breeding trees) and habitat for the Western Quoll/Chuditch, Western Ringtail Possum, Numbat and Wambenger Brush-tailed Phascogale.

## Mitigation and management

### Avoid

The proponent has applied the mitigation hierarchy and reduced its impact as much as possible by reducing the size of the mine development envelope. Where possible, infrastructure locations are preferentially located within existing disturbed areas to reduce the amount of habitat removal required. The proposal was unable to avoid hollows identified as habitat for Black Cockatoo species as the area is constrained

by the surrounding landscape (existing mining and public infrastructure, and landforms), and the position of the ore body. Therefore, the proposed clearing of 350 ha of terrestrial fauna habitat for the proposal cannot be avoided further for the expansion to occur.

### **Minimise**

The management approach taken is risk-based and developed around the mitigation hierarchy of minimise and rehabilitate to ensure impacts to native vegetation areas have been avoided or reduced to as low as reasonably practicable.

The proponent has proposed management procedures within their draft Conservation Significant Terrestrial Fauna Management Plan (CSTFMP), detailing management targets and objectives that include:

- minimising mortality of conservation significant terrestrial fauna within the mine development envelope during clearing activities and during all phases of mining activities, as far as possible
- ensuring there is no disturbance of potential active Black Cockatoo nests while undertaking clearing
- no direct and indirect impact as a result of implementing this proposal to conservation significant flora and native vegetation (including terrestrial fauna habitat) immediately surrounding the mine expansion.

The EPA has recommended condition 6 that provides for the development of a CSTFMP. The CSTFMP will be developed in consultation with the DBCA to ensure appropriate management actions are developed and implemented. Further management actions will involve identifying suitable habitat trees adjacent to the mine development envelope and incorporate appropriate buffers and exclusion zones to ensure no direct or indirect impacts occur to this habitat.

The EPA notes that unavoidable clearing of conservation significant habitat will occur as a result of implementing the proposal. The proponent has committed to an offset strategy for this significant residual impact (see Section 5).

### **Summary**

The EPA has paid particular attention to:

- *Environmental Factor Guideline – Terrestrial Fauna (EPA, 2016c)*
- the location of the proposal within a broader expanse of forests and reserves
- the proponent's application of the mitigation hierarchy to avoid and minimise the clearing of terrestrial fauna habitat
- the proponent's application of the mitigation hierarchy to avoid locations of known Black Cockatoo roosting trees, and minimise the clearing of potential breeding and foraging habitat for other conservation significant terrestrial fauna

- the proponent's commitments and management plan to avoid or minimise indirect impacts to terrestrial fauna
- other proposed management measures for terrestrial fauna.

The EPA notes that the site selection process targeted land that is largely cleared of native vegetation for the site of TSF4 in preference to further clearing of native vegetation within State Forest.

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:

- a limit on the clearing of native vegetation through the authorised extent in schedule 1 of the Recommended Environmental Conditions
- implementation of measures to address indirect impacts to Terrestrial Fauna and habitat through the implementation of the proponent's Conservation Significant Terrestrial Fauna Management Plan (condition 6)
- the implementation of offsets (condition 8) to counterbalance the significant residual direct impact of clearing of 350 ha of conservation significant terrestrial fauna habitat.

## 4.2 Flora and Vegetation

### EPA objective

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 that 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, 2016e)
- *Technical guidance - Flora and vegetation surveys for environmental impact assessment* (EPA, 2016f)
- *WA Environmental Offsets Policy* (Government of Western Australia, 2011)
- *WA Environmental Offsets Guidelines* (Government of Western Australia, 2014).

The considerations for EIA for this factor are outlined in *Environmental Factor Guideline – Flora and Vegetation* (EPA, 2016e).

### EPA assessment

#### *Existing environment*

Flora and vegetation surveys have been undertaken historically within the wider region providing a detailed understanding of locality and surrounding environment.

The proponent's environmental consultants conducted further flora and vegetation surveys of the mine development envelope and surrounding environments in 2011 and 2018. The environmental surveys identified:

- no Threatened Ecological Communities (TECs) are known to occur within the mine development envelope and surrounding locality
- no flora listed under the EPBC Act or gazetted as Threatened (formerly Declared Rare Flora (DRF)) under the Western Australian *Wildlife Conservation Act 1950* (WC Act) were recorded within the mine development envelope
- a total of 62 introduced flora species recorded within the proposal study area, three of which are Declared Plants under the *Biosecurity and Agriculture Management Act 2007*.

The proposal is located within an area at risk of Dieback (*Phytophthora cinnamomi*). Dieback is established in some areas of the mine development envelope, with some areas being mapped as "unprotectable" due to surrounding land use and nearby presence of dieback infested areas.

## Impacts

Flora and vegetation could be potentially impacted, either directly and indirectly, through:

- clearing of up to 350 ha of State Forest assessed as 'Good to Very Good' condition; and
- the introduction and spread of weeds, dieback and fire.

The proponent has noted that the main concern regarding impacts to Flora and Vegetation relate to impacts to terrestrial fauna habitat.

## Mitigation and management

### ***Avoid***

The site selection process has targeted land that is largely cleared of native vegetation for the site of a TSF4 in preference to further clearing of native vegetation within State Forest. The proponent has committed to minimise clearing native vegetation by applying the mitigation hierarchy, locating new landforms and infrastructure in existing cleared areas (or areas which have previously been disturbed and rehabilitated), where possible.

### ***Minimise***

The proponent has committed to an internal land clearing procedure which will include requirements to ensure that:

- internal permits are granted before clearing can occur
- all clearing areas are demarcated prior to clearing

- all clearing areas are surveyed after clearing to confirm the area cleared is within the approved boundary and for recording in a clearing database.

The proponent has committed to several mitigation measures to minimise and manage other indirect impacts to flora and vegetation, including:

- implementation of measures to minimise dust emissions
- progressive clearing to ensure clearing only occurs when areas are required
- progressive rehabilitation of WRL and TSF embankments to minimise surface water flows.

The EPA considers that impacts to flora and vegetation can be mitigated to acceptable levels and notes that the proponent has undertaken a number of appropriate measures to mitigate impacts to Flora and Vegetation.

## Summary

The EPA has paid particular attention to:

- *Environmental Factor Guideline – Flora and Vegetation* (EPA, 2016e)
- the proponent's application of the mitigation hierarchy to avoid and minimise the clearing of native vegetation
- the proponent's commitment to avoid or minimise indirect impacts to flora and vegetation; and
- other proposed management measures for flora and vegetation.

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 not 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.

The EPA notes that the implementation of the CSTFMP and offsets to counterbalance the significant residual impacts on conservation significant terrestrial fauna from the clearing of 350 ha of native vegetation will also have benefits for the conservation of flora and vegetation (see section 4.1).

## 4.3 Terrestrial Environmental Quality and Inland Waters

### EPA objective

#### 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*.

## 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 that the following current environmental policy and guidance is relevant to its assessment of the proposal for these factors:

- *Environmental Factor Guideline - Terrestrial Environmental Quality* (EPA, 2016g)
- *Environmental Factor Guideline – Inland Waters* (EPA, 2018a)
- *Guidelines for Preparing Mine Closure Plans* (EPA and DMIRS 2015).

The considerations for EIA for this factor are outlined in *Environmental Factor Guideline – Terrestrial Environmental Quality* (EPA 2016e) and *Environmental Factor Guideline – Inland Waters* (EPA 2018b).

## EPA assessment

### ***Existing environment***

Watercourses within the proposal area are tributaries to the Blackwood River. The proposal is located on a catchment divide with surface water flows to the Norilup and Cowan Brooks, the Hester Brook and Woljenup Creek catchments (within the greater Blackwood River catchment). Land use in these catchments is largely State Forest and Crown Reserve, with some clearing for agricultural uses.

The current mine pits are located along a ridgeline, running from the Greenbushes townsite towards the south-east. Surface flows are directed east and west of this divide. The existing Floyds WRL is located on the east of this ridgeline and drains into Saltwater Gully and will extend into the Hester Brook catchment, both of which flow in a southerly direction until they join the Blackwood River. The administration, process plants and TSFs are located on the west of this ridgeline, with this area draining into the Norilup Brook via Spring Gully and Cowan Brook.

The proposal is located in the Karri subarea of the Karri Groundwater Area on a catchment divide with groundwater flows to the east and west from the divide. The weathered lateritic profiles in the top 20 to 50 metres (m) represent superficial aquifers and provide the largest groundwater flows. The deeper Archaean host rocks are low-yielding groundwater sources (as evidenced by open pit dewatering only requiring removal of groundwater from in-pit sumps). There is no evidence of large-scale water movement in fractured rocks in the proposal area.

## Impacts

The potential impacts that may occur as a result of the proposal are:

- contamination of surface and groundwater and soils as a consequence of tailings and waste rock storage



- contamination of water due to release or spillage of environmentally hazardous materials including chemicals and tailings
- erosion and sedimentation as a result of vegetation clearing and alteration of surface water drainage patterns.

## Mitigation and management

The proponent has outlined how it has continued to work with the Department of Water and Environmental Regulation (DWER) and the Department of Mines, Industry Regulation and Safety (DMIRS) to improve management of historical areas of the site, including the TSFs and Floyds WRL. The proponent has noted that with this expansion it is further improving infrastructure to manage impacts to Terrestrial Environmental Quality and Inland Waters.

The proponent has committed to avoid impacts through the capture of all potentially contaminated surface waters within the mine water circuit for re-use, recycling and retreatment. Surface water and groundwater monitoring will continue to be undertaken throughout the expansion and current operating license conditions. The EPA notes that the current operating licence requires ecological surveys to be carried out annually to monitor any impact of water quality on downstream receptors. The proponent has committed to continue these surveys.

To minimise potential impacts from erosion and sedimentation, the proponent has committed to clearing progressively to avoid large cleared expanses. Additionally, all new infrastructure areas will be designed to have water collection and controls incorporated in the design. The EPA notes that clearing is also proposed to occur predominantly in topographically low areas, with slopes of less than five per cent. Considering this, it is unlikely that Inland Waters or Terrestrial Environmental Quality will be significantly impacted through erosion and sedimentation.

In addition, the proponent has designed the proposal with a range of further measures to mitigate and monitor potential impacts to this environmental factor, including but not limited to:

- a water treatment plant to remove lithium and improve water quality in the mine water circuit
- TSF design, construction and operation in accordance with DMIRS guidelines
- annual hydrological review of the operation by a consultant hydrologist
- additional groundwater monitoring bores at the site of Floyd's WRL expansion and TSF4.

The EPA notes that, in the design of the proposal, the proponent has considered the application of the mitigation hierarchy in accordance with the *Environmental Factor guideline – Inland Waters* (EPA, 2018b) and *Environmental Factor guideline – Terrestrial Environmental Quality* (EPA, 2016g). The EPA considers that through the application of the mitigation hierarchy, the proponent has minimised impacts. While the impacts have been minimised, the EPA notes that the proponent needs to

continue working with the DWER and the DMIRS during optimisation of the design of the TSFs and WRL, so that impacts are reduced to as low as practicable.

## Summary

The EPA has paid particular attention to the:

- *Environmental Factor Guideline – Inland Waters* (EPA, 2018a)
- *Environmental factor guideline - Terrestrial Environmental Quality* (EPA, 2016g)
- historical management and improvement of site practices
- development of new infrastructure to reduce impacts
- management and monitoring procedures in place and proposed.

The EPA considers, having regard to the relevant EP Act principles and environmental objective for Terrestrial Environmental Quality and Inland Waters, that the impacts to these factors are manageable and would no longer be significant, provided there is:

- control through authorised extent in schedule 1 of the Recommended Environmental Conditions.

The EPA notes that there is a requirement for:

- licensing of water abstraction by the DWER under the *Rights in Water and Irrigation Act 1914*
- licensing of emissions and discharges by the DWER under Part V of the EP Act
- management of WRL, mine closure and rehabilitation by the DMIRS through the Mining Act.

The EPA notes that the DWER and the DMIRS have regulated the site historically and should continue to regulate the site in an appropriate manner.

## 4.4 Air Quality

### EPA objective

The EPA's environmental objective for this factor is *to maintain air quality and minimise emissions so that environmental values are protected*.

### Relevant policy and guidance

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

- *Environmental Factor Guideline – Air Quality* (EPA, 2016h)
- *Guidance Statement No. 3 – Separation Distances between Industrial and Sensitive Land Uses* (EPA 2015).
- *National Environment Protection (Ambient Air Quality) Measure* (NEPC 2016).

- Air Quality Modelling Guidance Notes (DoE 2006)
- Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales. (NSW EPA 2017).

The considerations for EIA for this factor are outlined in *Environmental Factor Guideline – Air Quality* (EPA, 2016h).

## **EPA assessment**

### ***Existing environment***

The Greenbushes Mine is located within State Forest 20, with surrounding land use including agricultural properties. The existing air quality is influenced by the mine site and the surrounding agricultural activities. There are a number of identified sensitive receptors associated with the implementation of the Proposal, including the mine employees, Greenbushes town residences and nearby rural residences.

### ***Impacts***

Air quality has the potential to be impacted through the implementation of the proposal through:

- increased dust emissions associated with but not limited to:
  - vegetation clearing and subsequent dust emissions from increased open areas including TSFs, WRL, haul roads, open pit and stockpiles
  - earthworks for infrastructure construction
  - ore, waste and concentrate haulage
  - extraction processing of ore and waste.

The proponent has modelled a worst-case dust prediction in their assessment. The incremental total suspended particulate concentrations showed some cumulative exceedances under worst-case conditions but were below the guideline values at sensitive receptors. Under worst-case conditions there would be some exceedance of PM<sub>10</sub> concentrations (99.9<sup>th</sup> percentile) but the daily dust deposition levels would be within guidelines criteria, as would the concentrations at the high-volume sampler location (as licensed) to the north of the site. Dust deposition has been predicted to be within monthly criteria. The EPA notes that exceedances appear to be the result of ‘worst case’ weather conditions and activities that generate dust during these conditions would need to be managed appropriately.

## **Mitigation and management**

The EPA notes that dust monitoring is undertaken at the existing operations under a Part V operating licence, measuring PM<sub>10</sub> levels at the boundary between the operation and the nearest sensitive receptors in the town of Greenbushes. The proponent has outlined an expanded dust management and monitoring program

prior to implementing this proposal. The updated Dust Management Plan will include monitoring, dust level triggers and response actions.

The proponent has noted that they would apply a number of additional measures to the Plan required by the Part V licence, which includes:

- topsoil stripping and spreading activities will be restricted during high winds if dust cannot be adequately controlled
- watering prior to blasting when weather conditions are dry and windy
- use of weather forecasting to predict extreme weather conditions likely to result in increased dust emissions so that extra dust controls can be applied – noting the proponent has an onsite meteorological station
- management of TSF deposition and application of binding agents to the TSF surface to minimise wind generated dust emissions
- storage of product stockpiles in covered areas where available
- trucks transporting lithium mineral concentrate will be enclosed or covered
- dust monitoring using deposition gauges.

The EPA considers that, through the application of the mitigation hierarchy and implementation of the proponent's Dust Management Plan and through the Part V licence, the proponent can manage dust emissions and reduce impacts that would occur in worst case weather conditions. The EPA notes that the proponent has infrastructure onsite to monitor both dust and weather conditions. The EPA has provided other advice to the DWER regarding dust management in Section 8.

## Summary

The EPA has paid particular attention to:

- *Environmental Factor Guideline – Air Quality* (EPA, 2016h)
- the proponent's commitment to increased dust monitoring and control measures through the implementation of the Dust Management Plan
- the proponent's application of the mitigation hierarchy to avoid and minimise the discharge of dust during processing and transport
- the available infrastructure and facilities to manage dust.

The EPA considers, having regard to the relevant EP Act principles and environmental objective for Air 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

The EPA notes that there is a requirement for:

- licensing of emissions and discharges by the DWER under Part V of the EP Act

- management of the mining operations by the DMIRS through the Mining Act.

## 4.5 Social Surroundings

### EPA objective

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

### Relevant policy and guidance

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

- *Environmental Factor Guideline – Social Surroundings* (EPA, 2016i)
- Guidance Statement No. 3 – Separation Distances between Industrial and Sensitive Land Uses (EPA, 2015)
- Guidance Statement No. 41 – Assessment of Aboriginal Heritage (EPA, 2004b)

The considerations for EIA for this factor are outlined in Environmental Factor Guideline – Social Surroundings (EPA, 2016i).

Consistent with the EPA's Environmental Factor Guideline – *Social Surroundings* (EPA, 2016i), the EPA has considered the potential direct and indirect impacts of the proposal on social surroundings.

### EPA assessment

#### ***Existing environment***

The proposal is located immediately south of the Greenbushes town site, and is an existing mining operation with a long history of mining. The proposal is not directly visible from the town itself. The South Western Highway is located adjacent to the proposal.

The proponent's consultants undertook heritage surveys in 2015 and 2016. The survey work did not identify any sites of significance as defined under section 5 of the *Aboriginal Heritage Act 1972* (AH Act). The proponent's heritage surveys did however identify one registered site of aboriginal heritage significance within the wider locality, the Blackwood River.

A significant feature in the landscape is the Floyds WRL located on the east facing hill slope of the ridgeline between the open pits and the South Western Highway. Floyds WRL is an existing waste rock dump, which has historically been approved and managed under the provisions of the Mining Act.

The mine site has had approval to exceed the specified limits within the Environmental Protection (Noise) Regulations 1997 through a Regulation 17

approval. The closest sensitive receptors for noise are located within the town of Greenbushes immediately north of the mining operation with a further 14 sensitive receptors within approximately two kilometres of the mine development envelope, predominantly to the south and east.

Road transport through the town of Greenbushes, along the South Western Highway and in towns along South Western Highway is the main transport route for the Mine. Current road train movements are approximately 60 per day. The proponent has recognised that traffic through the town centre will increase as a result of the project (approximately 200 vehicle movements per day) and an alternative route would be required. The proponent has identified an alternative transport route bypassing the town to the north-west of the mine development envelope.

### ***Impacts***

The proposal may impact Social Surroundings through:

- impacts to aboriginal heritage sites
- changes to local landforms and visual impacts
- noise emissions, vibration and transport movements.

### ***Mitigation and management***

#### ***Heritage***

The proponent has avoided registered aboriginal heritage sites and sites lodged as other heritage places during the development of the expansion. The EPA notes that should any aboriginal heritage sites be identified, the proponent would be required to seek approval through the AH Act.

#### ***Visual amenity***

The proponent has limited the height of the Floyds WRL to the current approved height of 330 mAHD. The proponent acknowledges that the revised proposal will result in changes to local landforms potentially affecting the visual amenity at potentially sensitive receptors. The proponent has previously rehabilitated and screened WRL's.

To mitigate the visual impacts to local sensitive receptors, the EPA has recommended condition 7 that provides for the development and implementation of a Visual Impact Management and Rehabilitation Plan (VIMRP). The aim of the VIMRP is to ensure that progressive rehabilitation of the Floyds WRL occurs over the life of the project and achieves a stable and functioning landform, that has similar landscape characteristics as the surrounding environment. The VIMRP will also ensure the proponent undertakes operational aspects of the proposal in a manner that minimises light spill, as much as possible.

#### ***Noise***

The proponent has committed to developing and implementing a noise management plan to the requirements of the ISO 14001 certified Environmental Management

System. The plan will include the following mitigation and management measures for noise:

- establishment of two additional noise bunds approximately 10 m in height located at the northern end of the existing ROM and to the east of the existing 'Sound Wall'
- continuous monitoring of noise emissions at the Sound Wall and a new noise monitoring station to the east of the Floyds WRL
- equipment and plant selection to consider noise emissions with noise attenuation considered for all plant and equipment design
- designing haul roads and infrastructure locations in consideration of limiting noise emissions
- contractor equipment specifications to include maximum sound power levels
- rock breakers will only be used during day time periods in locations to reduce noise impacts
- planning to consider weather conditions for blasting to avoid conditions likely to increase the impact of noise
- a management zone for waste dumping on Floyds WRL where activities will be limited when there is a risk of noise exceedance (for example night time)
- the noise model will be updated to account for any additional noise mitigation strategies undertaken.

The EPA notes that noise is currently regulated through a regulation 17 approval for the premises. The EPA notes that the proponent has proposed management measures which would allow them to meet the regulation 17 requirements. The EPA notes that the proponent would need to implement these measures, as they are required to meet the regulation 17 approval during operations.

### ***Transport***

The proponent proposes to establish a new mine access road between the South Western Highway and Maranup Ford Road to reduce the vehicle traffic through the town of Greenbushes. The mine access road is located in proximity to some community facilities such as Greenbushes Pool and the Sports Ground but away from the town centre.

The proponent will need to seek approval from the local government authority to finalise the mine access road and has undertaken consultation for this purpose. The EPA notes that moving the mine access road will minimise impacts from traffic and notes that there are constraints on reducing impacts to Terrestrial Fauna with any access route to the mine. The EPA considers that the proposed route has been designed to balance impacts to conservation significant species and impacts to Social Surroundings.

### **Summary**

The EPA has paid particular attention to the:

- *Environmental Factor Guideline – Social Surroundings* (EPA, 2016i)
- avoidance of ‘Registered’ Sites of Aboriginal heritage significance, and Sites lodged as ‘Other Heritage Places’
- management of visual and light impacts through a Visual Impact Management and Rehabilitation Plan
- implementation of control measures to enable compliance with the *Environmental Protection (Noise) Regulations 1997* Regulation 17 Noise Approval, at sensitive receptors
- options for transport of ore concentrate from the mine
- diversion of road haulage and light vehicle traffic away from Greenbushes town
- other proposed management measures to avoid or minimise impacts to this factor.

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 not be significant, provided there is:

- a control on the authorised extent, maximum rate of mining, throughput capacity of infrastructure, ore processing, and tailings production, through the specifications in schedule 1 of the Recommended Environmental Conditions (Appendix 4).
- implementation of measures to address impacts to Social Surroundings associated with visual amenity through the preparation and implementation of a Visual Impact Management and Rehabilitation Plan (condition 7). The EPA notes that there is a requirement for:
  - licensing of emissions and discharges by the DWER under Part V of the EP Act
  - management of mine closure and rehabilitation by the DMIRS through the Mining Act.
- regulation of noise emissions under the *existing* Environmental Protection (Noise) Regulations 1997 Regulation 17 Noise Approval.

## 5. Offsets

### Relevant policy and guidance

The EPA considers that 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)
- *Environmental Impact Assessment (Part IV Divisions 1 and 2) Procedures Manual 2016* (EPA 2016a).



## EPA assessment

The proponent is proposing to offset the significant residual impact associated with the direct removal of 350 ha of conservation significant terrestrial fauna habitat through a combination of direct and indirect offsets. The direct offset is based on the acquisition of suitable land containing native vegetation that consists of 'like for like' habitat values, which will be transferred to the DBCA and managed under the CALM Act.

The calculation for the offset has been based on the Commonwealth offset guidelines, which often require an offset area greater than the area to be impacted. Based on calculations using the Commonwealth offset guide it is expected that a maximum offset area of 1,570 ha of Jarrah/Marri forest and Jarrah/Marri forest over Banksia could achieve a direct offset of 100% of the residual impact associated with the clearing of the terrestrial fauna habitat. It should be noted that the maximum of 1,570 ha is likely to overstate the area required and depending on the characteristics of the chosen offset sites, the required offset area is likely to be lower than this value.

Through a desktop review, the proponent has worked with the DBCA to identify over 20 properties with environmental qualities that may contribute to satisfying the offset requirement. After a reconnaissance vegetation survey and Level 1 fauna survey of the proposed offsets sites, an initial three properties have been selected as offset properties. The proponent may seek to increase the number of properties chosen however, and can include a mixture of properties to meet the direct offset requirements.

An indirect offset is proposed that provides funding towards research programs to protect the conservation significant terrestrial fauna likely to be impacted from the proposal. Examples of this research include:

- Feral Bee Control  
Research to develop and test at an operational scale an effective means of killing feral Honeybee hives that have established in key breeding areas. Trials of methods used to kill feral Honeybee hives have been completed, but further work and evaluation at an operational scale is required. This could include variations on chemicals used, dose rates, and protocols for the delivery of the insecticide.
- Habitat Utilisation, Distribution and Movement  
The use of Global Positioning System and Satellite tracking technologies attached to rehabilitated cockatoos of all three species has produced an enhanced understanding of daily and seasonal habitat utilisation, identified key movement corridors, identified previously unknown roosting sites, and provided a range of invaluable ecological knowledge applicable to enhancing management of these species and their habitat. A continuation of this work is required to expand the geographic coverage and robustness of data gathered from this technique.

- **Habitat Critical to the Survival**

Identify, map and model feeding and breeding habitat critical to survival of these species and important populations. Prepare management guidelines for these habitats. Parameters such as tree species composition, height, density, patch size and frequency of hollow bearing trees, and seasonal feeding resources, could be used to model known and potential habitat.

- **Low Breeding Success**

A study is needed to determine why such a small proportion of the population attempts to breed and why recruitment rates of Forest Black Cockatoos are low. The causes may include lack of nest hollows (although there is no evidence of competition for nests between pairs), competition for nest hollows with feral Honeybees and other birds (for example Galah and Corella) or hollow damage. In addition, seasonal and inter-annual variation in the amount of food produced by food plants may affect the number of birds that can breed.

### **Department comments**

The two key agencies providing advice on offsets include the DBCA and the DoEE. They have noted:

#### **Department of Biodiversity, Conservation and Attractions**

DBCA intends to manage the offset land parcels consistent with the CALM Act, which includes management for the purpose of conservation. DBCA has indicated that it is supportive of the proposed offsets approach and that the areas proposed are 'like to like' as much as practicable.

#### **Commonwealth Department of Energy and Environment**

The Commonwealth Offset Assessment Guide has been used to assess the quantum of residual impact associated with the proposal and quantify offset requirements. The Commonwealth has recently noted that there are a number of properties in the area that could be used to meet the 'like for like' offsets requirements.

### **Summary**

The EPA considers that there are suitable offset properties for a 'like for like' offset and the proposed research is targeted to solving research questions related to impacts on the conservation significant species. The EPA recommends that condition 8 is imposed to counterbalance the significant residual impacts of the proposal. The condition requires the preparation and submission of an Offsets Strategy, provided within 12 months of the issue of the Ministerial Statement.

## 6. Matters of National Environmental Significance

The Commonwealth Minister for the Environment has determined that the proposal is a controlled action under the EPBC Act as it is likely to have a significant impact on one or more MNES. It was determined that the proposed action is likely to have a significant impact on the following matters protected by the EPBC Act:

- Listed threatened species and communities (section 18 and 18A).

On 19 August 2018, the delegate under the EPBC Act determined that the proposal would be assessed by accredited assessment under the Environment Protection Act 1986 (WA).

This assessment report is provided to the delegate of the Commonwealth Minister for Environment who will decide whether or not to approve the proposal under the EPBC Act. This is separate from any Western Australian approval that may be required.

### Commonwealth policy and guidance

The EPA had regard to the following relevant Commonwealth guidelines, policies and plans during its assessment:

- Approved Conservation Advice for *Caladenia harringtoniae* (Harrington's Spider-orchid) DoEE (2008)
- Forest Black Cockatoo (Baudin's Cockatoo *Calyptorhynchus baudinii* and Forest Red-tailed Black Cockatoo *Calyptorhynchus banksii naso*) Recovery Plan (Department of Environment and Conservation, 2008)
- Approved Conservation Advice for *Calyptorhynchus banksii naso* (Forest Red-tailed Black Cockatoo) (Department of the Environment, Water, Heritage and the Arts, 2009)
- Chuditch (*Dasyurus geoffroyi*) Recovery Plan. Department of Environment and Conservation (2012)
- Commonwealth EPBC Act Environmental Offsets Policy (Commonwealth of Australia, 2012)
- Carnaby's Cockatoo (*Calyptorhynchus latirostris*) Recovery Plan (Department of Parks and Wildlife, 2013)
- Threat abatement plan for disease in natural ecosystems caused by *Phytophthora cinnamomi* (Department of the Environment, 2014)
- Numbat (*Myrmecobius fasciatus*) Recovery Plan. Department of Parks and Wildlife (2017)
- Threat abatement plan for predation, habitat degradation, competition and disease transmission by feral pigs (*Sus scrofa*) (2017). Department of the Environment and Energy (2017).
- Western Ringtail Possum (*Pseudocheirus occidentalis*) Recovery Plan. Department of Parks and Wildlife (2017)

- Conservation Advice *Calyptorhynchus baudinii* Baudin's cockatoo (Threatened Species Scientific Committee, 2018)
- Conservation Advice *Myrmecobius fasciatus* numbat. Threatened Species Scientific Committee (2018)
- Conservation Advice *Pseudocheirus occidentalis* Western ringtail possum. Threatened Species Scientific Committee (2018)

### **EPA assessment**

Impacts to the environment are covered under the key environmental factors of Flora and Vegetation, Terrestrial Environmental Quality, Terrestrial Fauna, Inland Waters, Air Quality and Social Surroundings where relevant.

### **Listed Threatened Black Cockatoos**

Three listed threatened Black Cockatoos were recorded or identified as being likely to occur within the mine development envelope:

- Carnaby's Black Cockatoo (*Calyptorhynchus latirostris*) (Endangered)
- Forest Red-tailed Black Cockatoo (*Calyptorhynchus banksia naso*) (Vulnerable)
- Baudin's Black Cockatoo (*Calyptorhynchus baudinii*) (Endangered).

Clearing of 350 ha of Black Cockatoo foraging and breeding habitat, including removal of up to 30 suitable hollows, including seven known breeding hollows and a further seven suitable breeding hollows and up to 2,100 potential breeding trees. The EPA has assessed the direct and indirect impacts of the proposal to these species (see section 4.1), and offsets have been proposed to counterbalance the residual impacts (see section 5).

### **Listed Threatened Fauna - Chuditch (*Dasyurus geoffroii*)**

Clearing of 350 ha of known habitat for Chuditch. The EPA has assessed the direct and indirect impacts of the proposal to this species (see section 4.1), and offsets have been proposed to counterbalance the residual impacts (see section 5).

### **Listed Threatened Fauna - Numbat (*Myrmecobius fasciatus*) and Western Ringtail Possum (*Pseudocheirus occidentalis*)**

Clearing of 350 ha of potential habitat for Numbat and Western Ringtail Possum. The EPA has assessed the direct and indirect impacts of the proposal to this species (see section 4.1), and offsets have been proposed to counterbalance the residual impacts (see section 5).

### **Listed Threatened Orchids – Pink Spider Orchid (*Caladenia harringtoniae*)**

Targeted searches have not identified any populations of *C. harringtoniae* within the

mine development envelope. The nearest population is noted to be located 560 m south-west and outside of the mine development envelope. The EPA has considered the low likelihood of indirect impacts to the known population. The EPA has also considered the low likelihood of there being undiscovered plants of this species within the mine development envelope.

## Summary

The EPA has recommended the following environmental conditions to minimise impacts on MNES:

- A limit on the clearing of native vegetation through the authorised extent in schedule 1 of the Recommended Environmental Conditions (Appendix 4)
- Implementation of measures to address indirect impacts to Terrestrial Fauna and habitat through the implementation of the Proponent's Conservation Significant Terrestrial Fauna Management Plan (condition 6)
- Implementation of offsets (condition 8).

The EPA considers that there will be significant residual impacts from the clearing of 350 ha of vegetation that represents foraging and breeding habitat for conservation significant terrestrial fauna, including tree hollows suitable for roosting and nesting for the Black Cockatoo. The EPA has recommended the preparation and implementation of an Offset Strategy in condition 8 which takes into account the significant residual impacts described above.

The EPA's view is that the impacts from the proposal on the above-listed MNES are therefore not expected to result in an unacceptable or unsustainable impact on the listed threatened species and communities.

## 7. Conclusion

The EPA has considered the proponent's proposal to develop the Greenbushes Lithium Mine Expansion to mine and process lithium at Greenbushes.

### 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:

- avoidance, minimisation and rehabilitation of direct and indirect impacts to flora and vegetation
- avoidance and minimisation of impacts to Terrestrial Fauna and the development of management plan for conservation significant terrestrial fauna
- Management and mitigation of potential impacts from water, noise and air emissions, including current management under existing licenses
- Management of visual amenity and light spill impacts, including the development of management plan to manage these impacts.

## **Offsets**

The EPA considers the proposal would have a significant residual impact from impacts to 350 ha of conservation significant terrestrial fauna habitat.

The EPA considers that the significant residual impact from the proposal should be directly counterbalanced by the development and implementation of an Offset Strategy by the proponent with both 'like for like' offsets and contributions to suitable research programs.

The EPA has recommended condition 8, to require the proponent to prepare and implement the offset strategy.

## **Conclusion**

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

- 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 has concluded that the proposal is environmentally acceptable and therefore recommends that the proposal may be implemented subject to the conditions recommended in Appendix 4.

## 8. 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 continued implementation of Licence (L4247/1991/13). 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, in relation to dust, it expects best practice monitoring and management to occur.

The EPA notes that regulation of waste rock management is via the continued applications and implementation of Mining Proposals 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 the waste rock dumps.

## 9. Recommendations

That the Minister for Environment notes:

1. that the proposal assessed is for the development of the Greenbushes Lithium Mine Expansion, to increase the production of spodumene ore and lithium mineral concentrate from the existing Greenbushes mining and processing operation located approximately 250 km south east of Perth, Western Australia.
2. the key environmental factors identified by the EPA in the course of its assessment are Flora and Vegetation, Terrestrial Environmental Quality, Terrestrial Fauna, Inland Waters Environmental Quality, Air Quality and Social Surroundings, set out in section 4.
3. the EPA has concluded 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 4. Matters addresses in the conditions include the following:
  - a) preparation and implementation of Management Plans (conditions 6 and 7) to minimise impacts to Conservation Significant Terrestrial Fauna and Visual Amenity and Rehabilitation; and
  - b) preparation and implementation of an Offset Strategy (condition 8) to counterbalance impacts to Conservation Significant Terrestrial Fauna foraging and breeding habitat.
4. other information, advice and recommendations provided by the EPA, set out in section 8 in relation to the management of dust and waste rock.



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## Appendix 1: List of submitters

### **Organisations:**

Department of Biodiversity, Conservation and Attractions

Department of Mines, Industry Regulation and Safety

Department of Water and Environmental Regulation

Department of the Environment and Energy (Commonwealth)

### **Individuals:**

4 individuals

## Appendix 2: Consideration of principles

EP Act Principle	Consideration
<p><b>1. The precautionary principle</b></p> <p><i>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 –</i></p> <ul style="list-style-type: none"> <li><i>a) careful evaluation to avoid, where practicable, serious or irreversible damage to the environment; and</i></li> <li><i>b) an assessment of the risk-weighted consequences of various options.</i></li> </ul>	<p>This principle is a 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, Inland Waters, Air Quality and Social Surroundings.</p> <p>The EPA notes that the proponent has identified measures to avoid or minimise impacts. The EPA has considered these measures during its assessment.</p> <p>Investigations into the biological and physical environmental that have been undertaken by the proponent have provided sufficient certainty to assess direct impacts and identify measures to avoid or minimise these impacts. Some uncertainty remains regarding offsets for residual impacts and potential indirect impacts and therefore the EPA has recommended conditions to ensure relevant measures are undertaken by the proponent (if the proposal is approved for implementation).</p> <p>From its assessment of the proposal, the EPA has concluded that there is no threat of serious or irreversible harm.</p>
<p><b>2. The principle of intergenerational equity</b></p> <p><i>The present generation should ensure that the health, diversity and productivity of the environment is maintained and enhanced for the benefit of future generations.</i></p>	<p>In considering this principle, the EPA notes that the environmental factors of Flora and Vegetation, Terrestrial Fauna, Terrestrial Environmental Quality, Inland Waters, Air Quality and Social Surroundings could be significantly impacted by the proposal. The assessment of these impacts is provided in this report.</p> <p>The proposal will contribute to the production of Lithium Hydroxide, which will supply the renewable battery market and reduce future dependency on fossil fuels.</p>

EP Act Principle	Consideration
	<p>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.</p>
<p><b>3. The principle of the conservation of biological diversity and ecological integrity</b></p> <p><i>Conservation of biological diversity and ecological integrity should be a fundamental consideration.</i></p>	<p>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.</p> <p>The EPA notes that the proponent has identified measures to avoid or minimise impacts. The EPA has considered these measures during its assessment.</p> <p>The proposal would involve clearing of native vegetation that is foraging and potential breeding habitat for Black Cockatoos. The proposal may also result in indirect impacts to these values.</p> <p>The EPA concludes that that impacts will affect biological diversity and ecological integrity due to the residual impacts on 350 ha of foraging and potential breeding habitat.</p> <p>The EPA has also considered to what extent the potential impacts from the proposal can be ameliorated by recommended conditions, including offsets. The EPA has concluded that, given the nature of the impacts, an offset strategy is likely to be able to be developed to ameliorate the impacts of the loss of biological diversity and ecological integrity given the presence of potential offset.</p>

<p><b>4. Principles relating to improved valuation, pricing and incentive mechanisms</b></p> <p>(1) <i>Environmental factors should be included in the valuation of assets and services.</i></p> <p>(2) <i>The polluter pays principles – those who generate pollution and waste should bear the cost of containment, avoidance and abatement.</i></p> <p>(3) <i>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.</i></p> <p>(4) <i>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.</i></p>	<p>In considering this principle, the EPA notes that the mining operations, by their nature, optimise the extraction of ore and due to economic pressures, thus minimise the creation of waste rock and tailings.</p> <p>The proposal may have impacts on the local valuation and pricing of nearby neighbours' properties based on impacts to amenity.</p> <p>The proposal will provide feedstock for further processing of Lithium concentrate. The management of wastes from the Lithium concentrate processing operations has been considered by the EPA in other proposals and the proponents for those proposals would bear the costs relating to waste disposal (in particular, tailings) and pollution. The cost for ongoing management and monitoring of the proposal would be the responsibility of the proponent.</p> <p>The EPA has had regard to this principle during the assessment of the proposal.</p>
<p><b>5. The principle of waste minimisation</b></p> <p><i>All reasonable and practicable measures should be taken to minimise the generation of waste and its discharge into the environment.</i></p>	<p>In considering this principle, the EPA notes that the mining operations, by their nature, optimise the extraction of ore and due to economic pressures, thus minimise the creation of waste rock and tailings.</p> <p>The Proposal includes measures to minimise the likelihood of the mine generating excess water that would be discharged to the environment.</p> <p>The EPA has had regard to this principle during the assessment of the proposal.</p>

## Appendix 3: Evaluation of other environmental factors

Environmental factor	Description of the proposal's likely impacts on the environmental factor	Government agency and public comments	Evaluation of why the factor is not a key environmental factor
<b>AIR Quality</b>			
Greenhouse Gas Emissions	Greenhouse gas has the potential to be directly impacted through: <ul style="list-style-type: none"> <li>• additional Scope 1 emissions of up to approximately 88,752 tpa CO2-e</li> </ul>	<b>There were no agency comments on this factor.</b>	<p>The proponent has included more efficient technology in the design of the new CGP3 and CGP4 processing plant to minimise greenhouse gas emissions which may reduce the predicted greenhouse gas emissions. The proponent currently reports greenhouse gas emissions in accordance with the requirements of the <i>National Greenhouse and Energy Reporting Act 2007</i> and will continue to do so for the expanded Mine.</p> <p>Having regard to:</p> <ul style="list-style-type: none"> <li>• the additional Scope 1 emissions do not exceed 100,000 tonnes per annum CO2 equivalent,</li> </ul> <p>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.</p>



			Accordingly, the <b>EPA did not consider Air Quality to be a key environmental factor</b> at the conclusion of its assessment.
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## 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:

<b>Decision-making Authority</b>	<b>Legislation (and Approval)</b>
1. Minister for Environment	<i>Biodiversity Conservation Act 2016</i> (Taking if threatened flora and fauna)  <i>Conservation and Land Management Act 1984</i> (License to access/use State Forest)
2. CEO, Department of Biodiversity Conservation and Attractions	<i>Biodiversity Conservation Act 2016</i> (Taking if threatened flora and fauna)  <i>Conservation and Land Management Act 1984</i> (License to access/use State Forest)
3. CEO, Department of Water and Environmental Regulation	<i>Environmental Protection Act 1986</i> (Works Approval and Licence)
4. Department of Mines, Industry Regulation and Safety  Executive Director, Resource and Environmental Compliance Division  State Mining Engineer	<i>Mining Act 1978</i> (Mining proposal)  <i>Mines Safety and Inspection Act 1994</i> (Mine safety)

Chief Dangerous Goods Officer	<i>Mines Safety and Inspection Regulations 1995</i> (Approval to commence mining operations)  <i>Dangerous Goods Safety Act 2004</i> (Dangerous goods)
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Note: In this instance, agreement is only required with DMA 1.

## RECOMMENDED ENVIRONMENTAL CONDITIONS

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

#### GREENBUSHES LITHIUM MINE EXPANSION

**Proposal:** The development of Stage 3 and Stage 4 expansion activities at the existing Greenbushes Lithium Mine in Greenbushes, Shire of Bridgetown, WA, as documented in Schedule 1 of this Ministerial Statement.

**Proponent:** Talison Lithium Australia Pty Ltd  
Australian Company Number 139 401 308

**Proponent Address:** Level 4, 37 St Georges Terrace  
Perth, WA 6000

**Assessment Number:** 2172

**Report of the Environmental Protection Authority:** 1636

Pursuant to section 45 of the *Environmental Protection Act 1986*, it has been agreed that the proposal described and documented in Tables 1-2 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 in Schedule 1, unless amendments to the Proposal and the authorised extent of the proposal have been approved under the EP Act.

#### **2 Contact Details**

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

### **3 Time Limit for Proposal Implementation**

- 3-1 The proponent shall not commence implementation of the proposal after five (5) years from the date on this Statement, and any commencement, prior to this date, must be substantial.
- 3-2 Any commencement of implementation of the proposal, on or before five (5) years from the date of this Statement, must be demonstrated as substantial by providing the CEO with written evidence, on or before the expiration of five (5) years from the date of this Statement.

### **4 Compliance Reporting**

- 4-1 The proponent shall prepare, 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 CEO or a person delegated to sign on the CEO'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 Conservation Significant Terrestrial Fauna Management Plan**

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

- (1) The Proponent shall avoid, where possible, and minimise direct and indirect impacts upon conservation significant fauna within the mine development envelope delineated in Figure 1 of Schedule 1 during

ground disturbing activities and during all phases of mining activities, as far as practicable;

- (2) The Proponent shall ensure there is no direct and indirect impact from the implementation of the proposal to conservation significant fauna habitat immediately surrounding the mine development envelope delineated in Figure 1 of Schedule 1.

6-2 In order to meet the requirements of condition 6-1, prior to ground disturbing activities within the mine development envelope delineated in Figure 1 of Schedule 1, unless otherwise agreed by the CEO, the proponent shall prepare a Conservation Significant Terrestrial Fauna Management Plan to the requirements of the CEO on advice of the Department of Biodiversity, Conservation and Attractions. The Conservation Significant Terrestrial Fauna Management Plan shall:

- (1) when implemented, substantiate and ensure that Condition 6-1 is being met;
- (2) present objectives and monitoring protocols to identify conservation significant fauna and fauna habitat immediately adjacent to the mine development envelope to ensure no direct or indirect impact occurs;
- (3) specify criteria (trigger criteria) that will trigger the implementation of management and/or contingency actions to prevent direct or indirect impacts to conservation significant fauna and fauna habitat;
- (4) specify management and/or contingency actions to be implemented if trigger criteria required by condition 6-2(3) have been reached;
- (5) include a trapping and translocation program for target fauna species, which includes the Carnaby's Black Cockatoo (*Calyptorhynchus latirostris*), Forest Red-tailed Black Cockatoo (*Calyptorhynchus banksii naso*), Baudin's Black Cockatoo (*Calyptorhynchus baudinii*), Chuditch (*Dasyurus geoffroii*), Numbat (*Myrmecobius fasciatus*) and Western Ringtail Possum (*Pseudocheirus occidentalis*), or as otherwise agreed by the CEO;
- (6) identify objectives and monitoring protocols to measure the success of trapping and translocation program required by condition 6-2(5) and;
- (7) identify management and contingency measures, including timeframes
- (8) for their implementation if the objectives of the trapping and translocation program in condition 6-2(5) are not being met.

- 6-3 The proponent shall implement the most recent version of the Conservation Significant Fauna Terrestrial Management Plan which the CEO has confirmed by notice in writing, addresses the requirements of condition 6-1,
- 6-4 The proponent shall continue to implement the Conservation Significant Terrestrial Fauna 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 Social Surroundings – Visual Amenity**

- 7-1 The proponent shall implement the proposal to meet the following environmental objectives:
  - (1) The Proponent shall ensure that progressive rehabilitation of the Floyds Waste Rock Landform occurs over the life of the project to achieve a stable and functioning landform that is compatible with the end land use;
  - (2) The Proponent will undertake operations in a manner that minimises visual impacts (including but not limited to light spill) from implementation of the proposal on land identified in condition 7-2(1), as far as practicable.
- 7-2 In order to meet the requirements of condition 7-1, prior to ground disturbance, unless otherwise agreed by the CEO, the proponent shall prepare a Visual Impact Management and Rehabilitation Plan to the requirements of the CEO on advice of the Department of Mines, Industry and Regulatory Safety and Department of Biodiversity, Conservation and Attractions. The Visual Impact Management and Rehabilitation Plan shall:
  - (1) identify land within a five (5) kilometre radius of the Floyds Waste Rock Landform from which the mine expansion is visible;
  - (2) detail the screening and rehabilitation practices to be implemented over the life of the operations (including, but not limited to, the planting of indigenous vegetation) for Floyds Waste Rock Landform;
  - (3) specify the short and long term measures to be taken to address visual impacts from Floyds Waste Rock Landform, as well as night time operational work, for land identified in condition 7-2(1); and
  - (4) specify management actions and time frames for the implementation of all screening and rehabilitation measures required by condition 7-2(2).
- 7-3 The proponent shall implement the most recent version of the Visual Impact Management and Rehabilitation Plan which the CEO has confirmed by notice in writing, addresses the requirements of condition 7-1,



- 7-4 The proponent shall continue to implement the Visual Impact Management and Rehabilitation Plan, or any subsequent revisions as approved by the CEO in condition 7-3, until the CEO has confirmed by notice in writing that the plan meets the objective specified in condition 7-1.

## **8 Offsets**

- 8-1 The proponent shall undertake an offset with the objective of counterbalancing the significant residual impact to 350 ha of foraging, roosting and breeding habitat for Carnaby's Black Cockatoo (*Calyptrorhynchus latirostris*), Forest Red-tailed Black Cockatoo (*Calyptrorhynchus banksii naso*), Baudin's Black Cockatoo (*Calyptrorhynchus baudinii*), Chuditch (*Dasyurus geoffroii*), Numbat (*Myrmecobius fasciatus*) and Western Ringtail Possum (*Pseudocheirus occidentalis*) as a result of implementation of the proposal.
- 8-2 Within twelve (12) months of the publication of this Statement, unless otherwise agreed by the CEO, the proponent shall prepare and submit an Offset Strategy to the CEO. The Offset Strategy shall:
- (1) identify an initially unprotected area or areas to be provided to the Crown for management for conservation purposes under the *Conservation and Land Management Act 1984* that contains the habitat values identified in condition 8-1;
  - (2) demonstrate how the proposed offset counterbalances the significant residual impact through consideration of the six 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 (October 2012) in conjunction with the associated Offsets assessment guide;
  - (3) identify the environmental values of the offset area(s);
  - (4) for land ceded to the crown for the purpose of conservation, the proponent will identify:
    - (a) the quantum of, and provide funds for, the upfront works associated with establishing the conservation area; and
    - (b) the quantum of, and provide a contribution of funds for, the management of this area for the first twenty (20) years after completion of purchase.
  - (5) identify any threats or opportunities for habitat improvement to offset values and provide management and/or rehabilitation actions to be undertaken to address the threats or improvements including:

- (a) the objectives and targets to be achieved, including completion criteria;
    - (b) management and/or rehabilitation actions and a timeframe for the actions to be undertaken;
    - (c) funding arrangements and timing of funding for conservation activities; and
    - (d) monitoring requirements for activities.
  - (6) define the role of the proponent and/or any third parties.
- 8-3 After receiving notice in writing from the CEO, on advice of the Department of Biodiversity, Conservation and Attractions, that the Offset Strategy satisfies the requirements of condition 8-2, the proponent shall:
- (1) implement the actions in accordance with the requirements of the approved Offsets Strategy; and
  - (2) continue to implement the approved Offset Strategy until the CEO has confirmed by notice in writing that it has been demonstrated that the completion criteria in the Offset Strategy have been met and therefore the implementation of the actions is no longer required.
- 8-4 The proponent shall review and revise the Offset Strategy as and when directed by the CEO.
- 8-5 The proponent shall implement the latest version of the Offset Strategy, which the CEO has confirmed by notice in writing, satisfies the requirements of condition 8-2.

**Schedule 1****Table 1: Summary of the Proposal**

<b>Proposal title</b>	Greenbushes Lithium Mine Expansion
<b>Short description</b>	<p>The Proposal is to undertake Stage 3 and Stage 4 expansion of the existing Greenbushes Lithium Mine in the Shire of Bridgetown - Greenbushes, WA. The Proposal includes the following:</p> <ul style="list-style-type: none"> <li>• Developing an expanded open pit;</li> <li>• Establishment of two additional chemical grade processing plants, a plant for retreatment of tailings, an additional crusher and expansion of a centralised ROM;</li> <li>• Establishment of a new Mine Services Area and explosives storage and handling infrastructure;</li> <li>• Expansion of the existing Floyds Waste Rock Landform;</li> <li>• Construction of an additional Tailing Storage Facility (TSF4); and</li> <li>• Establishment of additional linear infrastructure corridors (bypass road, powerline, pipeline and road corridors).</li> </ul>

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

<b>Element</b>	<b>Location</b>	<b>Authorised Extent</b>
Mine and associated infrastructure including the waste rock landform, tailings storage facility, processing infrastructure, and other mine site supporting infrastructure.	Figure 1	Clearing of no more than 350 ha* of native vegetation within a development envelope of 1,989 ha.

\* *Previous clearing approved under Part V of the Environmental Protection Act 1986 and the Mining Act 1978 is not included in the 350 ha authorised clearing but is authorised clearing for that purpose.*

**Table 3: Abbreviations and Definitions**

Acronym or Abbreviation	Definition or Term
CEO	The Chief Executive Officer of the Department of the Public Service of the State responsible for the administration of section 48 of the <i>Environmental Protection Act 1986</i> , or his delegate.
EPA	Environmental Protection Authority
EP Act	<i>Environmental Protection Act 1986</i>
ha	Hectare
Ground Disturbing Activity	Activities that are associated with the substantial implementation of a proposal including but not limited to, digging (with mechanised equipment), blasting, earthmoving, vegetation clearance, grading, gravel extraction, construction of new or widening of existing roads and tracks.

**Figures (attached)**

Figure 1 Mine Development Envelope

## **Schedule 2**

Coordinates defining the development envelope are held by the Department of Water and Environmental Regulation, Document Reference Number 2019 - 1556097290998



Figure 1 – Mine Development Envelope