Smiths Beach Project
Coastal Tourism Village, Yallingup WA

Smiths 2014 Pty Ltd

Conservation Significant Fauna Management Plan

JBS&G 65771 | 159921

22 November 2024

We acknowledge the Traditional Custodians of Country throughout Australia and their connections to land, sea and community.

We pay respect to Elders past and present and in the spirit of reconciliation, we commit to working together for our shared future.

Document History

Revision	Status	Date
0	Draft issued for assessment	08/08/2024
1	Revised draft post agency feedback	22/11/2024

Executive Summary

Smiths 2014 Pty Ltd (the Proponent) is proposing to develop Lot 4131 Smiths Beach Road (the Proposal) in Yallingup, Western Australia, into a coastal tourism village. The proposed site is within the Shire of Busselton, approximately 23 kilometres (km) west of the Busselton CBD, adjacent to the Leeuwin Naturaliste National Park and bounded by Smiths Beach Road and Indian Ocean Road.

The Proposal was subject to referral on the 24th of December 2021 under section (s.) 39 of the Western Australia *Environmental Protection Act 1986* (EP Act) and with level of assessment determined on the 18th of May 2022 as public environmental review under s.40(2)(b) of the EP Act.

This Conservation Significant Fauna Management Plan (CSFMP) has been prepared to outline the Proponent's approach to managing potential impacts on conservation significant terrestrial fauna from implementation of the Proposal. This CSFMP addresses terrestrial fauna species listed under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) as Matters of National Significance (MNES), fauna species listed under the State *Biodiversity Conservation Act 2016* (BC Act), for assessment under Part IV of the State EP Act and/or are listed as priority species by the Department of Biodiversity, Conservation and Attractions (DBCA).

Table ES 1: Conservation Significant Fauna Management Plan Executive Summary

CSFMP Executive Summary	
Proposal Name	Smiths Beach Project, Yallingup – Coastal Tourism Village
Proponent Name	Smiths 2014 Pty Ltd
Ministerial Statement Number	To be determined.
Purpose of the EMP	The purpose of this CSFMP is to minimise impacts on conservation-significant fauna, particularly the Western Ringtail Possum (WRP), by ensuring effective monitoring, mitigation, and management throughout the Proposal's implementation. It outlines measures to protect WRPs during clearing and construction, including pre-clearing surveys, active monitoring, staged clearing, and habitat enhancements such as artificial dreys and possum bridges. The plan also includes an adaptive monitoring program, revegetation efforts, and predator control to support WRP population resilience and ensure long-term conservation outcomes within the Development Envelope.
Key environmental factor/s, outcome/s and/or objectives	Terrestrial Fauna: To protect terrestrial fauna so that biological diversity and ecological integrity are maintained.
Key Components in the EMP	Outcome-based provisions aiming to minimise impacts on the WRP population level and reducing injury or mortality risks during the Proposal's development and construction phases. Monitoring will track WRP activity, habitat use, population trends, and the use of mitigation measures like artificial dreys and possum bridges. Pre-clearing surveys will establish baseline data, with ongoing monitoring every two months in the first year, transitioning to biannual checks. Results will be compared to baseline data and evaluated against trigger and threshold criteria to assess impacts and guide corrective actions. Objective-based provisions include retaining key habitat trees, installing possum bridges, controlling predators, and providing artificial shelters and water sources to support WRPs. These provisions aim to meet conservation targets, ensuring the long-term welfare of WRPs and other significant fauna within the Development Envelope.
Proposed Construction Date	2025 – 2027 Dependant on approval timeframes
EMP Required Pre-Construction	Yes

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Abbreviations

Term	Definition
ALARP	As Low as Reasonably Practical
BC Act	Western Australia *Biodiversity Conservation Act 2016*
CSFMP	Conservation Significant Fauna Management Plan
DCCEEW	Department of Climate Change, Energy, the Environment, and Water
DBCA	Department of Biodiversity, Conservation and Attractions
EP Act	Western Australian *Environmental Protection Act 1986*
EPA	Environmental Protection Agency
EPBC Act	Commonwealth *Environmental Protection, Biodiversity and Conservation Act 1999*
ERD	Environmental Review Document
ESD	Environmental Scoping Document
ha	Hectares
km	Kilometres
MNES	Matters of National Environmental Significance
PEC	Priority Ecological Community
PER	Public Environmental Review
POS	Public Open Spaces
s.	Section
UAR	Universal Access Ramp
WA	Western Australia

1. Context, Scope and Rationale

1.1 Proposal

Smiths 2014 Pty Ltd (the Proponent) plans to develop Lot 4131 Smiths Beach Road (the Proposal), Yallingup, Western Australia (WA), into a coastal tourism village. The development is located within the Shire of Busselton, approximately 23 km west of Busselton CDB. The Proposal is bound by Smiths Beach Road to the east, the Indian Ocean to the west, the existing Foreshore Reserve to the north and Lot 302 and the Leeuwin-Naturaliste National Park to the south (Figure 1.1).

The Proposal includes development of, but not limited to:

- Tourist development including hotel accommodation and wellness centre;
- A campground;
- 61 holiday homes;
- Community hub including café, bakery, general store and the Cape-to-Cape Welcome Centre; and
- Surf Lifesaving Club facilities and universal beach access ramp (UAR).

The Development Envelope covers 41.94 hectares (ha) and the Proposal includes clearing of 10.36 ha, of which 9.15 ha consists of native vegetation. 0.29 ha will be cleared for the construction of the UAR, of which 0.12 ha will be native vegetation (Figure 1.2).

Within the Development Envelope, landscaping and bushfire management will cover approximately 12.03 ha, of which 10.68 ha will include partial modification of native vegetation for bushfire and landscaping purposes (Figure 1.2).

Of the 19.26 ha of native vegetation being retained, 16.83 ha will be designated for conservation and the remaining 2.43 ha will be retained in Public Open Space (POS) (Figure 1.2).

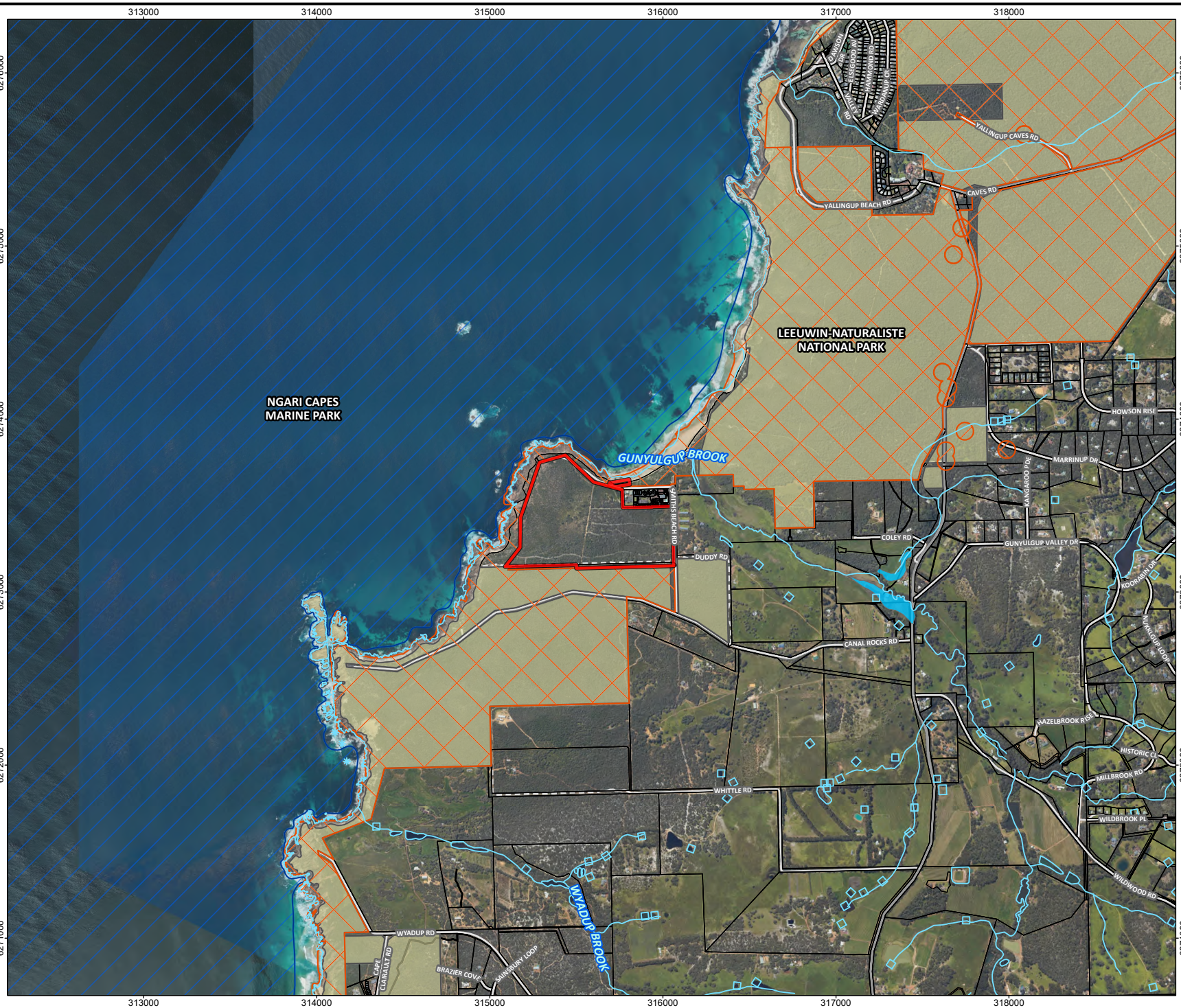
The Proposal was referred to the Environmental Protection Authority (EPA) and determined to require a Public Environmental Review (PER) with an Environmental Scoping Document (ESD), which has since been approved, on the basis of the Proposal's potential impacts on key environmental factors. The Proposal was also referred to the Department of Climate Change, Energy, the Environment and Water (DCCEEW) as a 'Controlled Action' under the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act) (EPBC 2021/9141), addressing potential impacts on Matters of National Environmental Significance (MNES). Key MNES impacted by the Proposal and addressed in this CSFMP include:

- Western ringtail possum (*Pseudocheirus occidentalis*); and
- Black Cockatoos: Baudin's (*Zanda baudinii*, previously *Calyptorhynchus baudinii*), Carnaby's (*Z. latirostris*, previously *C. latirostris*), and Forest red-tailed Black Cockatoo (*C. banksii naso*).

At the Proponent's request, DCCEEW determined that the Proposal would be assessed through an accredited assessment process under the *Environmental Protection Act 1986* (EP Act), in accordance with s.87 of the EPBC Act.

This Conservation-Significant Fauna Management Plan (CSFMP) has been prepared to outline how potential impacts, identified through the environmental impact assessment (EIA) undertaken as part of the ERD on the relevant environmental factor/ MNES detailed above, will be avoided, mitigated, monitored, and managed, ensuring that the environmental outcomes laid out can be achieved.

This CSFMP applies to all phases of the Proposal, including clearing, construction, and operation of the proposed future development.



Legend

- Development envelope
- Cadastral boundary
- Environmentally Sensitive Areas (DWER - 046)

Legislated lands and waters (DBCA - 011)

- Marine Park
- National Park

Geomorphic wetlands Leeuwin (DBCA-043)

- Palusplain
- Hydrography (DWER-031)
- Major road
- Minor road
- Track

JBS&G

Job No: 65771

Client: Linc Property

Version: C	Date: 1/07/2024
Drawn By: droberts	Checked By: BM

Scale 1:30,000 at A4

0 250 500
metres

Coord. Sys. GDA2020 MGA Zone 50

Lot 4131 Smiths Beach Road Yallingup, WA

REGIONAL CONTEXT

FIGURE 1.1

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Image Reference: www.nearmap.com© - Imagery Date: 01 February 2024.

Legend

- Development envelope
- Proposed full clearing
- Proposed modified areas
- Area to be placed into conservation (Area 1)
- Public Open Space/ Conservation Lot (Area 2)
- Public Open Space (Area 3)
- Public Open Space (Area 4)
- Cadastral boundary
- Minor road
- Track

JBS&G

Job No: 65771

Client: Smiths 2014 Pty Ltd

Version: C	Date: 5/07/2024
Drawn By: droberts	Checked By: RM

Scale 1:4,654 at A4

0 50 100
metres

Coord. Sys. GDA2020 MGA Zone 50

Lot 4131 Smiths Beach Road Yallingup, WA

PROPOSAL ELEMENTS

FIGURE 1.2

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Image Reference: www.nearmap.com© - Imagery Date: 01 February 2024.

1.2 Key Environmental Factor

This CSFMP specifically addresses the EPA 's environmental factor for Terrestrial Fauna, defined as:

> *"Animals living on land or using land (including aquatic systems) for all or part of their lives. Terrestrial fauna includes vertebrate (birds, mammals including bats, reptiles, amphibians, and freshwater fish) and invertebrate (arachnids, crustaceans, insects, molluscs and worms) groups (EPA 2016a)."*

EPA defines fauna habitat as:

> *"The natural environment of an animal or assemblage of animals, including biotic and abiotic elements, that provides a suitable place for them to live (e.g. breed, forage, roost or seek refuge). The scale at which fauna habitat is defined will depend on the ecological requirements of the species considered (EPA 2016a)."*

This CSFMP focuses on the management of species identified as significant (refer to Section 0), outlining measures to avoid and/or minimise impacts resulting from the Proposal. These species include:

- *Western ringtail possum, Pseudocheirus occidentalis (Critically Endangered – EPBC/BC Act);*
- *Carnaby's Black Cockatoo, Zanda latirostris (formerly Calyptorhynchus latirostris) (Endangered – EPBC/BC Act);*
- *Baudin's Black Cockatoo, Calyptorhynchus baudinii (Endangered – EPBC/BC Act);*
- *Coastal plains skink, Ctenotus ora (Priority 3 – DBCA Priority List);*
- *Quenda, Isoodon obesulus fusciventer (Priority 4 – DBCA Priority List); and*
- *Wambenger brush-tailed phascogale, Phascogale tapoatafa (CD – BC Act).*

1.3 Condition Requirements

This EMP will be updated to include requirements from relevant conditions of approval.

1.4 Rationale and Approach

The outcomes from the previous EPA strategic proposal have guided the development of the current Proposal, leading to a revised design that emphasises conservation of native fauna and habitat to the extent permitted under the bushfire risk mitigation restrictions. By applying the mitigation hierarchy to the previously approved structure plan, the Proponent has achieved a stronger environmental outcome, reducing development intensity and minimising built structures. Partial modification is one of the mitigation measures applied to the Proposal which allows for retention of native vegetation critical to conservation significant fauna. Retaining some of the vegetation rather than full clearing means that parts of the original habitat are conserved which may allow some or all of the individuals to persist. In particular, priority given to retaining tall trees in the area that is currently most densely populated by WRP ensures that a large proportion of the baseline vegetation in that vicinity will be retained. Other mitigation measures, such as the installation of possum bridges to connect otherwise disconnected patches of arboreal habitat, provision of artificial dreys and the installation of tree-canopy height water stations will assist in maximising the habitat value of the retained vegetation and maximising the probability that WRP will persist in the long term.

Nevertheless, key aspects of the Proposal still have the potential to directly and indirectly impact conservation-significant terrestrial fauna and their habitats within the Development Envelope across different phases of development. These potential impacts have been identified during the EIA process and are inclusively detailed for all conservation-significant fauna relevant to this CSFMP in Table 1.1 below.

Table 1.1: Potential impacts of the Proposal on Conservation Significant Fauna

Impact	Impact Type	Outcome
Loss of suitable habitat	Direct	Reduction in suitable habitat available for fauna due to clearing of native vegetation.
Increased vehicle movements	Direct	Increased vehicle movement during and post construction may result in an increase in injury or fatality of fauna, due to incidences with vehicles.
Fragmentation	Indirect	Loss of ecological connectivity due to clearing and fragmentation of native vegetation can lead to local extinction in isolated patches of habitat, restrict fauna ranges, and increase the risk of reduced genetic and ecological diversity.
Weeds/ Degradation	Indirect	Impacts to the diversity and abundance of native flora and vegetation from increased competition may reduce or remove fauna habitat values.
Phytophthora dieback (dieback)	Indirect	Vegetation infestation and death, due to the introduction of dieback, may damage or result in the loss of habitat for fauna.
Introduced fauna and attraction of predators or competitors	Indirect	Introduced fauna species that thrive in modified habitats due to factors including easier access to additional water sources and food via rubbish tips, increased accessibility from clearing and the construction of roads and tracks may increase in abundance. These species may lead to greater competition, habitat degradation, and heightened predation of native fauna species.
Altered fire regimes	Indirect	Potential increase in fires may cause loss or detrimental changes in habitat or prevent understorey from re-establishing, allowing spread of weeds.

1.4.1 Environmental Outcomes and Management Objectives

Based on the impacts outlined in Table 1.1 and the varied effects on each conservation-significant fauna species affected by the Proposal, a combined approach using both outcome-based and objective-based provisions has been identified as the most effective strategy for achieving optimal conservation outcomes.

The EPA's objective for Terrestrial Fauna is:

"To protect terrestrial fauna so that biological diversity and ecological integrity are maintained".

In order to align with this, the following provisions have been formulated for this CSFMP:

Outcome-based:

1. Minimise potential long-term impact on the abundance of WRPs in the Development Envelope as a result of the Proposal.
2. Minimise the risk of injury or mortality to conservation significant fauna in the Development Envelope as a result of Proposal activities.

Objective-based:

1. Construction and operation of the Proposal to avoid and minimise impacts to conservation significant fauna habitats;
2. Connectivity will be maintained throughout the Development Envelope for both ground-dwelling species and canopy dwelling species; and
3. Mortality and/ or predation as a consequence of the Proposal is avoided during both construction and operation phases of the Proposal.

For each relevant conservation-significant species included in this CSFMP, the EMP provides:

- Targeted management measures to address potential impacts, such as fauna injury, mortality, habitat loss, and connectivity issues;
- Monitoring programs specifically tailored for each species where direct or indirect impacts may occur; and
- A structured response framework with defined triggers, thresholds, and contingency actions.

These will act as means to evaluate the effectiveness of management measures for direct and indirect impacts on conservation significant fauna species. The EMP's development has been guided by baseline survey results and considers the assumptions and uncertainties outlined in the following sections.

Whilst this CSFMP has been targeted towards management actions applicable to conservation significant fauna, many of the management measures identified can be applied to minimise the potential impacts to, and the effect of the Proposal, to other fauna taxa which are not of listed conservation significance, therefore some management actions are not divided by conservation significant fauna species.

1.4.1.2 Survey Effort

Numerous basic (level 1), detailed (level 2) and targeted fauna baseline studies have been undertaken across the Development Envelope since 2001 (Table 1.2). The results of these surveys adequately describe the terrestrial fauna values within the Development Envelope, whilst also providing confidence on the presence/absence of conservation significant fauna species.

Table 1.2: Supporting historic and current technical studies for Terrestrial Fauna

Report title	Date(s)	Focus	Summary
Location 413 Smiths Beach Fauna Assessment. Unpublished report prepared for ATA Environmental (ecologia Environmental Consultants 2001)	April 2001	Fauna habitat and assemblages.	The results were provided to ATA Environmental. The findings were subsequently summarised and compared to the findings with the Level 2 Fauna Assessment (ATA Environmental, 2007b).
Vertebrate Fauna Assessment, Smiths Beach Yallingup (ATA Environmental, 2007b)	29 November – 9 December 2005	Level 2 Fauna Assessment. This survey was designed to complement a vertebrate fauna survey conducted by ecologia Environmental Consultants in April 2001.	Provided as part of the EPA strategic proposal by Canal Rocks Pty Ltd. Eighteen species were trapped over the 10-day period. Additional species were observed as part of opportunistic searches and spotlighting.
Lot 4131 Smiths Beach Road, Yallingup. Detailed Terrestrial Vertebrate Fauna Survey (Biologic 2024a)	1 – 10 November 2020	Detailed terrestrial vertebrate fauna assessment, inclusive of Black Cockatoo and western ringtail possum habitat assessments.	Undertaken to support the current Proposal. Seven broad fauna habitat types recorded. Six conservation significant species were recorded, with an additional three deemed likely to occur.
Smith's Beach Project Short-Range Endemic Invertebrate Fauna Desktop Assessment	November 2023	The purpose of the desktop assessment was to identify conservation significant and SRE invertebrate fauna occurring, or potentially occurring, in the Development Envelope.	A total of 90 conservation significant and SRE invertebrate taxa have been recorded within 40 km of the Development Envelope. Of these, 27 taxa are currently considered Confirmed SRE, with the rest being Potential SRE or Widespread.
Western Ringtail Possum Assessment (Bamford 2024)	19 – 21 November 2023	Targeted fauna assessment for the Western Ringtail Possum which included a desktop review and site visit in order to determine the status quo of the Western	The Development Envelope is considered to have both core and secondary Western Ringtail Possum habitat and population is concentrated in the northern part of the core habitat (adjacent to Canal Rocks Apartment.

Report title	Date(s)	Focus	Summary
		Ringtail Possum in the Development Envelope and provide recommendations for ongoing management.	

1.4.1.3 Survey Findings

Conservation Significant Terrestrial Vertebrate Fauna

Up to 78 terrestrial fauna species were recorded from the Biologic (2024a) survey undertaken within the Development Envelope. Of these, six conservation significant fauna species were listed under the EPBC Act, BC Act, or the DBCA Priority list. An additional three conservation significant species were also identified as likely to occur within the Development Envelope. The species listed in Table 1.3 will be managed under this CSFMP.

Table 1.3: Occurrence of conservation significant terrestrial fauna in the Development Envelope

Conservation Significant Terrestrial Fauna		Conservation Status	Occurrence
Species	Common Name		
Mammals			
Pseudocheirus occidentalis	Western Ringtail Possum	Critically Endangered under EPBC Act and BC Act	Confirmed
Phascogale tapoatafa	Wambenger Brush-tailed Phascogale	Conservation dependent fauna under BC Act	Confirmed
Isoodon obesulus fusciventer	Quenda	Priority 4	Confirmed
Notamacropus irma	Western Brush Wallaby	Priority 4	Likely
Birds			
Zanda baudinii	Baudin's Black Cockatoo	Endangered under EPBC Act and BC Act	Confirmed
Zanda latirostris	Carnaby's Black Cockatoo	Endangered under EPBC Act and BC Act	Confirmed
Calyptorhynchus banksii naso	Forest Red-tailed Black Cockatoo	Vulnerable under EPBC Act and BC Act	Likely
Ninox connivens connivens	Barking Owl	Priority 3	Likely
Reptiles			
Ctenotus ora	Coastal Plains Skink	Priority 3	Confirmed

Conservation Significant Fauna Habitat

A total of seven broad fauna habitat types[1] were mapped across the Development Envelope (refer Table 1.4 and Figure 1.3).

[1] Please note the fauna habitat mapping was updated as a result of vegetation mapping reconciliation that occurred as part of this ERD drafting.

Table 1.4: Broad fauna habitat types occurring within the Development Envelope (Biologic 2024a)

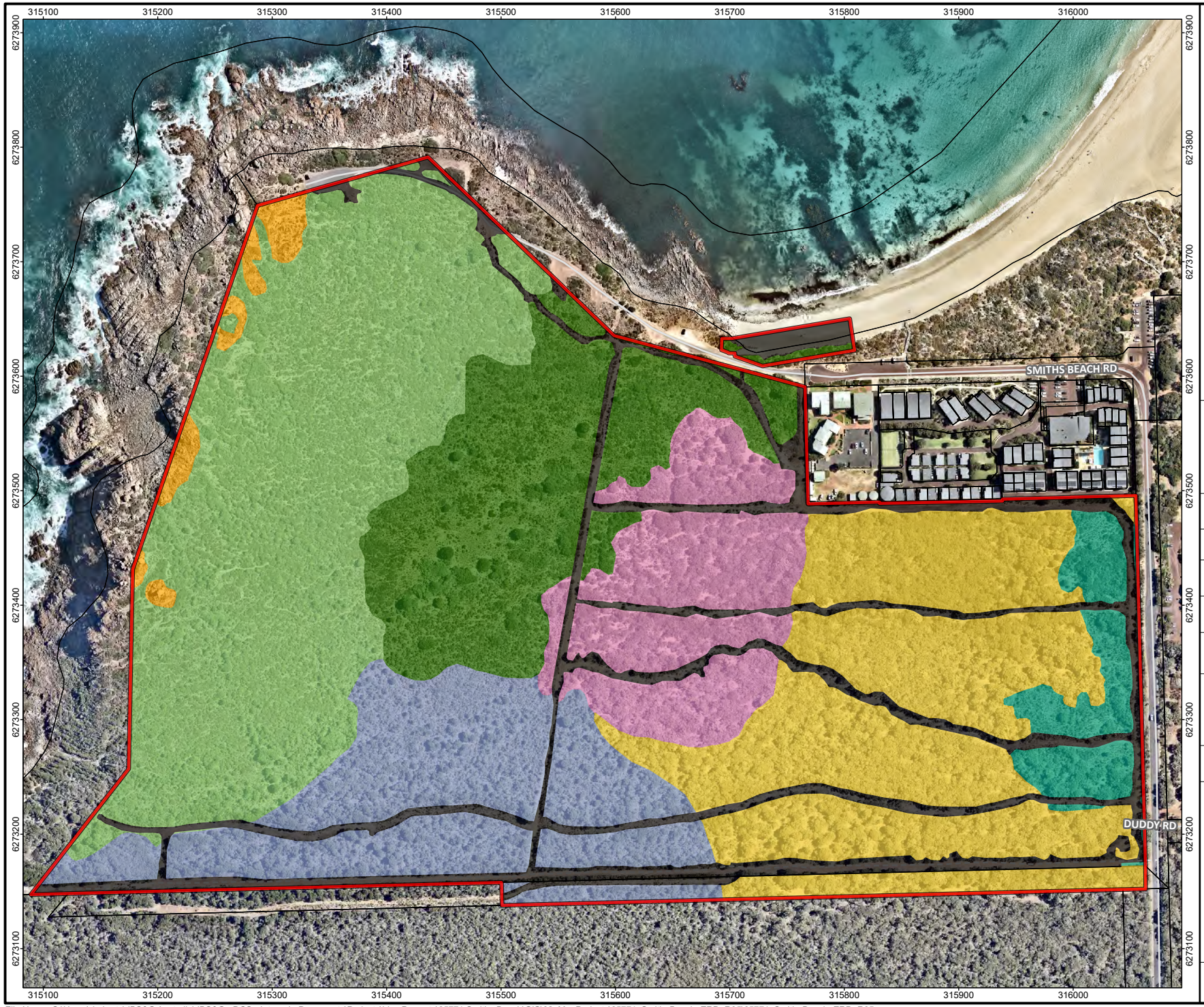
Habitat Type	Description	Corresponding vegetation unit mapping code	Conservation significance species	Photo	Extent within Development Envelope (ha)	% of Development Envelope
Kunzea and *Melaleuca* Closed Shrubland	Closed shrubland *Kunzea ciliata* and *Spyridium globulosum* over low open shrubland *Eutaxia myrtifolia* over sparse sedgeland over low sparse herbland as well as closed shrubland *Melaleuca lanceolata* and *Kunzea ciliata* over occasional grasses and herbs on a hillslope of granite outcropping	**KcSg, MlKc**	**quenda** - primary breeding, foraging and dispersal		11.63	28%
Open Peppermint Forest	Low open forest *Agonis flexuosa* over fernland *Pteridium esculentum* subsp. *esculentum* over open herbland mixed non-native species such as *Lysimachia arvens*is and *Asparagus asparagoides* on a sandy hillslope	**AfPe**	**western ringtail possum** – primary breeding, foraging and dispersal habitat **Black Cockatoos** – secondary roosting habitat **Baudin's** - low quality foraging habitat **wambenger brush-tailed phascogale** - primary breeding, foraging and dispersal habitat **quenda** - foraging and dispersal habitat		8.76	21%

Melaleuca over *Hakea* Shrubland	Low woodland to low open forest *Melaleuca huegelii, M. lanceolata* and *Guichenotia ledifolia* over tall open shrubland *Hakea oleifolia* over shrubland *Hibbertia cuneiformis* over low open herbland *Stylidium adnatum* on a sandy midslopes. Progresses westward to a low closed forest *Melaleuca lanceolata* over sparse shrubland *Melaleuca systena* and *Spyridium globulosum* over low open herbland *Dianella revoluta* var. *revoluta* over low open sedgeland *Lepidosperma spp*. (understorey absent in areas of dense canopy coverage)	**MhGl, MlDr**	**Baudin's** – primary foraging habitat (High Quality) **Carnaby's** – primary foraging habitat (Quality) **quenda** - primary breeding, foraging and dispersal ***Ctenotus ora*** - primary breeding, foraging and dispersal **barking owl –** primary foraging and dispersal		5.69	14%
Open Coastal Shrubland	Variable Shrubland progressing from a granitic stony plain to a sandy plain (southward) on a hillslope. Vegetation comprises distinct associations of *Acacia saligna* over low open shrubland *Hibbertia hypericoides* over grassland non-native	**AsHh, AsDc, NfCcXp, AhHe**	**Baudin's** - low quality foraging habitat **quenda** - primary breeding, foraging and dispersal ***Ctenotus ora*** - primary breeding, foraging and dispersal		5.86	14%

	species, shrubland *Acacia saligna* and *Dodonaea ceratocarpa* over low herbland *Trachymene pilosa* over low sparse grassland *Rytidosperma occidentale*, shrubland *Allocasuarina humilis* over low sparse herbland over low sparse grassland *Austrostipa mollis* and *Rytidosperma occidentale* over low open rushland *Hypolaena exsulca* and low open forest *Nuytsia floribunda* and *Corymbia calophylla* over open shrubland *Xanthorrhoea preissii* over low open mixed herbland over low open grassland native and non-native species					
Open *Banksia* Forest	Low open forest *Banksia attenuata* and occasional *Agonis flexuosa* over open shrubland *Macrozamia riedlei* and *Xanthorrhoea preissii* over open mixed herbland on a sandy hillslope	**BmMrXp**	**western ringtail possum** – secondary breeding, foraging and dispersal habitat **Black Cockatoos** – potential breeding habitat and secondary roosting habitat **Baudin's and Carnaby's** primary foraging habitat (Very High and High Quality respectively)		4.12	10%

			wambenger brush-tailed phascogale - primary breeding, foraging and dispersal habitat **quenda** - primary breeding, foraging and dispersal habitat **western brush wallaby** - primary breeding, foraging and dispersal habitat ***Ctenotus ora*** - primary breeding, foraging and dispersal habitat			
Closed Low *Marri* Forest	Low forest *Corymbia calophylla* over open shrubland *Xanthorrhoea preissii* and over low shrubland *Hibbertia hypericoides* over sparse low herbland *Scaevola calliptera* surrounded by Shrubland *Darwinia citriodora* and *Dodonaea ceratocarpa* over low sedgeland *Lepidosperma spp*. over low open grassland of native and non-native species over low open herbland Crassula spp. on a sandy hillslope	**CcHh, DciDcL**	**western ringtail possum** – secondary breeding, foraging and dispersal **Black Cockatoos** – primary foraging habitat and secondary roosting habitat **wambenger brush-tailed phascogale** - primary foraging and dispersal		1.53	4%

Rocky Outcrop	Granite outcropping and boulders with low open shrubland *Kunzea ciliata* and *Darwinia citriodora* over low sparse herbland *Stypandra glauca* over low sparse grassland *Poa poiformis* on granite	**KcDcPp**			0.51	1%
Cleared/Disturbed	No Native Vegetation.	-			3.85	9%



Legend

- Development envelope
- Cadastral boundary

Broad fauna habitat

- Closed Low Marri Forest surrounded by open shrubland areas
- Kunzea and Melaleuca Closed Shrubland
- Melaleuca over Hakea Shrubland
- Open Banksia Forest
- Open Coastal Shrubland
- Open Peppermint Forest
- Rocky Outcrop
- Cleared/ Disturbed
- Minor road
- Track

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Job No: 65771

Client: Smiths 2014 Pty Ltd

Version: A	Date: 1/07/2024
Drawn By: droberts	Checked By: RM

Scale 1:4,500 at A4

0 50 100
metres

Coord. Sys. GDA2020 MGA Zone 50

Lot 4131 Smiths Beach Road Yallingup, WA

FAUNA HABITAT

FIGURE 1.3

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1.4.2 Key Assumptions and Uncertainties

The key assumptions and uncertainties associated with this CSFMP include:

- All significant direct and indirect impacts on conservation significant fauna resulting from the Proposal have been identified;
- Direct impacts on fauna during construction are limited to habitat loss and mortality as a result of clearing and vehicle movement;
- Staged directional clearing using a “shepherding” approach, along with strategic timing to avoid peak population periods, will allow possums and other ground dwelling species to disperse naturally into retained vegetation patches with little to no handling resulting in a minimised disturbance to the species;
- The field surveys, conducted by qualified organisations and individuals experienced with the relevant fauna taxa, provide sufficient information to confirm the presence and abundance of significant fauna taxa within the Development Envelope and its surroundings;
- The relevant studies and surveys have accurately recorded the presence of all conservation-significant fauna species within the Development Envelope;
- Existing cleared areas within the Development Envelope are assumed not to contain habitat or known records of conservation-significant species;
- The majority of the identified conservation significant fauna species (excluding WRP) are mobile with relatively large home ranges, indicating that point location records represent the use of available foraging and breeding habitat rather than fixed, permanent locations;
- Point locations for nesting reflect the current use of available breeding habitat, however specific nesting sites may change annually;
- Based on local and regional records, the extent of potentially suitable breeding and foraging habitat for the identified conservation significant fauna species is expected to extend beyond the Development Envelope;
- Installation of artificial structures, such as possum bridges, will effectively facilitate the movement of WRP between fragmented habitat areas, thereby mitigating potential barriers caused by Proposal;
- Construction activities will be conducted in a manner that minimises disturbance to the surrounding environment and wildlife; and
- Impact on local wildlife due to an increase in vehicle movement during and post construction will be minimised through traffic control measures.

1.4.3 Risk-based Management Approach

1.4.3.1 Risk Assessment

Management targets and corresponding actions have been formulated using a qualitative risk-based assessment detailed below, incorporating the mitigation hierarchy to minimize impacts on critical environmental factors as low as reasonably practicable (ALARP). These management actions are prioritised according to a risk assessment that takes into account survey results and the potential impacts of the Proposal during construction and operational phases on conservation significant fauna identified in Section 1.4.1.3. The risk assessment can be found at Appendix A of this document.

1.4.4 Rationale for Choice

1.4.4.1 Indicators

Western Ringtail Possum

WRPs have been observed within and adjacent to the Development Envelope during several surveys undertaken for this Proposal and other projects within the vicinity.

According to Thompson and Thompson (2009), in situ management of the WRP within development areas is likely to yield better conservation outcomes than translocating individuals to other areas of remnant vegetation. This approach is preferred because WRPs seem to adapt relatively well to developed environments, whereas translocation efforts often result in poor survival rates (Bamford 2024). Based on this, WRP management approach during clearing operations will include pre-clearing surveys, active monitoring of WRPs during clearing, and timing the clearing activities for periods when WRP populations are expected to be at or near their seasonal low. Sensitive and staged clearing practices, including the use of a "shepherding" method, will be employed to guide WRPs towards retained patches of habitats. By allowing WRPs to relocate to adjacent habitats on their own, this will eliminate the need for translocation or animal handling, thereby significantly reducing the risk of undue stress to the species.

It is considered likely that following the clearing and construction phases of the Proposal, the abundance of WRPs within the Development Envelope will decline due to possums either relocating to adjacent areas or mortality. Therefore, an outcome-based provision to minimise the risk of injury or mortality to conservation significant fauna, including WRP, and reduce the potential for long-term decline in WRP abundance within the Development Envelope resulting from the Proposal would be most suitable. To achieve this outcome, trigger criteria, acting as an early warning to initiate mitigation and threshold criteria, marking a limit that, if crossed, indicates that significant and possibly harmful impact has occurred, requiring immediate remediation have been identified in Table 2.1. The primary indicators for achieving the desired environmental outcomes for conservation significant fauna, including WRPs, will include population-level monitoring data, such as observed activity and individual counts, alongside incident reports and records of interactions between Proposal activities and fauna within the Development Envelope.

Bamford (2024) have recommended a comprehensive, site-specific survey to help inform the mitigation measures for WRP population before development begins. This survey will involve mapping significant trees, canopy corridors, existing dreys (nests), and current WRP activity to establish baseline data, which will support the assessment of trigger and threshold criteria outlined in this plan. The survey will include day inspections to identify critical habitat features like hollows and canopy connectivity, as well as night-time spotlighting to detect active WRPs and hidden dreys. These assessments are essential for planning the placement of possum infrastructure, such as bridges and artificial dreys, which will provide alternative shelter and maintain connectivity within the Development Envelope. Where natural ground cover is limited, the installation of artificial shelters, such as logs, rocks, and purpose-built wildlife shelters will also be undertaken to provide refuges for small ground dwelling fauna, including the WRP, that may have come to ground. These structures mimic natural shelters, offering protection from predators and extreme weather. They are

particularly beneficial in areas where bushfire risk reduction efforts have removed natural ground cover.

Importantly, this survey will be repeated just before clearing to confirm up-to-date WRP locations, as possums may move or create new dreys over time. The sequential clearing approach will allow WRPs to gradually shift to nearby these refuges. Additionally, artificial dreys, bridges, and other infrastructure will be installed well in advance (Bamford (2024) recommending at least a week before clearing) to give possums time to become familiar with these structures, reducing their exposure to predation during site disturbance.

Of the native vegetation proposed for clearing, a portion will undergo revegetation at prescribed densities outlined in the BMP (Strategen-JBS&G 2021). An additional section of previously cleared land, primarily informal and fire access tracks outside the clearing footprint, will also be revegetated. Revegetation is scheduled post-clearing and construction and will prioritise usage of native plant species with high-nitrogen content to support and provide foraging opportunities for the WRP.

Before works commence, the Proponent will also develop landscaping and revegetation plans, detailing both vegetation/ significant trees to be retained and new plantings, aligned with the Vegetation Management Plan (VMP), Bushfire Management Plan (BMP), and Visual Landscaping Amenity report. These plans will guide initial landscaping and revegetation works and be maintained as per the VMP requirements. These plans will help guide the placement of possum bridges by mapping out the significant trees and vegetation patches within the Development Envelope that are suitable for the species and will be retained.

The VMP will include baseline vegetation studies, land-clearing procedures, a rehabilitation plan, bushfire management, and monitoring, along with training and responsibility designations for key stakeholders, including the Construction Manager, Community Corporation, and property operators. Upon completion of clearing and construction, the landscaping plans will be updated to an “as-constructed” version, reflecting final vegetation locations. This plan will serve as the reference for ongoing, year-round maintenance, with specific checks before and during bushfire season. A BPAD Level 3 practitioner will audit landscaping compliance annually before bushfire season, issuing a certificate to the local government to confirm adherence.

Monitoring Program for Western Ringtail Possum

Ongoing monitoring within the Development Envelope will be essential to effectively manage and adapt to potential impacts on the WRP. Baseline surveys conducted prior to, and following, the clearing and construction phases will inform a detailed, adaptive monitoring program grounded in accurate data. A comparable project, cited in Bamford (2024), applied a comprehensive monitoring approach for WRP that could serve as a model for this Proposal. In that project, population monitoring was conducted every two months during the first year to assess short-term impacts, transitioning to biannual monitoring over the following nine years to establish long-term population trends.

Monitoring activities included systematic checks of all natural and artificial dreys to confirm occupancy using binoculars or a pole camera. Opportunistic sightings of individual WRPs, along with new natural dreys, were also recorded. Additionally, possum bridges were monitored with motion-sensitive cameras to confirm usage, supplemented by opportunistic searches for WRP scats below these structures. A similar methodology for this Proposal would ensure comprehensive monitoring across the Development Envelope.

The monitoring regime should also include documentation of any adverse events, such as WRP mortality from predation or vehicle collisions, as well as instances of human-wildlife conflict, such as possums entering residential areas or interactions with people or pets. This monitoring framework will be essential in assessing the effectiveness of mitigation measures and enabling adaptive management adjustments as required. Additionally, it will serve as an indicator of whether the trigger and threshold levels remain appropriate.

1.4.4.2 Management Actions

The objective-based provisions established in this CSFMP are designed to ensure that impacts on conservation-significant fauna, including WRP, are effectively minimised and mitigated to the maximum degree possible. Key measures include retaining essential habitat trees to support canopy connectivity and foraging resources, installing possum bridges to maintain or enhance connectivity across cleared sections. Complementing these efforts, above-ground water sources, artificial shelter features and strict control of domestic and feral predators will further support WRP population resilience. Together, these management actions aim to consistently meet or exceed conservation targets, fostering positive outcomes for WRP and aligning with the broader environmental outcome of this CSFMP in relation to the long-term welfare of the possum population present within the Development Envelope.

2. CSFMP Provisions

2.1 Outcomes-based Provisions

Table 2.1: Outcome-based Provisions

EPA Factor and Objective	Terrestrial Fauna: To protect terrestrial fauna so that biological diversity and ecological integrity are maintained
Outcomes	1. There has not been a long-term impact on the abundance of WRPs in the Development Envelope as a result of the Proposal. 2. Minimise the risk of injury or mortality to conservation significant fauna in the Development Envelope as a result of Proposal activities.
Key Environmental Values	Conservation significant terrestrial fauna species and their habitat.
Key Impacts and Risks	• Direct impact due to loss of terrestrial fauna habitat from vegetation clearing; • Direct impact through mortality or injury through vehicle strike; • Indirect impacts from habitat fragmentation and degradation including loss of ecological connectivity; • Indirect impacts from invasive species including weeds and Phytophthora dieback may potentially damage or remove habitat for fauna; • Indirect impacts from increased introduced fauna species which may result in increased competition, habitat degradation and increased predation of native fauna species; and • Indirect impacts from altered fire regimes may cause loss of habitat or prevent understorey from re-establishing, allowing spread of weeds.

No.	Trigger Criteria Threshold Criteria	Response Actions (Trigger Level Actions/ Threshold Contingency Actions)	Monitoring	Timing/ Frequency of Monitoring	Reporting
1.	**Trigger criterion** A decline of 20% or more in the WRP population compared to the baseline assessment, or the absence of a stable or increasing population trend during annual monitoring. **Threshold criterion** A 40% decline in the WRP population compared to the baseline assessment, or the absence of a stable or increasing population trend during annual monitoring.	**Trigger level actions** • **Investigate Causes**: Conduct a detailed assessment to identify factors contributing to the decline, such as habitat degradation, environmental stressors including increased predation, or barriers in the artificial corridors implemented (i.e., possum bridges). • **Manage Causes**: Undertake habitat enhancement or targeted predator control, if deemed the cause. • **Enhance Monitoring**: Increase the frequency of: 1. monitoring to closely track changes in movement and identify potential obstacles or disturbances. 2. spatial coverage for monitoring within the Development Envelope to obtain more comprehensive data on WRP activity and presence. • **Implement Additional Mitigation Measures:** Install or improve fauna crossings, exclusion fencing, and buffer zones to minimise any further impact on WRPs. Install additional artificial possum dreys. • **Report to Regulatory Bodies:** Provide a detailed report on findings and initial actions to the relevant environmental regulatory authorities, ensuring compliance with permit conditions and early transparency. **Threshold contingency actions** • **Restore Corridor**: Undertake immediate actions to restore corridor functionality, including removing blockages or repairing damaged possum bridges or providing artificial dreys. • **Create Alternative Pathways**: If restoration is not feasible or declines persist, establish alternative movement pathways (e.g., additional possum bridges, safe crossing zones) to maintain connectivity.	**Indicator** • Population surveys (e.g., visual counts, scat analysis), juvenile recruitment rates, and breeding success. • Number of possums sighted during annual monitoring surveys. • Frequency of possum sightings along artificial corridors (i.e., possum bridges). • Corridor condition assessment (i.e., possum bridge condition). • Retained and artificial dreys condition. • Artificial shelters. • Water points. • Predator sightings. **Method for data collection and analysis** • Monitoring program. • Recordings from cameras installed along possum bridges will be used to monitor frequency of their use by possums. **Location of monitoring sites** Entire Development Envelope and Possum bridges.	Every two months during the first year to assess short-term impacts on WRP population, transitioning to biannual monitoring over the following nine years as the baseline survey to ensure results are comparable. This will be determined in consultation with suitably qualified fauna expert and relevant regulatory bodies which will also take into consideration optimal timing for monitoring.	Annual Reporting.

		• **Implement Habitat Enhancement Programs, where practicable**: Begin habitat enhancement within the Development Envelope, with a focus on increasing WRP food sources, improving nesting sites, and enhancing habitat structure. • **Intensive Monitoring and Reporting**: Initiate more rigorous, ongoing monitoring and prepare reports to evaluate the effectiveness of the response actions and adjust management strategies as needed. • **Re-evaluate Development Envelope Management Practices:** Review and revise management practices and operational protocols within the Development Envelope to reduce any ongoing pressures on WRP populations, potentially including reduced operational footprints or further access restrictions. This will also include a review and update of this CSFMP.			
2.	**Trigger criterion:** Near-misses involving conservation significant fauna during Proposal activities. **Threshold criterion:** Injury or mortality of conservation significant fauna directly attributable to Proposal activities.	**Trigger level actions:** • Immediately halt activities in the area of the near-miss to assess the situation. • Conduct a thorough investigation to determine the cause of the near-miss and assess any potential risks to fauna. • Enhance fauna monitoring and implement additional protective measures (e.g., increased fauna spotters, machinery speed reduction or temporary exclusion zones) in the area. • Reduce the area limit for clearing allowed to allow more time for fauna to relocate. • Review and update fauna management protocols to prevent further near-misses. • Implement and enforce reduced speed limits in high-risk areas, updating the traffic management plan accordingly. • Conduct wildlife safety training for all staff, with regular refresher courses to ensure adherence to fauna protection protocols. • Install clear signage and distribute educational materials to raise awareness of wildlife safety among visitors. **Threshold contingency actions** • Halt all activities immediately in the affected area to assess and manage the situation. • Investigate the cause of injury or mortality and report to relevant authorities (e.g., environmental regulators, species conservation programs). • Implement additional mitigation measures, including adjusting work practices, increasing fauna monitoring, or modifying work schedules. • Develop and implement an incident response plan, which may include fauna relocation or rehabilitation. • Conduct a review of the environmental management plan and update it to reflect new findings and measures to prevent further occurrences. • Consider additional monitoring beyond the standard annual surveys to ensure that the population is not impacted by ongoing activities.	**Indicator:** • Frequency of near-misses/ injury or mortality. • Cause of near-misses/ / injury or mortality. • Proximity to fauna habitats. • Fauna movement pattern. • Response time and effectiveness. **Methodology for data collection and analysis:** Visual observation. **Location:** Development Envelope.	Ongoing.	• Induction and training records. • Inspection records. • Incident reporting system. • Annual reporting.

	• Reassess speed limits or impose further restrictions if needed, including temporary road closures or additional signage during high-risk periods. • Review and update training programs if incidents persist, conducting compliance audits and incentivising staff adherence to wildlife protection measures. • Enhance signage and educational efforts if non-compliance continues, monitoring visitor behaviour for further enforcement.	

Please note that the proposed trigger and threshold criteria are currently preliminary and may be refined as more accurate data becomes available. The upcoming WRP survey, to be conducted pre-clearing, will provide essential insights, allowing us to adjust these criteria to more precisely reflect the local population dynamics and habitat conditions. This adaptive approach will help ensure that the trigger and threshold levels remain effective in guiding conservation efforts for the Western Ringtail Possum.

2.2 Objective-based Provisions

Table 2.2: Objective-based Provisions

EPA Factor and Objective	Terrestrial Fauna: To protect terrestrial fauna so that biological diversity and ecological integrity are maintained.
Objectives	1. Construction and operation of the Proposal to avoid and minimise impacts to conservation significant fauna habitats; 2. Connectivity will be maintained throughout the Development Envelope for both ground-dwelling species and canopy dwelling species; and 3. Mortality and/ or predation as a consequence of the Proposal is avoided during both construction and operation phases of the Proposal.
Key Environmental Values	Conservation significant terrestrial fauna species and their habitat.
Key Impacts and Risks	• Direct impact due to loss of terrestrial fauna habitat from vegetation clearing; • Direct impact through mortality or injury through vehicle strike; • Indirect impacts from habitat fragmentation and degradation including loss of ecological connectivity; • Indirect impacts from invasive species including weeds and Phytophthora dieback may potentially damage or remove habitat for fauna; • Indirect impacts from increased introduced fauna species which may result in increased competition, habitat degradation and increased predation of native fauna species; and • Indirect impacts from altered fire regimes may cause loss of habitat or prevent understorey from re-establishing, allowing spread of weeds.

No.	Management Target	Management Action	Monitoring Indicators, Methods and Location	Timing/Frequency of Action	Contingency Action Trigger	Contingency Measures	Reporting
Construct and operate the Proposal to avoid and minimise impacts to conservation significant fauna							
1	All clearing activities undertaken within the approved footprint to ensure no additional fauna habitat loss.	All site personnel and contractors to be inducted/ trained on environmental responsibilities including importance of: • Retained vegetation; and • Boundaries.	**Indicator:** • No unauthorised clearing of vegetation. • No unauthorised access into lots and vegetation outside/ adjacent to the Development Envelope. **Method:** Visual inspection of the ground disturbance outside of demarcated clearing area. **Location:** Development Envelope.	Prior to personnel and contractors attending site and starting works.	Vegetation clearing or unauthorised access by machinery/ personnel within designated retention areas.	• Investigate cause. • Re-instate appropriate boundary fencing and signage. • Undertake revegetation of area cleared. • Review effectiveness of the management action and identify opportunities for improvement. • Communicate outcomes of the incident and the boundaries of retained vegetation at a contractor toolbox meeting. • Monitor the success of remediation measures.	Induction and training records.
		Provide GPS coordinates of areas approved to be cleared and retained to the contractor to ensure no unapproved clearing is undertaken.		Prior to commencement of clearing activities.			• Inspection records. • Incident reporting system. • Annual audit. • Annual reporting on compliance.
		Prior to clearing activities, areas proposed to be cleared will be demarcated on-site (using appropriate visual markers such as flagging tape and/ or fencing).		Prior to commencement of clearing activities.			
		Vehicles and equipment access of existing designated roads/ access tracks and cleared areas will be preference over clearing new roads/ access tracks, where possible.		During construction works.			
		Temporary fencing and temporary signage, where appropriate, will be erected to clearly mark and restrict access to retained vegetation.		Prior to commencement of clearing activities.			
		No machinery, equipment or laydown areas are to be located within areas of native vegetation to be retained.		During construction works.			
		All vegetation cleared will be recorded within the vegetation clearing register.		Post completion of each clearing events.			
2	Minimise declines in conservation significant terrestrial fauna habitat as a result of altered fire regimes from the Proposal.	An adequate number of personnel and contractors shall be trained in basic fire awareness, fire response and use of fire suppression equipment.	**Indicator:** Recorded fire observed. **Method:** Fire incident reports. **Location:** Development Envelope.	Inspect equipment every 6 months during construction and operation.	Fire incident.	• Investigate cause. • Consult with local fire authorities in relation to improvements in fire prevention measures. • If fire impacts retained vegetation within POS, implement remedial actions such as post fire weed control or planting with tubestock.	• Induction and training records. • Inspection records. • Annual audit. • Annual reporting on compliance.
		Smoking permitted in designated smoking areas to have a Cease fire unit (or similar) for safe and contained cigarette butt disposal.					

		Spark arrestors will be fitted to mobile equipment with internal combustion engines involved in clearing operations.				• Monitor success of any revegetation works, if relevant. • Communicate to all personnel through toolbox meetings.	
		Clearing operations will not be permitted on days with extreme or catastrophic fire danger risk.					
		Fire-control equipment will be available in fire-risk areas including but not limited to hazardous material storage areas, hot works job sites, service trucks.					
		An emergency management plan shall be developed and implemented and shall include methods for managing major environmental incidents, including but not limited to fire.					
		Handling of chemicals/fuels shall take place off-site, or at a designated hazardous materials storage and handling location (which shall not be located adjacent vegetation to be retained).		At all times.			
3	Minimise decline in conservation significant terrestrial fauna due to the introduction of weeds and/ or dieback as a result of the Proposal	All site personnel and contractors to be inducted on environmental responsibilities. Environmental induction will include awareness of high risk/priority weed relevant to the Proposal and weed hygiene management, including: • The requirement for vehicles and machinery to be "clean on entry". • Access restrictions relating to retained vegetation.	**Indicator:** • New weed species identified. • Vehicles and machinery being "clean on entry" prior to entering the site. **Method:** • Visual inspections. • Opportunistic sightings. • Weed control reports. **Location:** Development Envelope.	Prior to personnel and contractors attending site and starting works.	• Vehicles not clean on entry. • New weed species identified. • New areas of weeds infestation identified. • Sightings of unusual death of trees.	• Investigate cause. • Ensure importance of maintaining hygiene is communicated to all personnel. • Clean-down affected machinery / vehicles at designated clean/wash down station or return to construction contractor depot. • Implement weed control within areas of retained vegetation exhibiting increase in weed density.	Induction and training records.
		All machinery and vehicles shall be cleaned down of all soil and vegetation material prior to arriving or entering on site. Any soil and vegetation removed from machinery or vehicles during clean down shall be collected and disposed offsite.		• Prior to arrival on site. • At all times.			• Inspection records. • Incident reporting system. • Material specification certificates. • Weed inspection records. • Monthly inspection. • Annual audit. • Annual reporting on compliance.
		Maintain accurate records of all vehicles/ machinery being inspected and "clean on entry".		Ongoing.			
		Require vehicles and machinery operators to leave site and clean vehicles which are determined to not meet hygiene standards		Upon arrival on site.			
		Locate topsoil, mulch and fill stockpiles more than 50 m from retained vegetation within POS and conservation areas.		During construction.			
		Undertake progressive land clearing minimising the amount of active disturbance present at any one time to reduce the opportunity for weeds to become established.		During clearing activities.			
		Undertake annual weed monitoring.		Annually.			
Connectivity will be maintained throughout the Development Envelope for both ground-dwelling species and canopy dwelling species							
4	Minimise clearing of conservation significant terrestrial fauna habitat	Conservative approach to Proposal through partial modification of vegetation serving as potential fauna habitat and retained canopy will serve as connecting	**Indicator:** No unauthorised clearing of vegetation.	• During the design and planning stages.	Full clearing occurring in areas designated for partial modification only.	• Investigate cause. • Lodge incident in the incident	• Incident reporting system. • Annual audit.

	required for implementation of the Proposal.	linkages to adjacent vegetation for canopy dwelling species (such as the Western Ringtail Possum and Wambenger Brush-tailed Phascogale).	**Method:** Visual inspection of the ground disturbance outside of demarcated clearing area. **Location:** Development Envelope.	• Ongoing.		• Re-instate appropriate boundary fencing and signage. • Undertake revegetation of area cleared. • Review effectiveness of the management action and identify opportunities for improvement. • Communicate outcomes of the incident and the boundaries of retained vegetation at a contractor toolbox meeting. • Record incident and outcome in the incident and complaints register. • Monitor the success of remediation measures.	• Annual reporting on compliance.
		Design measures implemented to avoid the clearing of conservation significant terrestrial fauna terrestrial habitat where possible (including locating infrastructure within existing disturbed areas).					
		Identify and mark significant trees and dreys identified for retention.	**Indicator:** No unauthorised clearing marked trees and/or dreys. **Method:** Visual inspection. **Location:** Development Envelope.	Periodic checks to ensure retained trees and dreys remain healthy and undisturbed.	Marked trees and/or have been disturbed/cleared.		
5	Provision of shelter and alternative methods of movement for ground dwelling fauna (such as possums) to enhance connectivity.	Install bridges (possum bridges), pergolas, fences, and lattices over 2 meters high, at key location(s) to maintain and enhance connectivity and movement of possums.	**Indicator:** Sightings of possums using the bridges. **Method:** Visual inspection. **Location:** Development Envelope.	• Opportunistically. • During annual monitoring.	Possums using/not using the rope bridges.	• Maintain a record of sightings/ interaction with possum.	• Annual audit. • Annual reporting on compliance.
		Install artificial shelters, such as logs, rocks, and purpose-built wildlife shelters (including artificial dreys) to provide refuges for small ground dwelling fauna (including the WRP) that may have come to ground in areas where natural ground cover is limited.	**Indicator** Evidence of fauna using artificial shelters. **Method:** Visual inspection. **Location:** Development Envelope.		Evidence of artificial shelters being used.	• Maintain a record of sightings.	• Annual reporting.
Mortality and/ or predation as a consequence of the Proposal is avoided during both construction and operation phases of the Proposal							
6	Minimise decline in conservation significant fauna due to predation from feral animals as a result of the Proposal.	All site personnel and contractors to be inducted on environmental responsibilities including the importance of: • awareness of high risk of introduced fauna species relevant to the Proposal; • consequences of feeding fauna species (which is prohibited); and • appropriate waste management measures.	**Indicator:** Feral fauna sightings. **Method:** • Visual inspections. • Opportunistic sightings. **Location:** Development Envelope.	Prior to personnel and contractors attending site and starting works.	• Inspection of construction areas shows lack of adherence to waste management measures put in place. • Sightings of feral fauna within Development Envelope. • Reporting on prohibited fauna feeding.	• The incident is to be immediately reported to the site supervisor. • Investigate cause. • Implement appropriate measures to ensure the incident is remediated (i.e., undertake additional fauna relocation works and/ or recommunicate environmental values to personnel). • Review effectiveness of the management actions. • Record incident and outcome in the incident and complaints register. • Communicate outcomes of the incident to the personnel at a toolbox meeting.	• Induction and training records. • Inspection records. • Incident reporting system. • Material specification certificates. • Monthly inspection. • Pest animal control records. • Annual audit. • Annual reporting on compliance.
		Implement domestic waste management procedures (e.g. fencing of landfills, regularly covering putrescible waste, secure lids on bins, to avoid attraction of both feral and native species to the Development Envelope.		Ongoing.			
		Undertake pest animal control on site, based on sightings of feral species, in cooperation with regional control programs where appropriate.		As required during construction or operation of Proposal.			
		A fauna interaction register is to be maintained to capture observations and interactions with fauna. Record incident and outcome in the incident and complaints register.		Ongoing.			
		Watering points (minimum of 2 per ha) will be installed in shaded parts of	**Indicator:**	Ongoing.			

		canopies of trees connected by the possum bridge and maintained at least 6 weeks prior to clearing in WRP habitats to be retained. These will be retained and maintained post clearing and construction to limit ground exposure, reducing predation risk through.	Sightings of fauna using watering points. **Method:** • Visual inspections. • Opportunistic sightings. **Location:** Development Envelope.				
7	Minimise incidental mortality or injury of conservation significant terrestrial fauna from clearing activities and/ or vehicle strike resulting from the Proposal.	• All clearing and construction activities are strictly confined to operating hours (7:00 AM to 6:00 PM). Outside these hours, no works are to be conducted. • Clearly communicate operating hours to all personnel and include them in induction materials and site signage. Regularly monitor compliance and address any breaches promptly.	**Indicator** Evidence of clearing or construction activities occurring outside the approved operating hours (7:00 AM to 6:00 PM). **Method:** • Daily activity logs. • Site inspections. • Incident reports. **Location:** Development Envelope.	Ongoing during clearing and construction activities.	Works undertaken outside operating hours.	• The incident is to be immediately reported to the site supervisor. • Any injured fauna shall be left alone and observed until a suitably qualified person can attend to the animal. • Once the animal has been attended to, investigate the cause of the incident. • Implement appropriate measures to ensure the incident does not re-occur (e.g., lower site speed limits, undertake additional fauna relocation works, recommunicate operating hours and/ or environmental values to personnel). • Review effectiveness of the management actions. • Communicate outcomes of the incident to the personnel at a toolbox meeting.	• Induction and training records. • Daily activity logs. • Incident reporting system. • Annual audit. • Annual reporting on compliance.
		All site personnel and contractors to be inducted on environmental responsibilities including the importance of: • Speed limits throughout the Development.	**Indicator:** Fauna spotted during clearing activities. Conservation significant fauna mortality or injury from clearing activities and/or vehicle strike. **Method:** Visual observation and incident reports of deceased or injured conservation significant fauna. **Location:** Development Envelope.	Prior to personnel and contractors attending site and starting works.	Speeding on site.		
		Two fauna spotters will be assigned per machine conducting clearing operations. In the event a fauna is spotted, all works will stop until it is safe for the fauna.		During clearing activities.	Sightings of fauna by fauna spotter or site personnel.		
		If during clearing works any injured, abandoned or visibly distressed fauna are found, personnel will immediately call the Wildcare Helpline on (08) 9474 9055.		During clearing activities.	Sightings of injured/ distressed fauna.		
		All vehicles and machinery are not to exceed speeds of 40km/hr throughout the site, to minimise risk of fauna strike.		Ongoing.	Speeding on site.		
		Record any injury or death to fauna and outcome in the incident and complaints register.		Ongoing.	Sightings of fauna on site.		
8	Minimise conservation significant terrestrial fauna population decline due to entrapment within Proposal infrastructure and equipment, as a result of the Proposal.	All site personnel and contractors to be inducted on environmental responsibilities including the importance of: • Complying with measures put in place to prevent attraction of fauna near infrastructures and equipment.	**Indicator:** Sightings of a conservation significant terrestrial fauna presence within infrastructure or equipment. **Method:** • Visual inspections of equipment/infrastructure. • Opportunistic sightings. **Location:** Development Envelope.	Prior to personnel and contractors attending site and starting works. • Daily checks during clearing and construction activities. • Monthly during operation or as required.	• Personnel not complying with management measures. • Regular sightings of fauna near infrastructure and equipment. • Entrapped fauna.	• The incident is to be immediately reported to the site supervisor. • Any injured fauna shall be left alone and observed until a suitably qualified person can attend to the animal. • Once the animal has been attended to, investigate the cause of the incident. • Implement appropriate measures to ensure the incident does not re-occur (e.g., undertake additional fauna relocation works, recommunicate environmental values to personnel). • Review effectiveness of the management actions. • Communicate outcomes of the incident to the personnel at a toolbox meeting.	• Induction and training records. • Inspection reports. • Reporting of any non-compliance as required. • Annual audit. • Annual reporting on compliance.
		Undertake regular inspections of water infrastructure to ensure integrity of fauna egress points and fencing.					
		Ensure all open holes are covered or capped during construction and operation; or are rehabilitated when they are no longer required.					
		Ensure all domestic waste facilities are fenced and putrescible wastes regularly covered.					
		Ensure all containers doors closed are securely when not in use.					

9	Manage and restrict pets within future proposed development, especially during hot weather during operation of Proposal.	• Implement pet restrictions such as:
		  ○ No domestic cats allowed; and
		  ○ Dogs must be kept on a leach.
		• Develop and install signage and distribute educational materials on importance of protection conservation significant terrestrial fauna.
			Indicator:
			• Sightings of cats within Development Envelope.
			• Dogs off leash.
			Method:
			Visual inspection.
			Location:
			Development Envelope.
				• Daily checks during operation of Proposal.	• Unrestrained dogs on site
					• Domestic cats present within site accommodation.
						• Re-communicate importance of protecting conservation significant terrestrial fauna present within Development Envelope to public.
						• Implement appropriate measures to ensure the incident does not re-occur (i.e., re-enforcement of pet policies or introduce penalties).
							Inspection reports.

10	Clearing to avoid peak season for ground dwelling fauna (including the WRP).	Clearing will be conducted between February and August.	**Indicator:** • No unauthorised clearing outside of this timeframe. **Method:** Period of clearing. **Location:** Development Envelope.	• Ongoing between February and August.	Clearing occurring outside of this timeframe.	• Stop all works. • The incident is to be immediately reported to the site supervisor.	• Induction and training records. • Inspection reports. • Reporting of any non-compliance as required. • Annual audit. • Annual reporting on compliance.
11	Directional staged clearing approach within WRP habitat to minimise fauna displacement stress	• A maximum of 1 ha of WRP habitat clearing will be cleared/ modified per day, with a total of 5 ha cleared/modified per week. • Clearing will occur in a directional manner to allow possums to naturally disperse into adjacent retained habitats and/ or shepherding of possums, into retained vegetation, should they come to ground.	**Indicator:** • No exceedance of limit implemented. **Method:** Clearing limit. **Location:** Development Envelope.	• Daily checks during clearing phase of Proposal.	• Exceedance of clearing limit. • Distressed possum/ injured possum.	• Stop all works. • The incident is to be immediately reported to the site supervisor. • Any injured fauna shall be left alone and observed until a suitably qualified person can attend to the animal. • Once the animal has been attended to, investigate the cause of the incident. • Implement appropriate measures to ensure the incident does not re-occur or to improve strategy.	• Induction and training records. • Inspection reports. • Reporting of any non-compliance as required. • Annual audit. • Annual reporting on compliance.

3. Adaptive Management and Review of the CSFMP

3.1 Adaptive Management and Review

Review of learnings from the implementation of mitigation measures will be utilised for the development of adaptive management practices to meet environmental objectives more effectively. The need for adaptive management may be recognised in the following ways:

- Evaluation of assumptions and uncertainties of the conservation significant fauna management and monitoring program;
- Re-evaluation of the risk assessment and revision of risk-based priorities as a result of monitoring outcomes;
- Review of data and information gathered over the review period that has increased understanding of site environment in the context of the regional ecosystem;
- Review of management actions as the Proposal matures and new management measures and technologies become available that may be more effective for conservation significant fauna management; and
- Assessment of changes which are outside the control of the Proposal and the management measures identified (i.e. a new project within the area or region; regional change affecting conservation significant fauna management).

Each adaptive management review will include:

- Review of the objective(s) that this CSFMP addresses;
- Review of the implementation of the management actions and associated monitoring, recording and reporting requirements; and
- Review of the management actions based on evaluation of:
    - Monitoring data and records;
    - Review of assumptions, uncertainties and understanding (e.g., of the ecological system);
    - Risk assessment; and
    - External changes (e.g., technical advances or innovation).

This CSFMP is to be reviewed by the Proponent at the following intervals:

- Grant or modification of relevant approvals;
- When monitoring indicates a potential new or increased impact on conservation significant fauna;
- When monitoring results/findings indicate an unexpected impact, or an unexpected degree of impact, to conservation significant fauna
- Findings or actions identified through monitoring, audits and incident reports;
- Annually from the commencement of construction until the achievement of completion criteria; and
- As and when directed by Chief Executive Officer, Department of Water and Environmental Regulation (DWER) and DCCEEW.

3.2 Reporting

3.2.1 Internal Reporting

Environmental incidents are to be reported in accordance with internal procedures. The incident will be assessed by severity and relevant personnel will be notified and consulted

Table 3.1: Internal Fauna Reporting Actions

Notification Event	Action	Responsibility	Timing
Failure of management target	Internal incident report and investigation.	All personnel/ Project Manager/ Environmental Advisor	Within 24 hours
Contingency exceedance	Internal incident report and investigation. External incident report to regulator.	All personnel/ Project Manager/ Environmental Advisor	Within 7 – 14 days of event
Injury or death of conservation significant fauna	Internal incident report and investigation.	All personnel/ Project Manager/ Environmental Advisor	Within 24 hours
Disturbance to conservation significant fauna habitat outside the approved footprint	Internal incident report and investigation.	All personnel/ Project Manager/ Environmental Advisor	Within 24 hours

3.2.2 External Reporting

Incidents reportable to the DWER and DCCEEW will be in accordance with condition requirements.

4. Communication

4.1 Stakeholder consultation

The Proponent has consulted with a number of stakeholders while developing this plan, consistent with the EPA's expectations to align the plan with the principles of EIA. Specifically, Bamford Consulting Ecologists were engaged to advise on the measures required to mitigate impacts to Western Ringtail Possums. It is noted in the Recovery plan for Western Ringtail Possums that:

"…in working towards effective conservation of the western ringtail possum, other species with similar habitat needs to the western ringtail possum are likely to benefit. Such threatened fauna species include Baudin's cockatoo, brush-tailed phascogale, Chuditch, Carnaby's cockatoo, forest red-tailed black cockatoo (DBCA 2017)".

The advice provided by Bamford (2024) which has been incorporated into this CSFMP and the management measures developed are considered to also benefit other conservation significant fauna species.

4.2 External communications and complaints

The Construction Contractor will develop and maintain a complaints register to record all complaints. Complaints will be recorded by the person who receives the complaint (at the time it is received). Records to be obtained about a complaint include:

- Contact details for the person making the complaint (name and phone number as a minimum);
- Approximate location that the issue was identified by complainant; and
- Date, time and issues that the complaint relates to.

5. Limitations

Scope of services

This report ("the report") has been prepared by JBS&G in accordance with the scope of services set out in the contract, or as otherwise agreed, between the Client and JBS&G. In some circumstances, a range of factors such as time, budget, access and/or site disturbance constraints may have limited the scope of services. This report is strictly limited to the matters stated in it and is not to be read as extending, by implication, to any other matter in connection with the matters addressed in it.

Reliance on data

In preparing the report, JBS&G has relied upon data and other information provided by the Client and other individuals and organisations, most of which are referred to in the report ("the data"). Except as otherwise expressly stated in the report, JBS&G has not verified the accuracy or completeness of the data. To the extent that the statements, opinions, facts, information, conclusions and/or recommendations in the report ("conclusions") are based in whole or part on the data, those conclusions are contingent upon the accuracy and completeness of the data. JBS&G has also not attempted to determine whether any material matter has been omitted from the data. JBS&G will not be liable in relation to incorrect conclusions should any data, information or condition be incorrect or have been concealed, withheld, misrepresented or otherwise not fully disclosed to JBS&G. The making of any assumption does not imply that JBS&G has made any enquiry to verify the correctness of that assumption.

The report is based on conditions encountered and information received at the time of preparation of this report or the time that site investigations were carried out. JBS&G disclaims responsibility for any changes that may have occurred after this time. This report and any legal issues arising from it are governed by and construed in accordance with the law as at the date of this report.

Environmental conclusions

Within the limitations imposed by the scope of services, the preparation of this report has been undertaken and performed in a professional manner, in accordance with generally accepted environmental consulting practices. No other warranty, whether express or implied, is made, including to any third parties, and no liability will be accepted for use or interpretation of this report by any third party.

The advice herein relates only to this project and all results conclusions and recommendations made should be reviewed by a competent person with experience in environmental investigations, before being used for any other purpose.

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Appendix A Risk Assessment

Each environmental risk identified has been provided a likelihood and consequence rating using the criteria in Table 6.1 and Table 6.2. These ratings are then combined using Table 6.3 to generate a risk rating of low, medium, high or severe. Table 6.4 details the findings of the risk assessment for the potential impacts from the Proposal.

Table 6.1: Likelihood

Qualitative Measures for likelihood (How likely is it that this event/issue 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 6.2: Consequence

Qualitative Measures for consequence (what will be the consequence/result if this issue does occur rating)	
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 6.3: 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

Table 6.4: Risk Assessment of Potential Impacts from the Proposal

Potential Impacts	Inherent Risk Rating			Mitigation measures	Residual Risk Rating		
	Likelihood	Consequence	Risk		Likelihood	Consequence	Risk
Loss of native vegetation	Highly Likely	High	**High**	• Implement induction and education programmes. • Design measures to avoid the clearing of terrestrial fauna habitat where possible, including locating infrastructure in existing disturbed areas. • Demarcation of clearing areas to prevent unauthorised clearing outside of approved footprint. Refer to Management Target 1.	Unlikely	High	**Medium**
Increased vehicle movements	Highly Likely	Moderate	**High**	• Implement induction and education programmes. • Promote driver awareness/training and implement appropriate speed limits. • Enforce strict traffic management rules (e.g. keeping to designated tracks, limiting driving at dusk and dawn, driving to road and weather conditions, reduced speed limits, signage of fauna along roads) to avoid accidental disturbance to fauna and habitat. • Record any injury or death of fauna to relevant agencies and as per internal processes. Refer to Management Target 7.	Possible	Moderate	**Medium**
Habitat loss, degradation and fragmentation	Highly Likely	Moderate	**High**	• Conservative approach to Proposal design to maximise retention of canopy through innovative methods such as partial modification. • Require site layout designed to reduce habitat fragmentation and provide corridors allowing fauna to move through the landscape on all sides of development. • Demarcation of clearing areas to prevent unauthorised clearing outside of approved footprint. • Introduce canopy dwelling fauna with movement alternatives such as possum rope bridges. Refer to Management Target 1, 4 & 5.	Unlikely	Moderate	**Low**

Weeds	Possible	Moderate	**Medium**	• Implement vehicle hygiene management procedures and requirements for all new vehicles and equipment to be certified clean and weed-free prior to mobilisation to site. • Enforce strict traffic management rules (e.g. keeping to designated tracks) to reduce the introduction and spread of weeds. Vehicles are not permitted to leave access tracks or cleared areas to reduce the spread of weeds. • Weed monitoring. • Undertake progressive land clearing minimising the amount of active disturbance present at any one time to reduce the opportunity for weeds to become established. Refer to Management Target 3.	Unlikely	Moderate	**Low**
Dieback	Possible	Moderate	**Medium**	• Implement vehicle hygiene management procedures and requirements for all new vehicles and equipment to be certified clean and weed-free prior to mobilisation to site. • Enforce strict traffic management rules (e.g. keeping to designated tracks) to reduce the introduction and spread of dieback. Vehicles are not permitted to leave access tracks or cleared areas to reduce the spread of dieback. • Dieback monitoring. Refer to Management Target 3.	Unlikely	Moderate	**Low**
Introduced fauna and attraction of predators or competitors	Possible	High	**Medium**	• Implement induction and education programmes. • Ensure appropriate fencing is constructed where required. • Implement domestic waste management procedures (e.g. fencing of landfills, regularly covering putrescible waste, secure lids on bins, designed to avoid ponding water) to avoid attraction of both feral and native species to the Project area. • Undertake pest animal control on site in cooperation with regional control programs where appropriate. Refer to Management Target 6 & 9.	Unlikely	High	**Medium**
Altered fire regimes	Possible	High	**Medium**	• Implement induction and education programmes. • Undertake regular maintenance of fire breaks and implement fire management procedures (e.g. Hot Work Permit system, firefighting training, Emergency Response Plan) to avoid increases in fire frequency. • Fire control equipment to be present and available on site and in all vehicles. Refer to Management Target 2.	Unlikely	High	**Medium**

1.1.1.1 Document Distribution

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