

Conservation Significant Fauna Management Plan

Environmental Management Plan



Worsley Alumina

BUSINESS BLUEPRINT

SOUTH32 WORSLEY ALUMINA (ABN 58 008 905 155)

Conservation Significant Fauna Management Plan

Environmental Management Plan



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1 DECLARATION OF ACCURACY

I declare that:

1. I am aware that:
 - a) Section 491 of the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) makes it an offence in certain circumstances to knowingly provide false or misleading information or documents to specified persons who are known to be performing a duty or carrying out a function under the EPBC Act or the Environment Protection and Biodiversity Conservation Regulations 2000 (Cth).
 - b) Section 112 of the EP Act makes it an offence to give or cause to be given information that to the person's knowledge is false or misleading to the Minister, the Authority, the CEO, a police officer, an inspector or an authorised person.
 - c) The above offences are punishable on conviction by imprisonment or a fine or both.
2. I am authorised to bind the approval holder to this declaration and that I have no knowledge of that authorisation being revoked at the time of making this declaration.

Signed

A black rectangular box redacting the signature of the declarant.

Full name (please print)

A black rectangular box redacting the full name of the declarant.

Organisation (please print)

South32 Worsley Alumina Pty Ltd

Date: 10 / 02 / 2025

2 EXECUTIVE SUMMARY

South32 Worsley Alumina Pty Ltd (Worsley), as operator for and on behalf of the Worsley Bauxite-Alumina Joint Venture, Operates the Boddington Bauxite Mine (BBM), Alumina Refinery at Collie (the Refinery) and Bunbury Port facilities.

Worsley proposes to continue activities that are currently approved, or exempt, and expand operations to provide access to future bauxite reserves and resources within the Primary Assessment Area (PAA) to sustain production at the Refinery near Collie. This expansion includes three main components:

- The Worsley Mining Development Envelope (WMDE), within which the next phase of mining is proposed to take place with existing areas as well as expansion areas to the west and north of current operations at the BBM. Worsley Alumina would continue to utilise existing crushing and conveying infrastructure;
- The Bauxite Transport Corridor (BTC), which would link current mining areas to new and future mining areas; and
- The Contingency Bauxite Mining Envelope (CBME), which would provide for an emergency supply of bauxite close to the Refinery should it be required.

The Revised Proposal is described in its entirety in the referral for the Revised Proposal and the referral supporting document (Worsley, 2019) and the Response to Submissions document (Worsley, 2024).

This Conservation Significant Fauna Management Plan (CSFMP) was prepared in accordance with the 'Instructions on how to prepare Environmental Protection Act 1986 Part IV Environmental Management Plans' published by the Western Australian (WA) Environment Protection Authority (EPA) (EPA, 2024) and the 'Environmental Management Plan Guidelines' published by the Department of Climate Change, Energy, the Environment and Water (DCCEEW) (DCCEEW, 2024). This CSFMP details the framework for management of conservation significant fauna within the PAA. The CSFMP describes the management control strategies that will be implemented to ensure Worsley complies with its obligations and management objectives to minimise the impact and risk of bauxite mining and transport activities to conservation significant fauna. A summary of the information contained in this CSFMP is provided in Table 1.

Table 1: CSFMP Executive Summary

Proposal Name	Worsley Mine Expansion Revised Proposal
Proponent Name	South32 Worsley Alumina Pty Ltd
Ministerial Statement Number	Ministerial Statement 1237
Commonwealth Assessment	EPBC 2019/8437
Purpose of the EMP	<p>Document the management measures in place to minimise and monitor impacts to conservation significant fauna from the Worsley operations in accordance with Condition B13-7 of MS1237.</p> <p>The CSFMP describes the strategies and procedures that will be implemented to ensure that potential adverse impacts on conservation significant fauna resulting from Worsley's activities are reduced and mitigated in accordance with the mitigation hierarchy (avoid, minimise, offset/compensatory action).</p>
Key environmental factor, outcomes and objectives	<p>The key environmental factor is Terrestrial Fauna.</p> <p>Environmental Outcomes:</p> <ol style="list-style-type: none"> 1. Disturb no more than the allowable disturbance for the environmental values as described in Condition B13-1(1). 2. Ensure ongoing viability of the Woylie (<i>Bettongia penicillata ogilbyi</i>) population recorded at the Hotham North mine region shown in Figure 3 is not lost due to the proposal (B13-1(2)). 3. Ensure ongoing viability of any Numbat (<i>Myrmecobius fasciatus</i>) population(s) recorded at the Hotham North and Marradong Timber Reserve mine regions shown in Figure 11 of MS1237, [Figure 3 of this document] is not lost due to the proposal (B13-1(3)); 4. Ensure no disturbance to:

- a. the buffers identified by condition B13-4(2) for trees being used, or that have evidence of use, by black cockatoos for breeding (excluding the up to 24 trees referred to in condition B13-1(1)(e)) (B13-1(4)(a)).
- b. peregrine falcon (*Falco peregrinus*) nests including a 30 m buffer unless the tree has not been used over two consecutive breeding seasons (B13-1(4)(b)).
- c. known records of significant short-range endemic fauna where those fauna are only known from the PAA unless they are known to occur within the protected areas or ecological linkages shown in Figure 4¹ and Figure 5² respectively (B13-1(4)(c)).

Environmental Objectives:

1. Minimise the risk of physical injury or mortality from construction activities on native fauna;
2. Minimise the risk of behavioural changes and health impacts from construction activities on native fauna.
3. Maintain ecological linkages to allow movement of fauna across the landscape.
4. Monitor and manage feral animals to minimise risk of predation of conservation significant fauna within the PAA.
5. Minimise fragmentation within and surrounding the PAA through targeted rehabilitation and ecological restoration.
6. Rehabilitation provides suitable habitat for conservation significant fauna.
7. Minimise impacts on conservation significant fauna associated with Worsley's operational activities.
8. Define baseline abundance and viability of any populations of Numbat within Hotham North and MTR mining areas.
9. Define baseline abundance and viability of any populations of Woylie within the Hotham North mining area.

Condition clauses

Condition 13-7: The proponent must prepare a Conservation Significant Fauna Environmental Management Plan to minimise and monitor impacts to conservation significant fauna from the proposal and submit it to the CEO for approval on advice from DBCA. The Conservation Significant Fauna Environmental Management Plan must:

- (1) demonstrate how impacts to conservation significant fauna from habitat fragmentation, mine operations and predation by feral animals will be minimised;
- (2) describe the following:
 - a) the feral predator monitoring and management actions to be undertaken;
 - b) the monitoring and management of ecological linkages to be undertaken;
 - c) the monitoring and management of relocated animals;
 - d) the conservation significant fauna monitoring to be undertaken including at both impact and control sites; and
 - e) the contingency actions to be taken in the event of a decline to conservation significant fauna attributable to the proposal.
- (3) Include a definition for ongoing viability of the Woylie as referred to in condition B13-1(2) and a definition for ongoing viability of the Numbat as referred to in condition B13-1(3).
- (4) Include a definition for inspect as referred to in condition B13-4.

Condition 13-1

The proponent must ensure the implementation of the proposal achieves the following environmental outcomes:

¹ As shown in MS1237 and replicated in Figure 4 (Protected Areas)

² As shown in MS1237 and replicated in Figure 8 (Ecological Linkages)

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1. Disturb no more than the following environmental values:
 - a. 276 ha of the Quindanning Timber Reserve
 - b. 2,033 ha of woylie (*Bettongia penicillata ogilbyi*) habitat which includes no more than 1,898 ha of the habitat shown in Figure 7³ (Figure 6 of this document)
 - c. 4,324 ha of numbat (*Myrmecobius fasciatus*) habitat
 - d. 4,533 ha of black cockatoo foraging habitat
 - e. 0 (zero) trees being used, or that have evidence of use, by black cockatoos for breeding, shown in Figure 8, or as identified by pre-clearance surveys required by condition B13-4(1), unless the proponent has:
 - i) submitted a written notice to the CEO documenting a proposal to clear such a tree or trees;
 - ii) included in the notice referred to in condition B13-1(1)(e)(i) evidence that the tree or trees cannot be reasonably avoided;
 - iii) included in the notice referred to in condition B13-1(1)(e)(i) an appropriate procedure that will be followed to ensure no black cockatoos will be present in the tree or trees at the time of the proposed clearing; and
 - iv) within 21 days of the submission of the notice referred to in condition B13-1(1)(e)(i) has not received advice from the CEO that the proposed clearing is not authorised, in which case the proponent may remove up to 24 trees for this purpose.
 - f. 4,459 ha of chuditch (*Dasyurus geoffroyi*) habitat
 - g. 135 ha of western ringtail possum (*Pseudocheirus occidentalis*) habitat
 - h. 135 ha of quokka (*Setonix brachyurus*) habitat; and
 - i. 245 ha of the red-tailed phascogale (*Phascogale calura*) habitat shown in Figure 9⁴ (Figure 7 of this document).

Condition 13-2

The proponent shall implement the proposal to achieve the following environmental objectives:

1. Minimise the risk of physical injury or mortality from construction activities on native fauna; and
2. minimise the risk of behavioural changes, health impacts, physical injury or mortality from construction activities on native fauna.

Condition 13-3

Within the first twelve (12) months from the date of this Statement, the proponent shall commence:

woylie (*Bettongia penicillata ogilbyi*) surveys over the Hotham North mine region shown in Figure 11⁵ [Figure 3 of this document]; and

numbat (*Myrmecobius fasciatus*) surveys over the Hotham North and Marradong Timber Reserve mine regions shown in Figure 11⁵ [Figure 3 of this document];

to determine the baseline population size during implementation of the proposal and to inform reporting associated with the Conservation Significant Fauna Environmental Management Plan required by Condition B13-7.

Condition 13-4

³ As shown in Figure 7 of MS1237 and replicated in Figure 6

⁴ As shown in Figure 9 of MS1237 and replicated in Figure 7

⁵ As shown in Figure 11 of MS1237 and replicated in Figure 3

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Prior to clearing each area to be disturbed in the PAA, the proponent shall undertake the following actions:

1. within seven (7) days prior to clearing, using a fauna spotter with experience in surveying for black cockatoos, inspect the area for potential breeding trees, and identify suitable hollows and determine if they are being used, or have evidence of use, by black cockatoos for breeding;
2. except where the tree is to be disturbed as one of the 24 trees referred to in condition B13-1(1)(e), identify the site-specific buffer (minimum of 30 metre radius from the base of the tree, unless advised otherwise in writing by the CEO for the purposes of Critical infrastructure) that should be applied to each identified tree that is being used or has evidence of use by black cockatoos for breeding, to ensure its viability for breeding use is not lost due to the proposal; and
3. identify which trees with suitable hollows that are not being used and do not show evidence of use by black cockatoos for breeding cannot be avoided and document the reasons.

Condition 13-5

The proponent shall make the methodology and findings of the inspections and buffer and avoidance determinations under conditions B13-4(1), B13-4(2) and B13-4(3), publicly available annually in a summary document on the proponent's website.

Condition 13-6

During clearing activities in the PAA, the proponent shall undertake the following actions:

1. ensure the presence of fauna handlers to ensure condition B13-6(2) is met
2. Cease clearing activities in any area where woylie (*Bettongia penicillata ogilbyi*), numbat (*Myrmecobius fasciatus*), chuditch (*Dasyurus geoffroii*), western ringtail possum (*Pseudocheirus occidentalis*), quokka (*Setonix brachyurus*) or red-tailed phascogale (*Phascogale calura*) individual(s) are identified until:
 - a. the individual(s) has been relocated by a fauna handler; or
 - b. the individual(s) has been observed by the fauna handler to have moved on from the area to adjoining suitable habitat; and/or
 - c. the fauna handler considers that the individual no longer occurs in the area.

Key components in the CSFMP

The key components of this CSFMP include:

- Identification of applicable conservation significant fauna species.
- Description of management and control strategies for conservation significant fauna species to minimise impacts associated with the Worsley operation including but not limited to:
 - Protected Areas and Protection Commitments;
 - Ecological linkages;
 - Forest rehabilitation;
 - Pre-clearance surveys and management measures;
 - Feral animal control programs; and
 - Monitoring programs.
- Definition of EMP provisions within section 8.

EMP required prior to implementation of proposal?

- Yes

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3 REFERENCE TO EPA AND DCCEEW FRAMEWORKS

This CSFMP has been produced to align with the following guidance documentation:

- Department of Climate Change, Energy, the Environment and Water (DCCEEW) (2024) Environmental management plan guidelines; and
- Environmental Protection Authority (EPA) (2024) How to prepare Environmental Protection Act 1986 Part IV environmental management plans.

The combined relevant contents required in each of the frameworks and where they are located in this plan are included in Table 2.

Table 2 Location of relevant contents required in WA EPA and DCCEEW EMP Frameworks

DCCEEW Framework Requirements	Plan Ref (Section)	WA EPA Framework Requirements	Plan Ref (Section)
Executive summary or introduction	2	Executive summary	2
Conditions of approval Table	4	Context, scope and rational	5
Project description	5.1	Key environmental factors	5.2
Objectives	6.1, 8.2	Condition requirements	4
Environmental management roles and responsibilities	11	Rationale and approach	6
Reporting	10	EMP Components	6.5
Potential environmental impacts and risks	5.2.1 8.2	Outcome-based EMPs	8.1
Environmental management measures	6.5 9	Objective-based EMPs	8.2
Audit and review	9	Adaptive management and review of the EMPs	9.1
Glossary	13	Early response indicators, criteria, and actions	8.1
Evaluating Risks	Appendix A - Evaluating Risk	Stakeholder consultations	12
		Changes to an EMP	15

4 CONDITIONS OF APPROVAL

This CSFMP is a requirement of the WA approval under Ministerial Statement 1237 (MS1237) and Commonwealth Approval Decision EPBC 2019/8437. The combined relevant conditions are included in Table 3.

Table 3: Applicable EP Act and EPBC Act Approval Conditions

Ref	Cond.	Condition Requirement	Plan Ref (Section)	Key commitments and activities
MS1237	B13-7	The proponent must prepare a Conservation Significant Fauna Environmental Management Plan to minimise and monitor impacts to conservation significant fauna from the proposal and submit it to the CEO for approval on advice from DBCA.	This Plan	This CSFMP has been developed to satisfy this component of the condition.
MS1237	B13-7 (1)	Demonstrate how impacts to conservation significant fauna from habitat fragmentation, mine operations and predation by feral animals will be minimised.	6.5 8.1 8.2	Controls will be implemented in accordance with Objective and Outcome based provisions.
MS1237	B13-7 (2)	Describe the following: (a) the feral predator monitoring and management actions to be undertaken; (b) the monitoring and management of ecological linkages to be undertaken; (c) the monitoring and management of relocated animals; (d) the conservation significant fauna monitoring to be undertaken including at both impact and control sites; and (e) the contingency actions to be taken in the event of a decline to conservation significant fauna attributable to the proposal.	6.5 7 8.1 8.2	Implement fox and cat baiting program. Implement vertebrate fauna monitoring program within ecological linkages. Vertebrate fauna monitoring for rehabilitation to be expanded into areas outside Saddleback Timber Reserve (STR). Contingency actions defined in outcome-based provisions. Consultation with DBCA regarding suitability and design of any fauna translocation programs for the Hotham North Mining Area.
MS1237	B13-7 (3)	Include a definition for ongoing viability of the Woylie as referred to in condition B13-1(2) and a definition for ongoing viability of the Numbat as referred to in condition B13-1(3).	13	Term defined
MS1237	B13-7 (4)	Include a definition for inspect as referred to in condition B13-4.	13 6.5.5	Term defined
MS1237	B13-1 (1)	The proponent must ensure the implementation of the proposal achieves the following environmental outcomes: 1. Disturb no more than the following environmental values: (a) 276 ha of the Quindanning Timber Reserve (b) 2,033 ha of woylie (<i>Bettongia penicillata ogilbyi</i>) habitat which includes no more than 1,898 ha of the habitat shown in Figure 6 (c) 4,324 ha of numbat (<i>Myrmecobius fasciatus</i>) habitat (d) 4,533 ha of black cockatoo foraging habitat (e) 0 (zero) trees being used, or that have evidence of use, by black cockatoos for breeding, shown in Figure 8, or as identified by pre-	8.1	Controls will be implemented in accordance Outcome based provisions.

Ref	Cond.	Condition Requirement	Plan Ref (Section)	Key commitments and activities
		<p>clearance surveys required by condition B13-4(1), unless the proponent has:</p> <ul style="list-style-type: none"> i. submitted a written notice to the CEO documenting a proposal to clear such a tree or trees; ii. included in the notice referred to in condition B13-1(1)(e)(i) evidence that the tree or trees cannot be reasonably avoided; iii. included in the notice referred to in condition B13-1(1)(e)(i) an appropriate procedure that will be followed to ensure no black cockatoos will be present in the tree or trees at the time of the proposed clearing; and iv. within 21 days of the submission of the notice referred to in condition B13-1(1)(e)(i) has not received advice from the CEO that the proposed clearing is not authorised, in which case the proponent may remove up to 24 trees for this purpose. <ul style="list-style-type: none"> (f) 4,459 ha of chuditch (<i>Dasyurus geoffroyi</i>) habitat (g) 135 ha of western ringtail possum (<i>Pseudocheirus occidentalis</i>) habitat (h) 135 ha of quokka (<i>Setonix brachyurus</i>) habitat; and (i) 245 ha of the red-tailed phascogale (<i>Phascogale calura</i>) habitat shown in Figure 9 [Figure 7 of this document]. 		
	B13-1 (2)	ensure ongoing viability of the woylie (<i>Bettongia penicillata ogilbyi</i>) population recorded at the Hotham North mine region shown in Figure 11 [Figure 3 of this document] is not lost due to the proposal;	8.1	
	B13-1 (3)	Ensure ongoing viability of any numbat (<i>Myrmecobius fasciatus</i>) population(s) recorded at the Hotham North and Marradong Timber Reserve mine regions shown in Figure 11 [Figure 3 of this document] is not lost due to the proposal;	8.1	
	B13-1 (4)	<p>ensure no disturbance to:</p> <ul style="list-style-type: none"> a. the buffers identified by condition B13-4(2) for trees being used, or that have evidence of use, by black cockatoos for breeding (excluding the up to 24 trees referred to in condition B13-1(1)(e)); b. peregrine falcon (<i>Falco peregrinus</i>) nests including a 30 m buffer unless the tree has not been used over two consecutive breeding seasons; c. known records of significant short-range endemic fauna where those fauna are only known from the PAA unless they are known to occur within 	8.1	

Ref	Cond.	Condition Requirement	Plan Ref (Section)	Key commitments and activities
		<p>the protected areas or ecological linkages shown in Figure 4 and Figure 5 respectively; and</p> <p>d. the offset values listed in Table 1 of condition B15-5 that intersect the PAA excluding any disturbance caused for the purpose of undertaking ecological restoration.</p>		
MS1237	B13-2	Minimise the risk of physical injury or mortality from construction activities on native fauna; and minimise the risk of behavioural changes, health impacts, physical injury or mortality from construction activities on native fauna.	8.2	Objective based provisions defined. Controls will be implemented in accordance with section 8.2.
MS1237	B13-3	<p>Commence the following within 12 months of the Ministerial Statement;</p> <p>woylie (<i>Bettongia penicillata ogilbyi</i>) surveys over the Hotham North mine region shown in Figure 11 [</p> <p>1. Figure 3 of this document]; and</p> <p>numbat (<i>Myrmecobius fasciatus</i>) surveys over the Hotham North and Marradong Timber Reserve mine regions shown in Figure 11 [</p> <p>2. Figure 3 of this document];</p> <p>to determine the baseline population size during implementation of the proposal and to inform reporting associated with the Conservation Significant Fauna Environmental Management Plan required by condition B13-7.</p>	7 8.2	Relevant surveys will be completed within 12 months of the issue of MS1237. .
MS1237	B13-4	<p>Prior to clearing each area to be disturbed in the PAA, the proponent shall undertake the following actions:</p> <p>1. within seven (7) days prior to clearing, using a fauna spotter with experience in surveying for black cockatoos, inspect the area for potential breeding trees, and identify suitable hollows and determine if they are being used, or have evidence of use, by black cockatoos for breeding;</p> <p>2. except where the tree is to be disturbed as one of the 24 trees referred to in condition B13-1(1)(e) identify the site-specific buffer (minimum of 30 metre radius from the base of the tree, unless advised otherwise in writing by the CEO for the purposes of critical infrastructure) that should be applied to each identified tree that is being used or has evidence of use by black cockatoos for breeding, to ensure its viability for breeding use is not lost due to the proposal; and</p>	6.5.5 8.2	Implement pre-clearance monitoring and management program in accordance with section 6.5.5. Record outcomes of pre-clearance surveys.

Ref	Cond.	Condition Requirement	Plan Ref (Section)	Key commitments and activities
		3. identify which trees with suitable hollows that are not being used and do not show evidence of use by black cockatoos for breeding cannot be avoided and document the reasons.		
MS1237	B13-5	The proponent shall make the methodology and findings of the inspections and buffer and avoidance determinations under conditions B13-4(1), B13-4(2) and B13-4(3), publicly available annually in a summary document on the proponent's website	10.1	Monitoring findings and management regarding Black Cockatoos to be published on the South32 website annually.
MS1237	B13-6 (1)	During clearing activities in the PAA, the proponent shall ensure the presence of fauna handlers to ensure condition B13-6(2) is met.	6.5.5	Controls will be implemented in accordance with Section 6.5.5.
MS1237	B13-6 (2)	Cease clearing activities in any area where woylie (<i>Bettongia penicillata ogilbyi</i>), numbat (<i>Myrmecobius fasciatus</i>), chuditch (<i>Dasyurus geoffroi</i>), western ringtail possum (<i>Pseudocheirus occidentalis</i>), quokka (<i>Setonix brachyurus</i>) or red-tailed phascogale (<i>Phascogale calura</i>) individual(s) are identified until: <ul style="list-style-type: none"> a. the individual(s) has been relocated by a fauna handler; or b. the individual(s) has been observed by the fauna handler to have moved on from the area to adjoining suitable habitat; and/or c. the fauna handler considers that the individual no longer occurs in the area. 	6.5.5	Controls will be implemented in accordance with Section 6.5.5.

5 CONTEXT, SCOPE & RATIONALE

5.1 PROPOSAL

5.1.1 Background

South32 Worsley Alumina Pty Ltd (Worsley) operates the Worsley Bauxite-Alumina Project on behalf of the Joint Venture parties. Worsley sought approval for the Worsley Mine Expansion Revised Proposal (the Revised Proposal) to continue existing mining operations and access additional ore resources to maintain the continuity of the Boddington Bauxite Mine (BBM), which has been in operation for over 40 years.

Key elements of the Revised Proposal include:

- expansion of the existing mining envelope at the BBM (to become the Worsley Mining Development Envelope – WMDE),
- establishment of a Bauxite Transport Corridor (BTC) at the BBM, and
- establishment of a Contingency Bauxite Mining Envelope (CBME) and support infrastructure / facilities at the Worsley Refinery (the Refinery).

The alumina refinery production rate remains at 4.7 million tonnes per annum. The full details of the Revised Proposal are detailed in the Worsley Environmental Review Document (Worsley, 2022) and the Response to Submissions document (Worsley, 2024).

5.1.2 Purpose and Scope

The purpose of this CSFMP is to document the management measures in place to minimise and monitor impacts to conservation significant fauna from the Worsley operation in accordance with Condition B13-1 to B13-7 of MS1237.

The CSFMP describes the strategies and procedures that will be implemented to ensure that potential adverse impacts on conservation significant fauna resulting from Worsley's activities are reduced and mitigated in accordance with the mitigation hierarchy (avoid, minimise, offset/compensatory action).

This CSFMP applies to all Worsley operations within the Primary Assessment Area (PAA) associated with the Revised Proposal (Figure 1).

The CSFMP includes a description of:

- The environmental setting of the current mining areas;
- Potential impacts and management and mitigation controls;
- EMP provisions and monitoring programs;
- Adaptive management and stakeholder consultation; and
- Risk assessment.

The CSFMP includes review mechanisms to ensure that the mitigation and protection techniques apply adaptive management to improve processes, update triggers and thresholds and meet relevant best practice principles.

Outcomes and objectives for Carter's Freshwater Mussel are included in the Water Management Plan (01027243) and therefore are not included in the scope of this CSFMP. Impacts, monitoring and management activities associated with the Extended Mining Areas, managed under Part B(B) of MS1237, are excluded from this CSFMP.

In accordance with Condition C2-6 of MS1237 this CSFMP will be published on the South32 website and provided to the CEO in electronic form suitable for on-line publication by the Department of Water and Environmental Regulation within twenty (20) business days of being implemented, or being required to be implemented (whichever is earlier).

5.2 KEY ENVIRONMENTAL FACTOR

This CSFMP specifically addresses the EPA key environmental factor of Terrestrial Fauna, in which the EPA's objective is "To protect terrestrial fauna so that biological diversity and ecological integrity are maintained".

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5.2.1 Proposal Activities Potentially Affecting Terrestrial Fauna

Activities associated with the Project have the potential to either directly or indirectly impact on the key environmental factor of Terrestrial Fauna. Potential impacts to the environment that may result from Project activities include:

- Direct Impacts
 - Habitat loss through vegetation clearing. The proposal will result in the direct loss of native, plantation and rehabilitated vegetation, and hence fauna habitat, through clearing associated with mine operations and supporting infrastructure; and
 - Injury, mortality, or displacement of fauna from construction and operations (including vehicle strikes).
- Indirect Impacts
 - Further fragmentation of habitat in the local area through partial or complete clearing and associated habitat loss of isolated remnant bands or patches;
 - Indirect impacts from dust, noise, vibration and lighting during construction and operations;
 - Indirect impacts as a result of altered fire regimes;
 - Increased competition or predation by introduced (feral) species; and
 - Cumulative impacts in relation to the direct loss and fragmentation of habitat for fauna.

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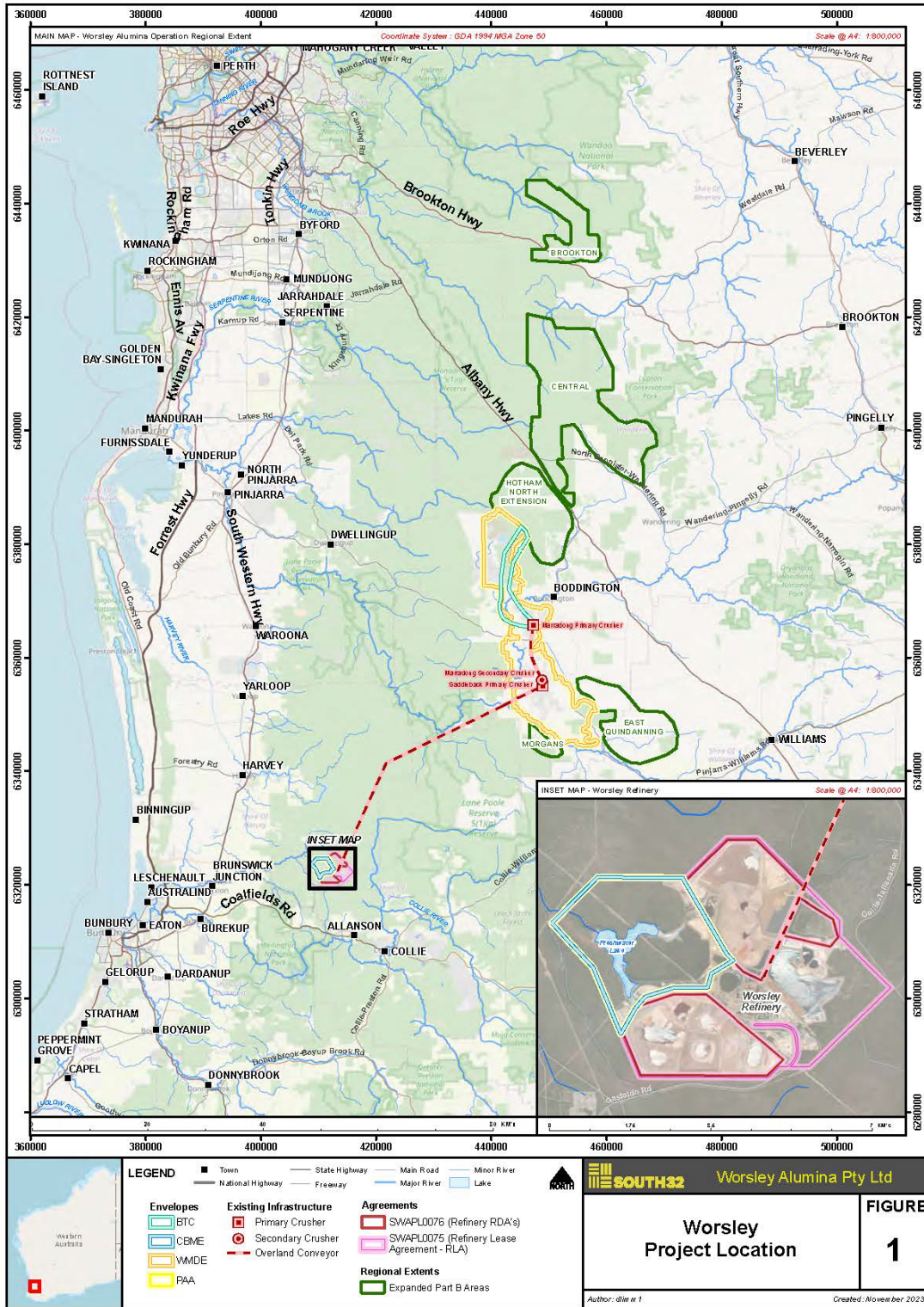


Figure 1: Worsley project location

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6 RATIONALE AND APPROACH

This CSFMP addresses the Terrestrial Fauna environmental factor and the EPA's objective to protect terrestrial fauna so that biological diversity and ecological integrity are maintained. The CSFMP addresses the requirements of MS1237 and other legal requirements and identified risks related to Terrestrial Fauna.

Worsley has operated in the region for over 40 years and, in this time, has conducted three detailed environmental impact assessments under Part IV of the *Environmental Protection Act 1986 (WA)* to support the expansion of its operations. Worsley has a thorough understanding of the potential impacts to terrestrial fauna that could occur as a result of its proposed operations.

Management measures and monitoring programs have been developed and adjusted over time in consultation with external experts to ensure that any impacts to terrestrial fauna are able to be identified and minimised. Management measures have been developed with consideration for the mitigation hierarchy (avoid, minimise, rehabilitate and offset). This section provides the rationale for the choice of monitoring and management measures to demonstrate compliance with the outcomes and objectives outlined in section 6.1.

6.1 ENVIRONMENTAL OUTCOMES AND OBJECTIVES

The CSFMP provides a framework for the identification and management of species, populations and communities identified to be at risk from Worsley's activities and has been prepared to fulfil requirements set out under the EPBC Act Approval Decision 2019/8437 for species listed as Matters of National Environmental Significance (MNES) and address the Terrestrial fauna conditions within MS1237.

Worsley will identify, manage, and mitigate potential impacts to conservation significant fauna species that have been identified as part of the Revised Proposal. The Revised Proposal includes the proposed WMDE and BTC, and the CBME as well as continuing operations including the refinery, overland conveyor and associated activities.

The primary objective of this CSFMP is to minimise and monitor impacts to conservation significant fauna from the Revised Proposal. This will be achieved through the following outcomes and objectives:

Environmental Outcomes:

1. Disturb no more than the allowable disturbance for the environmental values as described in Condition B13-1(1).

Ensure ongoing viability of the woylie (*Bettongia penicillata ogilbyi*) population recorded at the Hotham North mine region shown in Figure 11 [Figure 3 of this document] is not lost due to the proposal (B13-1(2)).

Ensure ongoing viability of any Numbat (*Myrmecobius fasciatus*) population(s) recorded at the Hotham North and Marradong Timber Reserve mine regions shown in Figure 11 [Figure 3 of this document] is not lost due to the proposal (B13-1(3));

2. Ensure no disturbance to:

- a. the buffers identified by condition B13-4(2) for trees being used, or that have evidence of use, by black cockatoos for breeding (excluding the up to 24 trees referred to in condition B13-1(1)(e)); (B13-1(4)(a))
- b. peregrine falcon (*Falco peregrinus*) nests including a 30 m buffer unless the tree has not been used over two consecutive breeding seasons (B13-1(4)(b));
- c. known records of significant short-range endemic fauna where those fauna are only known from the PAA unless they are known to occur within the protected areas or ecological linkages shown in Figure 4 and Figure 5 [Figure 4 and Figure 8 of this document] respectively (B13-1(4)(c)).

Note, Condition 13-1 (4)(d) is included in the Local Offsets Environmental Management Plan (LOEMP) (WAPL-Business-CD-200001090) and has not been included within this CSFMP.

Environmental Objectives:

1. Minimise the risk of physical injury or mortality from construction activities on native fauna;
2. Minimise the risk of behavioural changes and health impacts from construction activities on native fauna.
3. Maintain ecological linkages to allow movement of fauna across the landscape.
4. Monitor and manage feral animals to minimise risk of predation of conservation significant fauna within the PAA.
5. Minimise fragmentation within and surrounding the PAA through targeted rehabilitation and ecological restoration.
6. Rehabilitation provides suitable habitat for conservation significant fauna.
7. Minimise impacts on conservation significant fauna associated with Worsley's operational activities.
8. Define baseline abundance and viability of any populations of Numbat within Hotham North and MTR mining areas.

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9. Define baseline abundance and viability of any populations of Woylie within the Hotham North mining area.

6.2 SURVEY AND STUDY FINDINGS

6.2.1 Conservation Significant Fauna within the PAA

'Conservation significant fauna' and 'threatened fauna' are defined as those listed as Critically Endangered, Endangered, Vulnerable or Migratory under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) or as a Schedule species in accordance with the *Biodiversity Conservation Act 2016* (BC Act) or as a significant fauna in accordance with the Technical Guidance for Terrestrial Fauna Surveys (EPA 2016). For the purposes of this plan, conservation significant fauna is defined in accordance with the definition provided in EPA Report 1768 "*Threatened Fauna, priority fauna, other significant fauna and significant short range endemic fauna*". These are primarily listed in Table 5, noting *Westralunio carteri* (Carter's Freshwater Mussel) has been excluded from this plan as the provisions applicable to this species relate primarily to Inland Waters and are therefore included in the Water Management Plan (1027243). Specific Short Range Endemic (SRE) species are also not listed, noting that the CSFMP includes significant SRE species as a group in the provisions of the plan.

6.2.1.1 Baseline Surveys

Terrestrial fauna surveys at Worsley and other nearby premises (e.g. Newmont Boddington Gold Mine) have been conducted since 1982. The most recent terrestrial vertebrate fauna assessment undertaken by BIOSTAT (2021), involved a consolidated desktop and literature review of 27 reports and all previous survey data, as well as a field survey. This has provided a comprehensive understanding of the terrestrial fauna that utilise areas in and around the PAA. A number of surveys have also been conducted for Short-Range Endemic (SRE) species, as well as aquatic fauna, the most recent being for Carter's Freshwater Mussel (*Westralunio carteri*).

Surveys have identified six major fauna habitat types occurring within the WMDE and BTC. These include jarrah/marri communities, wandoo communities, mallee woodlands, heath communities, riparian/wetland and associated communities, and others (namely rehabilitated areas, plantations, dams and cleared lands).

Fauna habitat types identified within the CBME include riparian/mesic communities, jarrah/marri communities, cleared lands (supporting very small remnants of native vegetation) and others such as water bodies.

Conservation significant fauna that have been identified through fauna monitoring programs are the target subjects of this CSFMP.

Baseline surveys are conducted prior to extension of any mining areas. Surveys of rehabilitation and undisturbed areas adjacent to mining, are undertaken on a regular cycle. Targeted surveys may occur prior to disturbance, for research purposes, and / or upon request from regulators. A summary of key baseline studies undertaken to date for the Revised Proposal is presented in Table 4.

Table 4 Terrestrial and aquatic fauna baseline survey program

Mining Area	Survey Type	Description/Reference	Status/Timing
Saddleback	Vertebrate fauna	Phase 1 a broad overview of the flora and fauna	1981
		Phase 2 (baseline) a more detailed investigation into the flora and fauna values of the central portion of Saddleback Timber Reserve	1985
		Phase 3, species specific monitoring (reptile, small avian and invertebrates) (Ninox Wildlife Consulting 1995).	1990-1995
		A vertebrate fauna survey of the proposed southern Saddleback mining area 1997 to 1998 (Ninox Wildlife Consulting 1998)	1998
		The vertebrate fauna survey of the proposed northern Saddleback mining area 1996–1997 (Ninox Wildlife Consulting 1997)	1996-1997
		Seasonal vertebrate monitoring program for Forest and Rehabilitated areas of BBM Saddleback (3 yearly program)	2003, 2006-2007, 2009-2011, 2014-2015 & 2018
		Phase 4 Terrestrial Vertebrate Fauna in Rehabilitation Studies 2002-2018 (BIOSTAT, 2023)	2022
Saddleback	Invertebrates (including	Phase 2: Worsley Alumina Project Flora and Fauna Studies, Phase Two (Worsley Alumina Pty Ltd, 1985)	1985

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Mining Area	Survey Type	Description/Reference	Status/Timing
	Short Range Endemics (SREs)	Phase 3: Phase III Fauna Studies. Vertebrate and Invertebrate Surveys 1994-1995 (Ninox Wildlife Consulting, 1995)	1995
Quindanning	Vertebrate fauna	The vertebrate fauna of the Quindanning Timber Reserve (Ninox Wildlife Consulting, 2002)	2000-2001
		The vertebrate fauna of the Quindanning Timber Reserve (BIOSTAT Consulting, 2019)	2019
Marradong	Vertebrate fauna	Marradong Timber Reserve (Ninox Wildlife Consulting, 2007)	2006-2007
		West Marradong Timber Reserve (Ninox Wildlife Consulting, 2012)	2012
		Marradong Timber Reserve (BIOSTAT Consulting, 2018) Targeted Numbat Population Survey (baseline abundance and distribution)	2018 In progress (2024)
Hotham North	Vertebrate Fauna	Targeted Numbat and Woylie Survey (baseline abundance and distribution)	In progress (2024)
Saddleback, Marradong, Quindanning, Hotham North	SREs	SRE surveys were conducted in the Saddleback, Marradong and Quindanning Timber Reserves in Spring of 2011 and Autumn 2012 (Phoenix Environmental Sciences Pty Ltd, 2012)	2011-2012
		SRE Surveys of the Saddleback, Quindanning and Hotham North mining areas (Phoenix Environmental Sciences Pty Ltd 2021).	2019-2020
OBC	Vertebrate fauna	A vertebrate fauna survey of the Overland Conveyor Corridor (Ninox Wildlife Consulting, 1998)	1998
		Follow up monitoring of Conveyor Corridor (Ninox Wildlife Consulting, 2004)	2003-2004
		Follow up monitoring of Conveyor Corridor (Ninox Wildlife Consulting, 2010)	2009-2010
Primary Assessment Area (WMDE, and CBME)	Vertebrate fauna	Vertebrate fauna of the WMDE areas and CBME (BIOSTAT Consulting, 2021)	2019-2020
		Numbat Habitat Assessment – PAA and Offset properties (Biologic, 2023)	2022
	Aquatic fauna survey	Carter's Freshwater Mussel Survey at Williams and Hotham Rivers (Stantec, 2022)	2022
Refinery	Vertebrate fauna	Phase 1 a broad overview of the flora and fauna (Dames & Moore, 1981)	1981
Refinery	Invertebrates (including SREs)	SRE Surveys of the RLAs and surrounds (Phoenix Environmental Sciences Pty Ltd, 2021).	2019-2020
Refinery	Aquatic fauna survey	Water Quality Aquatic Macro-invertebrate and Fish monitoring of the Worsley Freshwater Lake and Brunswick River Catchment (Worsley).	1999
		Augustus River Ecological Monitoring Program (WRM)	2010
		Ecological Water Requirements of Augustus River (WRM).	2005
		Refinery Freshwater Lake - Mercury Bioaccumulation in Carter's Freshwater Mussel and Habitat Values Assessment (Stantec)	2021

6.2.1.2 Conservation Significant Species Relevant to the Revised Proposal

A review of the results from all historical fauna surveys was used to determine the likelihood of occurrence of conservation significant fauna species listed under the BC Act and the EPBC Act within the PAA (BIOSTAT, 2021). A summary of the

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outcomes of this assessment is presented in Table 5, which includes all conservation significant fauna species assessed as having a likelihood of occurrence greater than low or that have been historically recorded within Worsley's fauna surveys.

Worsley will continue to identify conservation significant species of interest throughout the life of operations. Worsley will make amendments to Table 5 as required following:

- Release of new legislation, policies, guidelines etc.;
- Completion of additional fauna surveys; and
- Completion of the annual protected matters search in accordance with the Protected Matters Review Standard Work Instruction (01024775).

Table 5: Conservation Significant Fauna Species Relevant to the Revised Proposal (excluding SRE)

Species	BC Act Listing ¹	EPBC Act Listing ¹	Habitat	Likelihood of Occurrence
<i>Bettongia penicillata ogilbyi</i> (Woylie)	CR	EN	<p>May persist in habitats where there is adequate introduced predator (fox and cat) control or exclusion, such as tall Eucalypt forest and woodland, dense myrtaceous shrubland, and Kwongan (proteaceous) or Mallee heath (Yeatman and Groom 2012).</p> <p>Found in a variety of habitats, but long-unburnt tall Eucalyptus species forest and woodland are regarded as one of the key habitats for this species (Yeatman and Groom 2012).</p> <p>Widely distributed in the Jarrah forests however, the species occurs sporadically (BIOSTAT, 2019). Individuals have been recorded (through trapping) in adjoining forest habitats surrounding the Newmont Boddington Gold Mine (surveys conducted in in 2012 and 2019).</p> <p>PAA Presence: Contiguous forest remnants of suitable habitat surrounding the Newmont Boddington Gold Mine (BIOSTAT, 2021).</p>	High - Recorded
<i>Phascogale calura</i> (Red-tailed Phascogale)	CD	EN	<p>In Western Australia, this species is often associated with the drier wandoo woodlands with rock sheoak (<i>Allocasuarina huegeliana</i>) but is known from a wider range of habitats. It will readily utilise hollows in wandoo as denning and nesting sites but has also been known to inhabit the grass skirts of balga (<i>Xanthorrhoea</i> spp.) and hollows in dead stumps and logs (Short, Hide & Stone 2011).</p> <p>Presence: Quindanning Timber Reserve only.</p>	High Recorded
<i>Pseudocheirus occidentalis</i> (Western Ringtail Possum, Ngwayir)	CR	CR	<p>Common in long unburnt remnant of Peppermint (<i>Agonis flexuosa</i>) and Tuart (<i>Eucalyptus gomphocephala</i>) woodlands on the coastal plains of the South-West of WA. It has also been recorded in jarrah/marri forests and woodlands, coastal heath, Bullich (<i>Eucalyptus megacarpa</i>) dominated riparian zones and Karri Forests.</p> <p>Presence: Refinery Lease Area (RLA) only.</p>	High - Recorded
<i>Zanda latirostris</i> (Listed as <i>Calyptorhynchus latirostris</i>) (Carnaby's Cockatoo)	EN	EN	<p>Endemic to the South-West WA occurring from the wheatbelt, to the extreme South-West, including the Swan Coastal Plain and the southern coast.</p> <p>Breeding mainly occurs in the wheatbelt. Over the past 50 years, the distribution has shifted considerably westwards and southwards. There are now numerous breeding records from the jarrah-marri forests of the Darling Scarp and the Tuart (<i>Eucalyptus gomphocephala</i>) forests of the Swan Coastal Plain.</p>	High - Recorded

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Species	BC Act Listing ¹	EPBC Act Listing ¹	Habitat	Likelihood of Occurrence
			Presence: All habitat types	
<i>Zanda baudinii</i> (Listed as <i>Calyptorhynchus baudinii</i>) (Baudin's Cockatoo)	EN	EN	<p>During the breeding season (from October to January), the species nests in the far South-West of WA primarily within jarrah, marri and karri forests.</p> <p>During the non-breeding season (from February) central and northern parts of the Darling plateau, southern Swan Coastal Plain and south coast</p> <p>Mainly occurs in eucalypt forests, especially jarrah, marri and karri forest. The species less frequently occurs in woodlands of Wandoo (<i>Eucalyptus wandoo</i>), Blackbutt (<i>Eucalyptus patens</i>), Flooded Gum (<i>Eucalyptus rudis</i>), Yate (<i>Eucalyptus cornuta</i>), partly cleared farmlands and urban areas, including roadside trees and house gardens. Baudin's Cockatoo breeds in the jarrah, marri and karri forests of the far South-West (BIOSTAT 2019).</p> <p>Presence: All habitat types (foraging), RLA (breeding).</p>	High - Recorded
<i>Myrmecobius fasciatus</i> (Numbat)	EN	EN	<p>Forested areas containing large forest debris (e.g. hollows) and supporting sufficient termite populations.</p> <p>Presence: Remnant native vegetation and Rehabilitation.</p>	Low - Recorded*
<i>Westralunio carteri</i> (Carter's Freshwater Mussel) ⁶	VU	VU	<p>Current distribution is patchy and extends from around Gingin south to Waychinicup. It inhabits freshwater lakes, river systems, and other waterways favouring sandy or muddy sediments and is often associated with woody debris (Klunzinger et.al 2012). Requires host fish species to be present for mussel larvae to disperse upstream.</p> <p>Presence: RLA only – Freshwater Lake (FWL) and Augustus River (AR).</p>	High - Recorded
<i>Calyptorhynchus banksii naso</i> (Forest Red-tailed Black Cockatoo)	VU	VU	<p>Foraging Habitat: primarily jarrah, karri and marri forests as well as plantations and orchards.</p> <p>Breeding Habitat: mainly nest in old veteran and stag marri, often nesting in clusters in the landscape.</p> <p>Roosting Habitat: Flocks spend the night roosting in trees.</p> <p>Presence: All vegetated habitat types (foraging), all remnant native vegetation supporting Jarrah, Marri and Wandoo (breeding and roosting).</p>	High - Recorded
<i>Dasyurus geoffroi</i> (Chuditch)	VU	VU	<p>Occurs in varying densities throughout the Jarrah Forest and woodlands in the south-west corner of WA, and in woodlands, mallee shrublands and heaths along the south coast, east to the Ravensthorpe area.</p> <p>Chuditch require suitable den and refuge sites (horizontal hollow logs or earth burrows) and sufficient prey biomass (large invertebrates, reptiles and small mammals) to survive. They are capable of travelling long distances and have large home ranges.</p> <p>Presence: All habitat types.</p>	High - Recorded

⁶ Provisions applicable to Carter's Freshwater Mussel relate primarily to Inland Waters and are included in the WMP and therefore are not included in this CSFMP.

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Species	BC Act Listing ¹	EPBC Act Listing ¹	Habitat	Likelihood of Occurrence
<i>Setonix brachyurus</i> (Quokka)	VU	VU	Prefers swampy habitats within jarrah forests (Hayward et al. 2007; Hayward, de Tores & Banks 2005). Presence: RLA only.	High - Recorded
<i>Falco peregrinus</i> (Peregrine Falcon)	OS		The peregrine falcon is a wide-ranging species with large home ranges and diverse habitat use. They are often found in hilly or mountainous landscapes but are recorded over much of the Australian mainland and offshore islands (Johnstone & Storr 1998). Due to their eclectic habitat use, this species is likely to exist in most areas but could not be regarded as common in any.	High - Recorded
<i>Phascogale tapoatafa</i> (Wambenger) (South-western Brush-tailed Phascogale)	CD		The south-western brush-tailed phascogale has been recorded in most areas of the BBM and in the CBME. They are generally associated with jarrah/marri/Allocasuarina (JC) forest and woodland complexes. They have also been recorded in areas of wandoo woodlands.	High - Recorded
<i>Oxyura australis</i> (Blue Billed Duck)	P4		The blue-billed duck is often found in wetlands and open water systems such as lakes, sewerage ponds, rivers, salt lakes and salt pans. It has a preference for deep water systems associated with dense vegetation. This type of habitat is limited within PAA to the Hotham River at BBM and the freshwater lake at CBME.	Highly Likely
<i>Isodon fusciventer</i> (Southern Brown Bandicoot)	P4		Quenda have been recorded in all PAA areas. They are not habitat specialists and will forage most native habitats as well as human constructed habitats such as urban gardens. They will avoid open fields and agricultural lands where possible due to predation.	High - Recorded
<i>Notamacropus irma</i> (Western Brush Wallaby)	P4		The western brush-wallaby is common in both CBME and BBM areas and is often observed during surveys or captured on PIR cameras. It is associated with most woodland systems, heaths and rehabilitated sites but unlikely to be found in open agricultural lands.	High - Recorded
<i>Falsistrellus mackenziei</i> (Western False Pipistrelle)	P4		The western false pipistrelle is a woodland species and has been recorded in wandoo woodlands, jarrah/marri complexes, jarrah/marri/Allocasuarina complexes, and rehabilitation areas.	High - Recorded
<i>Hydromys chrysogaster</i> (Water Rat, Rakali)	P4		This species is often associated with riparian systems and permanent water sources. It is impacted by destruction of habitat through agricultural practices (nutrient loads, erosion and silting, salinity), stock damage (erosion and nutrient loads), and alterations to surface hydrology (siltation, salinity, erosion).	High - Recorded
<i>Ctenotus delli</i> (Dell's Skink)	P4		<i>Ctenotus delli</i> is endemic to the Darling Range. It is restricted to Jarrah Forrest areas on lateritic or clay soils (Calver & Wardell-Johnson 2004) but also areas of vegetated granite out-cropping. This species has been recorded in rehabilitated mine sites but in low numbers (Nichols & Bamford 1985).	High - Recorded

CR=Critically Endangered, EN=Endangered, VU=Vulnerable, P=Priority, OS=Other Specially Protected, CD=Conservation Dependent

* Currently only one record in Marradong Timber Reserve considered likely to represent a dispersing individual, however further survey will be undertaken in accordance with condition B13-3, if required thereafter the likelihood can be updated if further individuals are found.

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6.3 OBJECTIVE AND OUTCOME BASED EMP – RISK BASED APPROACH

The CSFMP has been developed to avoid and minimise risks to the conservation significant fauna by developing outcome and objective-based management provisions. Outcomes-based provisions have been developed to ensure that the Revised Proposal does not contravene any approval conditions granted under MS1237 or Approval Decision 2019/8437.

The objective-based provisions that have been developed are considered appropriate to manage impacts (direct and indirect) on the conservation significant fauna within the PAA. The objective-based provisions in this management plan are designed to support continued persistence of conservation significant fauna within the PAA. This objective will be verified through dedicated fauna monitoring programs, opportunistic sightings and pre-clearance surveys. Presence will be determined through both direct (e.g. direct observation) and indirect (e.g. scats and tracks) evidence.

A risk assessment was completed to support the development of objectives and has been included as Appendix A.

6.4 RATIONALE FOR CHOICE OF INDICATORS AND/OR MANAGEMENT ACTIONS

This CSFMP has been prepared in accordance with the following:

- Instructions on how to prepare Environmental Protection Act 1986 Part IV Environmental Management Plans (EPA, 2024);
- Environmental Management Plan Guidelines (DCCEEW, 2024);
- MS1237, specifically conditions B13, C4-1 and C5-1; and
- Approval granted under Approval Decision EPBC 2019/8437.

The mitigation hierarchy (enhance, avoid, minimise, rehabilitate and offset) has been applied in the management of potential impacts from Worsley operations on conservation significant fauna species.

Worsley has considered the objectives outlined in the relevant Commonwealth Recovery Plans and Threat Abatement Plans for management of conservation significant fauna species and environmental risks.

Recovery plans set out the research and management actions necessary to stop the decline of, and support the recovery of, listed Threatened species or Threatened Ecological Communities. The aim of a recovery plan is to maximise the long-term survival in the wild of a Threatened species or ecological community. Recovery plans should state what must be done to protect and restore important populations of Threatened species and habitat, as well as how to manage and reduce threatening processes. Recovery plans achieve this by providing a planned and logical framework for key interest groups and responsible government agencies to coordinate their work to improve the plight of Threatened species and/or ecological communities.

Threat abatement plans provide for the research, management, and any other actions necessary to reduce the impact of a listed key threatening process on native species and ecological communities. Implementing the attributes of the threat abatement plan should assist the long-term survival in the wild of affected native species or ecological communities.

Conservation Advice, Recovery Plans and Threat Abatement Plans relevant to Worsley's operations and used to inform Worsley's management objectives are listed in Table 6 and Table 7.

Table 6: Threatened species conservation advice and Recovery Plans

Threatened Species	Conservation Advice and Recovery Plans
<i>Calyptorhynchus banksii naso</i> (Forest Red-tailed Black Cockatoo)	Approved Conservation Advice for <i>Calyptorhynchus banksii naso</i> (Forest Red-tailed Black Cockatoo), DEWHA 2009. In effect under the EPBC Act from 11-Jun-2009. http://www.environment.gov.au/biodiversity/threatened/species/pubs/67034-conservation-advice.pdf
	Forest Black Cockatoo (Baudin's Cockatoo <i>Calyptorhynchus baudinii</i> and Forest Red-tailed Black Cockatoo <i>Calyptorhynchus banksii naso</i>) Recovery Plan, DBCA (DEC) 2008 http://www.environment.gov.au/system/files/resources/48e4fc8c-9cb7-4c85-bc9f-6b847cf4c017/files/wa-forest-black-cockatoos-recovery-plan.pdf
<i>Calyptorhynchus baudinii</i>	Conservation Advice <i>Calyptorhynchus baudinii</i> Baudin's cockatoo, TSSC 2018 (DoEE – now DCCEEW). In effect under the EPBC Act from 15-Feb-2018.

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Threatened Species	Conservation Advice and Recovery Plans
(Baudin's Cockatoo)	<p>769-Conservation Advice-15022018 https://www.environment.gov.au/biodiversity/threatened/species/pubs/769-conservation-advice-15022018.pdf</p> <p>Forest Black Cockatoo (Baudin's Cockatoo <i>Calyptorhynchus baudinii</i> and Forest Red-tailed Black Cockatoo <i>Calyptorhynchus banksii naso</i>) Recovery Plan, DBCA (DEC) 2008 http://www.environment.gov.au/system/files/resources/48e4fc8c-9cb7-4c85-bc9f-6b847cf4c017/files/wa-forest-black-cockatoos-recovery-plan.pdf</p>
<i>Calyptorhynchus latirostris</i> (Carnaby's Cockatoo)	<p>Carnaby's Cockatoo (<i>Calyptorhynchus latirostris</i>) Recovery Plan, Western Australian Wildlife Management Program No. 52, DBCA (DPaW) 2013 http://www.environment.gov.au/system/files/resources/94138936-bd46-490e-821d-b71d3ee6dd04/files/carnabys-cockatoo-recovery-plan.pdf</p>
<i>Bettongia penicillata ogilbyi</i> (Woylie)	<p>Conservation Advice <i>Bettongia penicillata</i> woylie, TSSC 2018 (DoEE – now DCCEEW). In effect under the EPBC Act from 01-Feb-2018. http://www.environment.gov.au/biodiversity/threatened/species/pubs/213-conservation-advice-01022018.pdf</p> <p>National Recovery Plan for the Woylie (<i>Bettongia penicillata ogilbyi</i>), Wildlife Management Program No. 51, DBCA (DEC) 2012. http://www.environment.gov.au/system/files/resources/8c82d8f5-074f-40d8-8f2f-dc70bef7ab13/files/bettongia-penicillata-ogilbyi.pdf</p>
<i>Dasyurus geoffroii</i> (Chuditch)	<p>Chuditch (<i>Dasyurus geoffroii</i>) National Recovery Plan, Wildlife Management Program No. 54, DBCA (DEC) 2012 http://www.environment.gov.au/system/files/resources/d6c37be6-42cd-48c4-9cb6-9919457c8898/files/dasyurus-geoffroii-2012.pdf</p>
<i>Setonix brachyurus</i> (Quokka)	<p>Quokka (<i>Setonix brachyurus</i>) Recovery Plan, DBCA (DEC) 2013 http://www.environment.gov.au/system/files/resources/4581df81-0041-4fc9-ba1b-aca7cb22246d/files/quokka-recovery-plan.pdf</p>
<i>Myrmecobius fasciatus</i> (Numbat)	<p>Numbat (<i>Myrmecobius fasciatus</i>) Recovery Plan, DBCA (DPaW) 2017 http://www.environment.gov.au/system/files/resources/5b1825c3-becb-4b3c-8755-700767e8181d/files/numbat-recovery-plan.pdf</p> <p>Conservation Advice <i>Myrmecobius fasciatus</i> Numbat, TSSC 2018 (DoEE - now DCCEEW). In effect under the EPBC Act from 15-Feb-2018. https://www.environment.gov.au/biodiversity/threatened/species/pubs/294-conservation-advice-15022018.pdf</p>
<i>Pseudocheirus occidentalis</i> (Western Ringtail Possum, Ngwayir)	<p>Conservation Advice <i>Pseudocheirus occidentalis</i> Western ringtail possum, TSSC 2018 (DoEE – now DCCEEW). In effect under the EPBC Act from 11-May-2018. http://www.environment.gov.au/biodiversity/threatened/species/pubs/25911-conservation-advice-11052018.pdf</p> <p>Western Ringtail Possum (<i>Pseudocheirus occidentalis</i>) Recovery Plan, DBCA (DPaW) 2017 http://www.environment.gov.au/system/files/resources/e95bcb47-3db8-45d1-aae7-2cfd360097c9/files/recovery-plan-western-ringtail-possum.pdf</p>

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Table 7: Threat Abatement Plans

Threat	Threat Abatement Plan
<i>Felis catus</i> (Feral Cat)	Threat abatement plan for predation by feral cats, DoE 2015. http://www.environment.gov.au/system/files/resources/78f3dea5-c278-4273-8923-fa0de27aacfb/files/tap-predation-feral-cats-2015.pdf
<i>Vulpes vulpes</i> (European Red Fox)	Threat abatement plan for predation by the European red fox, DoEE (DEWHA) 2008. http://www.environment.gov.au/system/files/resources/1846b741-4f68-4bda-a663-94418438d4e6/files/tap-fox-report.pdf
Phytophthora Dieback	Threat abatement plan for disease in natural ecosystems caused by <i>Phytophthora cinnamomi</i> , DoAWE (DoEE) 2018. http://www.environment.gov.au/system/files/resources/ee1f3b9f-6e2e-4a01-86f3-6abb167fb443/files/tap-phytophthora-cinnamomi-2018.pdf

6.4.1 External Contributing Factors

The region in which Worsley operates is large with many contributing factors that must be factored into an assessment of impacts. Of highest relevance are:

- **Drying Climate:** the drying climate has resulted in localised decline in vegetation throughout the region particularly following extended dry periods. An increase in the frequency of extreme weather events has also been experienced. The drying climate may lead to changes in habitat and habitat quality over time.
- **Historic land use:** areas surrounding the Worsley operation are largely used for agricultural purposes with most native vegetation historically removed. This means that remnant vegetation often occurs in isolated fragments with increased occurrence of feral animals and weeds.
- **Dryland salinity:** The Hotham River and Williams River are known to be impacted by salinity associated with historic land clearing in the upper catchments.
- **Newmont Boddington Gold (NBG):** Worsley's operations will be adjacent to the existing NBG facility. Potential cumulative impacts have been considered in the EIA process to ensure that required environmental outcomes are achieved.

6.4.2 Selected Indicators

The environmental outcomes addressed by this CSFMP are largely interconnected and reflect potential direct and indirect impacts associated with the clearing of native vegetation. A summary table of the indicators selected to ensure compliance with each environmental outcome and the rationale for their selection are included in Table 8.

Table 8: Indicators selected for ensuring compliance with environmental outcomes

Environmental Outcome	Selected Indicators	Monitoring Program	Justification and Trigger Level	Ref
1. Disturb no more than the allowable disturbance for the environmental values as described in Condition B13-1(1).	Verified spatial data	Annual reconciliation of monthly survey data	<p>The required outcomes relate to maintaining disturbance within set limits for spatially defined areas and features. Disturbance of these areas and features is tracked monthly through field survey meaning that validated spatial data forms the best metric to track progress against this outcome.</p> <p>A trigger level of 75% has been set for all environmental values included under this environmental outcome. This trigger levels ensures that there is a significant buffer still present when a detailed review will is conducted to ensure planning for the remaining 25% of allowable disturbance is completed with careful consideration and that controls in place are adequate and effective for the remaining 25% of allowable disturbance.</p> <p>A threshold value of 95% has been selected. This ensures that disturbance cannot exceed the allowable disturbance and should additional clearing be required it must be done so under additional strict controls to ensure that there is no risk of exceeding allowable limits under condition B13-1 of MS1237.</p>	<p>Figure 7</p> <p>Table 11</p> <p>Table 12</p> <p>Table 13</p>
2. Figure 3 is not lost due to the proposal (B13-1(2)).	Woylie presence at control sites (pending outcomes of baseline monitoring and associated recommendations)	Targeted Woylie and Numbat Abundance Surveys (3 yearly)	<p>The Woylie located in the Hotham North mine region likely represent residents that form part of a more widespread population with evidence of Woylie presence identified within the surrounding forested areas (Biostat, 2021). Worsley has commenced baseline Woylie surveys over the Hotham North mine region in accordance with the requirements of Condition B13-3 of MS1237 to understand the distribution and abundance of Woylie in and surrounding areas of potential impact. This monitoring will include control sites (i.e. areas outside the expected area of impact). This monitoring will establish the baseline abundance (if sufficient individuals are captured) and distribution of Woylie within the Hotham North Mining Area and immediate surrounds. Following baseline assessment, targeted Woylie monitoring will be conducted every three years, or more regularly on advice from external qualified consultants, to track changes in population metrics of the Woylie within and surrounding the Hotham North mining area.</p> <p>Appropriate population metrics for Woylie will be established following the completion of baseline monitoring (over a minimum 2 year period). Until that time, a draft metric of continued Woylie presence in remnant forest areas within and surrounding the Hotham North mining operations is proposed. With presence in forest control sites demonstrating the persistence of the population in surrounding native vegetation. The draft trigger level for Woylie presence has been established as a >20% decline in presence at control sites surrounding the Hotham North mine region when compared with baseline presence. Control sites have been selected for this indicator as it is known that</p>	<p>Figure 6</p> <p>Table 11</p> <p>Table 13</p>

Environmental Outcome	Selected Indicators	Monitoring Program	Justification and Trigger Level	Ref
shown in Figure 8 is not lost due to the proposal (B13-1(3)).			<p>surveys are currently underway to determine whether a viable population of Numbat occurs within the Hotham North or Marradong mining areas.</p> <p>Given that lack of baseline information to support the presence of a viable population an interim trigger criteria for Numbat has been set for when verified evidence of a numbat individual is identified through surveys or opportunistic observation. Associated trigger response actions require application of additional control measures in accordance with pre-clearance procedures.</p> <p>No Threshold is proposed for this metric.</p>	Table 13
	TBD	Targeted Woylie and Numbat Surveys (3 yearly)	Should a viable population of Numbat be identified within or surrounding the proposed mining areas an appropriate population metric for Numbat with associated trigger and threshold values will be determined in consultation with qualified external consultants.	
4. Ensure no disturbance to:	Verified spatial data	10 Year Mine Plan	Potential breeding trees with evidence of use by Black Cockatoo species and Peregrine falcon nests are identified and assigned protection buffers during pre-clearance surveys as outlined in 6.5.5 and section 6.5.1. Spatial data for Protected Areas are maintained and utilised for mine planning purposes. Disturbance within a Protected Area is restricted to specific activities. Given the above, a trigger has been set for clearing that occurs within 10 m of a Protected Area designated for potential breeding trees with evidence of use or active peregrine falcon nests. This trigger activates the requirement for additional controls to be put in place to prevent unauthorised disturbance within a Protected Area.	6.5.1
a. the buffers identified by condition B13-4(2) for trees being used, or that have evidence of use, by black cockatoos for breeding (excluding the up to 24 trees referred to in condition B13-1(1)(e)) (B13-1(4)(a)).	Proximity of disturbance to potential breeding trees with evidence of use or peregrine falcon nests	Clearing Plans Monthly survey data		6.5.5 Appendix C – Black Cockatoo PBT Ranking System Table 11
b. peregrine falcon (Falco peregrinus) nests including a 30 m buffer unless the tree has not been used over two consecutive breeding seasons (B13-1(4)(b)).			The Threshold for this outcome is any disturbance inside a Protected Area that has been designated for potential breeding trees with evidence of use or active peregrine falcon nests (unless disturbance is completed in accordance with Condition B2-1(4)). Any such disturbance represents a non-compliance with MS1237.	6.5.1.1
c. known records of significant short-range endemic fauna where those fauna are only known from the PAA unless they are known to occur within the protected areas or ecological linkages shown in Figure 4 and Figure 5 respectively (B13-1(4)(c)).	Verified Spatial data Proximity of disturbance to Protected Areas for significant SRE only known from within the PAA	10 Year Mine Plan Clearing Plans Monthly survey data	SRE monitoring has been completed within the PAA and surrounding region. Monitoring for SRE will continue to take place and therefore the knowledge about SRE in the Region will continue to increase over time. All records of significant SRE species that are only known from the PAA have been assigned to Protected Areas with site specific buffers applied as outlined in section 6.5.1. Given the above, a trigger has been set for clearing that occurs within 10 m of a Protected Area designated for significant SRE that only occur within the PAA. This trigger activates the requirement for additional controls to be put in place to prevent unauthorised disturbance within any such Protected Area.	6.5.1 Table 11

Environmental Outcome	Selected Indicators	Monitoring Program	Justification and Trigger Level	Ref
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The Threshold for this outcome is where any disturbance occurs inside a Protected Area that has been designated for significant SRE that are only known from the PAA. Any such disturbance represents a non-compliance with MS1237.

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6.5 MANAGEMENT CONTROL STRATEGIES

This section describes the management and mitigation controls, which when implemented, will achieve the EPA objective for the Environment Factor of Terrestrial Fauna, uphold the relevant environmental values and manage impacts associated with Worsley's operations. For the purposes of this plan all construction and ongoing operations activities are considered and managed in the same way. This is because the potential impacts associated with construction activities for the Worsley Project are consistent with the potential impacts of the ongoing operational activities. Worsley's operational footprint is dynamic and new areas are being established continuously to support the mining process. Construction in the case of the Revised Proposal includes the establishment of a link haul road (noting haul roads are also constructed as part of normal operations), clearing and preparation of areas for the establishment of non-process infrastructure such as crib rooms and maintenance facilities (this process will be carried out in accordance with the same processes and practices as for operational clearing for mining) and the construction of crossings over rivers/streams and establishment of fauna underpasses (mitigation).

The following controls are applied to the Worsley operation to ensure the mitigation hierarchy is effectively applied to minimise the risk of impacts to conservation significant fauna species (see Appendix A - Evaluating Risk).

6.5.1 Protected Areas

Protected Areas are those areas of lands that Worsley will protect from operational clearing activities. Protected Areas include those area that are:

- Formal conservation reserves / parks, as defined in the Forest Management Plan 2014-2023 (Conservation Commission of Western Australia) (Map 2) (e.g. National Parks / Nature / Conservation Reserves), in compliance with the CALM Act and Regulations (2002);
- Areas identified under the EPBC Act, BC Act or through agreements with regulators;
- Areas within the PAA that Worsley has committed to protect as an offset; or
- Identified rehabilitation areas designated to be protected from further clearing (Protected Rehabilitation) as identified in the 10-Year Mine Plan.

Protected Areas are the primary avoidance measure applied to critical habitat for conservation significant fauna species located within and adjacent to operational areas within the PAA. The network of Protected Areas will provide sanctuary and transport corridors for all fauna species and have been designed to specially provide valuable habitat to those fauna species of conservation significance.

Baseline flora and fauna surveys are the primary basis by which Protected Areas are identified within the PAA. When establishing a new Protected Area, buffers must be applied unless the Protected Area itself represents a buffer (e.g. stream buffers) to ensure the intrinsic values contained within the Protected Area are maintained and indirect impacts are minimised.

Disturbance within Protected Areas must be approved by the CEO except where it occurs in the course of:

- Ecological restoration / rehabilitation activities (e.g. weed control, feral animal control, rehabilitation, rehabilitation maintenance etc.);
- Maintenance and / or decommissioning of existing infrastructure within the Protected Areas (e.g. roads, bores, fences, powerlines etc.);
- Environmental monitoring activities (including installation and decommissioning of monitoring equipment and sites); or
- Activities carried out to ensure compliance with legislation and / or approvals.

Any disturbance within Protected Areas must be included in the AER and the 10 Year Mine Plan.

Protected Areas must be monitored to verify habitat condition is maintained as operations continue and to assess utilisation by conservation significant fauna species during and following the completion of the approved operational activities in surrounding areas. This will be managed through ecological survey programs as detailed in section 7.

An external factor which may affect outcomes of this monitoring program is climate change. Groundwater monitoring within control sites will support an assessment of the potential contribution of a drying climate, and subsequent decline in groundwater levels, on vegetation condition.

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6.5.1.1 Protection of Potential Breeding Trees with Evidence of Use

As outlined in section 6.5.1, site specific buffers will be applied to Protected Areas. When applying a buffer for the protection of Potential Breeding Trees (PBTs) with evidence of use a minimum of 30 m from the base of the tree is used in accordance with Condition B13-4 (2). Exceptions to this are:

- where the tree is to be disturbed as one of the 24 trees referred to in condition B13-1(1)(e) of MS1237; or
- where advised otherwise in writing by the CEO.

6.5.2 High Quality Wandoo Habitat Protection Commitment

Plan W identified specific Wandoo, heath and Sheoak vegetation locations as defined in the DBCA agreement 1997 (updated Feb 1999). This agreement protected the identified areas from clearing for mining but permitted disturbance for haul roads and infrastructure. Under the Revised Proposal Worsley has committed to the complete avoidance of all remaining Plan W areas.

Worsley has undertaken extensive flora and fauna studies, including the review of potential habitat trees for the three species of Black Cockatoo. As evidenced from the biological studies undertaken, avoidance of additional Wandoo habitat will be beneficial to fauna, with particular emphasis on breeding and foraging of the three species of State and federally listed Black Cockatoos. Wandoo areas have been identified as key to providing suitable hollows in PBTs as Wandoo are a prolific hollow forming tree species. In line with these findings, Worsley has made a commitment to limit clearing within high quality Wandoo habitat to 25% of the known areas within the PAA and as shown on Figure 9 (currently representing 295 ha of the 1,183.6 ha).

NOTE: high quality wandoo areas have been identified from aerial photography in some areas. These areas will be verified in the field by June 2025. At that time this protection commitment and associated maps will be updated to reflect the confirmed total area of wandoo. Protection will be maintained at 75% of high quality wandoo regardless of confirmed total extent.

Reporting against this protection commitment will be included within the AER.

6.5.3 Ecological Linkages

The presence of Ecological Linkages between forested areas and remnant vegetation in the Southwest of WA is an essential component for facilitating the movement of fauna between habitats. The value of linkages is well documented and is supported by the federal government's National Wildlife Corridors Plan: A framework for landscape-scale conservation in 2012 (DSEWPaC, 2012).

Ecological Linkages for the WMDE were defined by Worsley and subsequently included as a requirement of Condition B2-1 (5) of MS1237 (see Figure 8). The focus for the selection of Ecological linkages was for the benefit of conservation significant fauna species including the Woylie and Red-tailed Phascogale, however, the benefit of the linkages also applies to other common species. Condition B2-1 (5) requires the following environmental outcome: *ensure no disturbance or adverse impacts to more than 146.5 ha of native vegetation within the ecological linkages shown in Figure 5 where disturbance shall only be for infrastructure, roads or access and not mining.*

Worsley has committed to additional mitigation measures for Ecological Linkages including a requirement for fauna underpasses, where a road or haulroad fully intersects an Ecological Linkage, and signage.

Fauna corridors are included in the Ten Year Mine Planning process for MTR. These areas are planned to have minimal disruption, to allow freedom of movement.

The Hotham River, its tributaries and remnant feeder creek systems traverse areas of State forest as well as agricultural land within the PAA (BIOSTAT, 2020), with waterways typically fringed by narrow disturbed native riparian and associated communities. This system provides important movement corridors and habitat within the PAA for a number of aquatic and semi-aquatic species, such as the Native Water-Rat (*Hydromis chrysogaster*), and numerous wetland bird and frog species, as well as ground dwelling species, such as the Common Brushtail Possum (*Trichosurus vulpecula*), Chuditch (*Dasyurus geoffroii*) and Quenda (*Isodon fusciventer*).

Annual rehabilitation plans have annual targets for completion and include a focus on maintaining fauna corridors and strengthening Ecological Linkages to promote movement of terrestrial fauna through the landscape and support recolonisation of rehabilitation. These corridors provide habitat connectivity, refuge and potential food sources for fauna species.

6.5.4 Fauna Crossings

Fauna crossings must be constructed for all linear barriers that fully intersect Ecological Linkages (i.e., roads and haul roads). Crossings will be designed to allow the movement of mobile ground dwelling and, where relevant, arboreal species across the landscape through Ecological Linkages. These crossings are intended to allow safe passage of terrestrial fauna through the region minimising potential interaction with vehicles and surface mobile equipment and reducing the threat of predation associated with traversing across open ground.

When determining appropriate placement of fauna crossings, mapping / surveys of the fauna “pathways” within Ecological Linkages, including consideration for seasonality (i.e. presence of intermittent streams), will be required. Sites will be selected based on suitability for use by a diverse range of fauna species all year round and constructability. Fauna crossings will include road underpasses and, where appropriate, overhead arboreal crossings (i.e., areas supporting Red tailed Phascogale).

The final design of the fauna crossings will be determined in consultation with fauna experts and DBCA. Fauna crossings will be designed to target mobile fauna species known or likely to occur within the area of installation. Some basic design principles for fauna crossings are described below:

Underpasses:

- Underpasses will be a culvert style fauna crossing that will include fixtures inside to allow for fauna to travel off the ground, avoiding potential predation or seasonally wet conditions.
- Litter trails will be incorporated in the design to support use by smaller fauna species such as reptiles.
- Vegetation will be maintained either side of the crossing as close to the underpass as possible to minimise risk of predation.
- Funnel fencing will be applied where other design features do not provide this effect.

Overpasses:

- Overhead arboreal crossings will be designed to accommodate small marsupials such as Red tailed Phascogale.

An example of a fauna underpass currently being utilised in Australia is provided as Figure 2.



Figure 2: Example culvert style underpass for critical weight range ground dwelling fauna.

All fauna crossings will be included in a targeted 3 yearly fauna monitoring program for Ecological Linkages. The purpose of this monitoring program will be to gain an understanding of the diversity and abundance of species utilising the Ecological Linkages and fauna crossings. The survey will include targeted surveys for conservation significant fauna and feral predators. A key objective of the program will be to understand the effectiveness of feral animal control measures being utilised within Ecological Linkages, ensuring that the Ecological Linkages do not become a targeted hunting area for feral predators. Findings and recommendations from these surveys will be incorporated into future fauna crossing designs and management measures through the adaptive management process.

6.5.5 Pre-Clearance Surveys and Management

Pre-clearance surveys are required to be completed prior to clearing of native vegetation. Where the Pre-clearance surveys identify the presence of conservation significant fauna or suitable habitat features, additional management measures must be applied to ensure that the risk of impacting on these species during clearing activities is minimised. Pre-clearance surveys for fauna are staged with an initial survey conducted to identify habitat, habitat features and potential presence of conservation significant fauna in the area. A follow up survey is then conducted within 7 days prior to clearing to reassess the significant features identified during the initial survey(s) to verify occupancy and apply appropriate management measures (e.g., avoidance buffers, destructive searches etc) to ensure potential impacts on fauna are minimised.

A summary of the pre-clearance surveys and management activities required to be completed for each conservation significant species is provided in Table 9.

6.5.5.1 Initial Pre-Clearance Surveys

Pre-clearance surveys are conducted prior to any native vegetation disturbance. The 10 Year Mine Plan includes planned operational disturbance activities and is used to identify areas requiring pre-clearance surveys. The following are identified during pre-clearance surveys

- Potential Breeding Trees (PBTs) including those with suitable hollow/s (Rank 3) or with evidence of use (Rank 1 or Rank 2);
- Potential and confirmed habitat features for other conservation significant fauna species (hollow logs, denning activity etc.);
- Physical signs of presence of conservation significant fauna species; and
- High potential habitat for more cryptic conservation significant fauna species.

Pre-clearance surveys include the following process for inspection:

- Areas of proposed clearing are walked to identify PBTs and other fauna habitat of significance (e.g. hollow logs, thickets etc.)
- All trees of suitable size are reviewed and PBTs are recorded as Rank 1-3 in accordance with Appendix C and GPS coordinates captured for all Rank 1-3 trees, as well as GPS coordinates for all other relevant habitat structures observed (noting rank 4 & 5 trees are not GPS recorded).
- PBTs Ranked 2-3 are inspected with a pole camera (or other method e.g. drone) where possible, to verify use or appropriateness of the hollow to support black cockatoo breeding. If the hollow is found to be unsuitable for breeding (e.g. shallow) the PBT will be re-classified to a Rank 4. Noting that PBTs assessed as Rank 1 are already confirmed to support Black Cockatoo breeding.

6.5.5.2 Follow up Pre-clearance Surveys

Follow up Pre-clearance surveys will be conducted within 7 days prior to clearing. This will include:

- monitoring of all suitable PBTs (Rank 1-3) using the Tap and Flush survey method to determine occupancy.
- destructive searches of potential and confirmed habitat features for conservation significant fauna species. This includes tapping and inspecting previously identified habitat features to flush out any occupants. Where possible entries should be blocked or features repositioned so as to discourage return.

6.5.5.3 General Management Measures

Additional management measures are applied to clearing activities to ensure that impacts to conservation significant fauna are minimised. These include:

- Fauna spotter must be present during all clearing activities.
- Clearing activities must cease if a Threatened mammal is identified within the planned disturbance area. Activities may only recommence once the fauna handler considers that the Threatened mammal no longer occurs in the area.
- Controlled felling must be applied for all suitable PBTs (Rank 1 -2)
- Avoidance buffers must be applied for:
 - active Black Cockatoo hollows within the clearing area (temporary 250 m buffer until hollow is verified as unoccupied)
 - active Peregrine falcon nests (30 m)
 - active Chuditch dens (temporary 50 m buffer until den is verified as unoccupied).

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- Clearing must be completed in a front towards remnant vegetation where possible (noting this is not possible for isolated fragments).

Table 9: Conservation Significant Fauna Pre-Clearance Survey and Management Summary

Species	Critical Habitat Features	Survey Timing	Pre-Clearance Monitoring and Management Activities
<p><i>Calyptorhynchus banksii naso</i> (FRTBC), <i>Zanda latirostris</i> (Carnaby's Cockatoo) and <i>Zanda baudinii</i> (Baudin's Cockatoo)</p>	PBTs	<p>Targeted searches for PBTs – unrestricted</p> <p>Confirmed Habitat Trees (Rank 1) will be monitored during the peak breeding season:</p> <ul style="list-style-type: none"> • Carnaby's - Sept-Nov • FRTBC - April-June and Aug-Nov • Baudin's - Oct-Jan (RLA) 	<ul style="list-style-type: none"> • Targeted searches for PBTs including subsequent verification with pole camera or drone as required to determine Rank in accordance with Appendix C. • PBTs with evidence of use (Rank 1-2) are monitored for multiple seasons where possible i.e. up to 2 years prior to disturbance (2 days of monitoring at monthly intervals during breeding season). • Signs of activity must also be recorded including foraging debris (noting in particular the markings on marri nuts to support species identification) and pruning debris. • All suitable Potential Breeding Trees (Rank 1-3) must be inspected within 7 days prior to clearing to determine occupancy and verify Rank. • If Rank 1 and 2 trees are to be avoided they must be assigned appropriate buffers in accordance with section 6.5.1.1 to ensure ongoing viability of the hollow. • Rank 1 PBTs for Baudin's Cockatoo, must be Protected. • A temporary 250 m mining exclusion zone must be applied (i.e. no new ground disturbing activities or clearing) for any active Black Cockatoo hollow until the hollow has been verified as vacated. • Any Rank 1-3 PBTs that are removed must be control felled with a fauna spotter present.
<p><i>Dasyurus geoffroii</i> Chuditch</p>	PBTs, hollows, denning features (hollow logs, rocks, overhangs, caves, breakaways etc)	<p>March – August Note: Breeding occurs April-July</p>	<ul style="list-style-type: none"> • Targeted searches for PBTs and critical habitat features prior to disturbance (noting Chuditch may also use suitable PBTs). • Further targeted camera trapping may be used to verify use at high potential PBTs or Habitat Features. • Where active denning is identified the DBCA Species and Communities program will be notified in writing and an exclusion zone will be established around the den in consultation with this team (i.e. no new ground disturbing activities or clearing) until the den is verified as vacated. Fauna awareness signage must also be installed on nearby haul roads and forest tracks. • Features are flagged and recorded on clearing plans. • Harvesting and habitat disturbance is undertaken in surrounding areas avoiding any 'Confirmed' features and buffers (encouraging dispersal).

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Species	Critical Habitat Features	Survey Timing	Pre-Clearance Monitoring and Management Activities
			<ul style="list-style-type: none"> Destructive searches of any habitat features present (assessed as not active) with a fauna spotter / specialist to encourage dispersal and prevent future access prior to clearing. Complete standard clearing for the remainder of the pit on a clearing front towards remnant habitat avoiding buffers for active dens (as applicable).
<i>Bettongia penicillata ogilbyi</i> Woylie	Large intact areas of variable vegetation	March – August Note: No specific breeding period, breed every 3-4 months	<ul style="list-style-type: none"> No specific habitat features are defined for this species; however, signs of activity are assessed and recorded during pre-clearance surveys (e.g. nest building, recent foraging activity). Further targeted surveys (e.g., camera trapping) may be initiated to confirm presence of species. Harvesting and habitat disturbance are undertaken while avoiding any areas supporting evidence of nest building and recent foraging activity (encouraging dispersal). Where presence is confirmed, complete a destructive search of verified habitat with a fauna spotter / specialist to encourage dispersal and / or capture / release and ensure no individuals are present. Complete clearing of the remainder of the pit on a clearing front towards remnant habitat.
<i>Phascogale calura</i> Red Tailed Phascogale Kenngoor	Allocasuarina stands Tree hollows Grass tree skirts	June – August Note: breeding known to occur in July	<ul style="list-style-type: none"> Where Wandoo or Allocasuarina with grasstree dominated habitat are being cleared, undertake the harvesting and habitat disturbance to include habitat modification of these habitat types with a Fauna Spotter present. Complete clearing of the remainder of the pit on a clearing front towards Protected Areas, ecological linkages and remnant habitat. Adaptive management for pre-clearance for the species upon review of initial clearance activities.
<i>Pseudocheirus occidentalis</i> Western Ringtail Possum Ngwayir	PBTs Dreys	March – August Note: breeding occurs in April-May and September-October	<ul style="list-style-type: none"> Targeted searches for PBTs (as per Black Cockatoos) and dreys / habitat features. Monitor PBTs with signs of potential use by mammals (e.g. scarring) and / or 'Confirmed' Habitat Features for 2 weeks prior to harvesting to verify status. Ensure a Fauna Spotter is present during clearing activities.
<i>Setonix brachyurus</i> Quokka	Often associated with riparian vegetation, dense vegetation and mid slopes.	March – August Note: Breeding occurs throughout the year on the mainland	<ul style="list-style-type: none"> No specific habitat features are defined for this species however, signs of activity are assessed and recorded during pre-clearance surveys (runnels, scats, tracks). Further targeted surveys (e.g., camera trapping) may be initiated to confirm presence of species. Undertake harvesting and habitat disturbance while avoiding any areas supporting evidence of quokka

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Species	Critical Habitat Features	Survey Timing	Pre-Clearance Monitoring and Management Activities
			activity (runnels, scats, tracks) with a focus on dense vegetation and riparian buffer habitat. <ul style="list-style-type: none"> Fauna Spotter to be present during clearing activities for areas of preferred habitat types within the RLA.
<i>Myrmecobius fasciatus</i> Numbat Noombat	Hollow logs Termites	March- August (cooler months when they are more active throughout the day) Note: Breeding occurs December - January	<ul style="list-style-type: none"> Targeted searches for preferred habitat (hollow logs) and signs of activity (recent foraging activity and scats). Further targeted surveys (e.g., camera trapping) may be initiated to confirm presence of species. Where presence is confirmed or considered likely, complete investigation of habitat features with a fauna spotter / specialist to encourage dispersal and / or capture / release and ensure no individuals are present. Where possible retain suitable logs, for rehabilitation fauna habitat. Undertake harvesting and habitat disturbance while avoiding any potential habitat features, logs and hollows suitable for the species Complete clearing of the remainder of the pit on a clearing front towards remnant habitat.
<i>Leipoa ocellata</i> Malleefowl	Mounds	N/A	<ul style="list-style-type: none"> Targeted searches for mallee fowl mounds. If identified, verify status (active vs inactive). Where found to be inactive estimate time (years) since last use. If estimated to have been active within the last 5 years, consult with external qualified experts to determine an appropriate buffer for the mound taking into consideration the surrounding habitat and any other known location of Malleefowl in the area.
<i>Falco peregrinus</i> Peregrine Falcon	Nests	Spring	<ul style="list-style-type: none"> Targeted searches for active nests. Active nests must be avoided with a 30m buffer applied from the base of the tree. Trees must be monitored annually for use. If tree is not used over 2 consecutive breeding seasons it may be removed through controlled felling.

6.5.6 Weed Management

The extent of weed invasion in the PAA covered with intact jarrah forest is assessed during baseline surveys. Managing declared weeds reduces the potential for habitats and conservation significant fauna species to be adversely impacted through competition of resources. Controls in place for the management of weeds are included within the Flora and Vegetation Environmental Management Plan (WAPL-Business-CD- 2000001092).

6.5.7 Feral Animal Control Programs

Worsley provides aerial 1080 baiting, targeting foxes and cats, across forested JV land and State forest areas within the WMDE and JV Land surrounding the RLA. These areas are aligned with operational timing and programs of neighbouring forest areas under DBCA management. This allows for a larger area of coordinated management and the reduced potential of isolated pockets for re-establishment of fox and cat populations. Each management method will be developed using the

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objectives outlined within the respective recovery or threat abatement plan for fauna listed in Table 7 and will be aligned to the relevant plan's objective.

Methods for other feral animal management (i.e. pigs) are discussed annually with DBCA representatives for potential inclusion as a targeted regime.

Targeted management activities for feral predators will also be applied to fauna crossings within Ecological Linkages.

6.5.8 Forest Hygiene Management

Forest diseases, including Phytophthora dieback (*Phytophthora sp.*) and Australian honey fungus (*Armillaria luteobubalina*) are recognised as having a significant impact on native vegetation and habitat for conservation significant fauna. Monitoring and management measures applied to achieve defined outcomes and objectives for forest diseases within the PAA are detailed within the Flora and Vegetation Environmental Management Plan (WAPL-Business-CD- 2000001092).

6.5.9 Forest Rehabilitation

Worsley conducts progressive rehabilitation of disturbed forest areas within the Project Area. The re-establishment of native vegetation minimises the potential for indirect impacts associated with fragmentation, edge effects and changes in groundwater and surface water in adjacent forested areas. Rehabilitation completed by Worsley must be consistent with the requirements of Condition B14-1 of MS1237.

To ensure these outcomes are met in relation to the Revised Proposal, Worsley will prepare and submit a Rehabilitation Performance Report in accordance with the requirements of Condition B14-2 within 12 months of receipt of MS1237. The intent of this Report is to outline the historic developments and improvements in rehabilitation, detail completion criteria and biodiversity indicators and their relevance to the rehabilitation development, as well as document Worsley's monitoring, measurement and adaptive management processes.

These requirements and associated monitoring and reporting are detailed in full within the Annual Rehabilitation Report required by condition B14-3 (and condition C4) of MS1237.

Please refer to the Rehabilitation Performance Report and the Annual Rehabilitation Report for further detail on rehabilitation practices and outcomes.

6.5.10 Biodiversity Offsets

Biodiversity Offsets represent the final consideration in the mitigation hierarchy. Biodiversity Offsets at Worsley are implemented and managed in accordance with the Local Offset Environmental Management Plan (WAPL-Business-CD-2000001090) required by condition B15-4 of MS1237. Areas within the PAA that have been identified and approved as Biodiversity Offset Areas will be managed as Protected Areas.

6.5.11 Fauna Translocation

Translocation is an important conservation technique for conservation significant fauna used in Western Australia to maintain genetic diversity and re-establish populations of conservation significant fauna within the environment. Translocation programs must be carefully planned, implemented and monitored to ensure that they meet their intended outcomes.

Translocations often observe higher mortality rates in the initial weeks following release due to predation, starvation, disease, interception with roads, cardiac pathology, reduced reproduction and dispersal from release site. Chronic stress does not directly cause a translocation to fail, however it increases the vulnerability of individual animals to these factors that contribute to translocation failure. Therefore, animal stress should be accommodated within translocation planning and procedures (Dickens et al. 2010).

Worsley does not currently implement translocation as part of its pre-clearance processes, favouring a staged approach to pre-clearance survey and management activities, staged harvest (overstorey disturbance primarily) and habitat modification encouraging fauna dispersal to Ecological Linkages, adjacent and protected habitat prior to clearing.

Detailed consultation with DBCA is required to determine whether a translocation program would be suitable for any conservation significant species present within planned operational areas. This consultation will be completed as early as possible prior to operations commencing within the northern portion of the WMDE (areas surrounding Newmont Boddington Gold) to allow sufficient planning time to implement any recommended management activities. This consultation process and any resulting management actions will be incorporated into the Worsley DBCA Working arrangements and future revisions of this CSFMP.

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6.5.12 Water Management Plan

In accordance with the requirements of MS1237 (condition B16-2) Worsley has compiled a Water Management Plan (WMP) (01027243) which details the potential impacts on groundwater, surface water and Groundwater Dependent Ecosystems (GDEs) and indirect impacts on conservation significant flora, fauna and ecological communities associated with changes to surface water and/or groundwater attributable to the Worsley operation. The WMP also outlines the management, monitoring and mitigation measures implemented to ensure that these direct and indirect impacts are minimised to achieve the environmental outcomes.

The WMP was prepared in accordance with the 'Instructions: How to prepare Environmental Protection Act 1986 Part IV Environmental Management Plans' published by the Western Australian Environment Protection Authority (EPA) (EPA, 2024) and the 'Environmental Management Plan Guidelines' published by the Department of Climate Change, Energy, the Environment and Water (DCCEEW) (DCCEEW, 2024). WMP has been written to be consistent with the requirements of conditions C4-1 and C5-1 of MS1237. In accordance with condition C1-1 no ground disturbing activities may take place until the CEO has confirmed in writing that this WMP meets the requirements of condition B16-2 of MS1237.

6.5.12.1 Carter's Freshwater Mussel

Included in the WMP is information relating to Carter's Freshwater Mussel, including outcomes and objectives for Carter's Freshwater Mussel, and therefore are not included in the scope of this CSFMP and the reader is directed to the WMP for further information.

The following information can be found in the WMP:

- Section 4.3.4: background information including survey programs, description / habitat, distribution and potential impacts and threats,
- Section 4.10.1: Carter's Freshwater Mussel Monitoring Program,
- Table 5-4: Carter's Freshwater Mussel Outcome-based provisions,
- Appendix D: Detailed Carter's Freshwater Mussel Monitoring Program.

7 FAUNA MONITORING PROGRAMS

Fauna monitoring programs have been designed and implemented to manage fauna related aspects associated with operations within the PAA. The purpose, locations and frequencies of each monitoring program are outlined in Table 10. The fauna monitoring programs include the monitoring required under MS1237. Monitoring programs are designed to allow assessment of outcomes and objectives as outlined in Section 8. Survey methodologies are determined by independent qualified third parties and comply with applicable EPA and DCCEEW guidelines.

Monitoring programs will be adapted with evolving technology (e.g., advances in use of DNA technology) to ensure effectiveness is maximised and impacts on fauna from monitoring activities are minimised. These changes will be made following consultation with appropriate regulators, ensuring data comparability over time is maintained.

Table 10: Fauna Monitoring Programs – Revised Proposal

Monitoring Program	Frequency	Location(s)	Purpose
Vertebrate Fauna presence confirmation*	Annual	Targeted locations in mining regions and control sites	Confirmation of native species presence. Assess presence of feral predators.
Vertebrate Fauna – Protected Areas and Ecological Linkages	3 yearly	Protected Areas Ecological Linkages GDEs (representative sample)	Assess fauna assemblage. Assess presence and use of the areas by conservation significant fauna. Assess presence of feral predators.
Vertebrate Fauna – Rehabilitation STR	3 yearly	STR rehabilitation areas Forest Control sites	Monitor re-establishment of fauna and compare with forest control sites. Presence of feral animals.
Vertebrate Fauna – Rehabilitation MTR	3 yearly	MTR rehabilitation areas Forest Control sites	Monitor re-establishment of fauna and compare with forest control sites. Presence of feral animals.

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Vertebrate Fauna – Rehabilitation QTR	3 yearly	QTR rehabilitation areas Forest Control sites	Monitor re-establishment of fauna and compare with forest control sites. Presence of feral animals.
Targeted Woylie and Numbat Abundance	3 yearly	Hotham North Mining Area Marradong Timber Reserve (Numbat only)	Determine a baseline abundance for Woylie and Numbat (first monitoring event) Monitor for changes in abundance over time at control sites.
Fauna Crossing Utilisation Survey	3 yearly	Fauna Crossings in Ecological Linkages	Determine which fauna species are utilising fauna crossings. Assess effectiveness of feral predator controls.
Pre-Clearance Surveys (see section 6.5.5)	Ongoing	Areas proposed for disturbance in the 10 Year Mine Plan	Identify habitat features for conservation significant fauna. Identify evidence of presence of conservation significant fauna. Allow application of the mitigation hierarchy for significant areas / features.
SRE - Rehabilitation	3 yearly	Rehabilitation Forest Control sites	Monitor re-establishment of SRE in rehabilitation. Monitor forest control sites to allow comparison and identification of regional trends.
Black Cockatoo PBT Monitoring	Annual	Known Rank 1 and Rank 2 PBTs within the PAA	Assess utilisation of PBTs with evidence of use by Black Cockatoo species. Monitor success of breeding attempts.
Vertebrate Fauna - CBME	5 yearly	CBME and surrounding forest	Assess fauna assemblage. Assess presence and use of the areas by conservation significant fauna. Assess presence of feral predators.

* Vertebrate fauna confirmation surveys are proposed to occur annually see section 7.1.1 below.

Additional fauna monitoring programs may be initiated on recommendation from independent qualified third parties, at the request of relevant Regulators or as a result of applying adaptive management processes to achieve the required outcomes and objectives of this CSFMP.

7.1.1 Annual Species Presence Confirmation Surveys

An annual survey will be established to confirm ongoing species presence in the mining regions and identify presence of additional species not seen in the area previously / recently. This program will be designed with input from expert third parties and confirmed with DBCA and regulators prior to being implemented. The CSFMP will be updated with this detail and resubmitted in accordance with Condition C2-2 or C2-3. This survey will be designed within 12 months of the date of MS1237 and implemented thereafter. It is proposed that the design will include the targeted placement of a suitable number of camera traps per target species home range, allowing confirmation of ongoing species presence within the mining regions.

Further work is continuing into understanding eDNA in the Northern Jarrah Forest, and this will continue to be investigated to determine how and if this methodology can be used to adapt future fauna surveys (Curtin 2024).

Annual species presence confirmation surveys will also support the understanding of presence and distribution of feral animals within the mining regions, assisting with targeted eradication programs.

7.1.2 Triennial Vertebrate Fauna Monitoring

Detailed fauna monitoring will be completed every three years to assess changes in fauna assemblage, allow comparison with forest control sites and identify any need for further targeted surveys.

To date the Vertebrate Fauna – Rehabilitation monitoring program at Worsley includes surveys of both rehabilitation and forest control monitoring plots within and adjacent to the mining areas, over three seasons on a three-yearly rotation. This program has been ongoing since 2002 and since this time has provided detailed information about the recolonisation of rehabilitation by vertebrate fauna through development stages. The monitoring program is consistent with the EPA Technical

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Guidance for Terrestrial Vertebrate Fauna Surveys for EIA (2020) and is conducted by qualified external consultants. The monitoring program includes an array of survey techniques including but not limited to camera trapping, traplines (pit fall traps, cage traps, box traps, funnel traps), targeted searches, acoustic recording (bats and birds), bird surveys, foraging assessments and opportunistic observations. These survey techniques may be modified over time with technology improvements, in consultation with appropriate regulators, through application of adaptive management.

The Vertebrate Fauna – Protected Areas and Ecological Linkages monitoring program will mirror the Vertebrate Fauna - Rehabilitation monitoring program. Additional forest control plots will be established, as required, to ensure that there are sufficient representative forest control plots to support this monitoring program.

7.1.3 Targeted Fauna Monitoring Programs

Targeted fauna monitoring programs will be initiated where required to address critical knowledge gaps. This may include surveys to determine distribution and abundance. Targeted surveys may be triggered by management targets, regulator requirement or to assess effectiveness of management techniques.

7.1.3.1 Targeted Numbat and Woylie Abundance

Baseline targeted surveys for Numbat within MTR and Hotham North, and Woylie within Hotham North have commenced. Survey techniques applied during these surveys were determined based on species specific survey techniques and included passive camera trapping (Numbat and Woylie), baited camera trapping (Woylie), active searches for signs (e.g., scats, diggings etc) and trapping and subsequent microchipping of individuals (Woylie). Upon completion, the outcomes of the baseline monitoring program will be used to support the definition of outcome-based provisions for Woylie and Numbat. It will also support development of a detailed ongoing triennial monitoring program to allow long term analysis of population dynamics within applicable mining areas. All monitoring programs are designed to ensure consistency with relevant EPA Guidelines.

7.1.3.2 Fauna Crossing Utilisation Survey

Monitoring of fauna crossings will commence upon the establishment of dedicated fauna crossings for haul roads and light vehicle tracks through Ecological Linkages. Monitoring will be completed at least 3 yearly over three seasons to assess the assemblage of fauna species utilising fauna crossings. It is anticipated that the survey methodology will include camera trapping and site inspections for evidence of animal presence (e.g., scats, tracks, diggings etc). The monitoring program will also be designed to assess the effectiveness of any feral animal controls applied at each crossing site. Given fauna crossings are yet to be established, the location and methodology for this monitoring program has not yet been finalised.

7.1.3.3 Black Cockatoo PBT Monitoring

Identified PBTs with evidence of use (Rank 1 and Rank 2) will be inspected during the breeding season on an annual basis to assess utilisation. This will include direct observation with binoculars, Tap and Flush checks or inspection with a pole camera. Identified active hollows will continue to be monitored to record the outcome of any observed breeding attempt. Monitoring results will be reported within the Annual Environmental Report.

7.1.3.4 SRE - Rehabilitation Monitoring

Within 12 months of receipt of MS1237 a SRE monitoring program will be designed and implemented to assess re-establishment of SRE in rehabilitation. This program will monitor rehabilitation sites and forest control sites to allow comparison and identification of regional trends. Survey methods utilised within the monitoring program are anticipated to include pitfall trapping, active foraging and litter/soil sieving. Surveys will be designed to comply with the relevant EPA technical guidance.

8 EMP PROVISIONS

8.1 OUTCOME-BASED PROVISIONS

This section describes the outcome-based provisions for conservation significant fauna, which when implemented, will achieve the EPA objective for the environment factor of Terrestrial Fauna and uphold the relevant environmental values and manage impacts associated with Worsley's operations. These are based on the approach described in Section 6.

The provisions included in this CSFMP reflect management actions taken by Worsley specifically targeting fauna species. Management actions for aspects more relevant to the protection of vegetation and flora (i.e. forest hygiene, weed management etc) are included in the Flora and Vegetation Management Plan (WAPL-Business-CD- 200001092).

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The purpose of the outcome-based provisions is to meet the legal requirements under MS1237 condition B2-1(5), B2-1(6) and B13-1. These outcome-based provisions are further detailed in Table 11.

Relevant Outcome(s)	Trigger & Threshold Criteria	Response actions	Monitoring	Timing / frequency of monitoring	Reporting
	<p>Threshold Criteria</p> <p>The total reconciled area of disturbance for any environmental value as outlined under condition B13-1 (1) reaches 95% of permitted disturbance (see Table 12 for Threshold Levels).</p>	<p>Threshold Contingency Actions:</p> <ul style="list-style-type: none"> Notify EH&A Manager and Production Planning Manager. Suspend all disturbance of the applicable environmental value until clearing boundaries have been surveyed / values have been verified. EH&A Manager must approve any further disturbance for the applicable environmental value with additional controls applied (as deemed necessary) to ensure compliance with Condition 13-1(1) disturbance limits. Any exceedance of disturbance limits within Condition 13-1(1) represents a non-compliance and must be reported to the appropriate regulator(s). 	<p>Clearing reconciliation process to verify total area cleared.</p> <p>Internal Clearing Plan sign off.</p>	<p>Annual</p> <p>Prior to Clearing</p>	<p>value included in the 10 Year Mine Plan.</p> <p>Non-compliance reports to appropriate regulator(s).</p>
MS1327 Condition B13-1(2)					
Outcome 2	<p>Trigger Criteria 1</p> <p>Annual species presence monitoring⁹ shows a decrease in presence of Woylie by >20% compared with previous years monitoring</p>	<p>Trigger Level Actions</p> <ul style="list-style-type: none"> Notify EH&A Manager Engage qualified consultants to investigate potential causes of reduced presence and compare with regional trends. 	<p>Indicator: <i>Woylie presence within Hotham North Mine Area</i></p>	<p>Annual</p>	<p>Monitoring results for vertebrate fauna included in AER.</p> <p>Compliance Assessment Report.</p>
	<p>Threshold Criteria 1</p> <p>Annual species presence monitoring⁹ fails to identify Woylie</p>	<p>Threshold contingency actions</p> <ul style="list-style-type: none"> Notify EH&A Manager Develop and implement a response plan in consultation with relevant government authorities. 			

⁹ Final trigger and threshold criteria for this outcome are pending drafting of the monitoring program for annual species presence monitoring, which will be completed within 12 months of the date of MS1237

Relevant Outcome(s)	Trigger & Threshold Criteria	Response actions	Monitoring	Timing / frequency of monitoring	Reporting
		<ul style="list-style-type: none"> Initiate further detailed monitoring in line with 3 Year monitoring 			
Outcome 2	<p>Trigger Criteria 1¹⁰ Decrease in detection of presence of Woylie by >20% at monitored control sites within and surrounding the Hotham North mine region from the measured baseline.</p> <hr/> <p>Threshold Criteria 1¹⁰ Decrease in detection of presence of Woylie by >40% at monitored control sites within and surrounding the Hotham North mine region from the measured baseline.</p>	<p>Trigger Level Actions</p> <ul style="list-style-type: none"> Notify EH&A Manager Identify any obvious spatial patterns in reduced presence. Engage qualified consultants to investigate potential causes of reduced presence and compare with regional trends. Implement actions in accordance with recommendations received from investigation. Monitor and report on outcomes. <hr/> <p>Threshold contingency actions</p> <ul style="list-style-type: none"> Notify EH&A Manager and appropriate regulators. Develop and implement a response plan in consultation with appropriate regulators. 	<p>Indicator: <i>Woylie presence within control sites</i></p> <p>Targeted Woylie abundance and distribution monitoring program.</p> <p>Ecological Linkages and Protected Areas vertebrate fauna monitoring program</p>	<p>3 yearly</p> <p>3 yearly</p>	<p>Monitoring results for vertebrate fauna included in AER.</p> <p>Compliance Assessment Report.</p> <p>Provision of survey data (IBSA).</p> <p>Threshold exceedance reports and associated response plans to appropriate regulator(s).</p>
Outcome 2	<p>Trigger Criteria 2 Woylie not observed within expected Ecological Linkages (as identified during baseline monitoring) during Vertebrate Fauna – Protected Areas and Ecological Linkages monitoring program.</p>	<p>Trigger Level Actions</p> <ul style="list-style-type: none"> Notify EH&A Manager Investigate potential causes of lack of observations within Ecological Linkages including any requirement for additional targeted survey work. Implement additional control actions in accordance with investigation findings (e.g. modifications to feral animal control measures, changes to operational areas, prioritisation of rehabilitation etc). 	<p>Indicator: <i>Woylie presence within Ecological Linkages</i></p> <p>Vertebrate Fauna – Protected Areas and Ecological Linkages monitoring programs.</p>	<p>Triennial</p>	<p>Summary of monitoring results provided in AER.</p> <p>Provision of survey data (IBSA).</p> <p>Threshold exceedance reports and associated response plans to appropriate regulator(s).</p>

¹⁰ Final trigger and threshold criteria for this outcome are pending completion of baseline monitoring for Woylie in the Hotham North mining area.

Relevant Outcome(s)	Trigger & Threshold Criteria	Response actions	Monitoring	Timing / frequency of monitoring	Reporting
		<ul style="list-style-type: none"> Monitor and report on outcomes of control actions in AER. 			
	<p>Threshold Criteria 2</p> <p>Woylie not observed within expected Ecological Linkages (as identified during baseline monitoring) during two consecutive Vertebrate Fauna – Protected Areas and Ecological Linkages monitoring programs.</p>	<p>Threshold contingency actions</p> <ul style="list-style-type: none"> Notify EH&A Manager and appropriate regulators. Engage qualified external consultants to conduct an investigation into potential cause(s) for lack of utilisation by Woylie and recommended actions to improve utilisation. Develop a response plan and implement actions as agreed with appropriate regulators. 			
MS1237 Condition B13-1(3)					
Outcome 3¹¹	<p>Trigger Criteria 1</p> <p>Verified evidence of Numbat identified within a proposed clearing area.</p> <p>OR</p> <p>Trigger Criteria 2¹¹</p> <p>To be determined following completion of baseline surveys (if required).</p>	<p>Trigger Level Actions</p> <ul style="list-style-type: none"> Notify EH&A Manager. <p>Criteria 1:</p> <ul style="list-style-type: none"> Assess options for avoidance of area and, where practicable, avoid disturbance. Notify relevant regulators and apply additional control measures in accordance with Pre-Clearance Procedure (Section 6.5.5). <p>Criteria 2:</p> <ul style="list-style-type: none"> Engage qualified consultants to investigate potential causes of the reduced population metric. Implement actions in accordance with investigation findings. Monitor and report on outcomes. 	<p>Indicator: <i>Evidence / presence of Numbat</i></p> <p>Pre-clearance surveys (see section 6.5.5)</p> <p>Targeted Numbat abundance and distribution monitoring program.</p> <p>Rehabilitation vertebrate fauna monitoring program.</p>	<p>See section 6.5.5.</p> <p>3 yearly</p> <p>3 yearly</p>	<p>Monitoring results for Numbat included in AER.</p> <p>Compliance Assessment Report.</p> <p>Provision of survey data (IBSA).</p> <p>Threshold exceedance reports to appropriate regulator.</p>

Relevant Outcome(s)	Trigger & Threshold Criteria	Response actions	Monitoring	Timing / frequency of monitoring	Reporting
	Threshold Criteria 2¹¹ To be determined following completion of baseline surveys (if required).	Threshold contingency actions <ul style="list-style-type: none"> Notify EH&A Manager. Conduct an investigation to determine contributing factors to observed reduction in population metric (including regional factors, feral predator abundance etc). Develop and implement a response plan in consultation with relevant government authorities. 	Annual species presence monitoring	Annually	

MS1237 Condition B13-4 (a)

Outcome	Trigger Criteria	Trigger Level Actions	Indicator: <i>Verified spatial data</i>	Timing / frequency of monitoring	Reporting
Outcome 4a Outcome 4b	Disturbance within 10 m of a defined protection buffer for a PBT with evidence of use or a known active Peregrine falcon nest is identified within a Clearing Plan.	<ul style="list-style-type: none"> Notify Environmental Specialist of requirement to disturb within 10 m of a defined protection buffer for a PBT with evidence of use (i.e. Rank 1 or Rank 2) or a known active Peregrine Falcon nest. Conduct Pre-clearance survey to determine current activity within PBT or Peregrine falcon nest. Apply 250m buffer (no new disturbance allowed) around any active Black Cockatoo PBTs until verified no longer active. Apply a 30 m buffer around active Peregrine falcon nests. If a PBT with evidence of use is to be removed ensure CEO approval has been acquired in accordance with condition B13-1(1)(e). 	<p><i>Indicator: Verified spatial data</i></p> <p>Pre-clearance surveys (in accordance with section 6.5.5).</p> <p>Internal Clearing Plan sign off.</p> <p>Clearing boundary survey</p> <p>Clearing reconciliation</p>	<p>Variable (in accordance with section 6.5.5)</p> <p>Prior to clearing</p> <p>Monthly reconciliation.</p> <p>Annual</p>	<p>Clearing reported in the AER and 10 Year Mine Plan.</p> <p>Compliance Assessment Report.</p> <p>Threshold exceedance reports and response action plans submitted to appropriate regulator(s).</p>

¹¹ Trigger and Threshold criteria for Numbat will be reviewed and finalised upon completion of baseline monitoring in MTR and Hotham North mining regions in accordance with condition B13-3 of MS1237.

Relevant Outcome(s)	Trigger & Threshold Criteria	Response actions	Monitoring	Timing / frequency of monitoring	Reporting
		<ul style="list-style-type: none"> Protected buffer to be clearly demarcated in the field prior to clearing. 			
	<p>Threshold Criteria</p> <p>Disturbance occurs within the defined Protection buffer for a PBT with evidence of use (see section 6.5.1.1) or a known active Peregrine falcon nest.</p>	<p>Threshold contingency actions</p> <ul style="list-style-type: none"> Suspend disturbing activities within the immediate area. Notify EH&A Manager. Report incident to appropriate regulator. Conduct an investigation to determine cause of incident and additional controls required to prevent recurrence. Provide investigation findings and proposed response actions to regulators. Implement agreed actions. Continue to monitor applicable nest / PBT for potential impacts following incident. 			
MS1237 Condition B13-1 (4) (c)					
Outcome 4c	<p>Trigger Criteria:</p> <p>Disturbance within 10 m of a defined protection buffer for significant short-range endemic fauna where those fauna are only known from the PAA identified within a Clearing Plan.</p>	<p>Trigger Level Actions</p> <ul style="list-style-type: none"> Notify Environmental Specialist of requirement to disturb within 10 m of a significant SRE. Protected Area to be clearly demarcated in the field prior to clearing commencing. 	<p>Indicator: <i>Verified spatial data</i></p>		
	<p>Threshold Criteria:</p> <p>Disturbance occurs within the defined Protection buffer for significant short-range endemic fauna where those fauna are only known from the PAA.</p>	<p>Threshold contingency actions</p> <ul style="list-style-type: none"> Suspend disturbing activities within the immediate area. Notify EH&A Manager. Report incident to appropriate regulator. Conduct an investigation to determine cause of incident and additional controls required to prevent recurrence. 	<p>Internal Clearing Plan sign-off.</p> <p>Clearing boundary survey.</p> <p>Targeted SRE surveys (to support investigations)</p>	<p>Prior to clearing</p> <p>Monthly reconciliation</p> <p>As required</p>	<p>Compliance Assessment Report</p> <p>Provision of survey data (IBSA).</p> <p>Threshold exceedance reports and action plans to appropriate regulator(s).</p>

Relevant Outcome(s)	Trigger & Threshold Criteria	Response actions	Monitoring	Timing / frequency of monitoring	Reporting
		<ul style="list-style-type: none"> Provide investigation findings and proposed response actions to regulators. Implement agreed actions. 			

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Table 12: Outcome-based Provision – Condition B13-1(1) – Trigger and Threshold Values (Outcome 1)

Environmental Value	Unit	Limit	Trigger (75%)	Threshold (95%)
Quindanning Timber Reserve	ha	276	207	262
Woylie habitat	ha	2033	1525	1931
Numbat habitat	ha	4324	3243	4108
Black Cockatoo foraging habitat	ha	4533	3400	4306
Black Cockatoo PBTs with evidence of use (Rank 1 or Rank 2)	#	24	18	23
Chuditch habitat	ha	4459	3344	4236
Western Ringtail Possum habitat	ha	135	101	128
Quokka habitat	ha	135	101	128
Red-tailed Phascogale habitat	ha	245	184	233

8.2 OBJECTIVE-BASED PROVISIONS

This section describes the objective-based provisions for conservation significant fauna, which when implemented, will achieve the EPA objective for the environmental factor of Terrestrial Fauna and uphold the relevant environmental values and manage impacts associated with Worsley’s operations. These provisions are based on the approach described in Section 6.

The objective-based provisions included in this CSFMP reflect management actions taken by the operation specifically targeting fauna. Management actions for aspects relevant to the protection of flora and vegetation (i.e., forest hygiene, weed management, forest rehabilitation, etc) are included in the Flora and Vegetation Management Plan (WAPL-Business-CD-200001092).

The purpose of the objective-based provisions is to meet the legal requirements under MS1237 condition B13-2 and address the requirements of Condition B13-3 – B13-7. The objective-based provisions are detailed in Table 13.

Management objectives specific to the Carters Freshwater Mussel are detailed in the Water Management Plan required by condition B16-2 of MS1237.

For the purposes of this management plan, the definition of “Construction activities” is as defined by MS1237 to be “Activities that are associated with the substantial implementation of a proposal including but not limited to, earthmoving, vegetation clearing, grading or construction of right of way. Construction activities do not include geotechnical investigations (including potholing for services and the installation of piezometers) and other preconstruction activities where no clearing of vegetation is required.” Given this, construction and ongoing operations activities are considered and managed in the same way because the potential impacts associated with construction activities for the Worsley Project are consistent with the potential impacts of the ongoing operational activities.

Table 13: Objective-based Provisions

<p>EPA factor/s: Terrestrial Fauna</p> <p>Objective/s:</p> <ol style="list-style-type: none"> 1. Minimise the risk of physical injury or mortality from construction activities on native fauna; 2. Minimise the risk of behavioural changes and health impacts from construction activities on native fauna. 3. Maintain ecological linkages to allow movement of fauna across the landscape. 4. Monitor and manage feral animals to minimise risk of predation of conservation significant fauna within the PAA. 5. Minimise fragmentation within and surrounding the PAA through targeted rehabilitation and ecological restoration. 6. Rehabilitation provides suitable habitat for conservation significant fauna. 7. Minimise impacts on Conservation significant fauna associated with Worsley’s operational activities. 8. Define baseline abundance and viability of any populations of Numbat within Hotham North and MTR mining areas. 9. Define baseline abundance and viability of any populations of Woylie within the Hotham North mining area. <p>Key environmental values: Conservation significant fauna, Native fauna, Fauna habitat</p> <p>Key impacts and risks: Loss of fauna habitat, physical injury to native fauna, predation by feral animals, habitat fragmentation</p>
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Objective	Management Targets	Management Actions	Monitoring	Timing/frequency of monitoring	Reporting
MS1237 Condition B13-2 (1) and B13-2 (2)					
Objective 1	Minimise the risk of physical injury or mortality from construction activities on native fauna	<ul style="list-style-type: none"> Minimise clearing associated with construction. Apply pre-clearance and management measures as detailed in section 6.5.5. Speed limits and road rules are applied for all mine site activities (maximum 60km/h). All conservation significant fauna incidents must be recorded in G360. Review and investigate fauna incidents to determine requirement for additional control measures. As outlined in the site induction all unusual fauna sightings must be reported to the site Environment Team (including conservation significant fauna, feral animals or sightings of unknown species). Site inductions include awareness and reporting requirements for native fauna. Establish Protected Areas in accordance with the section 6.5.1. 	Annual Clearing Reconciliation Pre-clearance surveys (section 6.5.5)	Monthly clearing survey As described in Section 6.5.5.	Clearing is to be reported in the AER/CAR All fauna incidents and unusual sightings to be reported within the AER. All conservation significant fauna incidents will be reported to DBCA as soon as practicable following the event through the submission of the Fauna Reporting Form (Species Community Branch, DBCA).

Objective	Management Targets	Management Actions	Monitoring	Timing/frequency of monitoring	Reporting
		<ul style="list-style-type: none"> Implement Ecological Linkages to facilitate movement of fauna through the landscape in accordance with section 6.5.3. Fauna crossings constructed for all linear barriers that fully intersect Ecological Linkages (i.e., roads and haul roads) in accordance with section 6.5.4. Implement fauna crossings in accordance with section 6.5.4. Clearing areas undergo staged disturbance activities allowing natural dispersal of mobile fauna. Where possible, clearing is completed toward a vegetated boundary. However, establishment of a protective firebreak may be required prior to clearing to minimise the risk of wildfire. Suitably qualified and experienced fauna spotter will be on site during harvesting and clearing activities. Reduced speed limits applied for Ecological linkages (40 km/hr) where alternative fauna crossings (i.e. underpass / overpass) are not possible due to landscape constraints to engineering solutions. Signage within Ecological linkages and on roads adjacent to clearing activities to increase driver awareness of potential fauna interactions. Relevant fauna management measures included in Mine Site Drivers Permit training package. Fauna egress points for all dams. S40 BC Act Authorisation required for areas where “take” of threatened species is possible. 			Reporting as required under the Biodiversity Conservation Act 2016.
Objective 2	Continued presence of vertebrate fauna species as identified from baseline in respective mining regions, for the duration of the proposal.	<ul style="list-style-type: none"> Conduct pre-clearance surveys and apply management measures as detailed in section 6.5.5. Establish Protected Areas in accordance with section 6.5.1. Implement Ecological Linkages to facilitate movement of fauna through the landscape in accordance with section 6.5.3. 	Pre-clearance surveys. Targeted Protected Area and Ecological Linkage fauna surveys	Annually 3 yearly	Findings from pre-clearance surveys to be reported in AER (e.g. PBTs, fauna trapping and relocation outcomes etc).

Objective	Management Targets	Management Actions	Monitoring	Timing/frequency of monitoring	Reporting
		<ul style="list-style-type: none"> Fauna crossings constructed for all linear barriers that fully intersect Ecological Linkages (i.e., roads and haul roads) in accordance with section 6.5.4. S40 BC Act Authorisation required for areas where “take” of threatened species is possible. Implement dust controls on haul roads and within fixed plant to ensure compliance with Part V of the EP Act. Manage noise emissions to comply with <i>Environmental Protection Act (Noise) Regulations 1997</i>. Ensure lighting plant is directed to areas of work, and as far as practicable light is not directed to areas of uncleared native vegetation and no unnecessary artificial light is used outside of operational areas. Clearing activities should occur only during daylight to ensure lighting plant is not required to be used when clearing new areas. Progressive rehabilitation as outlined in section 6.5.9. Monitoring of vertebrate fauna and SRE in accordance with section 7. Monitoring and reporting against Biodiversity Indicators in accordance with Conditions 14-1 and 14-2 of MS1237. Controlled burning must only occur in areas of State Forest following consultation with DBCA in accordance with the DBCA/Worsley Working Arrangements – planning for burning. Relocation of fauna from clearing areas by fauna handlers (as required) with fauna monitored at point of release to assess health and mobility (i.e. individual moves away from the disturbance area and seeks shelter). 	<p>Monitor fauna crossings in targeted 3 yearly ecological linkages fauna monitoring program</p> <p>Annual species presence monitoring</p>	<p>3 Yearly</p> <p>Annually</p>	<p>All reported fauna incidents are included in the AER.</p> <p>All conservation significant fauna incidents will be reported to DBCA as soon as practicable following the event through the submission of the Fauna Reporting Form (Species Community Branch, DBCA).</p> <p>All relocations to be reported in annual animal ethics report.</p> <p>Compliance Assessment Report.</p>
Objective 3	Ecological linkages, including installed crossings, are being	<ul style="list-style-type: none"> Implement Ecological Linkages to facilitate movement of fauna through the landscape in accordance with section 6.5.3. 	Vertebrate Fauna – Protected Areas and Ecological Linkages Monitoring Program	3 yearly	Ecological Linkages and rehabilitation to

Objective	Management Targets	Management Actions	Monitoring	Timing/frequency of monitoring	Reporting
	utilised by native fauna for the duration of the proposal.	<ul style="list-style-type: none"> Implement review and approval process to ensure clearing within Ecological linkages is limited to infrastructure, roads and access and will not include ore mining activities. Implement controls and review processes to ensure clearing within Ecological linkages is limited in accordance with Condition B2-1(5). Monitor Ecological linkages for fauna use (including feral animals). Prioritise rehabilitation to enhance Ecological Linkages. 			be included in the AER. Compliance Assessment Report.
Objective 4	Population assessment shows no increase in presence of feral animals within the mining regions for the life of the proposal.	<ul style="list-style-type: none"> Site induction requires feral animal sightings to be reported to Site Environment team. Complete targeted trapping for feral cats following sightings. Conduct targeted feral animal baiting within Ecological Linkages (see sections 6.5.3 and 6.5.7). Continue aerial 1080 baiting targeting foxes and cats across JV land and State Forest areas within the WMDE and JV Land surrounding the RLA (section 6.5.7). All bins storing putrescible waste to have secure lids. Investigate alternative survey methodologies for assessment of abundance of feral animals within the PAA. Implement feral animal control strategies on the Offset properties in accordance with the LOEMP. Ensure fauna crossings contain refuges for native fauna (section 6.5.4). Investigate and trial emerging technologies for management of feral animals. 	<p>Opportunistic fauna observations.</p> <p>Vertebrate fauna monitoring programs</p> <p>Fauna Crossing Utilisation Survey</p> <p>Annual species presence monitoring</p>	<p>Annual Summary</p> <p>3 – 5 yearly</p> <p>3 yearly</p> <p>Annually</p>	Summary of feral animal sightings, management activities and outcomes included in AER/CAR.
Objective 5	A progressive reduction in fragmentation within the PAA is observed from the 2028	<ul style="list-style-type: none"> Establish and maintain Protected Areas and Ecological Linkages to protect fauna habitat and movement of fauna through the landscape. 	Regional assessment of fragmentation using aerial imagery.	5 yearly	Progressive rehabilitation and ecological restoration included in AER.

Objective	Management Targets	Management Actions	Monitoring	Timing/frequency of monitoring	Reporting
	<p>assessment period for the duration of the project.</p> <p>Note: the baseline assessment completed in 2023 is not applied given fragmentation will increase in the initial 5 years of implementation due to establishment of long term infrastructure..</p>	<ul style="list-style-type: none"> Limit disturbance within Protected Areas and Ecological Linkages in accordance with conditions B2-1 (4) to B2-1 (6) of MS1237. Minimise clearing is through Mine Planning processes. Ensure compliance with clearing limits for fauna habitat in accordance with condition B13-1 (1). Review and identify areas of rehabilitation that are adjacent to Protected Areas and Ecological Linkages and can be assigned as Protected Rehabilitation. 10 Year Mine Planning process to review areas available for rehabilitation and prioritise those that are adjacent to Protected Areas and Ecological Linkages. Ecological restoration completed in accordance with Local Environmental Offset Management Plan (WAPL-Business-CD- 200001090). Conduct 5 yearly assessment of fragmentation. Provide outcomes and recommendations to Mine Planning and Principal - Biodiversity Offsets to support planning for rehabilitation and restoration activities. 			<p>Summary of results from 5 yearly regional assessment to be included in AER.</p> <p>10 Year Mine Plan to include identification of planned rehabilitation areas.</p>
Objective 6	<p>Presence of relevant conservation significant fauna is observed within expected timeframes (see LOEMP) in rehabilitation (compared with relevant forest control plots).</p>	<ul style="list-style-type: none"> Construction of fauna habitats included in State Forest rehabilitation. Local provenance seed used in rehabilitation in accordance with the Rehabilitation Prescription. Hollow forming tree species included in seed mix and verified to be present in rehabilitation. Retention and replacement of woody debris in State Forest, including, where practicable, hollow logs in rehabilitation. Research program implemented to support adaptive management of rehabilitation. Develop and implement a vertebrate fauna rehabilitation monitoring program for forest rehabilitation in Marradong, Hotham North and Quindanning. 	<p>Vertebrate Fauna – Rehabilitation STR</p> <p>Vertebrate Fauna – Rehabilitation MTR</p> <p>Vertebrate Fauna – Rehabilitation QTR</p> <p>Vertebrate Fauna – Rehabilitation HON</p> <p>Monitoring against Biodiversity indicators and agreed completion criteria as per condition B14-1(10).</p> <p>Flora and Vegetation Management Plan (WAPL-Business-CD- 200001092)</p>	<p>3 yearly</p> <p>3 yearly</p> <p>3 yearly</p> <p>3 yearly</p> <p>In accordance with Rehabilitation Plan required by Condition B14-3</p> <p>At age 20 years</p>	<p>Summary of rehabilitation works and rehabilitation performance is included in the AER.</p> <p>Compliance Assessment Report.</p> <p>Rehabilitation Performance Report.</p> <p>Annual Rehabilitation Plan as per condition B14-3.</p>

Objective	Management Targets	Management Actions	Monitoring	Timing/frequency of monitoring	Reporting
		<ul style="list-style-type: none"> Support research in determining alternative hollows/designs for habitat that can be incorporated into rehabilitation (ongoing). Continue to investigate options to enhance coarse woody debris incorporation into rehabilitation/ecological restoration to enhance termite activity. 	Monitoring for termite structures within Rehabilitation		
Conservation Significant Fauna					
Objective 7	Continued presence of Black Cockatoo Species within the Mining Regions for the duration of the proposal.	<ul style="list-style-type: none"> Implement Protected Areas in accordance with section 6.5.1. Black Cockatoo habitat disturbance to be restricted in accordance with condition B13-1 (1) (refer Table 11 for outcome-based provision). Conduct pre-clearance surveys and apply required management measures in accordance with section Table 9. All PBTs with evidence of use must be demarcated in the field and accurate GIS information collected. Mapping layers (GIS and Vulcan) for PBTs to be maintained including assigned Rank and protection status to support mine planning and design processes. Biodiversity offsets to be implemented in accordance with section 6.5.10. Monitor utilisation of Rank 1 and Rank 2 PBTs by Black Cockatoo species. 	<p>Pre-clearance surveys</p> <p>Black Cockatoo PBT Monitoring (includes any artificial hollows)</p> <p>External review and analysis of Black Cockatoo PBT monitoring information (including review of PBT condition)</p>	<p>Ongoing (prior to clearing) in accordance with section 6.5.5</p> <p>Annual (peak breeding season)</p> <p>5 yearly</p>	<p>Public reporting in accordance with condition B13-5.</p> <p>Summary of findings from pre-clearance surveys, annual PBT monitoring and 5 yearly external reviews will be included in the AER.</p>
Objective 9	Baseline Woylie Population within the Hotham North Mining area defined by March 2026.	<ul style="list-style-type: none"> Undertake surveys over the Hotham North mine region (see Figure 6) in accordance with Condition B13-1(2) to determine the baseline Woylie population metrics. Assess the viability of any identified Woylie population. 	Baseline surveys to commence within 12 months from the date of MS1237.	Baseline Survey – commence Spring 2024 to be complete by March 2026	Survey data to be submitted (IBSA).

Objective	Management Targets	Management Actions	Monitoring	Timing/frequency of monitoring	Reporting
		<ul style="list-style-type: none"> Utilise baseline monitoring results and recommendations to review and update outcome-based provisions in Table 11, as required, to address the ongoing viability of the Woylie population utilising the Hotham North mining area. 			
Objective 7	Continued presence of Woylie within the Hotham North mining region for the life of the proposal	<ul style="list-style-type: none"> Implement and maintain ecological linkages through the known Woylie habitat (Figure 6). Woylie habitat disturbance to be restricted in accordance with condition B13-1 (1) (refer Table 11 for outcome-based provision). Conduct pre-clearance surveys and apply required management measures in accordance with section Table 9. Investigate less invasive survey methodology options for Woylie population assessments (e.g. eDNA). Amend survey methodologies in accordance with adaptive management following engagement with relevant authorities as improvements are identified. Apply feral predator control mechanisms within Hotham North mining area. 	<p>Pre-clearance surveys.</p> <p>Annual species presence confirmation survey</p> <p>Protected Areas & Ecological Linkages monitoring program</p> <p>Targeted Woylie and Numbat Abundance Surveys</p>	<p>Ongoing (prior to clearing) in accordance with section 6.5.5</p> <p>Annual</p> <p>3 yearly</p> <p>As required</p>	<p>10-Year Mine Plan includes disturbance forecast for Woylie habitat and Ecological Linkages.</p> <p>Survey data to be submitted (IBSA).</p> <p>Provide summary of management measures and monitoring results within AER.</p> <p>Survey data to be submitted (IBSA).</p>
Objective 8	Baseline assessment(s) to determine the presence of any viable Numbat population within the Hotham North and Marradong Timber Reserve Mining Regions completed by March 2026	<ul style="list-style-type: none"> Undertake surveys over the Hotham North and Marradong Timber Reserve mine region in accordance with Condition B13-3 (2) (as per Figure 3 to identify the presence and abundance of Numbat. Qualified external consultants assess the viability of any identified Numbat population. Review outcome-based provision for Numbat in Table 11 with qualified external consultants to ensure metrics are appropriate to any identified population. Modify outcome through adaptive management processes as required in consultation with appropriate regulators. 	Baseline surveys commence within 12 months from the date of MS1237	Baseline Survey – commence Spring 2024 to be complete by end March 2026.	Survey data to be submitted (IBSA).
Objective 7	If a viable population of Numbat is found, continued presence of numbat in Hotham	<ul style="list-style-type: none"> Numbat habitat disturbance to be restricted in accordance with condition B13-1 (1) (refer Table 11 for outcome-based provision). 	Pre-clearance surveys	Ongoing (prior to clearing) in accordance with section 6.5.5	10-Year Mine Plan includes disturbance

Objective	Management Targets	Management Actions	Monitoring	Timing/frequency of monitoring	Reporting
	North/Marradong Timber Reserve mining regions for the life of the proposal	<ul style="list-style-type: none"> Apply feral predator control mechanisms within Numbat habitat. Conduct pre-clearance surveys and apply required management measures in accordance with section Table 9. 	Targeted Woylie and Numbat Abundance Surveys	3 yearly	forecast for Numbat habitat. Summary of feral animal management measures and outcomes included in AER.
Objective 7	Continued presence of Chuditch within the Hotham North & CBME mining regions for the life of the proposal	<ul style="list-style-type: none"> Chuditch habitat disturbance to be restricted in accordance with condition B13-1 (1) (refer Table 11 for outcome-based provision). Maintain Ecological Linkages through suitable habitat (Figure 8). Apply feral predator control mechanisms within the PAA in accordance with section 6.5.7. 	Pre-clearance surveys Clearing reconciliation. Annual species presence confirmation	In accordance with section 6.5.5 Monthly survey Annually	10-Year Mine Plan includes disturbance forecast for Chuditch habitat. Summary of feral animal management measures and outcomes included in AER.
Objective 7	Continued presence of Red-Tailed Phascogale within the eastern QTR mining region for the duration of the proposal	<ul style="list-style-type: none"> Red-tailed Phascogale habitat disturbance to be restricted in accordance with condition B13-1 (1) (refer Table 11 for outcome-based provision). Maintain Protected Areas for Red Tailed Phascogale (Figure 7). Maintain ecological linkages through the known Red-tailed Phascogale habitat in QTR (Figure 7). Apply feral predator control mechanisms within Ecological Linkages. 	Pre-clearance surveys Clearing reconciliation. Annual species presence confirmation	In accordance with section 6.5.5 Monthly Survey Annually	Findings included in AER. 10-Year Mine Plan includes disturbance forecast for Red-tailed Phascogale habitat.
Objective 7	Continued presence of the Western Ringtail Possum & Quokka within the CBME for the duration of the proposal	<ul style="list-style-type: none"> Western Ringtail Possum and Quokka habitat disturbance to be restricted in accordance with condition B13-1 (1) (refer Table 11 for outcome-based provision). Apply feral predator control mechanisms on JV Land surrounding the RLA. 	Pre-clearance surveys Clearing reconciliation. Annual species presence confirmation survey (to commence once activities in the CBME commence)	In accordance with section 6.5.5 Monthly survey Annually	Public reporting in accordance with condition B13-5. Summary of findings from pre-clearance surveys, annual PBT monitoring and 5 yearly external reviews are included in the AER.
Objective 7	Continued presence of Priority fauna & other significant	<ul style="list-style-type: none"> Apply pre-clearance and management measures as detailed in section 6.5.5. 	Review and investigate fauna incidents to determine	As required following fauna incidents.	All fauna incidents and unusual sightings

Objective	Management Targets	Management Actions	Monitoring	Timing/frequency of monitoring	Reporting
	fauna as observed within baseline monitoring and forest control plots within the Mining Regions for the duration of the proposal	<ul style="list-style-type: none"> Speed limits and road rules are applied for all mine site activities (maximum 60km/h). All conservation significant fauna incidents must be recorded in G360. As outlined in the site induction all unusual fauna sightings must be reported to the site Environment Team (including conservation significant fauna, feral animals or sightings of unknown species). Site inductions include awareness and reporting requirements for native fauna. Establish Protected Areas in accordance with the section 6.5.1. Implement Ecological Linkages to facilitate movement of fauna through the landscape in accordance with section 6.5.3. Fauna crossings constructed for all linear barriers that fully intersect Ecological Linkages (i.e., roads and haul roads) in accordance with section 6.5.4. Implement fauna crossings in accordance with section 6.5.3. Clearing areas undergo staged disturbance activities allowing natural dispersal of mobile fauna. Where possible, clearing is completed toward a vegetated boundary. However, establishment of a protective firebreak may be required prior to clearing to minimise the risk of wildfire. Suitably qualified and experienced fauna spotter will be on site during harvesting and clearing activities. Reduced speed limits applied for Ecological linkages (40 km/hr) where alternative fauna crossings (i.e. underpass / overpass) are not possible due to landscape constraints to engineering solutions. Signage within Ecological linkages and on roads adjacent to clearing activities to increase driver awareness of potential fauna interactions. Relevant fauna management measures included in Mine Site Drivers Permit training package. 	<p>requirement for additional control measures.</p> <p>Annual species presence confirmation</p>	Annually	<p>to be reported within the AER.</p> <p>All conservation significant fauna incidents will be reported to DBCA as soon as practicable following the event through the submission of the Fauna Reporting Form (Species Community Branch, DBCA).</p>

Objective	Management Targets	Management Actions	Monitoring	Timing/frequency of monitoring	Reporting
		<ul style="list-style-type: none"> • Fauna egress points for all dams. • Undertake annual species presence monitoring to confirm ongoing presence of conservation significant species and to record return of species that may not have been present previously. • S40 BC Act Authorisation required for areas where “take” of threatened species is possible. 			

9 ADAPTIVE MANAGEMENT, AUDIT AND REVIEW

9.1 ADAPTIVE MANAGEMENT

Worsley commits to maintaining a process of adaptive controls that provide the best outcome for conservation significant fauna species. These include:

- Maintaining compliance to changes in legislation;
- Maintaining compliance to environmental commitments;
- Reviewing and updating at risk species information;
- Extending protection capabilities for newly identified critical habitats or species;
- Implementing appropriate buffers for Protected Areas in accordance with section 6.5.1;
- Conducting and committing to outcomes from research;
- Targeted use of available land for improving environmental outcomes;
- Ongoing identification and management of Ecological Linkages;
- Reviewing design requirements for new long term haul roads and conveyors to allow for dedicated safe passage locations for fauna;
- Ensuring targeted biodiversity offsets are relevant for impacted species;
- Implementing best practice mitigation programs (i.e. artificial habitat); and
- Maintaining supporting documentation.

These controls will be reviewed with relevant stakeholders when there are changes that impact specific species with modifications made to this CSFMP as required.

In addition to the above controls, monitoring outside of the regular program may occur to support adaptive management at the request of DBCA or for research purposes.

9.2 COMPLIANCE ASSESSMENT REPORTING

Compliance to this CSFMP will be audited annually under MS1237 condition D2-1. Any non-compliances to the provisions set out in this CSFMP will be identified and registered within the internal incident, risk reporting and management system (G360) and will be reported within the AER and the Compliance Assessment Report (CAR). Audit findings will be communicated internally, and actions will be assigned through G360. The CAR will be provided in a form suitable for publication on the South32 website and online by DWER, as required by MS1237 Condition D2-4(5).

9.3 PLAN REVIEW

This CSFMP will be reviewed by Worsley triennially or as required to support adaptive management. The review will assess effectiveness, ongoing relevance and incorporate improved management strategies derived from assessment of monitoring, research, and positive corrective actions from incident investigations.

The review process will consider:

- Surveying and monitoring program outcomes;
- Specialist advice and stakeholder consultation;
- Increased risk ratings;
- Implementation and effectiveness of control measures;
- Performance indicators and any corrective actions;
- Audit findings;
- Addition of new mining areas;
- Changes to operational activities leading to changes in the risk;
- Findings from applicable research and monitoring conducted under other Environmental Management Plans; and
- Changes to relevant legislation, policy, guidelines, guidance material and industry practices.

9.4 KEY ASSUMPTIONS AND UNCERTAINTIES

The key assumptions and uncertainties within this CSFMP include:

- Fauna surveys conducted over the last 30 years within Saddleback, Quindanning and Marradong Timber Reserves have identified all habitat types and conservation significant fauna species likely to occur within these areas of the PAA (i.e; presence);
- Conservation significant fauna remain primarily within their preferred habitat areas and utilise other remnant vegetation, such as ecological linkages, primarily to access other areas of preferred habitat;
- Most mobile fauna will disperse away from the clearing front towards other vegetated areas;
- When clearing habitat is considered suitable to support one or more conservation significant fauna species it is assumed that all species may be present and management controls for all species will be applied (Precautionary Principle);
- Suitable areas will be available to relocate fauna from disturbance areas (where required);
- Worsley operations occur within generalized habitat for conservation significant fauna and very little specific critical habitat is proposed for clearing; and
- Abundance of conservation significant fauna has not been determined.

10 REPORTING

10.1 REPORTING UNDER MINISTERIAL CONDITIONS

Reporting will be completed in accordance with the requirements of MS1237 as follows:

Reporting under condition D-2 (1):

“The proponent must provide an annual Compliance Assessment Report to the CEO for the purpose of determining whether the implementation conditions are being complied with.”

Reporting under condition B13.5:

“The proponent shall make the methodology and findings of the inspections and buffer and avoidance determinations under conditions B13-4(1), B13-4(2) and B13-4(3), publicly available annually in a summary document on the proponent’s website.”

Reporting under condition C3-2:

“The proponent must submit as part of the Compliance Assessment Report required by condition D2, a compliance monitoring report that:

(1) outlines the monitoring that was undertaken during the implementation of the proposal;

(2) identifies why the monitoring was capable of substantiating whether the proposal limitation and extents in Part A are exceeded;

(3) for any environmental outcomes to which condition C3-1(2) applies, identifies why the monitoring was scientifically robust and capable of detecting whether the environmental outcomes in Part B are met;

(4) outlines the results of the monitoring;

(5) reports whether the proposal limitations and extents in Part A were exceeded and (for any environmental outcomes to which condition C3-1 (2) applies) whether the environmental outcomes in Part B were achieved, based on analysis of the results of the monitoring; and

(6) reports any actions taken by the proponent to remediate any potential non-compliance.”

10.2 ANNUAL ENVIRONMENTAL REPORT

The AER outlines the progressive implementation of environmental management and research programs and provides a detailed performance and compliance report regarding statutory environmental requirements. The AER also meets the requirements for reporting detailed in the Ministerial Statement as outlined above. Information reported in the AER applicable to this CSFMP is outlined in Table 11 and Table 12.

During the reporting period, any environmental incidents are reported to the appropriate regulator(s) and are investigated with corrective measures identified and actioned. The report is accepted by the members of the EMLG at the annual meeting and can be provided publicly upon request.

Additionally, the methodology and findings of the Black Cockatoo monitoring and management measures outlined in Section 6.5.5 are to be included in a summary document prepared annually, and made publicly available on the South32 Worsley website.

Conservation Significant Fauna Management Plan

Business Blueprint



Worsley Alumina

10.3 10-YEAR MINE PLAN

Worsley is bound by the provisions of the Worsley State Agreement. Clause 16 (10) of this agreement requires Worsley to produce a Plan of Bauxite Mining Operations for the coming ten years (10 Year Mine Plan). This plan is produced and updated every year in consultation with the EMLG for submission to the State Government for endorsement. The 10-Year Mine Plan will encompass reporting relevant to this CSFMP including:

- Protected Areas and Protection Commitments;
- The sequence of mining and rehabilitation;
- Access for mining and future management; and
- Location of mine facilities.

The protection of conservation significant fauna will be considered in developing the 10-Year Mine Plan with application of the mitigation hierarchy applied.

11 ENVIRONMENTAL MANAGEMENT ROLES AND RESPONSIBILITIES

Role	Responsibility
Manager Environment Heritage and approvals	<ul style="list-style-type: none"> • Ensure pre-clearance and operational fauna monitoring is included in planning and budgeting processes. • Present significant conservation significant fauna species findings and proposed avoidance actions to the Worsley Lead Team.
Principal – Governance and Assurance	<ul style="list-style-type: none"> • Develop schedules for review and audit of Environmental Management Plans. • Monitor compliance to commitments. • Review and submit Annual Environmental Report (AER). • Review and submit Compliance Assessment Report.
Environment Specialists	<ul style="list-style-type: none"> • Commission fauna monitoring programs within remnant vegetation and rehabilitation areas. • Recommend areas for avoidance based on findings from pre-clearance surveys. • Communicate findings from pre-clearance surveys to relevant internal and external stakeholders. • Recommend areas for protection following review of biodiversity monitoring reports. • Update GIS layers and mapping of high value habitat, habitat features for Threatened fauna and identify suitable salvageable forest material for use in constructed fauna habitats in rehabilitation. • Provide spatial information to Superintendent Mine Development Planning. • Maintain records of habitat recorded during pre-clearance surveys in biodiversity spatial database. • Conduct annual Protected Matters Reviews. • Conduct research to support rehabilitation and management of feral animals to ensure adaptive management is applied. • Monitor progress of rehabilitation against DRAFT completion criteria, until such time as completion criteria is agreed or approved. • Prepare AERs. • Work with Department of Biodiversity, Conservation and Attractions (DBCA) to ensure the continuance of feral animal baiting programs.

Conservation Significant Fauna Management Plan

Business Blueprint



Worsley Alumina

Role	Responsibility
	<ul style="list-style-type: none"> Ensure appropriate conservation significant fauna species content is included in site training packages. Organise installation of environmental signage as required. Consult with DBCA and other stakeholders as required. Conduct annual audit of surveyed clearing areas. Maintain register of Protected Areas including any associated records.
Specialist GIS - Approvals	<ul style="list-style-type: none"> Develop and maintain mapping layers as required to support environmental management and compliance with approvals.
Superintendent Mine Development Planning	<ul style="list-style-type: none"> Coordinate development and submission of the 10-Year Mine Plan, which includes mining areas planned for clearing within three years plus indicative clearing areas in the next four to ten years. Track progressive disturbance for reporting against Protection Commitments and MS1237 Conditions. Report on Protected Areas and annual and forecast disturbance of environmental values outlined in Condition B13-1 (1) of MS1237 within the 10 Year Mine Plan. Plan rehabilitation to reduce fragmentation within the PAA and support ecological linkages and provide additional buffer to Protected Areas.
Principal Long-Term Planning	<ul style="list-style-type: none"> Ensure mining plans exclude Protected Areas. Ensure mining plans maintain Protection Commitments for the life of the operation. Identify and endorse areas of rehabilitation for protection.
Engineer Mining	<ul style="list-style-type: none"> Include proposed 10-Year Mine Plan clearing layers in ArcGIS library. Liaise with site Environmental Specialist regarding mine planning requirements; including areas planned to be cleared to support the mine plan in the next three years, and indicative areas expected to be cleared within ten years. Ensure identified Rank 1 and Rank 2 PBTs and important breeding habitat features (nesting, denning), roosting and refuge habitat features suitable for conservation significant species are displayed in pit disturbance plans. Maintain and update Vulcan Protected layers as required.
Mine Services	<ul style="list-style-type: none"> Complete rehabilitation works in accordance with plans, site procedures, standards and specifications.
Principal – Environmental Approvals	<ul style="list-style-type: none"> Commission baseline biodiversity monitoring for new mining areas. Assist with development and maintenance of mapping layers to support environmental management and compliance. Process and maintain records of Recommendation for Area Protection Forms.
Principal – Environmental Offsets	<ul style="list-style-type: none"> Development and implementation of Offset Plans.
Draftsperson Design Services	<ul style="list-style-type: none"> Compile all spatial information for clearing within the RLA (completed and proposed) for the Annual Clearing Reconciliation process.
All Staff and Contractors	<ul style="list-style-type: none"> Report fauna sightings. Report fauna incidents. Comply with speed limits, restricted access areas and other road rules when driving on site.

12 STAKEHOLDER CONSULTATION

12.1 ENVIRONMENTAL MANAGEMENT LIAISON GROUP

The EMLG has been established under the Worsley State Agreement and formalised under Ministerial Statement 423 and Ministerial Statement 719. The group has representatives from the DBCA, DWER, DPIRD, and the Department of Energy Mines, Industry Regulation and Safety. The EMLG currently meets annually to review Worsley's mining plans and environmental performance in general. Any amendments to management plans prepared in accordance with the Proponent Commitments of the approved Ministerial Statement (MS1237) are reviewed and endorsed by the EMLG.

12.2 OTHER STAKEHOLDER CONSULTATION

Stakeholder consultation undertaken in association with this CSFMP is outlined in Table 14.

Table 14: Stakeholder Consultation Summary

Stakeholder	Comments/Advice	Response
EPA-S	Detailed review and commentary provided on version 1.1 of CSFMP.	Comments and recommended changes actioned with tracked changes provided in version 1.2.
DBCA	Review and commentary provided on version 2.0 of CSFMP.	Response provided in writing via EPA-S and amendments incorporated into version 3.0.

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13 DEFINITIONS, TERMS AND ABBREVIATIONS

Term	Description
AER	Annual Environmental Report
AR	Augustus River
BBM	Boddington Bauxite Mine
BC Act	<i>Biodiversity Conservation Act 2016</i>
BOP	Biodiversity Offset Plan
BTC	Bauxite Transport Corridor
CAR	Compliance Assessment Report
CBME	Contingency Bauxite Mining Envelope
Confirmed Habitat Tree	A potential habitat tree which has been confirmed to have been used for breeding by Black Cockatoos. i.e. Adult on nest, chick in nest.
CFWM	Carter's Freshwater Mussel
CSFMP	Conservation Significant Fauna Management Plan
DBCA	Department of Biodiversity, Conservation and Attractions
DBH	Diameter at Breast Height
DCCEEW	Department of Climate Change, Energy, the Environment and Water
DEC	Department of the Environment and Conservation (now DBCA)
DoE	Department of the Environment (now DCCEEW)
DoEE	Department of the Environment and Energy (now DCCEEW)
DoEWHA	Department of the Environment, Water, Heritage and the Arts (now DCCEEW)
DPaW	Department of Parks and Wildlife (now DBCA)
DSEWPaC	Department of Sustainability, Environment, Water, Population and Communities (Now DCCEEW)
DPIRD	Department of Primary Industries and Regional Development
DWER	Department of Water and Environment Regulation
EMLG	Environmental Management Liaison Group
EP Act	<i>Environmental Protection Act 1986</i>
EPA	Environmental Protection Authority
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i>
ERD	Environmental Review Document
Evidence of Use (MS1237)	Trees with a suitable hollow for black cockatoo breeding where evidence of potential use of that hollow has been observed. For example, chewing at the hollow entry. This definition includes Rank 1 and Rank 2 PBTs as described in Appendix C.
FRTBC	Forest Red-tailed Black Cockatoo
FWL	Refinery Freshwater Lake

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Term	Description
High Potential Habitat Tree	A potential habitat tree which has: <ul style="list-style-type: none"> Moderate to high confidence in evidence of use. Likely chewing at hollow entrance. Hollow attributes suitable for black cockatoo breeding. Pole camera / drone to confirm.
HON	Hotham North Mining Area
Inspect (PBTs)	<p>Initial Pre-clearance surveys</p> <ul style="list-style-type: none"> Areas of proposed clearing are walked to identify PBTs and other fauna habitat of significance (e.g. hollow logs, thickets etc.) All trees of suitable size are reviewed and PBTs are recorded as Rank 1-3 in accordance with Appendix C and GPS coordinates captured for all Rank 1-3 trees, as well as GPS coordinates for all other relevant habitat structures observed (noting rank 4 & 5 trees are not GPS recorded). PBTs Ranked 2-3 are inspected with a pole camera (or other method e.g. drone) where possible, to verify use or appropriateness of the hollow to support black cockatoo breeding. If the hollow is found to be unsuitable for breeding (e.g. shallow) the PBT will be re-classified to a Rank 4. Noting that PBTs assessed as Rank 1 are already confirmed to support Black Cockatoo breeding. <p>Follow up Pre-clearance surveys</p> <ul style="list-style-type: none"> Within 7 days prior to clearing, monitoring of all suitable PBTs (Rank 1-3), as identified in initial pre-clearance surveys, will be completed using the Tap and Flush survey method to determine occupancy.
JV	Joint Venture
LOEMP	Local Offsets Environmental Management Plan
MNES	Matters of National Environmental Significance
MTR	Marradong Timber Reserve
Ongoing viability	The ability of a population to persist and to avoid extinction within the defined areas.
PAA	Primary Assessment Area
PBT	<p>Potential Breeding Tree (MS1237): Any existing tree of a species known to support black cockatoo breeding which has a diameter at breast height of 300 millimetres or greater that therefore may develop a breeding hollow.</p> <p>This definition includes all PBTs as described in Appendix C.</p>
Priority species	<p>P1 – Priority 1: Poorly-known species - known from few locations, none on conservation lands</p> <p>P2 – Priority 2: Poorly-known species - known from few locations, some on conservation lands</p> <p>P3 – Priority 3: Poorly-known species – known from several locations</p> <p>P4 – Priority 4: Rare, Near Threatened and other species in need of monitoring</p>
QTR	Quindanning Timber Reserve
STR	Saddleback Timber Reserve
Suitable hollow/s (MS1237)	<p>Any hollow with dimensions suitable for use for breeding by black cockatoos. Characteristics of hollows used by each species is available in the SPRAT database: http://www.environment.gov.au/cgi-bin/sprat/public/sprat.pl</p> <p>This definition includes Rank 1, Rank 2 and Rank 3 PBTs as described in Appendix C.</p>
TSS	Total Suspended Solids
TSSC	Threatened Species Scientific Committee
The Refinery	Worsley Alumina Refinery

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Term	Description
The Revised Proposal	Worsley Mine Expansion (Revised Proposal) as referred for assessment under the EP Act and EPBC Act.
Relocation	Movement of fauna by a qualified fauna handler from one location to another location of similar habitat within the home range of the individual.
RLA	Refinery Lease Area
SRE	Short-range Endemic
Threatened	A species listed under Section 178 of the EPBC Act in any one of the following categories: <ul style="list-style-type: none"> • extinct • extinct in the wild • critically endangered • endangered • vulnerable • conservation dependent
Translocation	Targeted trapping and relocation of fauna to a new location, outside the current home range.
Viable population	A self-sustaining population with a high probability of survival because it has sufficient numbers and reproductive potential
WA	Western Australia
WMDE	Worsley Mining and Development Envelope
WMP	Water Management Plan
Worsley	South32 Worsley Alumina Pty Ltd
Worsley State Agreement	Alumina Refinery (Worsley) Agreement Act 1973

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14 REFERENCES

200001056	Construction Environmental Management Plan
200001092	Flora and Vegetation Environmental Management Plan
200001090	Local Offset Environmental Management Plan
01027243	Water Management Plan
	<i>Alumina Refinery (Worsley) Agreement Act 1973 (WA)</i>
	<i>Biodiversity Conservation Act 2016 (WA)</i>
	<i>Conservation and Land Management Act 1984 (WA)</i>
	<i>Environmental Protection Act 1986 (WA)</i>
	<i>Environment Protection and Biodiversity Conservation Act 1999 (Cth)</i>
	<i>Soil and Land Conservation Act 1945 (WA)</i>
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15 DOCUMENT CONTROL

Version Control

Version	Change	Date
1.1	Initial version prepared for submission following Receipt of EPA Report 1768. First draft submitted to EPA-S for review.	18/10/2024
1.2	Amendments made following feedback from EPA-Services review. Primary changes relate to: <ul style="list-style-type: none"> amendments to outcome and objective based provisions and associated justification for indicators in Table 8. Amendment to conditions in line with Recommended Environmental Conditions received from Appeals Committee. Terminology updated to ensure consistency with definitions as included within EPA Report 1768. "inspect" (process for pre-clearance inspection of PBTs) defined as required within Recommended Conditions from Appeals Committee. Section 6.5.9 Forest Rehabilitation significantly reduced to avoid repetition across EMPs. Section 7 expanded to include more detailed description of monitoring programs. Document provided to EPA-S for review	12/12/2024
	Updated Ministerial Statement references and condition numbers throughout document, added internal document reference numbers and revised internal signatories	16/01/2025

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2.0	Internal Signatures applied. Final submitted under MS1237	17/01/2025
2.1	Updates made based on EPA-S feedback	10/02/2025
3.0	Internal signatures applied. Final as submitted under MS1237.	10/02/2025

Reviewer Circulation

Role	Name	Endorsed	Date
Environmental Specialist	Paul Bullock	✓	10.02.2025
Manager Production Planning	Cameron McKean	✓	10.02.2025
Acting Manager Production	Jason Leach	✓	10.02.2025

Approval Circulation

Role	Name	Approved	Date
Manager EH&A	Claire Reid	✓	10.02.2025
General Manager Mine and Materials	Trever Stockil	✓	10.02.2025

APPENDIX A - EVALUATING RISK

The DCCEEW (2024) identify a requirement for a risk assessment to assess the likelihood and consequence of each potential impact to ensure that risks are translated into controls, mitigation and management actions.

A risk assessment has been completed for each of the relevant conservation significant fauna species. The likelihood and consequence assessment, with the resulting 'risk outcome', have been based upon the residual risk levels after management and monitoring activities are implemented.

The assessments have applied the definitions for likelihood, consequence and risk rating as prescribed within DCCEEW (2024), and are presented in Table 15, Table 16 & Table 17 respectively.

Table 15 Measure of likelihood

Qualitative measure of likelihood	How likely is it that this event/issue will occur after control strategies have been put in place
Highly likely	Is expected to occur in most circumstances
Likely	Will probably occur during the life of the project
Possible	Might occur during the life of the project
Unlikely	Could occur but considered unlikely or doubtful
Rare	May occur in exceptional circumstances

Table 16 Measure of consequence

Qualitative measure of consequences	Qualitative measure of consequences
Minor	Minor incident of environmental damage that can be reversed
Moderate	Isolated but substantial instances of environmental damage that could be reversed with intensive efforts
High	Substantial instances of environmental damage that could be reversed with intensive efforts
Major	Major loss of environmental amenity and real danger of continuing
Critical	Severe widespread loss of environmental amenity and irrecoverable environmental damage

Table 17 Risk rating

	Consequence				
	Minor	Moderate	High	Major	Critical
Highly Likely	Medium	High	High	Severe	Severe
Likely	Low	Medium	High	High	Severe
Possible	Low	Medium	Medium	High	Severe
Unlikely	Low	Low	Medium	High	High
Rare	Low	Low	Low	Medium	High

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Table 18 Residual Risk Assessment

Risk Identification				Risk Evaluation and Control Effectiveness Assessment			
Location	Risk Event	Causes (Direct & contributing)	Expected Impact / Consequences	Controls	Consequence	Likelihood	Risk Rating
Refinery	Reduced water quality in FWL (potential impacts on Carter's Freshwater Mussel)	Loss of containment of chemicals, hydrocarbons or process liquors within the freshwater catchment Failure of sediment controls in freshwater drainage lines Increased erosion and overland flow caused by mining activities in CBME	Potential impacts on Carter's Freshwater Mussel within FWL and AR. Non-compliance with DWER licence (quality of FWL not suitable for release).	Water Management Plan (01027243) Separated catchments, Contaminated and Freshwater, and associated protection infrastructure (Pipehead dams, RCL, BRDA design etc) Worsley Tank Integrity Maintenance System (TIMS) Auditing to Australian Standards 3780 and Codes Drainage control structures (sediment traps, sumps, drain scour protection) Annual preventative maintenance and inspection of drainage lines and silt traps 50 m exclusion zone for FWL for mining in the CBME Process bunds Portable barriers to freshwater drains Spill Response Procedures FWL discharge shut off valve Monitoring program for FWL water and sediment (described in WMP)	Minor	Likely	Low
All	Injury, mortality or displacement of Threatened fauna from construction and operations	Clearing of native vegetation Vehicle interaction Interaction with mining infrastructure	Loss of Threatened fauna habitat Fragmentation of vegetation Individual fauna deaths through vehicle strike or interaction with infrastructure Displacement of local populations of Threatened fauna species	CSFMP (200001091) Flora and Vegetation Environmental Management Plan (200001092) Protected Areas established Protection Commitments for high value habitat Pre-clearance surveys Fauna handlers Controlled felling of PBTs (Rank 1 and 2) CSFMP (200001091) Driller's inductions Progressive forest rehabilitation Development of Completion criteria Mine Site Driver Permit (speed restrictions) Fauna crossing signage Incorporation of fauna habitats into rehabilitation areas Fauna egress points for dams Biodiversity Offsets	Minor	Likely	Low

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Risk Identification				Risk Evaluation and Control Effectiveness Assessment			
Location	Risk Event	Causes (Direct & contributing)	Expected Impact / Consequences	Controls	Consequence	Likelihood	Risk Rating
All	Unauthorised clearing within a Protected Area or Protection Commitment Area	Insufficient signage Mapping layers not maintained Operator error Escaped Fire	Loss of areas of high conservation value Increased fragmentation of fauna habitat Potential loss of Threatened or Priority flora species Non-compliance with legal requirements	Clearing Planning process Sign off of Clearing Plans Clearing Permit System (non-production related clearing) Protected Areas established GPS systems in SME Site GIS layers for Protected Areas and Protection Commitments included on all Clearing Plans Clearing boundaries surveyed and inspected Sign posting or flagging of Protected Areas when clearing is occurring adjacent BBM Clearing and Burning Operations manual CSFMP (200001091)	Moderate	Unlikely	Low
BBM	Loss / deterioration in quality of topsoil leading to reduced quality of rehabilitation for use as habitat by Threatened species	Erosion Poor topsoil management Poor planning and scheduling topsoil movements (wet)	Decrease in quality of rehabilitation Inability to use topsoil Direct Return annual targets not met. Failure to meet completion criteria	Topsoil and gravel handling techniques and management measures Rehabilitation planning Direct return targets Rehabilitation monitoring and maintenance Forest Management Plan (2024-2033), DBCA	Minor	Unlikely	Low
All	Spread of weeds leading to additional competition and decreased habitat quality for Threatened species	Poor topsoil management Failed soil hygiene management	Increase in weeds Loss of native flora	Driller's induction includes weed identification and controls Forest Management Plan (2014-2023), DBCA Weed monitoring and mapping Weed spraying or removal (as required) Topsoil and gravel handling techniques and management measures	Minor	Possible	Low

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Risk Identification				Risk Evaluation and Control Effectiveness Assessment			
Location	Risk Event	Causes (Direct & contributing)	Expected Impact / Consequences	Controls	Consequence	Likelihood	Risk Rating
All	Loss of habitat supporting Threatened species	Clearing of native vegetation	Displacement or reduction of local populations of Threatened Species Increased fragmentation and associated edge effects	CSFMP (200001091) Minimise clearing through Mine Planning processes. Establishment of Protected Areas, Protection commitments and Biodiversity Areas of Interest Progressive Rehabilitation Ecological Linkages Biodiversity Offsets Use of artificial habitats	Moderate	Likely	Medium
BBM	Falling groundwater table impacting of Threatened vegetation communities	Abstraction of groundwater Rehabilitation with native vegetation Drying climate	Localised vegetation deaths Change in vegetation structure (soil profile moisture regime changes)	Water Management Plan (01027243) Groundwater monitoring program Triennial aquifer reviews Regular Tunnell Road Heath Health Assessments Groundwater Modelling as part of Grade Control Modelling Process Monitoring and management of clearing gap Groundwater abstraction (within sustainable yields)	High	Rare	Low

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Risk Identification				Risk Evaluation and Control Effectiveness Assessment			
Location	Risk Event	Causes (Direct & contributing)	Expected Impact / Consequences	Controls	Consequence	Likelihood	Risk Rating
All	Spread of Forest Disease: Dieback (Phytophthora) or Armillaria leading to decreased habitat quality for Threatened species	Breach of Soil Hygiene Management Plan Working in an area of unknown soil hygiene status Non-compliance with Forest Hygiene Management Procedure Lack of signage Poor drainage design	Spread of Dieback and/or Armillaria Loss of biodiversity Decline in susceptible species Spread between mine/OBC and public areas	Green Card training Wash down facilities on site Working Arrangements with DBCA Dieback awareness training for Mine Site Driver's Permit holders Dieback Management included in Site Inductions Drains and sumps cleared during summer Minimum design standards for drainage structures OBC Vehicle authorisation Signage Flora and Vegetation Environmental Management Plan (200001092) Vehicle clean down requirements Operate in dry conditions required for some activities Dieback surveys and mapping Restricted access Perimeter Tracks around clearing areas Clearing Planning Procedure Sealed roads along OLC Pit specific soil hygiene management plans Soil Hygiene management in Extractive Industries (Dieback Working Group) Regular review of best practice dieback management for adaptive management	High	Rare	Low
BBM	Rising groundwater table impacting on Threatened vegetation communities	Clearing of native vegetation	Localised vegetation deaths Increased salinity in waterways and groundwater Change in vegetation structure (soil profile moisture regime changes)	Water Management Plan (01027243) Triennial aquifer reviews Regular Tunnell Road Heath Health Assessments in accordance with BFMP Groundwater Modelling Monitoring and management of clearing gap under Rehabilitation Commitment Progressive Rehabilitation Groundwater abstraction Water Management Plan and associated monitoring programs	High	Unlikely	Medium

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Risk Identification				Risk Evaluation and Control Effectiveness Assessment			
Location	Risk Event	Causes (Direct & contributing)	Expected Impact / Consequences	Controls	Consequence	Likelihood	Risk Rating
BBM	Increased competition or predation by introduced (feral) animals on Threatened species	Increased fragmentation of vegetation	Increased predation from feral animals Increased competition from feral animals	CSFMP (200001091) Feral animal management program Ecological linkages Flora and Vegetation Environmental Management Plan (200001092) Protected Areas established Research program (adaptive management)	Minor	Likely	Low
All	Indirect impacts on Threatened flora and fauna from noise, dust and vibration	Construction and operation activities	Decreased vegetation health Change to local fauna population distribution (avoidance of impacted areas)	Dust suppression (water and / or chemical) on haul roads and open areas Dust suppression in fixed plant Noise suppression technology applied to SME Noise monitoring for compliance with Noise Regulations	Minor	Likely	Low
BBM	Isolation of genetic pools - flora and fauna	Presence of linear barriers (e.g. conveyors) Increased fragmentation of vegetation	Reduced movement of fauna between isolated areas. Reduced genetic exchange between populations	CSFMP (200001091) Protected Areas established 10-Year Mine Plan - Figure 7 (Ecological Linkages) Ecological Linkages Interagency Agreement with DBCA Wildlife Corridor (George Block) Fauna monitoring programs	High	Rare	Low

APPENDIX B – CONSERVATION CODE DESCRIPTIONS

Table A-1: Conservation Code Descriptions for Western Australian Fauna (DBCA, 2019)

Rating	Description
Threatened Species	<p>Listed by order of the Minister as Threatened in the category of critically endangered, endangered or vulnerable under section 19(1), or is a rediscovered species to be regarded as threatened species under section 26(2) of the BC Act.</p> <p>The assessment of the conservation status of these species is based on their national extent and ranked according to their level of threat using International Union for Conservation of Nature Red List categories and the following criteria:</p> <ul style="list-style-type: none"> Critically endangered species: Threatened species considered to be “<i>facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with criteria set out in the ministerial guidelines</i>”. Endangered species: Threatened species considered to be “<i>facing a very high risk of extinction in the wild in the near future, as determined in accordance with criteria set out in the ministerial guidelines</i>”. Vulnerable species: Threatened species considered to be “<i>facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with criteria set out in the ministerial guidelines</i>”.
Specially Protected Species	
Priority 1	Species that are known from one or a few locations (generally five or less) which are potentially at risk. All occurrences are either: very small; or on lands not managed for conservation, e.g. agricultural or pastoral lands, urban areas, road and rail reserves, gravel reserves and active mineral leases; or otherwise under threat of habitat destruction or degradation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under immediate threat from known threatening processes. Such species are in urgent need of further survey.
Priority 2	Species that are known from one or a few locations (generally five or less), some of which are on lands managed primarily for nature conservation, e.g. national parks, conservation parks, nature reserves and other lands with secure tenure being managed for conservation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under threat from known threatening processes. Such species are in urgent need of further survey.
Priority 3	Species that are known from several locations, and the species does not appear to be under imminent threat, or from few but widespread locations with either large population size or significant remaining areas of apparently suitable habitat, much of it not under imminent threat. Species may be included if they are comparatively well known from several locations but do not meet adequacy of survey requirements and known threatening processes exist that could affect them. Such species are in need of further survey.
Priority 4	<p>(a) Rare. Species that are considered to have been adequately surveyed, or for which sufficient knowledge is available, and that are considered not currently threatened or in need of special protection, but could be if present circumstances change. These species are usually represented on conservation lands.</p> <p>(b) Near Threatened. Species that are considered to have been adequately surveyed and that are close to qualifying for Vulnerable, but are not listed as Conservation Dependent.</p> <p>(c) Species that have been removed from the list of threatened species during the past five years for reasons other than taxonomy.</p>

APPENDIX C – BLACK COCKATOO PBT RANKING SYSTEM

The PBT ranking scale applied by Worsley is consistent with the system established by Bamford Ecological Consultants in 2023 and 2024 as provided in Table 19. All PBTs within Worsley GIS layers have been assessed against the Bamford Ranking system with field verifications being completed as required in accordance with section 6.5.5.

Table 19: Black Cockatoo pre-clearance survey potential habitat tree rating system (Bancroft & Bamford, 2024)

Rank	Potential	Description	Applicable EPA Definition
1	Confirmed	Activity at hollow observed; adult (or immature) bird seen entering or emerging from hollow. Can also be used for a known nest tree active in the previous 12 months (although this should be noted in the description). Note that activity at a hollow does not absolutely mean that breeding is occurring unless a young bird in hollow is observed.	Potential breeding tree Evidence of use Suitable hollow/s
2	High	Hollow of suitable size visible with chew marks around entrance. Record if chew-marks are recent or old.	Potential breeding tree Evidence of use Suitable hollow/s
3	Moderate	Potentially suitable hollow visible but no chew marks present at entrance; or potentially suitable hollow suspected to be present - as suggested by structure of tree, such as large, vertical trunk broken off at a height of >8m; but note that hollow height is contextual. Carnaby's Black-Cockatoo will nest in hollows <5m so in a Wheatbelt breeding site a lower criterion may be more appropriate.	Potential breeding tree Suitable hollow/s
4	Low	Tree with large hollows or broken branches that might contain large hollows, but hollows or potential hollows (nest chamber) are not vertical or near-vertical; thus a tree with or likely to have hollows of sufficient size but not to have hollows of the angle preferred by Black-Cockatoos. Trees with low but otherwise suitable hollows can also be assigned a rank of 4, depending on the species of black-cockatoo likely to be present	Potential breeding tree
5	Nil	Tree lacking large hollows or broken branches that might have large hollows; a tree with more or less intact branches and a spreading crown.	Potential breeding tree

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APPENDIX D – ASSOCIATED FIGURES

Deployed 10 Feb 2025
Revalidate 10 Feb 2028
Author Silver Kenny

Owner Manager Approvals
WAPL Business Blueprint
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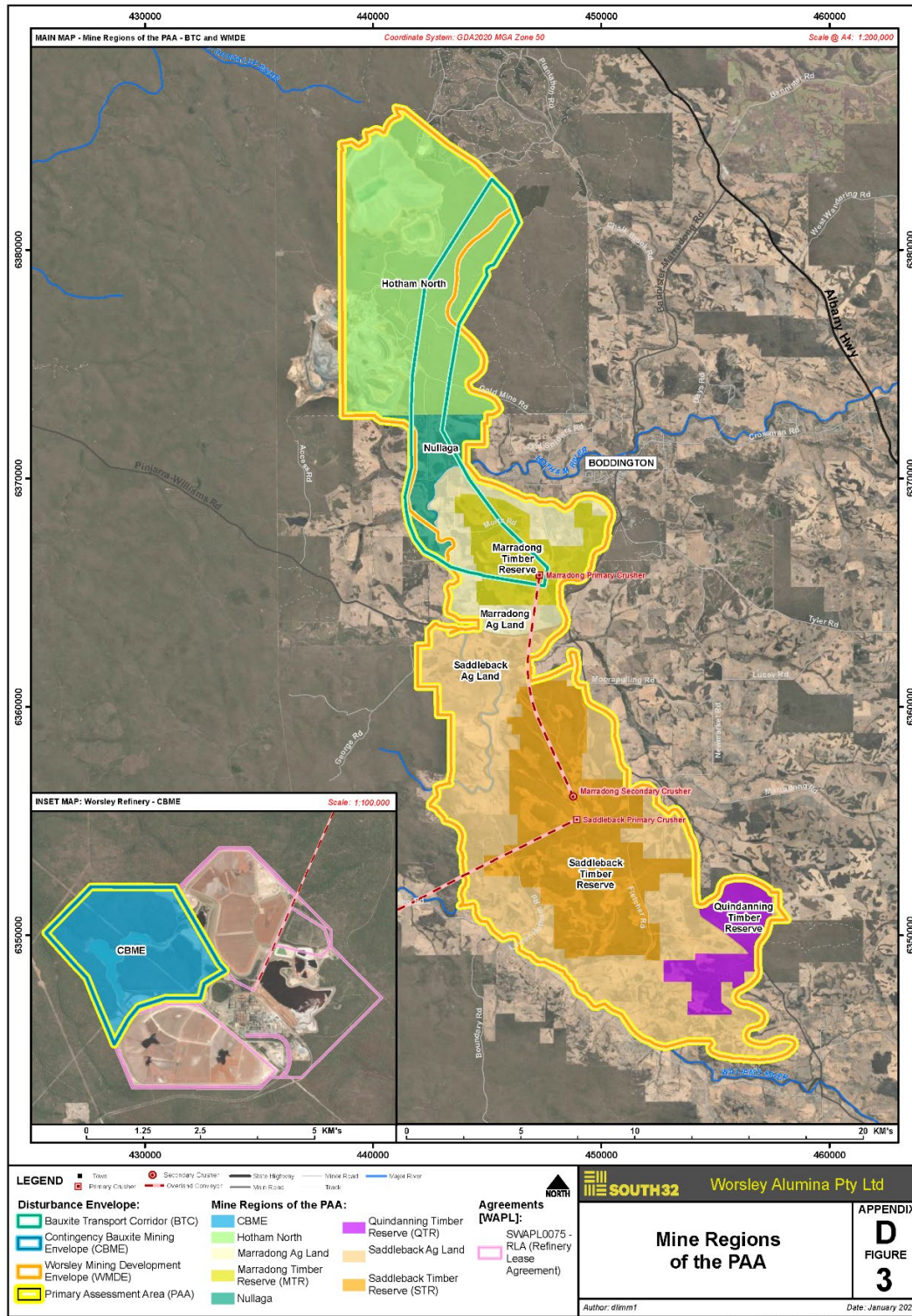


Figure 3: Mine Regions of the PAA.

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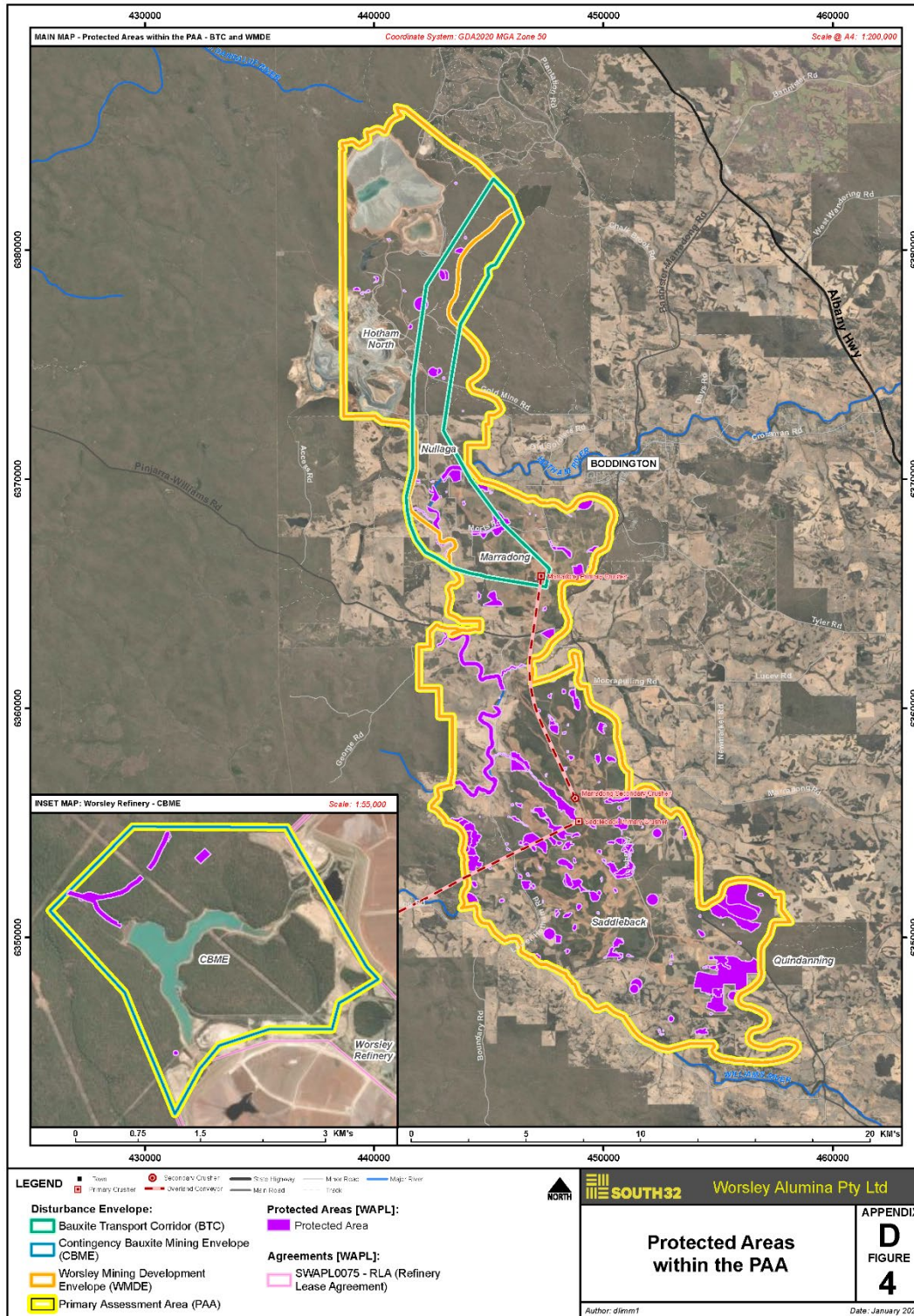


Figure 4: Protected Areas within the PAA.

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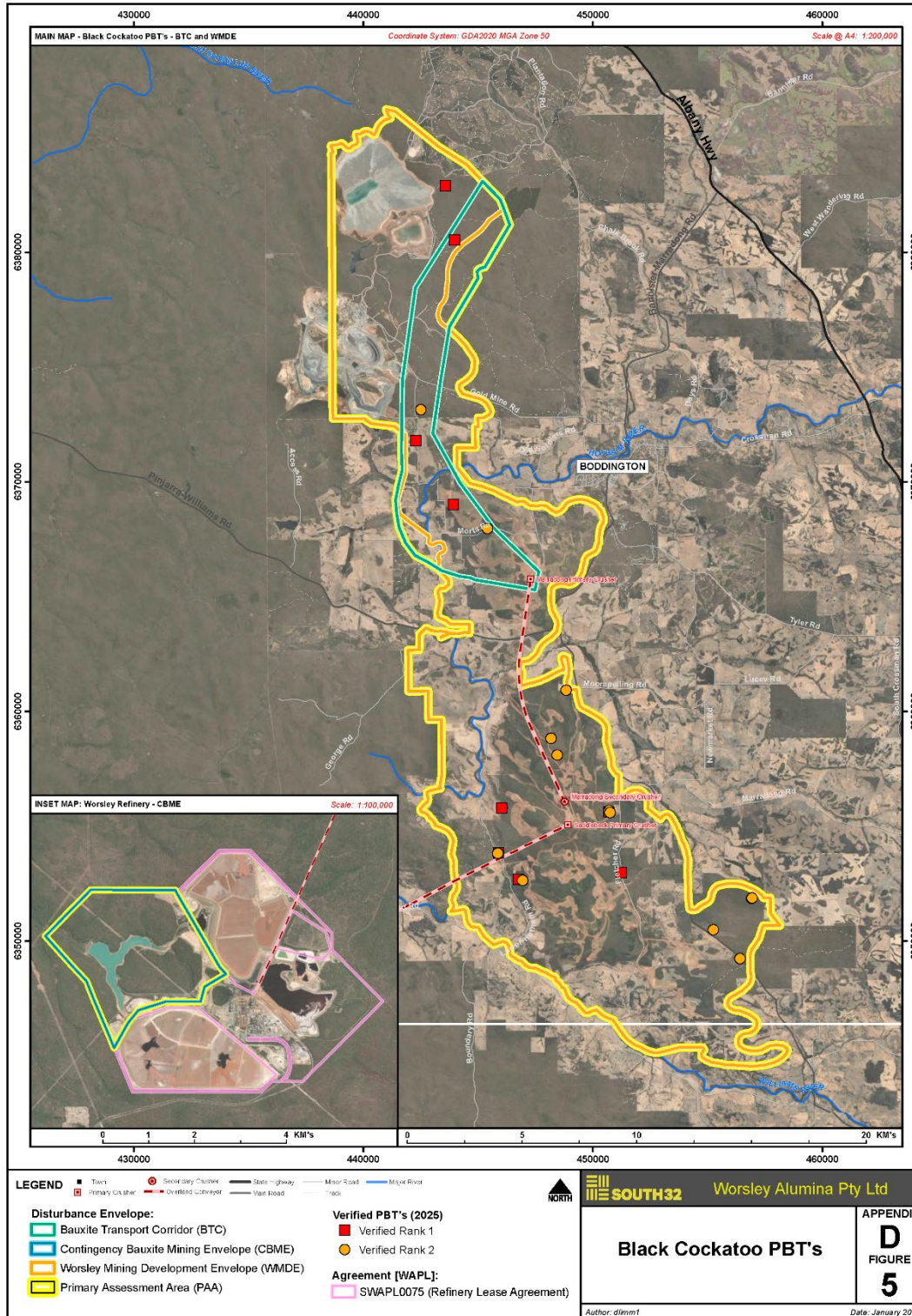


Figure 5 Black Cockatoo PBT's

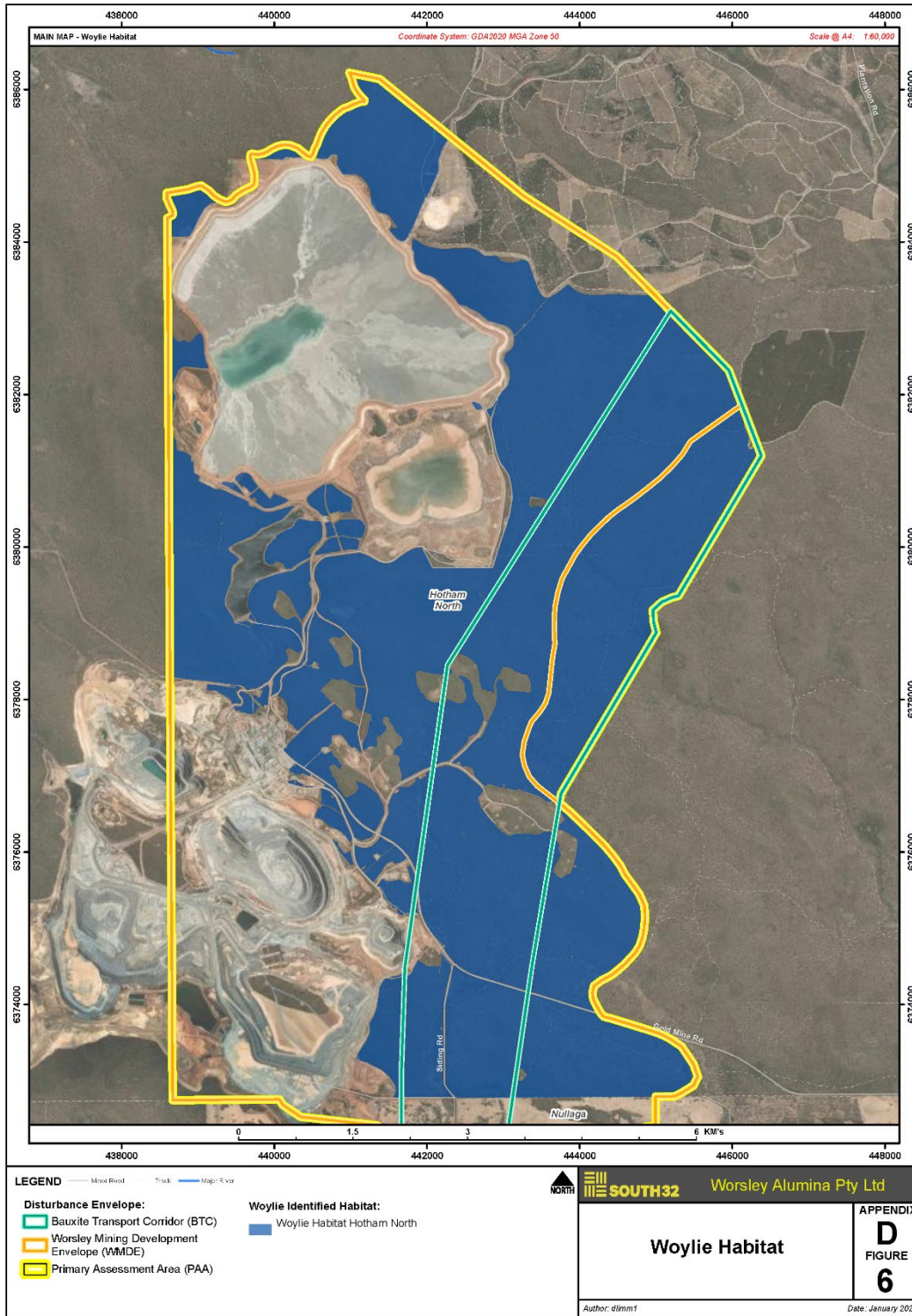


Figure 6 Woylie Habitat

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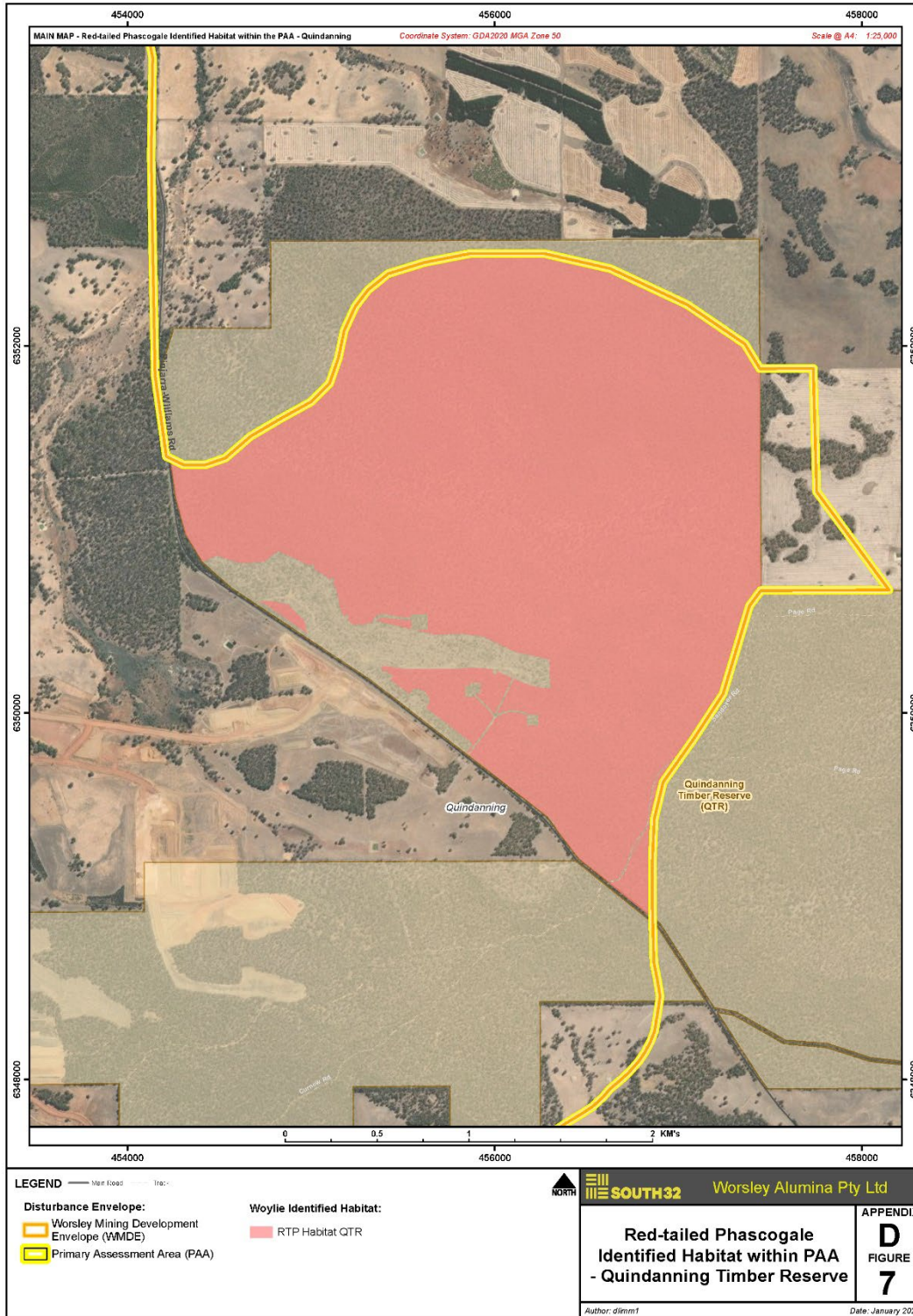


Figure 7 Red-tailed phascogale habitat

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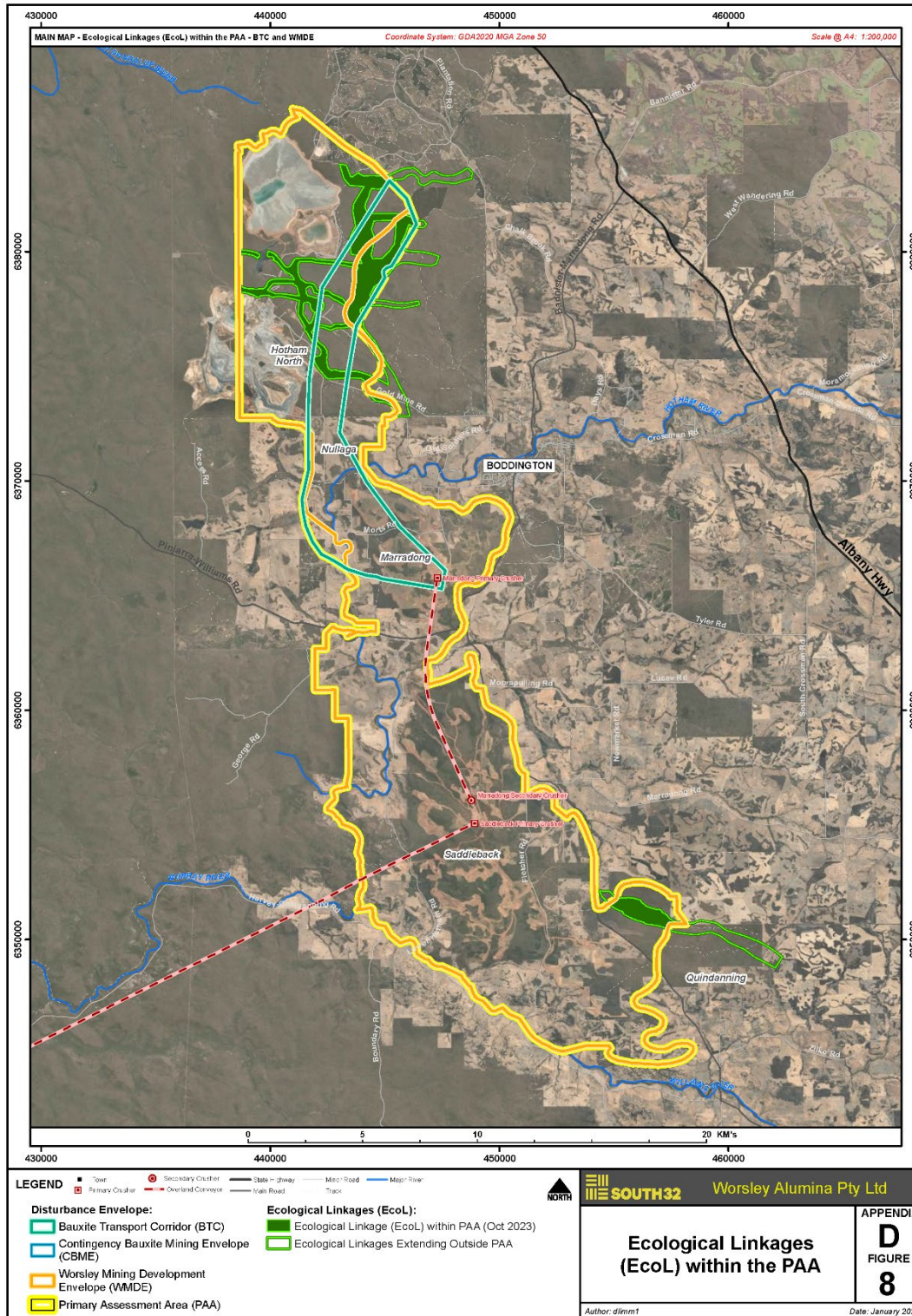


Figure 8 Ecological Linkages

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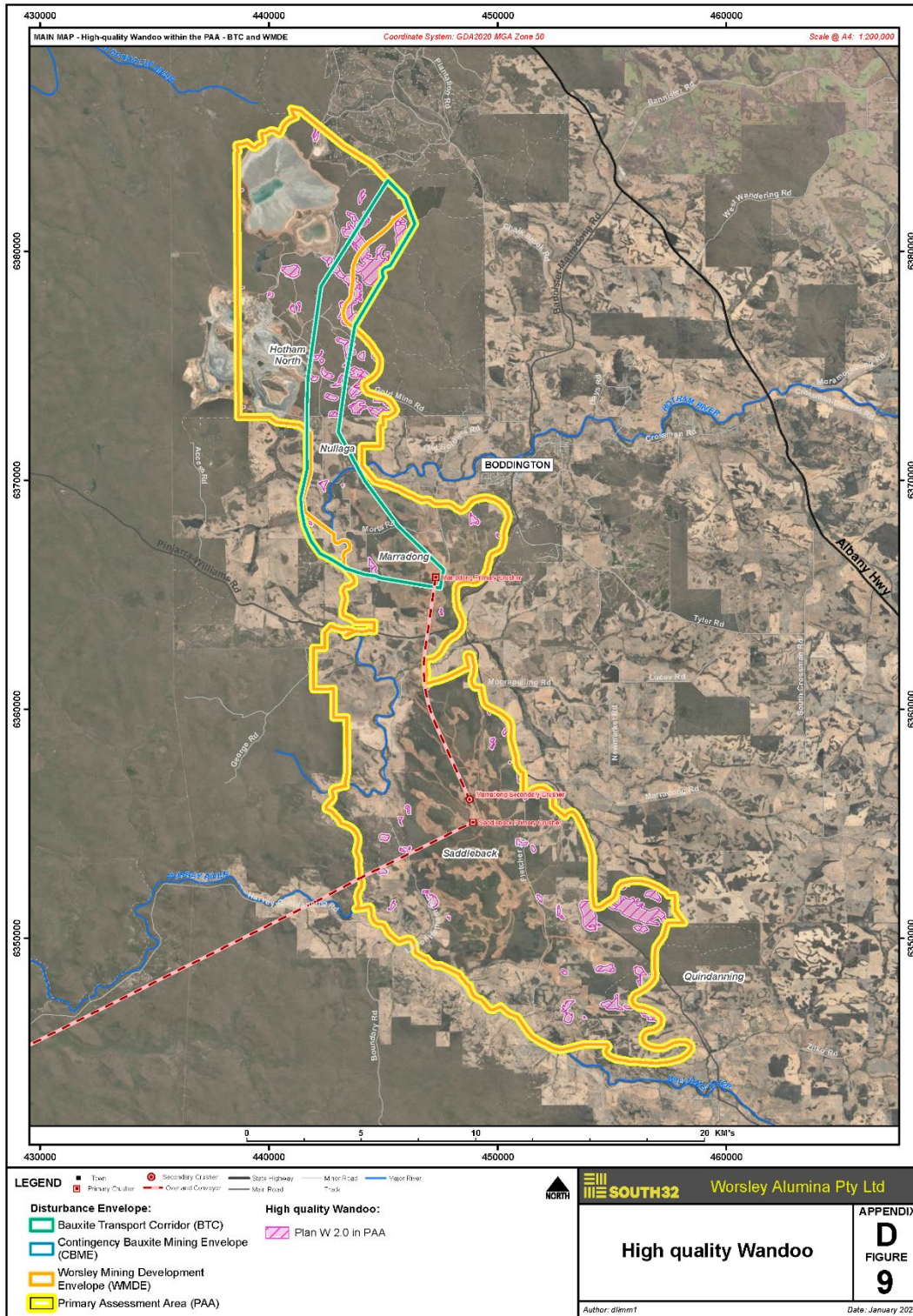


Figure 9: High Quality Wandoo