BHP

Carrapateena Operation

EPBC Compliance Report 2024

28 March 2025

Acknowledgements

Acknowledgements go to all staff across the Carrapateena Operations for their contributions to the overall report and for undertaking all activities in a safe and effective manner. We also acknowledge the Kokatha People for their ongoing support and assistance provided at Carrapateena.

Document control

CA-0000-ENV-REP-1052

Version	Description	Author	Approval	Date
1	PEPR Compliance Report 2024	Luke Boehm Specialist Environment Trent Anderson Specialist Environment Josh Allen Superintendent Environment Operations	Sally Lamb Manager Asset Environment Approvals and Sustainability	28/03/2025

Executive summary

BHP Carrapateena submits this Compliance Report for the period January 2024 to December 2024; as required by the Conditions of Approval attached to EPBC 2017/7895 authorised under the *Environment Protection and Biodiversity Conservation Act 1999* (Cth).

This Compliance Report has been prepared in accordance with the Annual Compliance Report Guidelines and demonstrates compliance with the Conditions of Approval associated with EPBC 2017/7895.

Contents

List of appendices

List of tables

List of figures

1 Introduction

BHP is operating the Carrapateena mine located approximately 160 km north of Port Augusta, South Australia (Figure 1.1). On 2 May 2023 BHP Group Limited completed the acquisition of OZ Minerals Limited. The Carrapateena operation has been developed and operated by OZM Carrapateena Pty Ltd and OZ Minerals Carrapateena Pty Ltd, wholly owned by OZ Minerals Limited. The Carrapateena site has been integrated into the BHP Copper South Australia (SA) asset, also incorporating BHP's Prominent Hill mine, Olympic Dam mine and Oak Dam exploration site. Copper SA falls under the BHP Minerals Australia business portfolio which also incorporates Western Australia Iron Ore, Western Australia Nickel, Coal, Mt Arthur Coal and Operations Services.

OZ Minerals submitted a Referral under the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act) for Carrapateena in March 2017 (OZ Minerals 2017a), with a variation requested in June 2017 (OZ Minerals 2017c). The Carrapateena Operation (EPBC 2017/7895) was determined to be a controlled action in April 2017 (DoEE 2017), to be approved via the *Mining Act 1971* (SA) (Mining Act) approvals process, in accordance with the Assessment Bilateral Agreement between the Government of South Australia and the Commonwealth of Australia.

OZ Minerals submitted a Mining Lease Proposal (MLP) and Miscellaneous Purposes Licence (MPL) Management Plans (collectively referred to as the MLP) on 26 May 2017 (OZ Minerals 2017b) to support applications for a Mining Lease (ML) and three MPLs. An associated Response Document was submitted on 22 September 2017 (OZ Minerals 2017d). OZ Minerals received formal notification of the granting of the tenements ML 6471, MPL 152, MPL 153, MPL 154 on 3 January 2018. The associated Program for Environment Protection and Rehabilitation (PEPR) for the tenements (PEPR2018/019) was subsequently approved on 29 March 2018 (OZ Minerals 2018).

Approval of Carrapateena under the EPBC Act was received on 29 March 2018, subject to Conditions of Approval (DoEE 2018a). A variation of conditions (OZ Minerals 2017c) was approved on 14 December 2018 (DoEE 2018b), with a subsequent correction notification published on 10 February 2025 (DCCEEW 2025).

The Northern Wellfield MPL 156 was granted 11 December 2018, with the associated PEPR (PEPR2019/001) approved on 13 February 2019.

In November 2020, a consolidated PEPR, MPEPR2019/026, was granted approval encompassing activities across all Carrapateena tenements (ML 6471, MPL 149, MPL 152, MPL 153, MPL 154 and MPL 156) (OZ Minerals 2020). In October 2024, MPEPR2019/026 was superseded following approval of MPEPR2024/009, which continues to incorporate ML 6471, MPL 149, MPL 152, MPL 153, MPL 154 and MPL 156 (BHP 2024).

BHP submits this Compliance Report as required by Condition 14 of the Variation of Conditions Attached to Approval EPBC 2017/7895 (DoEE 2018b) for the approved action to construct and operate an underground mine, processing facility and associated support infrastructure as described in the EPBC Referral (OZ Minerals 2017a and OZ Minerals 2017c).

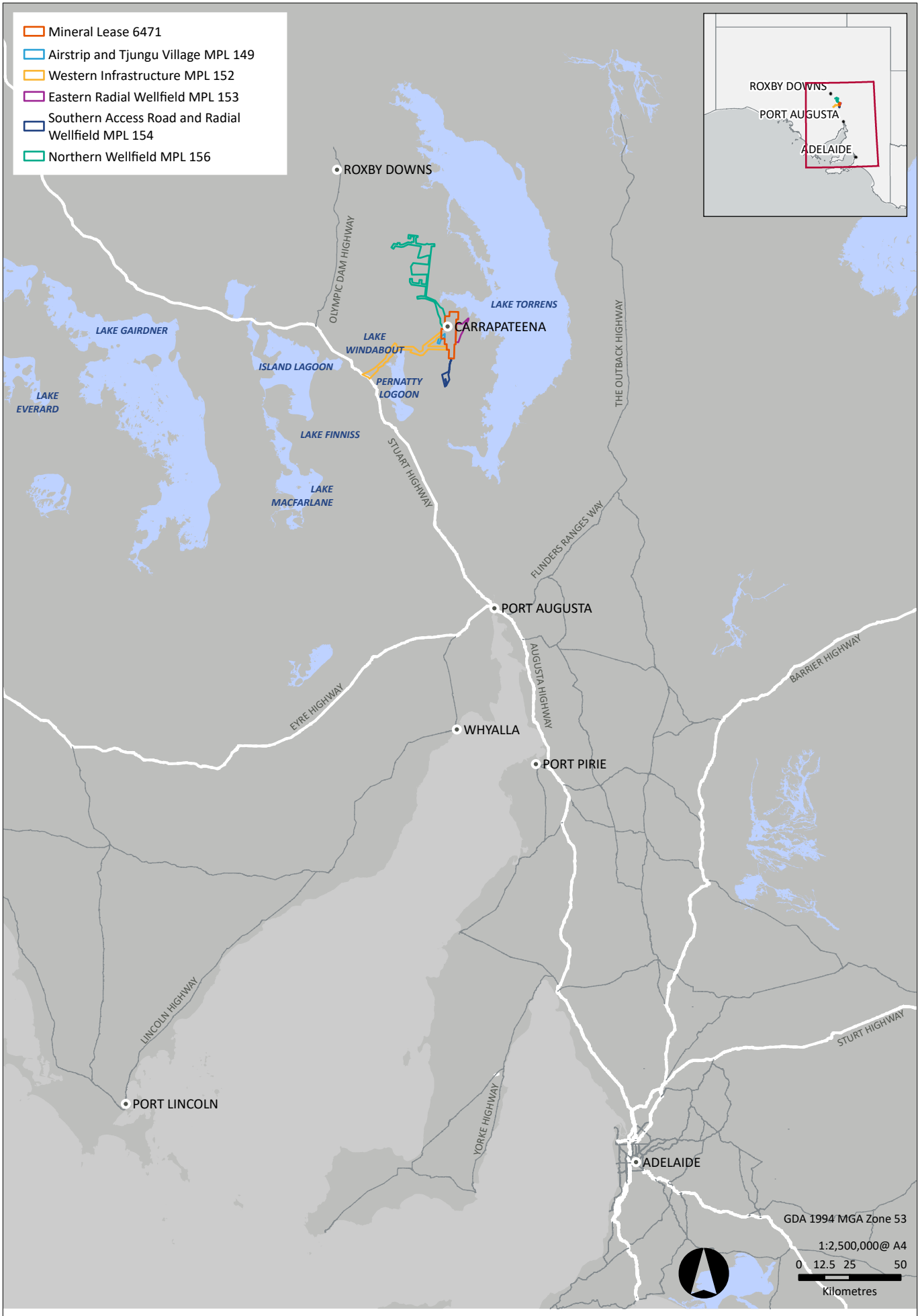

Figure 1.1 | Operation location

Carrapateena BHP

2 Declaration of accuracy

Person responsible for the preparation of the Compliance Report			
In making this declaration, I am aware that sections 490 and 491 of the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) make it an offence in certain circumstances to knowingly provide false or misleading information or documents. The offence is punishable on conviction by imprisonment or a fine, or both. I declare that all the information and documentation supporting this Compliance Report is true and correct in every particular. 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.			
Name	**Position or Agent**	**Signature**	**Date**
Anna Wiley	Asset President Copper South Australia		28 March 2025

3 Key activity information

Table 3.1 | Key activity information

Operation Name	Carrapateena	EPBC Number	2017/7895
Approval Holder	OZM Carrapateena Pty Ltd (58%) and OZ Minerals Carrapateena Pty Ltd (42%), wholly owned by BHP Lonsdale Investments Pty Ltd, a subsidiary of BHP Group Limited.		
Australian Company Number	149 626 255 and 007 756 443, respectively.		
Approved Action	To construct and operate an underground mine, processing facility and associated support infrastructure, 65 km east of Woomera, SA (EPBC 2017/7895 (DoEE 2018a, DoEE 2018b and DCCEEW 2025))		
Operation Location	Located approximately 160 km north of Port Augusta. Nearby townships include Woomera (approximately 65 km west) and Roxby Downs (approximately 90 km north-west). Refer to Figure 1.1.		
Site Contact	Elton Peebles, General Manager, Carrapateena		
Address	10 Franklin Street	City (Postcode)	Adelaide (5000)
Telephone	08 8422 3713	Email	elton.peebles@bhp.com
Reporting Period	January 2024 – December 2024		

4 Activities undertaken during the reporting period

BHP submits this Compliance Report for the reporting period of 1 January 2024 to 31 December 2024. The Compliance Report relates to the activities undertaken for the approved action to construct and operate an underground mine, processing facility and associated support infrastructure as described in the EPBC Referral (OZ Minerals 2017a and OZ Minerals 2017c) and approved under EPBC 2017/7895 (DoEE 2018a, DoEE 2018b and DCCEEW 2025).

BHP undertook the activities related to the approved action during the reporting period. The disturbance footprint for the activities as of December 2024 is provided in Figure 4.1. Of the activities undertaken during the reporting period, the following were undertaken within Plains Mouse habitat:

- tailings storage facility (TSF) Stage 2 Embankment Raise
- TSF Stage 2B causeway raise
- Fremantle Doctor track maintenance
- mine-to-vent raise powerline
- TSF Stage 3 geotechnical investigation
- TSF Stage 3 pipeline duplication
- Western Access Road extension and carpark expansion
- Midway Quarry and access.

Specifically related to the EPBC Condition 4, Nature Foundation, acting on behalf of OZ Minerals, initiated a program of land management on the South Gap Offset in 2021. The work program was dictated by the management goals of the offset, which include:

- Establish baseline conditions, including the distribution and condition of Plains Mouse habitat, the presence and distribution of target species, and the identification and prioritisation of local threats.
- Refine the presence, distribution and abundance of Plains Mouse within the offset.
- Reduce total predation pressure (from cats, foxes and wild dogs).
- Maintain and/or enhance the condition of habitat for the benefit of Plains Mouse, through the management of total grazing pressure and invasive weeds.
- Improve knowledge of local target species populations including how they respond to management locally.

Details of the activities undertaken, related to Nature Foundation's work program, during the reporting period are described in Table 4.1.

A copy of the South Gap EPBC Offset Annual Report is provided as Appendix A.

Table 4.1 | Nature Foundation's work program activities undertaken during the reporting period

Management goal	Activities undertaken
Establsih and monitor the state of vegetation	Weed assessments Continued research on cracking clay function and ecology
Refine the presence, distribution and abundance of Plains Mouse within the offset	Baited motion camera program across twelve (12) sites Incidental surveys for other bird and reptile species
Reduce predation pressure	Two feral eradication campaigns (spotlight shooting) Predator monitoring with motion cameras

Management goal	Activities undertaken
Maintain habitat condition through management of grazing and invasive weeds	Maintain stock exclusion boundary fence Motion camera program including at a core goat habitat location Rabbit monitoring and warren fumigation Maintain a sustainable population of kangaroo within the offset to reduce impact – thermal cameras used in conjunction with a point-based survey methodology
Improve knowledge of local target species populations including how they respond to management locally	Bird surveys at designated sites

Baited motion camera trapping efforts culminated in one confirmed Plains Mouse sighting across the twelve sites indicating population presence within the offset area. Details of the sighting was submitted to the Biological Databases of South Australia in February 2024.

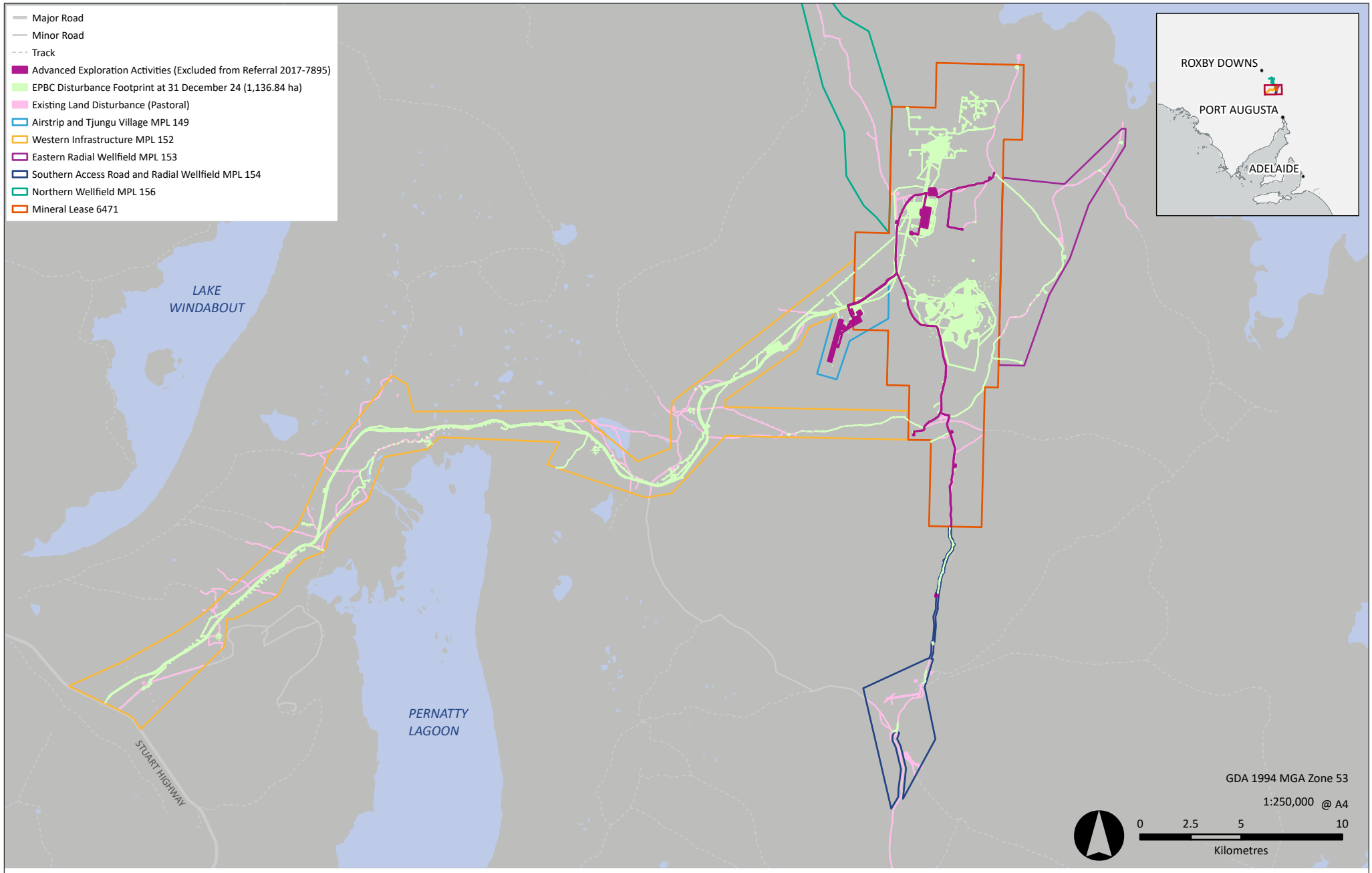

Figure 4.1 | EPBC disturbance footprint (December 2024)

Carrapateena BHP

5 EPBC Act approval conditions and compliance status

The Conditions of Approval associated with EPBC 2017/7895 are detailed in Table 5.1, together with clear statements regarding the status of compliance with the Conditions of Approval. Where necessary, statements regarding compliance are supported by a summary of evidence clearly demonstrating the conclusion that compliance with the condition was (or was not) fully met.

Table 5.1 | EPBC Act approval conditions and compliance status

Condition number	Condition	Compliance status	Evidence demonstrating compliance with condition
1	To manage the impacts of the action on the environment, the person taking the action must implement the conditions of the SA approval.	Compliant	The Compliance Report associated with the granting of the Carrapateena tenements under the Mining Act will be submitted to DEM on 31 March 2025 indicating compliance with the conditions of the SA approval. The Compliance Report will be publicly available on the DEM website at: https://www.energymining.sa.gov.au/industry/minerals-and-mining/mining/major-projects-and-mining-activities/major-operating-and-approved-mines/carrapateena
2	The person taking the action must not impact more than 1,740 hectares of Plains Rat habitat within the disturbance footprint.	Compliant	Total disturbance since the commencement of the referred action is 1,546.41 ha, including 280.83 ha of Plains Rat (Plains Mouse) habitat, as shown in Figure 4.1 and Figure 5.1, respectively.
3	Prior to commencement of the action, to compensate for residual impacts to the Plains Rat, the person taking the action must acquire an offset property which must contain: • a population of the Plains Rat • no less than 1,740 hectares of Plains Rat habitat • habitat quality equal to that of the Plains Rat habitat within the disturbance footprint.	Compliant	Following on from an 'Agreement to Underlease' (CA-APR-AGR-1037) with the Pastoral Lessee of South Gap Pastoral Station two offset areas, OZ Minerals established two individual Underlease Agreements, one for each offset area, securing a total of 3,251 ha of suitable Plains Mouse habitat (Northern Offset Underlease Agreement 1,882 ha and Southern Offset Underlease Agreement 1,369 ha (CA-APR-LET-1178). The Underlease Agreements have a 10-year expiry term, with successive Agreements to be established totalling the required duration as per the approval conditions. The offset areas consist of Arcoona Tablelands habitat that is similar in quality and structure to the land disturbed at Carrapateena and are considered to represent equally viable Plains Mouse habitat. Historical observations of Plains Mouse have been recorded nearby the northern offset, and within the same stretch of continuous tablelands habitat connecting disturbed Plains Mouse habitat at Carrapateena, to the offset areas on South Gap Station.
4	The person taking the action must maintain or improve the habitat quality of the existing Plains Rat habitat at the acquired offset property for the life of this approval.	Compliant	BHP Carrapateena has developed an Environmental Offset Management Plan (CA-0000-ENV-PLN-1004) (the Plan) which aims to: • Establish baseline conditions, including the distribution and condition of Plains Mouse habitat, the presence and distribution of target species, and the identification and prioritisation of local threats. • Define the potential presence, distribution and abundance of other target species within the offset (i.e. Thick-billed Grasswren and Night Parrot). • Manage total predation pressure (fox, cat, wild dog/dingo). • Enhance the condition of habitat for the benefit of Plains Mouse, through the management of total grazing pressure (i.e. stock exclusion) and invasive weeds. • Improve knowledge of local target species populations including an understanding of how they respond to management locally. The Plan presents fourteen (14) individual objectives grouped under eleven (11) management strategies to address EPBC Act offset liability, and associated legislative and policy obligations, for the first ten (10)-year period of management.
5	Within 2 years from commencement of the action, the person taking the action must change the tenure of the offset property for conservation purposes using an appropriate legal mechanism for long term protection.	Compliant	Underlease agreements signed, executed and back-dated from to 21 April 2020 (2 years from the commencement of the action) for the Northern Offset Area and the Southern Offset Area. The areas have been officially registered with the Lands Titles Office: two registrations as associated with each offset area. The Agreements to Underlease clearly define that the areas are to be set aside for environmental offset purposes. The change in land use will apply for ten (10) years, after which the change in land use will need to be renewed (permission granted from the Commonwealth to manage as rolling terms to achieve the total required tenure).
6	Prior to the commencement of the action, the person taking the action must engage a suitably qualified expert to undertake a Night Parrot survey within the development envelope. The Night Parrot survey must be undertaken in' accordance with the EPBC Act Night Parrot survey guidelines. Within three months of the Night Parrot survey being completed, the person taking the action must provide the Department with the Night Parrot survey results.	Compliant	OZ Minerals completed a targeted Threatened Species Survey for Night Parrot in March 2018 (CA-ENV-REP-1040). There were no Night Parrots or evidence of Night Parrots detected during the survey. The results of the survey were forwarded to the Department of the Environment and Energy (DoEE) in April 2018 (DOE: CA-APR-EML-1077). Night Parrot has not been reconfirmed as locally extinct within South Australia.

Condition number	Condition	Compliance status	Evidence demonstrating compliance with condition
7	Should the Night Parrot or evidence of the Night Parrot be recorded during the survey, the person taking the action must submit for the Minister's approval, a Night Parrot Management Plan that must include: • Details of the Night Parrot survey results, including the methodology, timing and area surveyed. • An assessment of the impacts to the Night Parrot that will result from the action. • Management actions that will avoid, minimise and/or offset both the immediate and long-term impacts of the action on the Night Parrot. • Monitoring and reporting requirements that demonstrate the management actions are effectively being implemented and achieve the intended results. This should include the frequency, intensity and duration of monitoring. The person taking the action must not commence the action prior to the Minister approving the Night Parrot Management Plan. The approved Night Parrot Management Plan must be implemented.	Not Applicable	The targeted survey (CA-ENV-REP-1040) did not find evidence of the Night Parrot in the Operation area. Night Parrot has not been reconfirmed as locally extinct within South Australia.
8	Prior to the commencement of the action, the person taking the action must engage a suitably qualified expert to undertake a *Frankenia plicata* survey within the development envelope. The *Frankenia plicata* survey must be undertaken in accordance with contemporary survey methods. Within three months of the *Frankenia plicata* survey being completed, the person taking the action must provide the Department with the *Frankenia plicata* survey results.	Compliant	OZ Minerals completed a targeted Threatened Species Survey for *Frankenia plicata* in March 2018 (CA-ENV-REP-1040). *Frankenia plicata* was not detected during the survey. The results of the survey were forwarded to DoEE in April 2018 (CA-APR-EML-1077). Follow-up work by the engaged consultant uncovered the incorrect classification of locally collected Frankenia samples lodged with the SA Herbarium. Consultation with the SA Herbarium coupled with extensive survey work within the Carrapateena tenements and more broadly within the region has failed to detect this species, which is more likely to occur much further north of the Operation.
9	Should the *Frankenia plicata* be recorded during the survey, the person taking the action must submit for the Minister's approval, a *Frankenia plicata* Management Plan that must include: • Details of the *Frankenia plicata* survey results, including the methodology, timing and area surveyed. • An assessment of the impacts to the *Frankenia plicata* that will result from the action. • Management actions that will avoid, minimise and/or offset both the immediate and long-term impacts of the action on the *Frankenia plicata*. • Monitoring and reporting requirements that demonstrate the management actions are effectively being implemented and achieve the intended results. This should include the frequency, intensity and duration of monitoring. The person taking the action must not commence the action prior to the Minister approving the *Frankenia plicata* Management Plan. The approved *Frankenia plicata* Management Plan must be implemented.	Not Applicable	The targeted survey (CA-ENV-REP-1040) did not find evidence of *Frankenia plicata* in the operational area. Follow-up work by the engaged consultant uncovered the incorrect classification of locally collected *Frankenia plicata* samples lodged with the SA Herbarium.
10	Within 3 months following the change of tenure referred to in condition 5) the person taking the action must provide the Department with written evidence that the offset property has been secured for conservation purposes using an appropriate legal mechanism.	Compliant	Written evidence provided to DoEE via letter dated 16 December 2020 (CA-APR-LET-1178).
11	Within 30 days after the commencement of the action, the person taking the action must advise the Department in writing of the actual date of commencement.	Compliant	OZ Minerals advised DoEE of the commencement of the action on 21 April 2018 (CA-ENV-LET-1001).
12	The person taking the action must maintain accurate records substantiating all activities associated with or relevant to the conditions of approval, and make them available upon request to the Department. Such records may be subject to audit by the Department or an independent auditor in accordance with section 458 of the EPBC Act, or used to verify compliance with the conditions of approval. Summaries of audits will be posted on the Department's website. The results of audits may also be publicised through the general media.	Compliant	BHP Carrapateena maintains an Environmental Management System that includes electronic data management systems for document control (Aconex), obligations management and land access (LandFolio) and consultation/correspondence (INX InForm). Data collected during Carrapateena monitoring is recorded on the site environmental data management system (MonitorPro) or within ArcGIS. Data collected for the environmental offsets on South Gap pastoral station will be collected, managed and reported on by a third party engaged to manage the offset (Nature Foundation) with select information captured back into the Carrapateena systems.
13	Within 30 days after completion of the action, the person taking the action must advise the Department in writing of the actual date of completion and provide a map clearly defining the date, location and actual impact within the Disturbance footprint of the action and be accompanied with a shape file.	Not Applicable	BHP Carrapateena is currently undertaking the action.

Condition number	Condition	Compliance status	Evidence demonstrating compliance with condition
14	The approval holder must prepare a compliance report for each 12-month period following the date of commencement of the action, or as otherwise agreed to in writing by the Minister. The approval holder must: • publish each compliance report on the website within 60 business days following the relevant 12-month period; • notify the Department by email that a compliance report has been published on the website within five business days of the date of publication; • keep all compliance reports publicly available on the website until this approval expires; • exclude or redact sensitive ecological data from compliance reports published on the website; and • where any sensitive ecological data has been excluded from the version published, submit the full compliance report to the Department within 5 business days of publication. NOTE: The first compliance report may report a period less than 12 months so that it and subsequent compliance reports align with the similar requirement under state approval.	Compliant	The EPBC 2017/7895 Compliance Report is posted annually in April to BHP's website where copies of previous Compliance Reports can also be located.
15	Upon the direction of the Minister, the person taking the action must ensure that an independent audit of compliance with the conditions of approval is conducted and a report submitted to the Minister. The independent auditor must be approved by the Minister prior to the commencement of the audit. Audit criteria must be agreed to by the Minister and the audit report must address the criteria to the satisfaction of the Minister.	Not Applicable	BHP Carrapateena has not been directed by the Minister to commission an independent audit of compliance with the conditions of approval associated with EPBC 2017/7895.
16	If, at any time after 5 years from the date of this approval, the person taking the action has not commenced the action, then the person taking the action must not commence the action without the written agreement of the Minister.	Not Applicable	OZ Minerals commenced the action in late March 2018, as communicated to DoEE in April 2018 (CA-ENV-LET-1001).
17	The approval holder must notify the Department in writing of any: incident; non-compliance with the conditions; or non-compliance with the commitments made in plans. The notification must be given as soon as practicable and no later than two business days after becoming aware of the incident or non-compliance. The notification must specify: • the condition which is or may be in breach; and • a short description of the incident and/or non-compliance.	Compliant	There were no non-compliances with the EPBC 2017/7895 conditions of approval, nor non-compliances with commitments described in any plans required therein during the reporting period. There were no incidents associated with the action during the reporting period that caused, or had the potential to cause, significant impacts to matters of national environmental significance.
18	The approval holder must provide to the Department details of any incident or non-compliance with the conditions or commitments made in plans as soon as practicable and no later than 30 days after becoming aware of the incident or non-compliance, specifying: • Any corrective action or investigation which the approval holder has already taken or intends to take in the immediate future; • the potential impacts of the incident or non-compliance; and • the method and timing of any remedial action that will be undertaken by the approval holder.	Compliant	There were no non-compliances with the EPBC 2017/7895 conditions of approval, nor non-compliances with commitments described in any plans required therein during the reporting period. There were no incidents associated with the action during the reporting period that caused, or had the potential to cause, significant impacts to matters of national environmental significance.

Figure 5.1 shows the current disturbance footprint for activities subject to the action in relation to the Plains Mouse habitat.

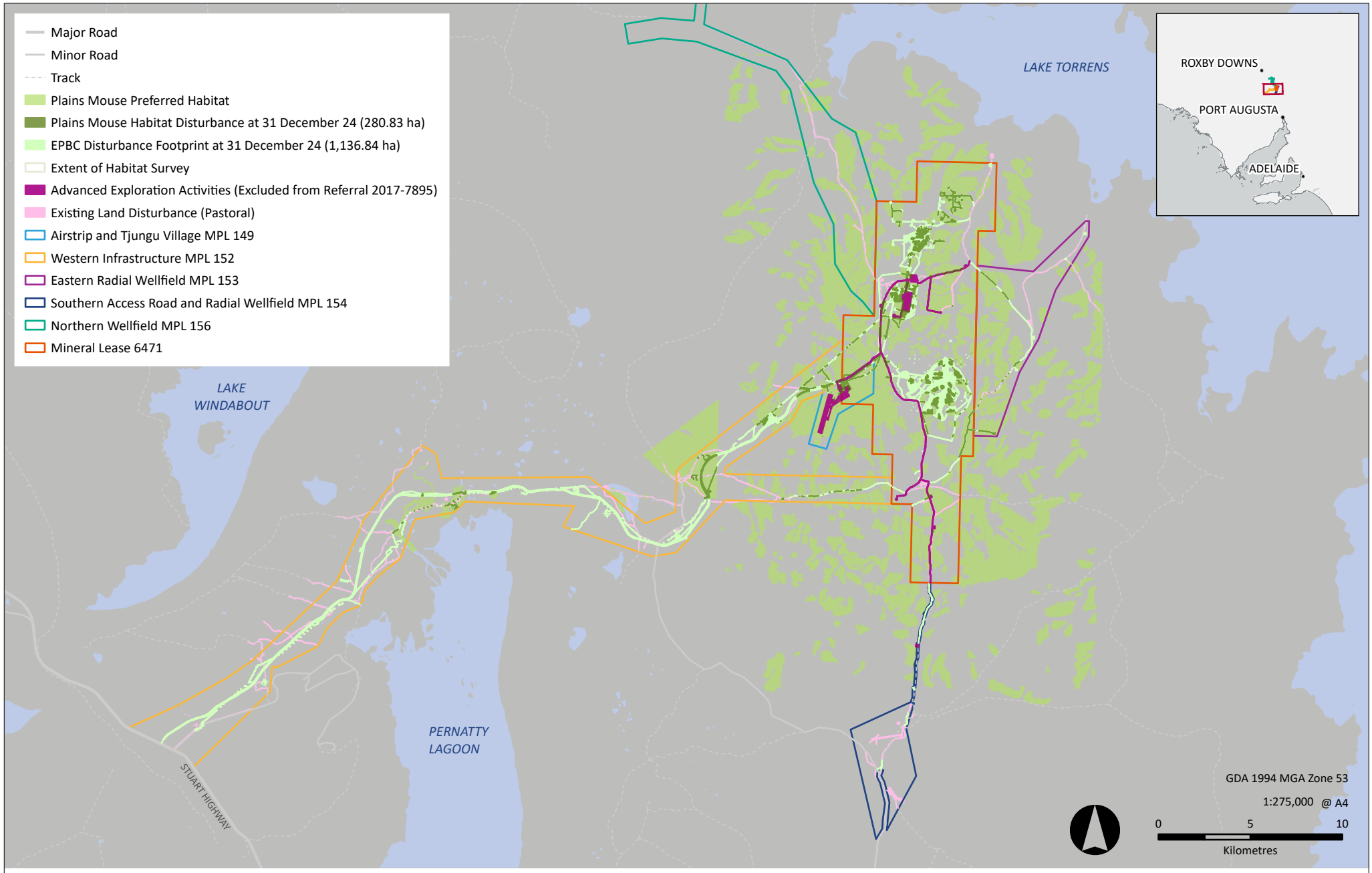

Figure 5.1 | Plains Mouse (*Pseudomys australis*) habitat disturbance at 31 December 2024

Carrapateena BHP

6 Corrective actions

There were no non-compliances with the Conditions of Approval during the reporting period.

There were no corrective actions carried over from previous reporting periods, and therefore no assessment of the effectiveness of the corrective actions was required.

7 New environmental risks

There were no new environmental risks that were identified during the reporting period, and subsequently no risk analysis is presented.

8 References

BHP (2024) *Carrapateena Operation Program for Environment Protection and Rehabilitation for ML 6471 Mineral Lease, MPL 149 Airstrip, MPL 152 Western Infrastructure Corridor, MPL 153 Eastern Radial Wellfield and MPL 154 Southern Access Road and Radial Wellfield and MPL 156 Northern Wellfield*. June 2024. MPEPR2024/009.

DCCEEW (Department of Climate Change, Energy, the Environment and Water) (2025) *Correction Notification. Variation of conditions attached to approval, Carrapateena Project copper-gold mining and processing, 65 km east of Woomera, SA (EPBC ref 2017/7895)*. 10 February 2025. Australian Government Department of Climate Change, Energy, the Environment and Water. Canberra.

DoE (Department of the Environment) (2014) *Annual Compliance Report Guidelines 2014*. Commonwealth of Australia 2014. Australian Government Department of the Environment. Canberra.

DoEE (Department of the Environment and Energy) (2017) *Notification of Referral Decision and Designated Proponent – controlled action.* 12 April 2017. Australian Government Department of the Environment and Energy. Canberra.

DoEE (Department of the Environment and Energy) (2018a) *Approval Carrapateena Project copper-gold mining and processing, 65 km east of Woomera, SA (EPBC 2017/7895)*. 29 March 2018. Australian Government Department of the Environment and Energy. Canberra.

DoEE (Department of the Environment and Energy) (2018b) *Variation of Conditions Attached to Approval Carrapateena Project copper-gold mining and processing, 65 km east of Woomera, SA (EPBC 2017/7895)*. 14 December 2018. Australian Government Department of the Environment and Energy. Canberra.

OZ Minerals (2017a) *Carrapateena Project Environment Protection and Biodiversity Conservation Act 1999 – Referral of Proposed Action.* March 2017.

OZ Minerals (2017b) *Carrapateena Project Mining Lease Proposal and Miscellaneous Licence Purposes Management Plans*. May 2017. Version A. OZ Minerals, South Australia, Adelaide.

OZ Minerals (2017c) *Request to vary proposal (Referral EPBC 2017/7895)*. 2 June 2017. OZ Minerals, South Australia, Adelaide.

OZ Minerals (2017d) *Carrapateena Project Mining Lease Proposal and Miscellaneous Licence Purposes Management Plans Response Document*. September 2017. Version A. OZ Minerals, South Australia, Adelaide.

OZ Minerals (2018) *Carrapateena Project Program for Environment Protection and Rehabilitation, ML 6471 Mineral Lease, MPL 152 Western Infrastructure Corridor, MPL 153 Eastern Radial Wellfield, MPL 154 Southern Access Road and Radial Wellfield*. March 2018. Version A. OZ Minerals, South Australia, Adelaide.

OZ Minerals (2020) *Carrapateena Project Program for Environment Protection and Rehabilitation. ML 6471 Mineral Lease, MPL 149 Airstrip, Workers' Accommodation Village, Access Road and Ancillary Infrastructure, MPL 152 Western Infrastructure Corridor, MPL 153 Eastern Radial Wellfield, MPL 154 Southern Access Road and Radial Wellfield, MPL 156 Northern Wellfield.* February 2020. MPEPR2019/026.

9 Abbreviations and units of measure

9.1 Definition of acronyms

Acronym	Expansion
DCCEEW	Department of Climate Change, Energy, the Environment and Water
DoEE	Australian Government's Department of the Environment and Energy (now DCCEEW)
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999* (Cth)
Mining Act	*Mining Act 1971* (SA)
ML	Mining Lease
MPL	Miscellaneous Purposes Licence
PEPR	Program for Environment Protection and Rehabilitation
TSF	tailings storage facility

9.2 Units of measure

Acronym	Expansion
%	percent
ha	hectare
km	kilometre

Appendices

Appendix A

2024 South Gap EPBC Offset Annual Report

South Gap EPBC Offset Annual Report 2024

06 February 2025

Contents

Abbreviations

IBRA	Interim Biogeographic Regionalisation for Australia (Region, Sub-region, Association)
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth)
EOMP	EPBC Offset Management Plan
MNES	Matters of National Environmental Significance

1. Introduction

1.1 Background

The on-ground offset program at South Gap Station (central South Australia) is halfway through the fourth year of management. The main focus of this site is to protect the EPBC listed plains mouse (*Pseudomys australis*) and restore their habitat. The EPBC Offset Management Plan (EOMP) is followed to satisfy relevant approval conditions, with 5 key goals:

Goal 1- Establish baseline conditions, including the distribution and condition of plains mouse habitat, the presence and distribution of target species, and the identification and prioritisation of local threats (refer to Jacobs 2020)
Goal 2- Refine the presence, distribution, and abundance of plains mouse within the offset
Goal 3- Manage total predation pressure (from cats, foxes and possibly wild dogs)
Goal 4- Maintain and / or enhance the condition of the habitat for the benefit of plains mouse through the management of total grazing pressure and invasive weeds
Goal 5- Improve knowledge of local target species populations, including how they respond to management locally.

The EOMP presents 14 individual objectives grouped under 11 management strategies to address EPBC Act offset liability and associated legislative and policy obligations for the first 10-year management period.

1.2 Location and site features

The two South Gap EPBC offset areas are situated in central South Australia, approximately 100 km north of Port Augusta and 30 km south-east of the Carrapateena mine (Fig. 1). The site is adjacent to Lake Torrens. It is in the traditional country of the Kokatha people, who have strong connections to this land. The pastoral industry has utilised the landscape for the last 160 years, with sheep as the dominant stock for the area. The northern South Gap EPBC offset area is 1882 ha in size, whilst the southern is 1369 ha

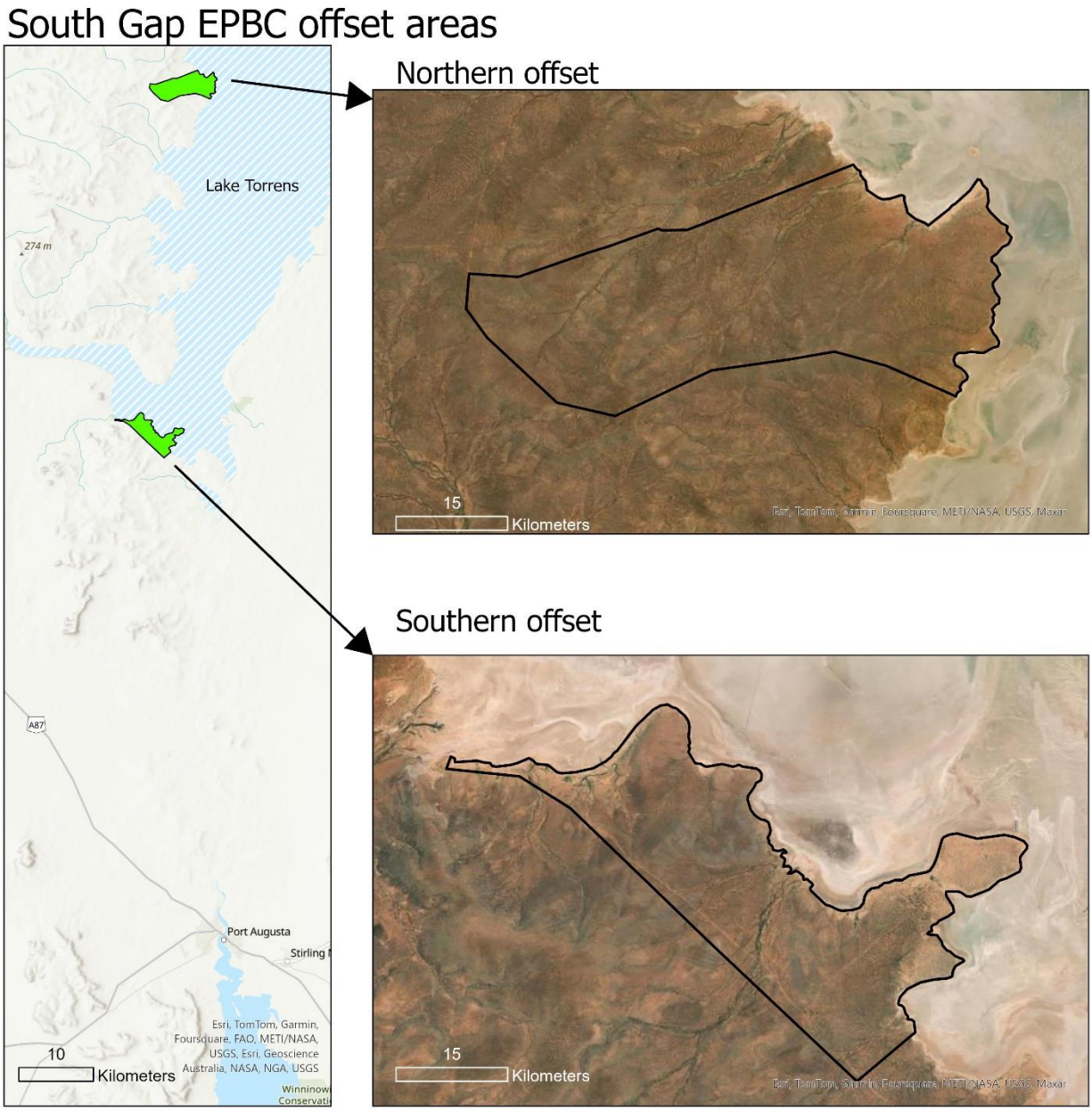

Figure 1. Location of the South Gap EPBC offset area (Red Our) within South Australia

1.3 Landscape

Habitat in the South Gap EPBC offset area (henceforth "the offset") is dominated by low plateau hills around 200m high. Vegetation is mostly low open Chenopod shrublands, interspersed with trees and shrubs along the drainage lines. The most important habitat features for the plains mouse (*Pseudomys australis*) are cracking clays (also known as Gilgai's). There are no waterpoints in the northern offset. There is a dam on the southern offset (Gum dam) that is occasionally full.

1.4 Climate

The offset is in a region where annual average rainfall is around 180 mm per year (nearest Bureau of Meteorology station, South Gap station number 016043, complete records for 1884–November 2024), marking it as a semi-arid climate. Rainfall is low, and on average roughly equally distributed across the year. Over the last seven years, there was a drought in 2018 and 2019, yet each subsequent year has been around average rainfall (Fig. 2). During 2024, there has been 212 mm as of November (as recorded at the South Gap homestead), which is above average. There was heavy rainfall in July and November 2024 (Fig. 3), though it did not appear that much of this rain fell on the north offset (personal observation). Rain gauges will be established in both offsets in 2025.

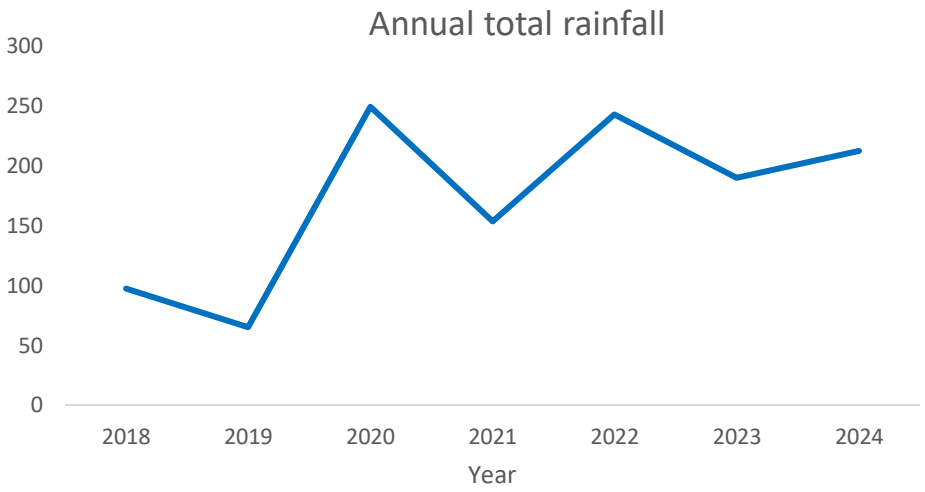

Figure 2. Total rainfall for each year from the South Gap weather station (Bureau of Meteorology # 016043)

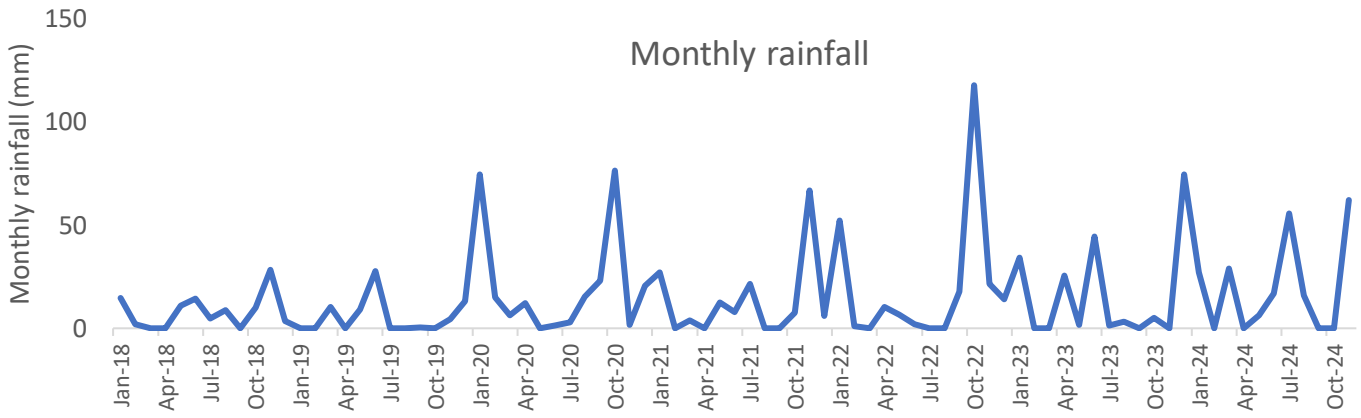

Figure 3. Rainfall from each month from January 2019 to November 2024, measured by the South Gap weather station (Bureau of Meteorology # 016043)

1.5 Conservation Values

The primary conservation value for the offset is the preservation of habitat for the plains mouse, a threatened native rodent. This species lives in the open dry shrubland, builds small burrows, and is, on average, 55 g. This makes it within the critical weight range of mammals, where species with a body mass between 35 – 5500 g have a propensity to be threatened by feral cats and foxes (Johnson and Isaac 2009, Woinarski, Burbidge et al. 2015). Plains mouse are listed under Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) as a Vulnerable Matter of National Environment Significance.

Two nationally threatened species may occur on site, although there are no known recent records from the surrounding area. These are the thick-billed grass-wren (*Amytornis modestus*) and night parrot (*Pezoporus occidentalis*). Other local species of note include the locally endemic Pernatty knob-tailed gecko (*Nephrurus deleani*), along with small native mammals like spinifex hopping mouse (*Notomys alexis*) and Bolam's mouse (*Pseudomys bolami*).

1.6 Threatening processes

Key threatening processes most likely affecting the offset areas and the Plains Mouse include:

- Predation by european red fox (*Vulpes vulpes*)
- Predation by feral cat (*Felis catus*)
- Predation by wild dog (*Canis* spp.)
- Competition and land degradation by european rabbit (*Oryctolagus cuniculus*)
- Competition and land degradation by domestic stock (*Bos* spp. and *Ovis aries*)
- Competition and land degradation by feral goats (*Capra hircus*)

2. Legislative Framework

2.1 Environment Protection and Biodiversity Conservation Act (1999)

The Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) is the primary Commonwealth legislation established to protect and manage Matters of National Environmental Significance (MNES), including nationally and internationally important flora, fauna, ecological communities, and heritage places.

The EOMP guides the delivery of an on-ground offset required to address the residual impact to Plains Mouse (Condition 3, 4 and 5) as per the EPBC Act Approval conditions (granted on 29 March 2018).

2.2 Other legislation

Other relevant legislation relating to the offset area includes the National Parks and Wildlife Act (1972), Native Title Act (1993), Aboriginal Heritage Act (1988), Landscape Act (2019) and the Pastoral Land Management and Conservation Act (1989). For more detail on these acts, refer to the EOMP.

3. Management Goals, Strategies and Objectives

Goals	**Strategies**	**Objectives** (under same acronym headings as EOMP)
Goal 1- Establish baseline conditions	Strategy 2: Improve knowledge of target species population dynamics and management	PM1: Quantify and monitor Plains Mouse habitat within the offset
Goal 2- Refine the presence, distribution, and abundance of Plains Mouse within the offset	Strategy 2: Improve knowledge of target species population dynamics and management	PM1: Quantify and monitor Plains Mouse habitat within the offset
Goal 3- Reduce predation pressure	Strategy 3: Cat control Strategy 4: Fox control Strategy 5: Wild dog control	CC1: Reduce Cat density to less than 4 Cats / 100 km within the offset area. FC1: Reduce Fox density to less than 1 Fox / 100 km within the offset area. DC1: Keep the offset area free of Wild Dogs.
Goal 4- Reduce total grazing pressure	Strategy 1: Stock management Strategy 6: Rabbit control Strategy 7: Weed control	SM1: Keep the offset area free of domestic livestock. RC1: By 2023, reduce Rabbit numbers and warrens by 80% within the offset area. RC2: Map and rip 5 km^2 of chenopod shrublands in priority areas each year for 4 yrs. WC1: By 2028, the distributions of invasive weeds (i.e. Declared and Weeds of National Significance) will be reduced.
Goal 5- Improve knowledge of local target species populations	Strategy 2: Improve knowledge of target species population dynamics and management	PM1: Quantify and monitor Plains Mouse habitat within the offset

4. Results

4.1 Goal 1 - Establish baseline conditions

4.1.1 Overview

The vegetation of the South Gap EPBC offset area is important to manage and understand. We monitor vegetation condition with annual Rangeland Assessment Method (RAM) floral surveys and Jessop transects (described in more detail below). These surveys have not been completed at the time of reporting due to a lack of rainfall on the northern offset, and a focus on efforts to establish the southern offset. Surveys in both offsets will be carried out in early 2025.

4.1.1 Weed assessments

To limit the spread of weeds to the South Gap EPBC offset area, vehicles are washed down before and after arrival. For the Nature Foundation field ecologist based in Roxby Downs, this occurs at the Arid Recovery wash down facility at Olympic Dam. No weeds of national significance were detected. However, some annual exotic forbs were found at cracking clay sites, including sow thistle (*Sonchus oleraceus*), malvastrum (*Malvastrum americanum*) and london rocket (*Sisymbrium irio*). These will be monitored through 2025 and controlled as required.

4.2 Goal 2 - Presence, distribution, and abundance of Plains Mouse

Plains Mouse activity is monitored at 12 permanent remote camera sites. Each consists of a remote camera (Reconyx Hyperfire 2 Professional HP2X) with adjusted focus to 90 cm placed on a star-picket facing down at a lure (PVC tube with peanut butter). A 50 x 50 cm corkboard with 10 mm gridlines was placed underneath to enable measurements of animal size. Cameras were last checked in November 2024. Three cameras were not operational, with one having too many false triggers and running out of battery, and two knocked down by kangaroos.

Once images were downloaded, small animals recorded were identified. We identified plains mouse from a head and body length of 90 to 145 mm and a tail shorter than 125 mm (Van Dyck *et al.* 2013). Images of rodents with a head and body length of approximately 90 mm were only classed as 'likely' plains mouse. We could reliably identify to species level the spinifex hopping-mouse (*Notomys alexis*), narrow-nosed planigale (*Planigale tenuirostris*), and desert short-tailed mouse (*Leggadina forresti*). Some individuals of the other small mammal species could be identified to species, though not all. For example, some dunnart images could be differentiated between *Sminthopsis crassicaudata* or *S. macroura*, though often not. Therefore, these species were often clumped together, along with small rodents (*P. bolami*, *P. hermanbergiensis* or *M. domesticus*).

During 2024, only one plains mouse was detected. This was a small individual, recorded at a site that was located in creekline habitat dominated by shrubs (Fig. 4). It was possibly not resident at the site. The lack of sightings is part of a general low

detection rate since mid-2022 (Fig. 5). Over this same time, activity rates of dunnarts, spinifex hopping-mice, and other small rodents have remained low yet stable (Fig. 6).

Figure 4. Creekline shrub habitat on the northern South Gap EPBC offset area where a plains mouse was detected in 2024.

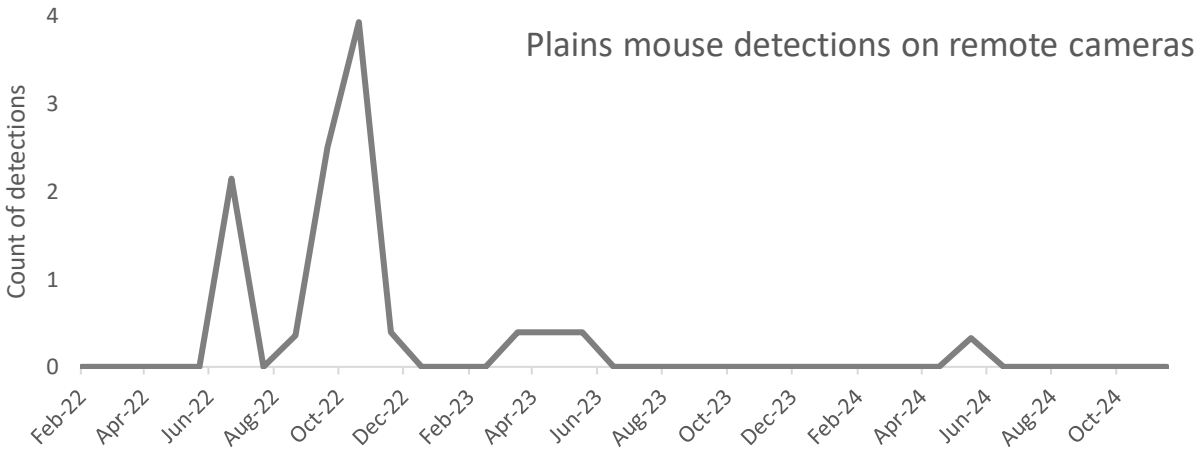

Figure 5. Plains mouse detections on remote cameras at the northern South Gap EPBC offset.

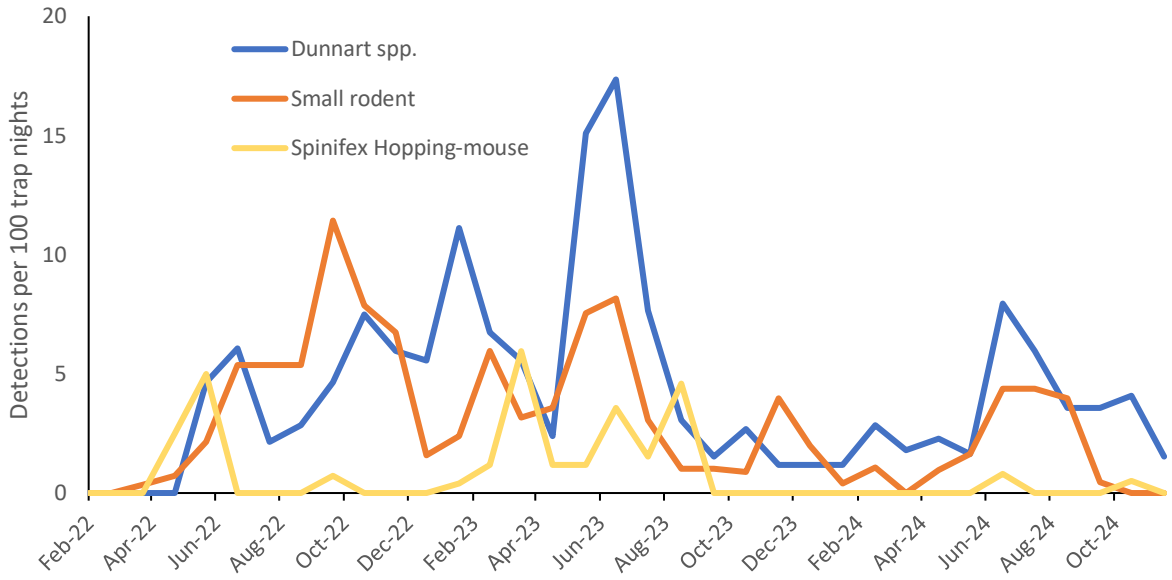

Figure 6. Detection rates of dunnarts (*Sminthopsis* spp.), small rodents (<20g) and spinifex hopping mice at the South Gap EPBC offset area.

4.3 Goal 3 - Reduce predation pressure

There were two feral predator control trips to the South Gap EPBC offset area during 2024, conducted by the professional shooter Graham Miller. On these trips, three feral cats and one red fox have been shot. This brings the total number of feral animals removed through EOMP activities to 38 (15 cats and 23 foxes, Table 1). To further monitor trends in feral animal presence and abundance and place this control in context, we have deployed 20 Swift Enduro Pro remote cameras across the paddock (Fig. 7). These have been continuously operating since February 2022. Results for 2024 demonstrate that fox and cat activity fluctuated through the year, though both remained well below 2022 (fox) and 2023 (cat) peaks (Fig 8). There were spikes in cat activity ~February/March and August/September, and spikes in fox activity in March and May, which have both since abated. Feral predator control will be continued through 2025. It should be noted that Canid bait injectors cannot be used on the offsets to ensure that the organic certification of the South Gap property is maintained.

Table 1. Feral predators removed from South Gap EPBC offset area through EOMP activities.

Year	Cats	Foxes
2021	4	12
2022	2	8
2023	6	2
2024	3	1
Total	15	23

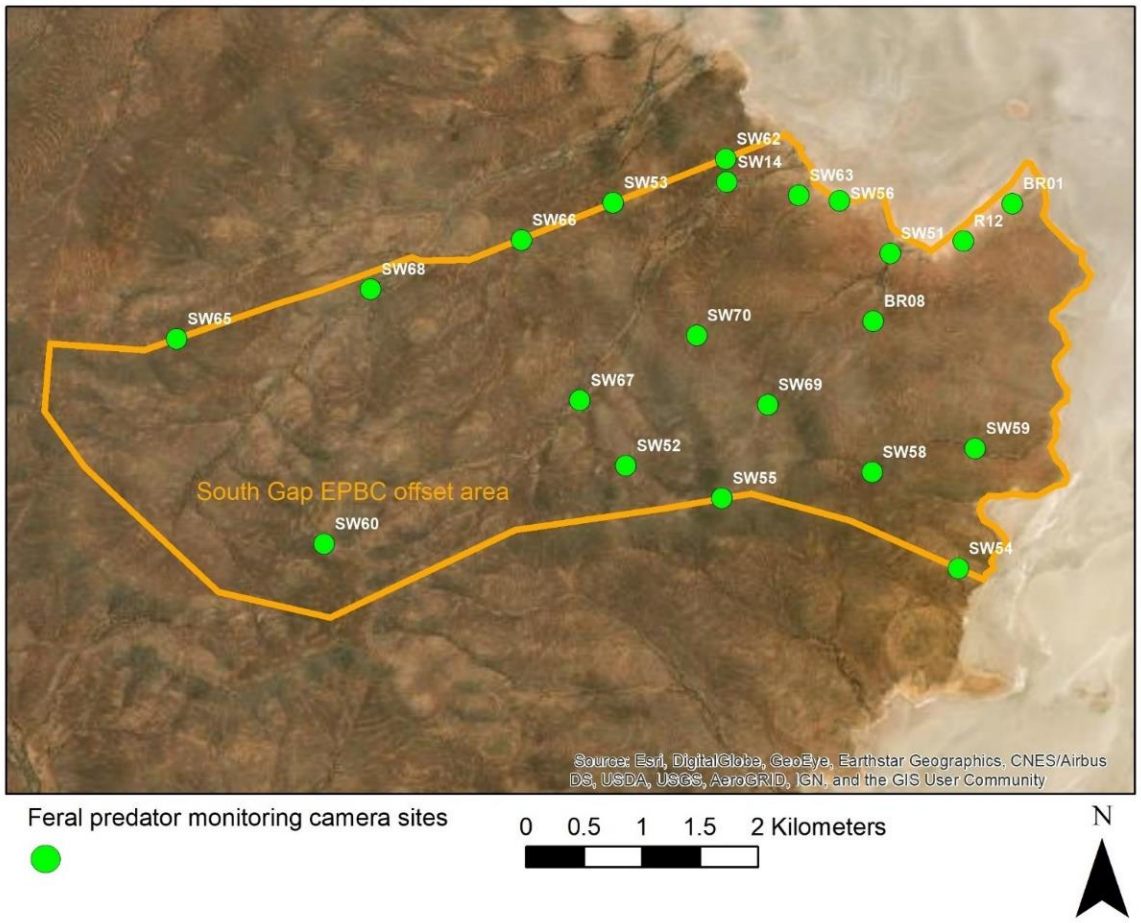

Figure 7. Location of the remote camera sites used at the northern South Gap EPBC offset area to monitor feral predators from 2022, 2023, and 2024.

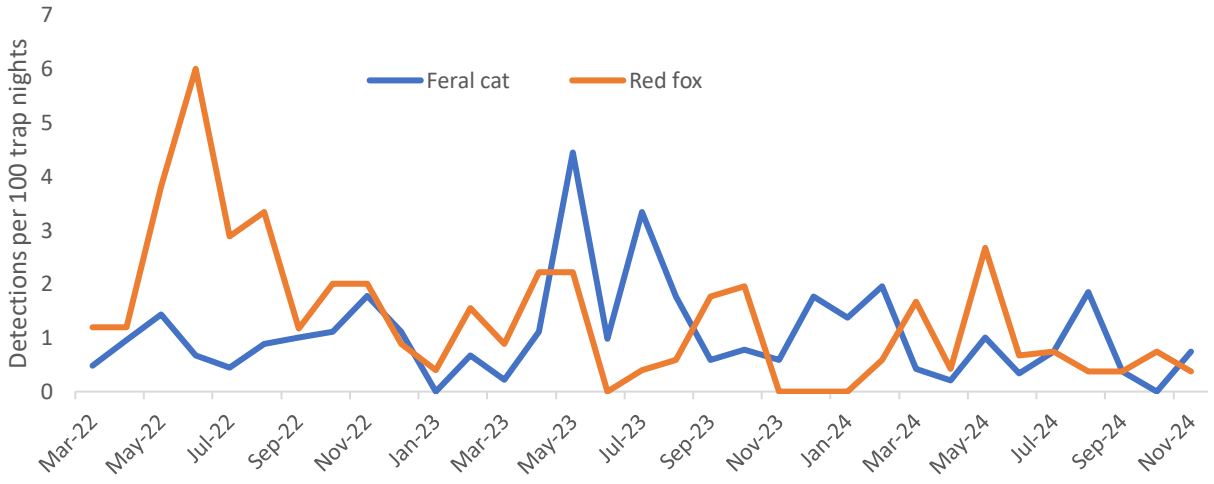

Figure 8. Detection rates of Feral cats and Red Fox at remote camera trap sites spread across the northern South Gap EPBC offset area from intial deployment in Feb 2022 to November 2024.

4.4 Goal 4 - Maintain habitat condition through management of grazing and invasive weeds

To maintain and enhance habitat condition, we aim to reduce total grazing pressure to prevent negative impacts on vegetation. Primarily, this is achieved using stock-proof perimeter fence and removal of sheep and goats. We also control rabbits and aim to manage kangaroo numbers.

4.4.1 Fence condition

After much of the northern fence to the northern offset fell down in 2023, a new fence was rebuilt in 2024. This is a ring-lock fence, the same as the southern boundary fence. During each site visit, a full audit was conducted, and all issues with the fence were recorded and fixed where possible. After the new fence was erected, there were no holes found during fence checks. However, there have been some holes dug under the southern fence by kangaroos (Fig. 9), which have all been patched up with small sections of mesh.

Figure 9. Example of a hole dug underneath the stock exclusion fence by kangaroos. These were patched up each time they were found with either large rocks or mesh wire.

4.4.2 Sheep activity

The fence in the northern offset was compromised and non-functional for most of 2023. After the fence in the was repaired in early 2024, there was a single event where a flock of sheep was detected in the paddock and were mustered out (Fig. 10).

4.4.3 Goats

Only a small number of goats were detected on remote cameras in the northern offset during 2024 (Fig. 10). There are, however, reports of large influxes over the general region (Kate Greenfield pers com). They are therefore likely to be a major threat in 2025.

4.4.4 Rabbits

Few rabbits were detected in 2024 (Fig. 10), and no historic calcrete warrens visited have been reopened. Due to these low numbers, no rabbit control was conducted. Monitoring will continue in 2025 to guide control requirements.

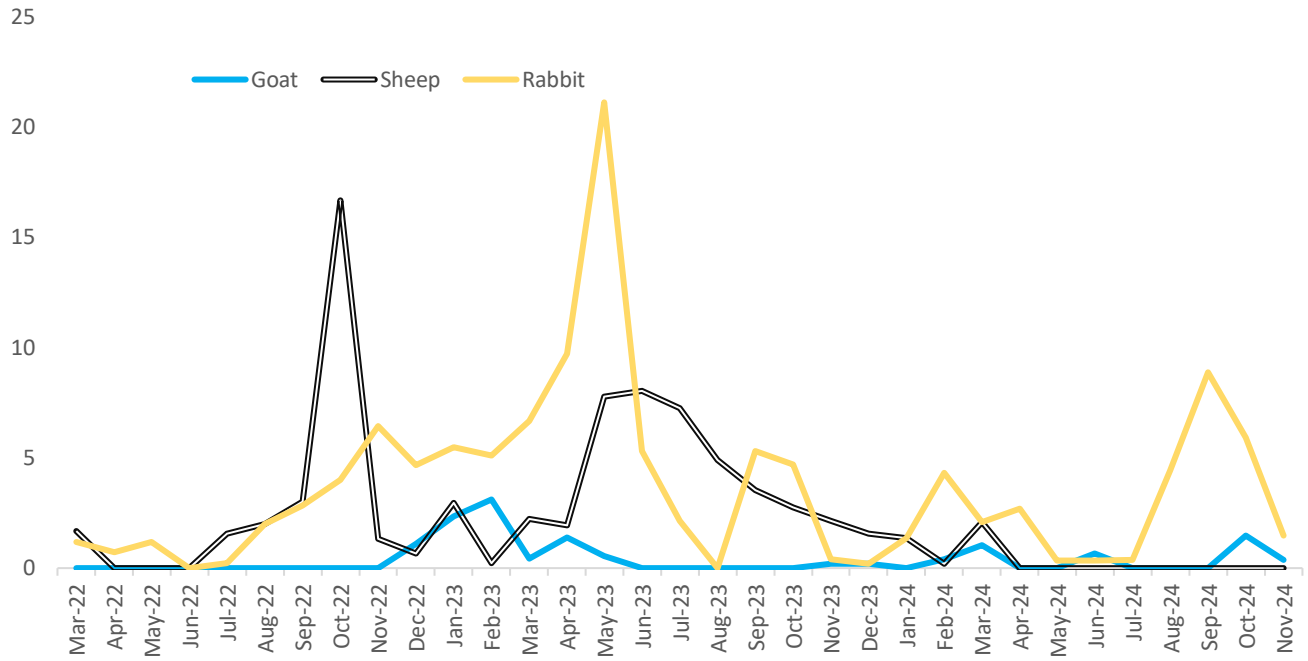

Figure 10. Detection rates on remote cameras within the northern offset of Goats, Sheep and Rabbits.

4.4.5 Kangaroos

Remote camera data revealed very high kangaroo activity in winter, which decreased significantly in spring (Fig. 11). A thermal camera survey of kangaroos was also conducted in 2024, in April, when activity rates in remote cameras were especially low. Only two kangaroos were detected during this survey, from 20 sites.

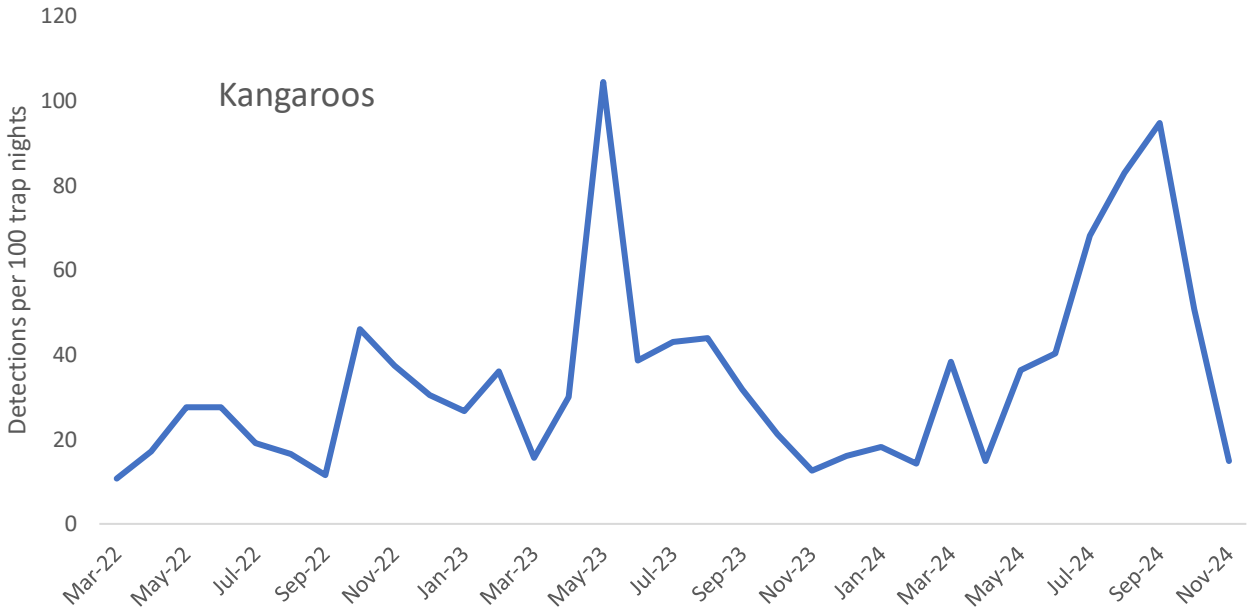

Figure 11. Activity rates of kangaroos (both Red Kangaroos and Euros) from remote cameras at the South Gap EPBC offset area.

4.5 Goal 5- Improve knowledge of local target species populations, including how they respond locally to management.

While the key focus of the EOMP is on plains mouse, birdlife is also monitored on the offset. Birds were surveyed at three sites within the northern offset. Each site was scanned for birds for 20 minutes, with a count taken of each species seen or heard. All incidental sightings of note were also recorded. Each site was surveyed twice in 2024 (July and November). Habitat varied at each site, from creek woodland near Grim dam, open saltbush plains, and dense saltbush on the banks of Lake Torrens.

A total of 70 birds have been detected thus far (Table 2). Two species detected are listed as vulnerable under the EBPC act, the blue-winged parrot and southern whiteface. A mixture of birds from different ecosystems were detected, including wetland birds like the red-necked avocet, arid-zone birds like the cinnamon quail-thrush, and woodland birds like the rufous whistler. Incidentally, we also detected spotted marsh frogs and Stoke's skink (or gidgee skink).

Table 2. South Gap offset areas' bird list to from 2021 to 2024. Species listing under EPBC act in brackets.

Bird List	
Australian Boobook	Mulga Parrot
Australian Magpie	Nankeen Kestrel
Australian Owlet-nightjar	Orange Chat
Australian Pipit	Pacific Black Duck
Australian Raven	Pied Butcherbird
Banded Stilt	Pink-eared Duck
Barn owl	Purple-backed Fairywren
Black-faced Woodswallow	Red-capped Robin
Black-shouldered Kite	Red-necked Avocet
Black-tailed Native-hen	Rufous Field-wren
Blue-winged Parrot (Vulnerable)	Rufous Songlark
Brown Falcon	Rufous Whistler*
Brown Goshawk	Singing Honeyeater
Budgerigar	Slender-billed Thornbill
Chirruping Wedgebill	Southern Whiteface (Vulnerable)
Cinnamon Quail-thrush	Spiny-cheeked Honeyeater
Common Bronzewing	Spotted Harrier
Crested Bellbird	Spotted Nightjar
Crested Pigeon	Striated Pardalote*
Crimson Chat	Stubble Quail
Eastern Bluebonnet	Tawny Frogmouth
Elegant Parrot*	Wedge-tailed Eagle
Emu	Weebill
Galah	Welcome Swallow
Grey Fantail*	White-backed Swallow
Grey Shrike thrush	White-browed Babbler
Grey Teal	White-faced Heron
Grey-crowned Babbler	White-fronted Honeyeater*
Hooded Robin	White-winged Fairywren
Inland Dotterel	Willie Wagtail
Inland Thornbill*	Yellow Chat
Little Buttonquail	Yellow-throated Miner
Little Crow	Zebra Finch
Mallee Ringneck	Silver Gull

*Only detected on southern offset.

5. Infrastructure

The access roads to both the northern and southern offset present some challenges. While previously accessed through Pernatty station, the northern offset now needs to be accessed through South Gap station. This is achieved via one of two roads: a rough road following alongside a dry creek, or a road that goes directly over a hill with a small section of steep incline (Fig. 15). While each are traversable by experienced four-wheel drivers, they may pose access limitations in unfavorable conditions. In contrast, while the road to the southern offset is in good condition, the internal roads are poor, with large erosion gullies.

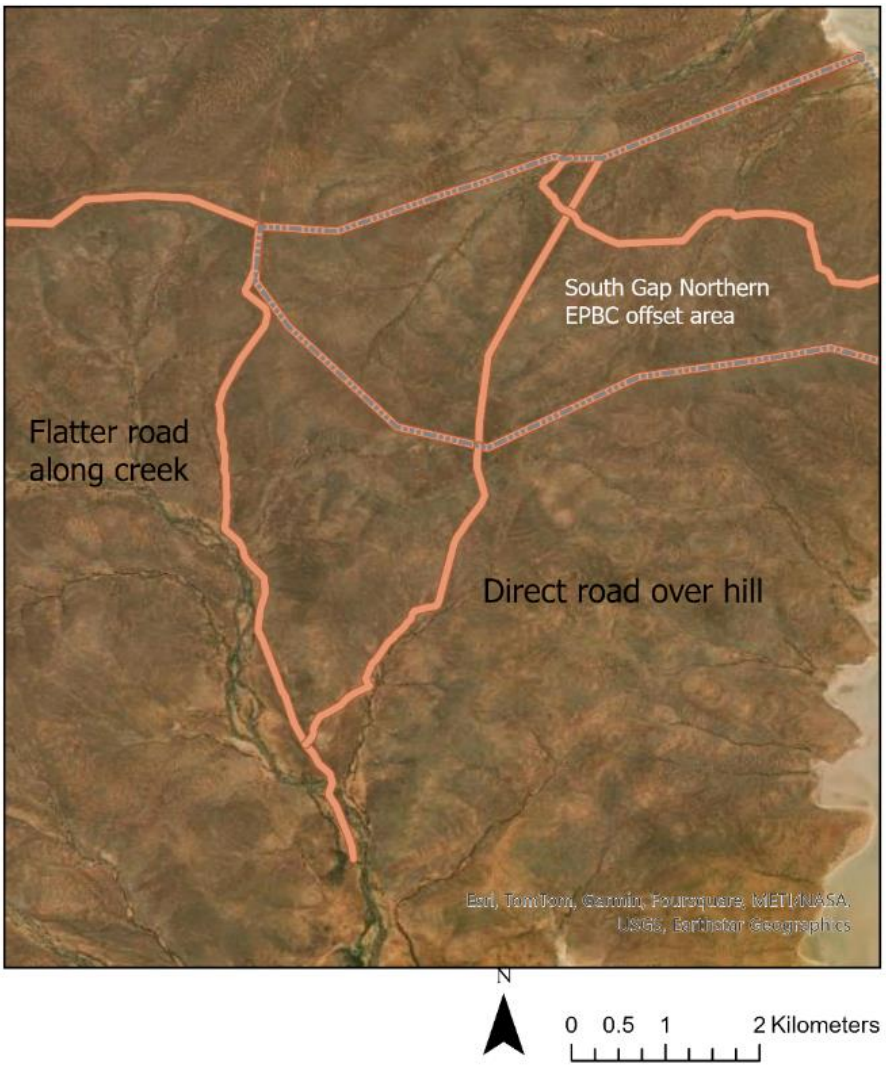

Figure 15. Map of the two access routes into the South Gap northern EPBC offset area.

6. Initial works on the South Gap southern offset

Work began in 2024 on the new southern offset, a 1369 ha area on the southern end of Lake Torrens (Fig. 1, page 7). Initial efforts have focused on laying groundwork for establishing the stock-exclusion fence, while implementing on-site surveys designed to assess the presence and status of native species, the level of feral animal activity, and the diversity and extent of weeds.

To assess the presence of native species we deployed six small mammal cameras at cracking clay gilgai sites, conducted two rounds of bird surveys at three sites (total 6 surveys, reported), and conducted targeted searches for threatened plants. Of the six remote cameras set for small mammals, useable data was only obtained from three cameras for three months. On these we observed Bolam's mouse and dunnarts, but no plains mouse. This was not surprising given the site is outside the current known distribution for the species, and the sample size is small. As conditions improve post grazing management, and more cameras are set, our chances for future detections will improve. In 2025 we will map and measure cracking clay habitats and add more small mammal cameras. Sixty bird species were recorded during the surveys, including several not yet observed in the northern offset. And after a walk along all major watercourses, we found four Sandalwood plants, all of which had evidence of goat browsing.

To monitor feral animals, we deployed six remote cameras in August 2024, and another four in November 2024. We acquired data from four of the six cameras. On those four cameras, many goats were detected with mobs of between 50 to 130 observed around Gum dam (Fig. 16). These had likely come in from the south. We also detected numerous feral cats and foxes, at a higher rate than reported on the northern offset (Fig. 17). It should be noted, however, that observations for the southern offset have come from only four sites (in contrast to the northern offset with sixteen), which is too few sites to provide any significant indication of trends.

In contrast to the northern offset, the southern offset had an abundance of recognized weeds. Of note was prickly pear cactus, scattered across the offset. We began monitoring by recording every clump seen near the main track (14.5 km long), estimating its rough size, assigning each a health score (0 = dead to 5 = completely alive), and conducting control if relevant. On the first trip, each healthy (score > 2) cactus had chunks infected by the cochaneil bio-control insect transplanted onto it (see Figure below). Subsequent trips showed there had been little success using this control method (Fig. 18). Instead, the whole plant was dug up, with all bits placed on a rock or saltbush (where they would otherwise be able to rejuvenate). 14 clumps were killed in this way, and the number of healthy cacti has already declined substantially (Fig. 19). We will aim to do this every trip and should thus be able maintain a low cactus presence.

Figure 16. The Gum Dam, located within the southern offset. It is a focal point for both grazing mammals and native birds.

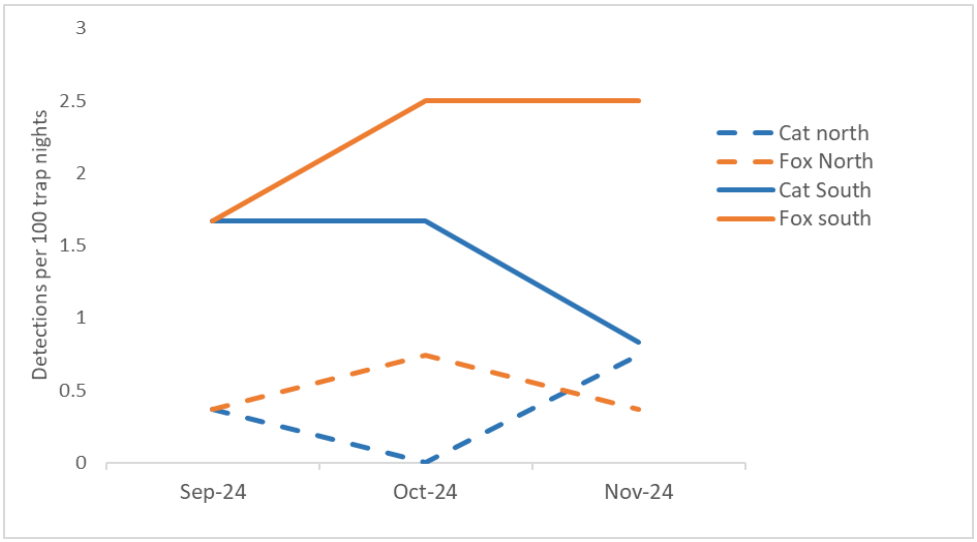

Figure 17. Comparison of detection rates of cats and foxes on remote cameras at South Gaps' northern offset (dashed lines) and southern offset (solid lines). Data is from 16 sites at northern offset and four at southern offset.

Figure 18. Prickly pear with a small section of cochineal infected pear transplanted into it (left), which did not appear to work by the next trip (right).

Figure 19. Prickly pear, dug up from the base and placed off the ground.

A patch of the declared environmental weed “tree tobacco” (*Nicotiana glauca*) was also found on-site (Fig. 20). This patch was about 140 m x 50 m with around 100 plants. The use of herbicides to control plants is prohibited on South Gap, so these were removed manually. We will continue to monitor this patch in 2025.

Figure 20. The patch of Tree tobacco bush on the southern offset. All were removed.

7. Future Priorities

For 2025, we will continue all ongoing monitoring and management actions as directed by the EOMP. Additional priorities will include:

- The implementation of management plans in the southern offset, and preparation for a new fence
- The promotion of sandalwood regeneration in the southern offset
- The continuation of gilgai research to improve understanding of plains mouse habitat use
- Track work to ensure safe access to, and travel across, the offsets
- Preparations to enable us to respond to rainfall driven increases in goat and/or rabbit populations with appropriate controls

8. References

Black, A., et al. (2011). "Distribution and habitats of the thick-billed grasswren *Amytornis modestus* and comparison with the western grasswren *Amytornis textilis myall* in South Australia." South Australian Ornithologist 37.

Clive, L. and K. Fels (2020). South Gap EPBC Offset Ecological Characterisation, Jacobs Australia Pty Limited.

Ecosphere Ecological Solutions (2023). South Gap Carrapateena EPBC Biodiversity Offset Monitoring Report – June 2023. P. f. N. Foundation.

Johnson, C. N. and J. L. Isaac (2009). "Body mass and extinction risk in Australian marsupials: the 'Critical Weight Range revisited." Austral Ecology 34(1): 35-40.

Woinarski, J. C. Z., et al. (2015). "Ongoing unraveling of a continental fauna: Decline and extinction of Australian mammals since European settlement." Proceedings of the National Academy of Sciences 112(15): 4531–4540.

BHP