RioTinto

Environment Protection and Biodiversity Conservation Act 1999
Annual Compliance Report

EPBC Approval: 2018/8341

Project: Greater Paraburdoo Iron Ore Hub, Pilbara, WA

Report period: 1 January – 31 December 2024

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1 Description of activities

EPBC approval number:	2018/8341
Project name:	Greater Paraburdoo Iron Ore Hub, Pilbara, WA
Approval holder:	Hamersley Iron Pty. Limited
Approval holder's Australian Business Number:	49 004 558 276
Approved action:	To develop a new mine and associated infrastructure at Western Range and extend existing mining operations and associated infrastructure at Paraburdoo and Eastern Range, Pilbara region, Western Australia.
Location of the project:	Pilbara Region, Western Australia
Reporting period:	1 January 2024 to 31 December 2024
Report preparation date:	30 April 2025
Implementation phase(s) during reporting period:	Operational

2 Audit table

Details of compliance with each condition under EPBC approval 2018/8341 are presented in Table 1.

Table 1: EPBC Approval Conditions Compliance Table – EPBC 2018/8341 – Greater Paraburdoo Iron Ore Hub

<table>
<tr><th>Condition Number</th><th>Condition</th><th>Compliance status</th><th>Evidence/Comments</th></tr>
<tr><td>1</td><td>To avoid and mitigate impacts to protected matters, the approval holder must not clear more than 4,300 ha, and in addition not:
a. clear outside the development envelope
b. clear or impact within the Mining Exclusion Zones from proposal activities except for activities associated with the implementation of the Environmental Management Plan.
c. clear within the development envelope more than the following critical habitat types:
i. 7 hectares of Riverine habitat
ii. 36 hectares of Breakaway habitat
iii. 257 hectares of Gorge/Gully habitat
d. clear more than a total combined 4,000 ha within the development envelope of any of the following supporting habitat types:
i. Rocky Hill habitat
ii. Drainage Line habitat
iii. Alluvial Plain habitat</td><td>Compliant</td><td>Aerial photography was collected during the reporting period to reconcile ground disturbance and the prescribed clearing limits were not exceeded. Cumulative clearing under EPBC 2018/8341 totalled:
<table>
<tr><th></th><th>Total for reporting period</th><th>Cumulative total under EPBC 2018/8341</th><th>Permitted under EPBC 2018/8341</th></tr>
<tr><td>Clearing within development envelope</td><td>207ha</td><td>885ha</td><td>4,300ha</td></tr>
<tr><td>Clearing of Riverine habitat</td><td>5.33ha</td><td>5.33ha</td><td>7ha</td></tr>
<tr><td>Clearing of Breakaway habitat</td><td>3.64ha</td><td>3.94ha</td><td>36ha</td></tr>
<tr><td>Clearing of Gorge/Gully habitat</td><td>1.48ha</td><td>5.05ha</td><td>257ha</td></tr>
<tr><td>Clearing of combined Rocky Hill, Drainage Line and Alluvial Plain habitat</td><td>56.53ha</td><td>125.62ha</td><td>4,000ha</td></tr>
</table></td></tr>
<tr><td>2</td><td>For the life of the approval, the approval holder must:
a. Undertake the measures specified in condition 4-2(2) of the Western Australian Approval to minimise impacts to protected matters from dust emissions and fire.
b. Minimise noise, vibration, and artificial lighting impacts to protected matters attributable to the action by only undertaking construction, clearing and/or blasting during daylight hours except that construction and alteration of the action in the Construction Area (night and day) may be conducted at any time.
c. Ensure that if any protected matter is seen in the vicinity during clearing, the clearing activity that may impact the protected matter ceases until the protected matter has moved out of the way of clearing by its own accord or if the protected matter has not moved on its own accord, then a fauna handler has relocated</td><td>Not compliant</td><td>The Greater Paraburdoo Environmental Management Plan (EMP) (our ref: RTIO-HSE-0336947) contains the required environmental outcomes and objectives. The EMP was approved by OEPA and DoCCEEW on 20 January 2023 (OEPA ref: DWERVT11092; our ref; RTIO-0981203).
• Condition 4-2(2) in MS1195 was adhered to.
• Clearing occurred outside of daylight hours on two discrete occasions as outlined in Section 3. Condition otherwise adhered to.
• No protected matters were sighted during clearing activities in 2024.
• Speed restrictions complied with requirements stated in 2d.
• Legacy barbed wire was identified within development envelope as reported in 2023 ACR. This was removed during the 2024 reporting</td></tr>
</table>

Condition Number	Condition	Compliance status	Evidence/Comments
	the **protected matter** away from **clearing.** d. Ensure that no vehicle travels faster than 60 kilometres per hour on any unsealed road within the **development envelope**, and no more than 60 kilometres per hour at **night** (and 40 kilometres per hour at **night** when undertaking **construction activities**) on any road within **Habitat Zone**, except during an emergency incident. e. Not install any barbed wire fence within the **development envelope** unless required by other legislation for intersecting pastoral leases in which case it must have the top strand replaced with unbarbed wire and have reflectors installed to deter bat interaction. f. Complete, within 12 months from the date of this approval, the removal of all barbed wire fences from the **Mining Exclusion Zones** and **Mining Restriction Zones**, except where otherwise required under WA Legislation, in which case it must have the top strand replaced with unbarbed wire and have reflectors installed to deter bat interaction within 12-months from the date of this approval. g. Adhere to the **National Light Pollution Guidelines for Wildlife 2023** throughout the development area and avoid direct or permanent light spill attributable to the action within the **Mining Exclusion Zones** and **Mining Restriction Zones** and attributable to construction in the **Habitat Zones.** h. Avoid noise and vibration emissions attributable to the action during construction in the **Habitat Zones**. i. Avoid dust emissions attributable to the action during construction in the **Habitat Zones**.		period. No barbed wire was installed in the 2024 reporting period. Further outlined in Section 3 of report. • Light spill was managed in accordance with condition 2 throughout 2024. • Noise, vibration and dust emissions were minimised in Habitat Zones.

Condition Number	Condition	Compliance status	Evidence/Comments
3	To avoid and mitigate impacts to **Ghost Bat** and **Pilbara Leaf-nosed Bat**, the approval holder must: a. Ensure there is no **clearing** or **impacts** on the **Ratty Springs Cave** or **retained Ghost Bat Caves** as a result of the action. b. Limit sound pressure levels attributed to the action to below 70 dB(Z) at the **Ratty Springs Cave** entrance at all times. c. Maintain the **viability** of the **retained Ghost Bat Caves** and the **viability** of the **Ratty Springs Cave.** d. Use the findings and outcomes of findings from condition 7-6 of the **Western Australian Approval** to inform the *Environmental Performance Report* required under condition 12 of the **Western Australian Approval** and condition 6 of this approval.	Compliant	The Environmental Management Plan (EMP) (our ref: RTIO-HSE-0336947) contains the required environmental outcomes and objectives. The EMP was approved by OEPA and DoCCEEW on 20 January 2023 (our ref: RTIO-0981202). During the reporting period there was no exceedance of trigger or threshold criterion related to protected matter(s) specified in the Environmental Management Plan.
4	To minimise **impacts** to **protected matter(s) critical habitats** and **supporting habitats** within the **development envelope** from the dewatering program, the approval holder must not impact **protected matter** habitats within the **Mining Exclusion Zones** and **Mining Restriction Zones** due to changes to surface and groundwater.	Compliant	The Environmental Management Plan (EMP) (our ref: RTIO-HSE-0336947) contains the required environmental outcomes and objectives. No exceedances to EMP criteria relating to surface or groundwater were observed in the reporting period.
5	To mitigate impacts to **protected matters**, the approval holder must develop an **Environmental Management Plan** in accordance with condition 7 of the **Western Australian Approval** and Conditions 2, 3 and 4 of this approval. The **Environmental Management Plan** must be endorsed by the **Minister**. The approval holder must seek **Minister** endorsement of any subsequent revisions of the **Environmental Management Plan** where changes have been made relevant to **protected matters** prior to any approval by the DWER. The approval holder must implement the endorsed **Environmental Management Plan** and any subsequently DWER approved **Environmental Management Plan** for the **life of the approval**. The **Environmental Management Plan** must also include: a. Specification of a monitoring program that is suitable to enable **impacts** from changes to hydrology on **protected matter(s)** and their habitats to be mitigated. b. Commitments that, if the monitoring and predictive modelling shows that **impacts** to **protected matters** and their habitats will, or are likely to, be greater than predicted modelling presented in the **Greater Paraburdoo Iron Ore Hub Proposal Environmental**	Compliant	The Environmental Management Plan (EMP) (our ref: RTIO-HSE-0336947) contains the required environmental outcomes and objectives. The EMP was approved by OEPA and DoCCEEW on 20 January 2023 (our ref: RTIO-0981202). During the reporting period there was no exceedance of trigger or threshold criterion related to protected matter(s) specified in the Environmental Management Plan. EMP Management targets were not met on three occasions during the reporting period. This is further detailed in Section 3.

Condition Number	Condition	Compliance status	Evidence/Comments
	Review Document, or that any outcome relevant to **protected matter(s)** required under condition 7 of the **Western Australian Approval** may not be achieved, the approval holder will implement condition S(c) of this approval. c. Commitments that, in the event of any exceedance of a threshold criterion related to **protected matter(s)** specified in the **Environmental Management Plan**, the approval holder must: i. Notify the **Department** of the exceedance in the same timeframes as required by condition 7-8 (for exceedance of any threshold criterion) and/or condition 7-9 (for exceedance of any management target) of the **Western Australian Approval** and include in the report advice of any **impact(s)** to **protected matters** arising from the exceedance event. ii. Within 6 months of detecting any exceedance of a threshold criterion related to **protected matters**, caused by implementation of the action, submit to the **Department** for the **Minister's** approval, a **Remediation Plan**. If approved, the **Remediation Plan** must be implemented. iii. Within 6 months of detecting any exceedance of a threshold criterion related to **protected matters**, have an **independent suitably qualified person** review the **Environmental Management Plan** to advise how to prevent the exceedance reoccurring as detailed in the report required by conditions 7-8(5) and 7-9(3) of the **Western Australian Approval**. iv. Within 10 months of detecting any exceedance of a threshold criterion related to **protected matters**, submit to the **Department** the advice of the **independent suitably qualified person** and a version of the **Environmental Management Plan** revised to address the advice of the **independent suitably qualified person**. v. If a revised **Environmental Management Plan** has not been endorsed by the **Minister** within 13 months of detecting any exceedance of a threshold criterion, and the **Minister** notifies the approval holder that the **Environmental Management Plan** is not suitable for endorsement, the **Minister** may, at least two months after so notifying the approval holder, endorse a version of the **Environmental Management Plan** revised by the **Department**. The approval holder must implement the		

Condition Number	Condition	Compliance status	Evidence/Comments
	endorsed **Environmental Management Plan** until it is subsequently approved by the **DWER**. vi. If the **Minister** informs the approval holder in writing that it is not possible to adequately remediate the **impact(s)** on **protected matter(s)** of one or more exceedance (as referred to in condition 5(c)(ii) of this approval), then the approval holder must, within 3 months of receiving such advice from the **Minister**, submit to the **Department**, an **Exceedance Offset Management Plan (EOMP)** addressing the exceedance(s) as specified by the **Minister** in writing for the **Minister's** approval. The **EOMP** must meet the requirements specified in Attachment G. vii. If the **EOMP** has not been approved by the **Minister** within 6 months of the **Minister** informing the approval holder in writing as described in condition 5(c)(vi) of this approval, and the **Minister** notifies the approval holder that the **EOMP** is not suitable for approval, the **Minister** may, at least two months after so notifying the approval holder, approve a version of the **EOMP** revised by the **Department**. The approval holder must implement the approved **EOMP** for the remainder of the **life of this approval** or a revised version of the **EOMP** is endorsed.		
6	The approval holder must provide *the Environmental Performance Report* as required by condition 12 of the **Western Australian Approval** to the Department every five (5) years, with the first *Environmental Performance Report* due by the 30 April after the expiry of the five-year period commencing from the first date of the **Western Australian Approval**. Should the *Environmental Performance Report* required by conditions 12-3 to 12-5 of the **Western Australian Approval** identify any significant change to the state of any **protected matter(s)** attributed to the action, the approval holder must implement conditions 5(c) of this approval. The approval holder must make each of the *Environmental Performance Reports* publicly available for the **life of the approval**.	Not applicable	No Environmental Performance Report was required within the reporting period. The first Environmental Performance Report will be submitted on 30 April 2028.
7	To compensate for the **residual significant impacts** of **clearing** habitat for the **Northern Quoll**, **Ghost Bat**, **Pilbara Leaf-nosed Bat** and **Pilbara Olive Python**, the approval holder must make financial contributions to the **Pilbara Environmental Offsets Fund**.	Not applicable	No payments were required during the reporting period.
8	In contributing to the **Pilbara Environmental Offsets Fund** the approval holder must:	Compliant	Endorsement of the Greater Paraburdoo Iron Ore Hub Proposal Impact Reconciliation Procedure (our ref:

Condition Number	Condition	Compliance status	Evidence/Comments
	a. Contribute funds toward an offset activity or activities that: i. reduces the rate of decline of the **Northern Quoll**, **Ghost Bat**, **Pilbara Leaf-nosed Bat** and **Pilbara Olive Python**. ii. ensures a viable population of **Northern Quoll**, **Ghost Bat**, **Pilbara Leaf-nosed Bat** and **Pilbara Olive Python** remain in the Pilbara region. iii. has specified outcomes and performance indicators. iv. timeframes and milestones for their achievement. v. includes sufficient monitoring to detect achievement of performance indicators, milestones, and the outcomes; and vi. requires regular reporting to the approval holder of the outcomes of the offset activity or activities their funding has contributed towards. b. Prior to approval of the **Greater Paraburdoo Iron Ore Hub Proposal Impact Reconciliation Procedure** by **DWER** in accordance with condition 11-5 of the **Western Australian Approval**, the approval holder must seek written endorsement of the **Greater Paraburdoo Iron Ore Hub Proposal Impact Reconciliation Procedure** from the **Minister**. The approval holder must not commence the action until they have been notified by the **DWER** that the **Greater Paraburdoo Iron Ore Hub Proposal Impact Reconciliation Procedure** has been approved. c. The **Greater Paraburdoo Iron Ore Hub Proposal Impact Reconciliation Procedure** must include the information required by 11-5 of the **Western Australian Approval** and the financial contributions that will be paid into the **Pilbara Environmental Offsets Fund** per hectare of **protected matter** habitat, as per the value described in Condition 8(e) of this approval for each **protected matter** and the schedule of contributions to be made over the **life of the approval**. d. Following receipt of the **DWER** notification of approval of the **Greater Paraburdoo Iron Ore Hub Proposal Impact Reconciliation Procedure** and prior to **commencement of the action**, the approval holder must make a payment of 10 per cent of the total contribution that may be paid into the **Pilbara Environmental Offsets Fund**, which will contribute towards achieving the requirements of condition 8(a) of this approval.		RTIO-HSE-0345123) was provided by the Minister on 10 November 2022 (our ref: RTIO-0980742). The action was not commenced until after approval of the Greater Paraburdoo Iron Ore Hub Proposal Impact Reconciliation Procedure from DWER on 15 November 2022 (our ref: RTIO-0981240). Prior to the commencement of the action, a payment of 10 per cent of the total contribution was paid into the Pilbara Environmental Offsets Fund on 13 December 2022 (our ref: RTIO-0983725). Evidence of payment into the Pilbara Environmental Offsets Fund was provided to the Department on 16 December 2022 (our ref: RTIO-0983725). No payments were required during the reporting period.

Condition Number	Condition	Compliance status	Evidence/Comments
	e. Make biennial payments to the **Pilbara Environmental Offsets Fund** based on **evidence** of the **actual clearing footprint** in accordance with the timing specified in condition 11-2 of the **Western Australian Approval**. Biennial payments must be equivalent to or greater than the value of the following amounts, by adjustment in accordance with the **CPI** from the date of this approval decision until the end of the year during which clearing was undertaken, of: i. A minimum of $3,306 AUD (excluding GST) per hectare of **critical habitat**. ii. A minimum of $1,653 AUD (excluding GST) per hectare of **supporting habitat**. f. Submit **evidence** of each payment made to the **Department** within 10 **business days** of the date of making the payment. g. Include details of progress towards, or achievement of, the outcomes specified under Condition 8(a) of this approval for the **Northern Quoll**, **Ghost Bat**, **Pilbara Leaf-nosed Bat** and **Pilbara Olive Python** in each **compliance report** submitted to the **Department**.		
9	Write to the **Minister**, within 10 **business days** of being aware or having concerns, that the offset outcomes specified for the **Pilbara Environmental Offsets Fund** project(s) may not be achieved for the **Northern Quoll**, **Ghost Bat**, **Pilbara Leaf-nosed Bat** and **Pilbara Olive Python**.	Not applicable	The approval holder had no concerns regarding the offset outcomes specified for the Pilbara Environmental Offsets Fund during the reporting period.
10A	The approval holder may, at any time, apply to the **Minister** for a variation to an action management plan approved by the **Minister** by submitting an application in accordance with the requirements of section 143A of the **EPBC Act**. If the **Minister** approves a revised action management plan (RAMP) then, from the date specified, the approval holder must implement the RAMP in place of any previous version of the action management plan.	Not applicable	No variations to an action management plan were submitted during the reporting period.
11	The approval holder must notify the **Department** electronically of the date of **commencement of the action**, within 10 **business days** of **commencement of the action**.	Compliant	The Department was notified of the commencement of the action on 16 December 2022 (our ref: RTIO-0983725) within 10 business days of commencement of the action (14 December 2022).

Condition Number	Condition	Compliance status	Evidence/Comments
12	If the **commencement of the action** does not occur within 5 years from the date of this approval, then the approval holder must not **commence the action** without the prior written agreement of the **Minister**.	Not applicable	Action has commenced within 5 years from the date of approval.
13	The approval holder must maintain accurate and complete **compliance records**.	Compliant	Records associated with or relevant to the conditions of this approval are maintained within the Rio Tinto Iron Ore Document Management System.
14	If the **Department** makes a request in writing, the approval holder must provide electronic copies of **compliance records** to the **Department** within the timeframe specified in the request.	Not applicable	No requests received during the reporting period.
15	The approval holder must ensure that any monitoring data (including sensitive ecological data), surveys, maps, and other spatial and meta data required under the conditions of this approval are prepared in accordance with the Department's Guidelines for biological survey and mapped data (2018), or any subsequent official version or as otherwise specified by the Minister in writing.	Compliant	Data provided is prepared in accordance with the Departments' guidelines
16	The approval holder must ensure that any **monitoring data** (including **sensitive ecological data**), surveys, maps, and other spatial and metadata required under the conditions of this approval are prepared in accordance with the **Department's** *Guide to providing maps and boundary data for EPBC Act projects* (2021), or any subsequent official version or as otherwise specified by the **Minister** in writing.	Compliant	Data provided is prepared in accordance with the Departments' guidelines
17	The approval holder must submit all **monitoring data** (including **sensitive ecological data**), surveys, maps, other spatial and metadata and all species occurrence record data (sightings and evidence of presence) electronically to the **Department** in accordance with the requirements of the **Environmental Management Plan**.	Compliant	Data required by the EMP was submitted.
18	The approval holder must prepare a **compliance report** by 30 April 2023 addressing the period from the date of issue of this approval until 31 December 2022 and annually thereafter by each 30 April in respect of the preceding calendar year date, or as otherwise agreed to in writing by the **Minister**.	Compliant	The 2023 Annual Compliance Report (our ref: RTIO-1020601) was submitted on 30 April 2024.
19	Each **compliance report** must be consistent with the **Department's** *Annual Compliance Report Guidelines* (2014), or any subsequent official version.	Compliant	The 2023 Annual Compliance Report (our ref: RTIO-1020601) submitted on 30 April 2024 met the requirements of the Department's *Annual Compliance Report Guidelines* (2014).

Condition Number	Condition	Compliance status	Evidence/Comments
20	Each **compliance report** must include: - Accurate and complete details of compliance and any non-compliance with the conditions and the **plans**, and any **incidents**. - One or more **shapefile** showing all **clearing** of any **protected matters**, and/or their habitat, undertaken within the 12-month period at the end of which that **compliance report** is prepared. - A schedule of all **plans** in existence in relation to these conditions and accurate and complete details of how each plan is being implemented.	Compliant	The 2023 Annual Compliance Report (our ref: RTIO-1020601) was submitted on 30 April 2024.
21	The approval holder must: a. Publish each **compliance report** on the **website** by 30 April of each year immediately following the 12-month period for which that **compliance report** is required. b. Notify the **Department** electronically, within 7 **business days** of the date of publication that a **compliance report** has been published on the **website**. c. Provide the weblink for the **compliance report** in the notification to the **Department**. d. Keep all published **compliance reports** required by these conditions on the **website** until the expiry date of this approval. e. Exclude or redact **sensitive ecological data** from **compliance reports** published on the **website** or otherwise provided to a member of the public. f. If **sensitive ecological data** is excluded or redacted from the published version, submit the full **compliance report** to the **Department** within 5 **business days** of its publication on the **website** and notify the **Department** in writing what exclusions and redactions have been made in the version published on the website.	Compliant	The 2023 Annual Compliance Report for EPBC 2018/8341 – Greater Paraburdoo Iron Ore Hub (was made publicly available on the Rio Tinto website (https://www.riotinto.com/en/operations/australia/pilbara) on 30 April 2024. The department was notified of this and provided with the above weblink on the same day (our ref: RTIO-1049991).
22	The approval holder must notify the **Department** electronically, within 7 **business days** of becoming aware of any **incident** and/or potential non-compliance and/or actual non-compliance with the conditions or commitments made in a **plan**.	Compliant	Four potential non-compliance notifications were submitted to the DCCEEW in the reporting period. Condition 2b (our ref: RTIO-1041361) Condition 2e (now Condition 2f) (our ref: RTIO-1049029) Condition 5 (our ref: RTIO-1085835) Condition 2b (our ref: RTIO-1093839)

Condition Number	Condition	Compliance status	Evidence/Comments
23	The approval holder must specify in the notification: a. Any condition or commitment made in a **plan** which has been or may have been breached. b. A short description of the **incident** and/or potential non-compliance and/or actual non-compliance. c. The location (including co-ordinates), date, and time of the **incident** and/or potential non-compliance and/or actual non-compliance.	Compliant	All non-compliance notifications were compliant with the requirements outlined in Condition 23.
24	The approval holder must provide to the **Department** in writing, within 21 **business days** of becoming aware of any **incident** and/or potential non-compliance and/or actual non-compliance, the details of that **incident** and/or potential non-compliance and/or actual non-compliance with the conditions or commitments made in a **plan**. The approval holder must specify: a. Any corrective action or investigation which the approval holder has already taken. b. The potential impacts of the **incident** and/or non-compliance. c. The method and timing of any corrective action that will be undertaken by the approval holder.	Compliant	Four potential non-compliance notifications were submitted to the DCCEEW in the reporting period. Condition 2b (our ref: RTIO-1041361) Requirements of Condition 24 were fulfilled in initial notification (our ref: RTIO-10413613). Condition 2e (now Condition 2f) (our ref: RTIO-1049029) Requirements of Condition 24 were fulfilled in initial notification (our ref: RTIO-1049029). Condition 5 (our ref: RTIO-1049821) Further details were provided as required by Condition 24 within 21 business days (our ref RTIO-1052862) Condition 2b (our ref: RTIO-1093839) Further details were provided as required by Condition 24 within 21 business days (our ref: RTIO-1095860)
25	The approval holder must ensure that an **independent audit** of compliance with the conditions is conducted for every five-year period following the **commencement of the Action** until this approval expires, unless otherwise specified in writing by the **Minister**.	Not applicable	There were no audits required during the reporting period.
26	For each **independent audit**, the approval holder must: a. Provide the name and qualifications of the nominated **independent** auditor, the draft audit criteria, and proposed timeframe for	Not applicable	There were no audits required during the reporting period.

Condition Number	Condition	Compliance status	Evidence/Comments
	submitting the **audit report** to the **Department** prior to commencing the **independent audit**. b. Only commence the **independent audit** once the nominated **independent** auditor, audit criteria and timeframe for submitting the **audit report** have been approved in writing by the **Department**. c. Submit the **audit report** to the **Department** for approval within the timeframe specified and approved in writing by the **Department**. d. Publish each **audit report** on the **website** within 15 **business days** of the date of the **Department's** approval of the **audit report**. e. Keep every **audit report** published on the **website** until this approval expires.		
27	Each **audit report** must report for the five-year period preceding that **audit report**.	Not applicable	There were no audits required during the reporting period.
28	Each **audit report** must be completed to the satisfaction of the **Minister** and be consistent with the **Department's** *Environment Protection and Biodiversity Conservation Act 1999 Independent Audit and Audit Report Guidelines* (2019), or any subsequent official version.	Not applicable	There were no audits required during the reporting period.
29	The approval holder must notify the **Department** electronically 60 **business days** prior to the expiry date of this approval, that the approval is due to expire.	Not applicable	Approval not due to expire within 60 days.
30	Within 30 **business days** after the **completion of the Action**, and, in any event, before this approval expires, the approval holder must notify the **Department** electronically of the date of **completion of the Action** and provide **completion data**.	Not applicable	Action not completed.

3 Non-Compliances

3.1 Details of non-compliance(s)

3.1.1 Condition 2b: 27W Land bridge

Which implementation condition or procedure was non-compliant?	
Condition 2b: Minimise noise, vibration and artificial lighting impacts to protected matters by only undertaking construction, clearing and/or blasting during daylight hours.	
Who detected the non-compliance?	
The approval holder	
On what date(s) did the non-compliance occur (if applicable)?	
3 – 6 February 2024. Identified 7 February 2024.	
Was this non-compliance reported to the Department?	
☒ Yes ☐ Reported to DoE verbally Date: ☒ Reported to DoE in writing Date: 16 February 2024 Our ref: RTIO-1041361	☐ No
What correction measure(s), if any, were taken or are proposed to be taken in response to the non-compliance?	
• Work instructions updated to include Dayshift only control • Night-time conduct of disturbance activities in areas where there is potentially undisturbed ground ceased • Review of site-based land disturbance process	
Who was/is responsible for correcting the non-compliance?	
The approval holder	
What date did/will the correction measures commence and/or be completed or the time frame for correction?	
Correction measures commenced upon identification of potential non-compliance (7 February 2024).	
What measures, if any, are in place to prevent re-occurrence of the non-compliance?	
Refer Section 3.1.3	

3.1.2 Condition 2e: Barbed wire removal/ bat deflector installation

Which implementation condition or procedure was non-compliant?	
A section of Condition 2e states "…All required barbed wire, within the development envelope must have the top strand replaced with single strand wire and have reflectors installed to deter bat interaction within 12-months from the date of this approval."	
Who detected the non-compliance?	
The approval holder	
On what date(s) did the non-compliance occur (if applicable)?	
2023 and 2024 reporting periods.	
Was this non-compliance reported to the Department?	
☒ Yes ☐ Reported to DoE verbally Date: ☒ Reported to DoE in writing Date: 22/04/2024 Our ref: RTIO-1049029	☐ No
What correction measure(s), if any, were taken or are proposed to be taken in response to the non-compliance?	
The approval holder has implemented the following corrective actions: • Audit to identify existing barbed wire at Paraburdoo Operations. • Plan in place for removal of all legacy barbed wire not required under WA legislation to be removed in 2024. • Plan in place for all legacy barbed wire required under WA legislation to have top strand replaced with single strand wire and bat deflectors installed in 2024.	
Who was/is responsible for correcting the non-compliance?	
The approval holder	
What date did/will the correction measures commence and/or be completed or the time frame for correction?	
Barbed wire was removed or bat deflectors installed by end of 2024 reporting period.	
What measures, if any, are in place to prevent re-occurrence of the non-compliance?	
Improvement to internal change management process.	

3.1.3 Condition 2b: 36W Land bridge

Which implementation condition or procedure was non-compliant?	
Condition 2b: Minimise noise, vibration, and artificial lighting impacts to protected matters attributable to the action by only undertaking construction, clearing and/or blasting during daylight hours except that construction and alteration of the action in the Construction Area (night and day) may be conducted at any time.	
Who detected the non-compliance?	
The approval holder	
On what date(s) did the non-compliance occur (if applicable)?	
14 November 2024. Identified 15 November 2024.	
Was this non-compliance reported to the Department?	
☒ Yes ☐ Reported to DoE verbally Date: ☒ Reported to DoE in writing Date: 26 November 2024 Our ref: RTIO-1093839	☐ No
What correction measure(s), if any, were taken or are proposed to be taken in response to the non-compliance?	
• Scene frozen until survey flyover completed and area inspected for MNES • Work instructions updated to include Dayshift only control • Night-time conduct of disturbance activities in areas where there is potentially undisturbed ground ceased • Complete a Business improvement workshop to identify engineering controls to assist adherence to environmental restrictions on mine operations	
Who was/is responsible for correcting the non-compliance?	
The approval holder	
What date did/will the correction measures commence and/or be completed or the time frame for correction?	
Correction measures commenced upon identification of potential non-compliance (15 November 2024).	
What measures, if any, are in place to prevent re-occurrence of the non-compliance?	
• Site-based land disturbance process updated. • Remote operating systems updated to include location, action rules, visible marking and unassigning day shift only locations every night. • Environmental training delivered to controllers who manage remote tipping restrictions. • Environment team added as mandatory attendees to mine planning meeting. • Detailed investigation complete. Update will be provided to the department with investigation outcomes in due course.	

4 Management Plan/Program

4.1 Threatened fauna

4.1.1 Environmental criteria

The below table summarises the environmental criteria associated with threatened fauna required by Ministerial Statement 1195.

Table 2: Environmental criteria associated with threatened fauna

Key environmental factor: Threatened fauna	
Environmental outcomes, trigger and threshold criteria and management targets as per MS1195	**Reporting period 1 October 2023 – 30 September 2024**
Trigger criterion:	**Status report:**
1. Vibration levels exceeds 50 mm/s peak particle velocity (PPV) at retained Ghost Bat caves located within 300 m of mine pit (caves 6, 16, 17 and 18).	Criteria not exceeded
2. Decline in visual structural integrity of any retained Ghost Bat caves (caves 2, 6, 7, 8, 9, 10, 11, 12, 14, 15, 16, 17 and 18), supported by a significant step change in microclimate (temperature and humidity) data, attributable to the Proposal.	Criteria not exceeded
3. Disturbance within the 250 m Mining Exclusion Zone surrounding the Pilbara Leaf-nosed Bat permanent maternal roost (Gardagarli [Ratty Springs]), attributable to the Proposal.	Criteria not exceeded
4. Vibration levels exceed 10mm/s peak particle velocity (PPV) at the Pilbara Leaf-nosed Bat permanent maternal roost (Gardagarli [Ratty Springs]), attributable to the Proposal.	Criteria not exceeded
5. Decline in visual structural integrity of the Pilbara Leaf-nosed Bat permanent maternal roost (Gardagarli [Ratty Springs]), attributable to the Proposal.	Criteria not exceeded
6. LZ10>70 dB(Z) over a one (1) hour period, at the Pilbara Leaf-nosed Bat maternity roost, attributable to the Proposal. AND 7. Reducing call counts at, or below Lower Call Limit5 for five (5) or more consecutive nights at the Pilbara Leaf-nosed Bat maternity roost, attributable to the Proposal	Criteria not exceeded however there were periods it could not be suitably assessed reported under Condition 7-7
Threshold criterion:	**Status report:**
8. Pit crest intersects a Ghost Bat Mining Restriction Zone (100 m around caves 6, 16, 17 and 18)	Criteria not exceeded
9. Significant damage to any retained Ghost Bat caves (caves 2, 6, 7, 8, 9, 10, 11, 12, 14, 15, 16, 17 and 18), supported by a significant step change in microclimate (temperature and humidity) data, attributable to the Proposal.	Criteria not exceeded
10. Disturbance within 250 m Mining Exclusion Zone surrounding the Pilbara Leaf-nosed Bat permanent maternal roost (Gardagarli [Ratty Springs]) which causes significant damage to the cave, attributable to the Proposal	Criteria not exceeded
11. LZ10>70 dB(Z) over a one (1) hour period, at the Pilbara Leaf-nosed Bat maternity roost, attributable to the Proposal. AND	Criteria not exceeded however there were periods it could not be suitably assessed reported under Condition 7-7
12. Reducing call count trend identified by the initial trigger criteria 2 remains below Lower Call Limit5 for 15 consecutive nights at the Pilbara Leaf-nosed Bat maternity roost, attributable to the Proposal	

4.1.2 Results, analysis and interpretation

In line with advice from bat ecologist Robert Bullen, and to protect the EPBC listed bat species during maternity periods, the collection of data for Q4 takes place in Q1. Therefore, the reporting year for bat roost data (structural integrity, microclimate and echolocation) is offset to an October to September annual reporting period. This ensures that a full calendar year of data can be collected, analysed and reported in the annual compliance assessment report (ACAR). For this regulatory reporting period, criteria for Threatened Fauna aspect (only) covers the October 2023 to September 2024 period.

4.1.2.1 Ghost Bats

Thirteen ghost bat roosts are monitored in the development envelope. Of these, four roosts (caves 6, 16, 17 and 18) are within 300m of proposed pits and are considered potential impact roosts. The remainder (caves 2, 7, 8, 9, 10, 11, 12, 14 and 15) are considered reference roosts.

During the reporting period, operations (including land clearing, drilling and blasting) took place within 350m of all four of the potential impact roosts. This occurred namely through the construction of the 36W land bridge and mining operations at 36W pit. No disturbance attributable to the proposal occurred within Ghost bat Mining Restriction Zones during the reporting period.

Rio Tinto conducts blast vibration monitoring for all blasts within 350m of retained ghost bat roosts (above the 300m requirement of the EMP). Blasting took place within 350m of one roost (Cave 6) during the reporting period. No vibration levels were exceeded through blast vibration monitoring. In addition, no decline in visual structural integrity of any retained ghost bat cave was observed. Some fluctuations in cave microclimate were recorded, however this is not thought to be attributable to the proposal and is discussed further below. Acoustic monitoring confirmed continued presence of Ghost Bats in the development envelope.

Cave 6 – Category 2

Cave Structure Assessment

Two blasts took place within 350m of Cave 6 during the reporting period.

Table 2: Blast PPV data for 2024

Date	Modelled PPV at Cave 6	Max Actual PPV at Cave 6 (EMP trigger level 50mm/s)
1/04/2024	3.15mm/s	2.22mm/s
16/09/2024	13.9mm/s	5.7mm/s

Cave structure was assessed quarterly at cave 6. No evidence of structural change was observed. See appendix 1 for cave structure assessments.

A camera on telemetry capturing daily cave structure imagery of Cave 6 (above quarterly requirement) was installed in October 2024.

A datasheet on Cave 6 roost structure can be found in Appendix 2.

Microclimate (Temperature & Humidity)

Data collected during reporting period shows temperature and humidity were stable at Cave 6. Data loss occurred due to cable being chewed through by an animal on 1 August 2023 and bat maternity inhibited equipment replacement on the Q4 2023 equipment maintenance visit. Monitoring equipment was fixed and live on 16 March 2024. No blasting took place within 300m of Cave 6 during the period data losses were experienced and quarterly cave structure assessments show no decline in visual structural integrity. In addition, following the restoration of monitoring equipment, microclimate trends replicate trends recorded in previous reporting period (Figures 1 and 2).

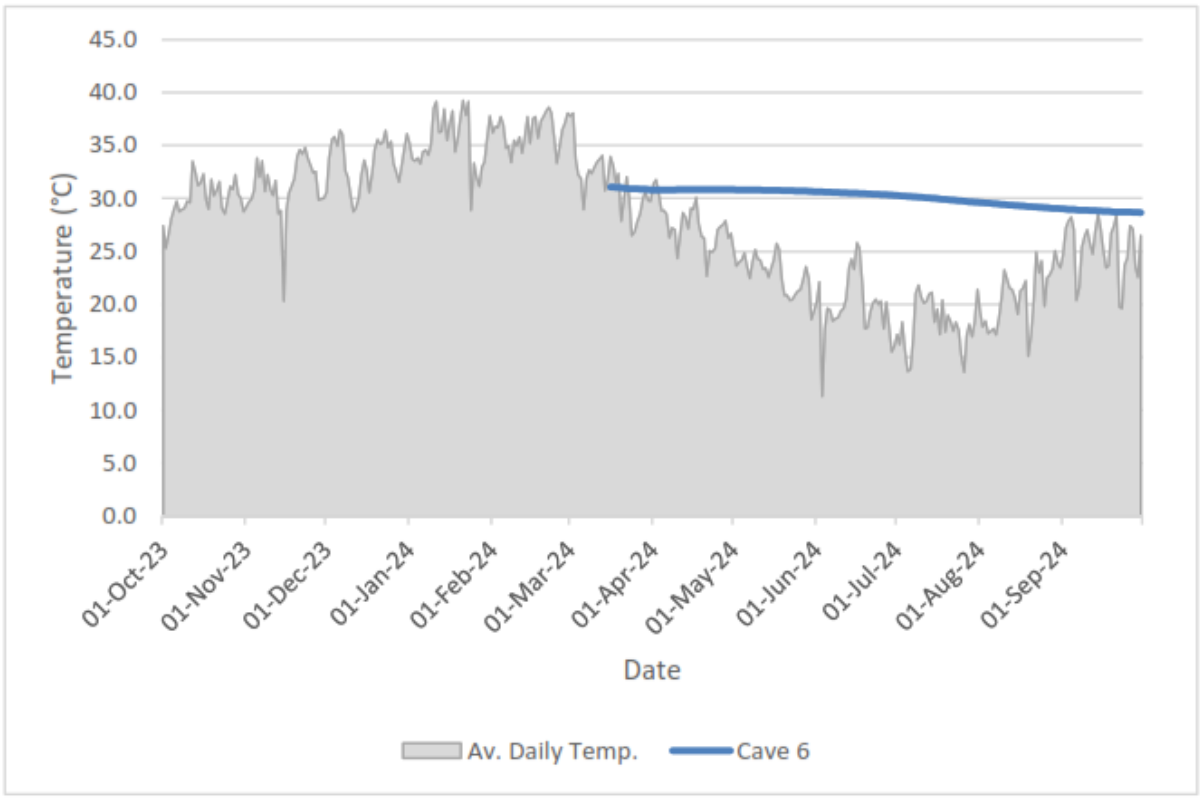


Figure 1: Cave 6 Average daily temperature vs ambient temperatures

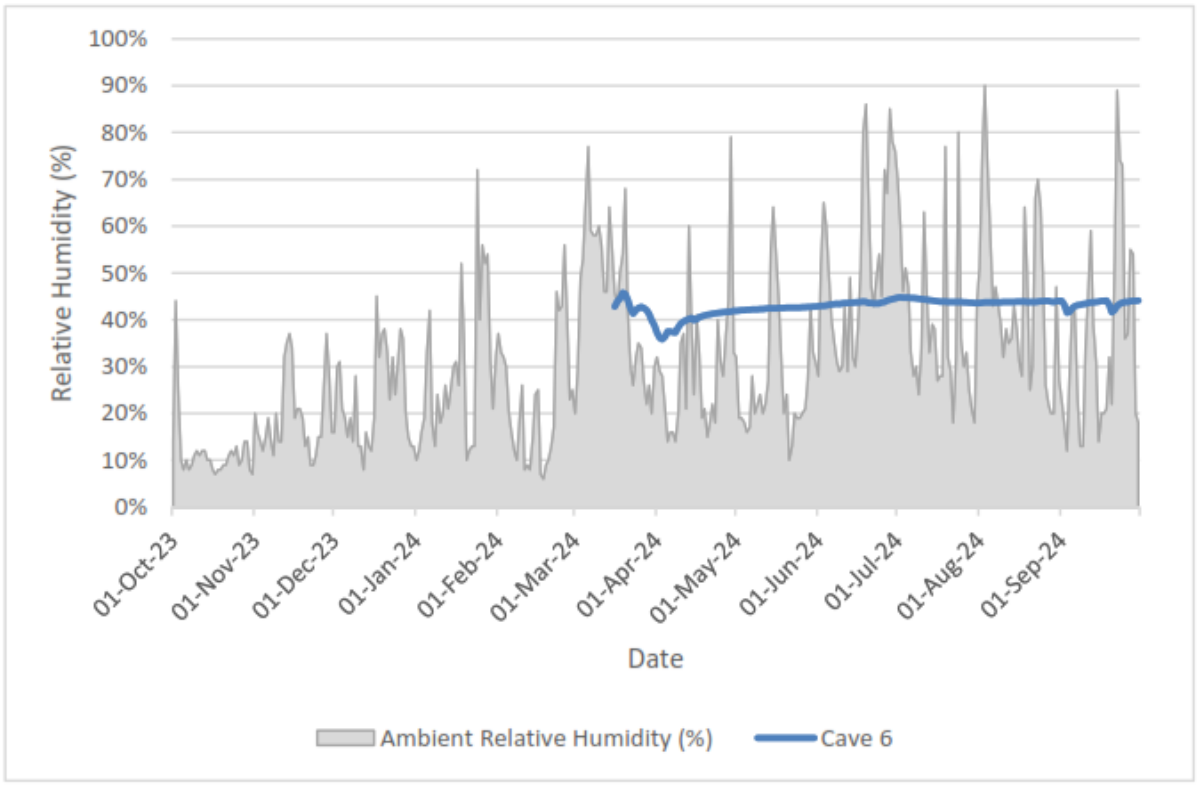


Figure 2: Cave 6 Average daily relative humidity vs ambient relative humidity

Acoustic Monitoring

Cave 6 is a category 2 roost. Acoustic monitoring showed a decline in roost utilisation during the reporting period. This coincides with commencement of operations at nearby 36W pit. High diurnal roosting within roosts in the west of the development envelope suggests ghost bats are choosing to roost at caves further from mining operations, within the development envelope.

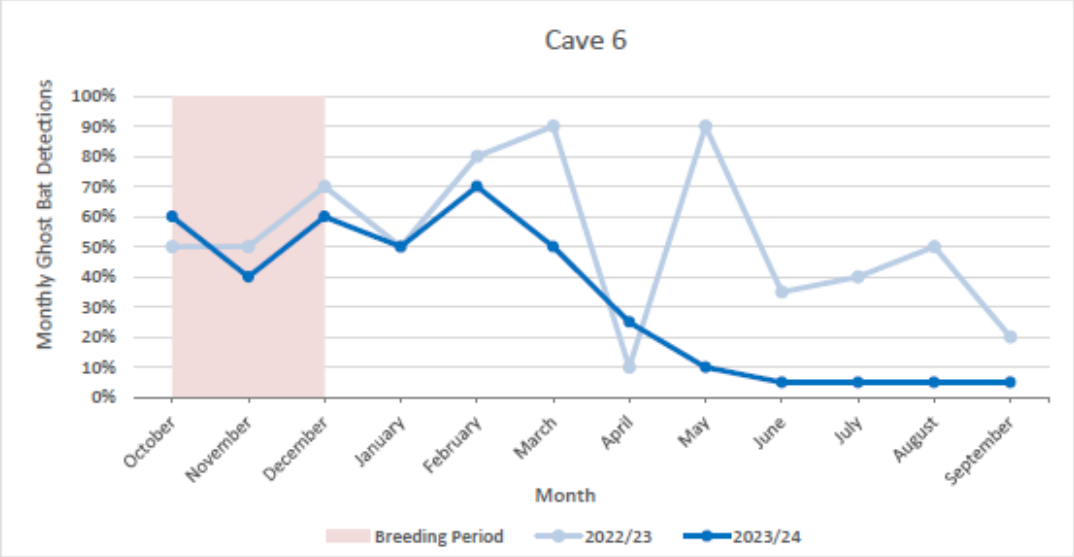


Figure 3: Cave 6 monthly ghost bat detections

Cave 16 – Category 3

Cave Structure Assessment

No blasts took place within 350m of Cave 16 during the reporting period.

Cave structure was assessed quarterly at cave 16. No evidence of structural change was observed. See appendix 1 for cave structure assessment images.

A camera on telemetry capturing daily cave structure imagery of Cave 16 (above quarterly requirement) was installed October 2024.

A datasheet on Cave 16 roost structure can be found in Appendix 2.

Microclimate (Temperature & Humidity)

While temperature is stable at Cave 16 through the reporting period, the humidity experiences a fluctuating trend. During the wet season the humidity is variable and aligned with ambient trends, while during the dry season the humidity is higher and more stable. Similar trends are seen at Caves 10, 15, 17 & 18. External zoologists have advised this is a consistent observation at Ghost Bat caves in the Pilbara. This could correlate with how enclosed the cave opening is, as well as atmospheric pressure trends, with average atmospheric pressure being higher in dry season months, and lower in wet season months, encouraging circulation of air between roost chamber and exterior Observed fluctuations in humidity do not reflect an impact to the roost as a result of mining activities and therefore a significant step change associated with the proposal has not been identified.

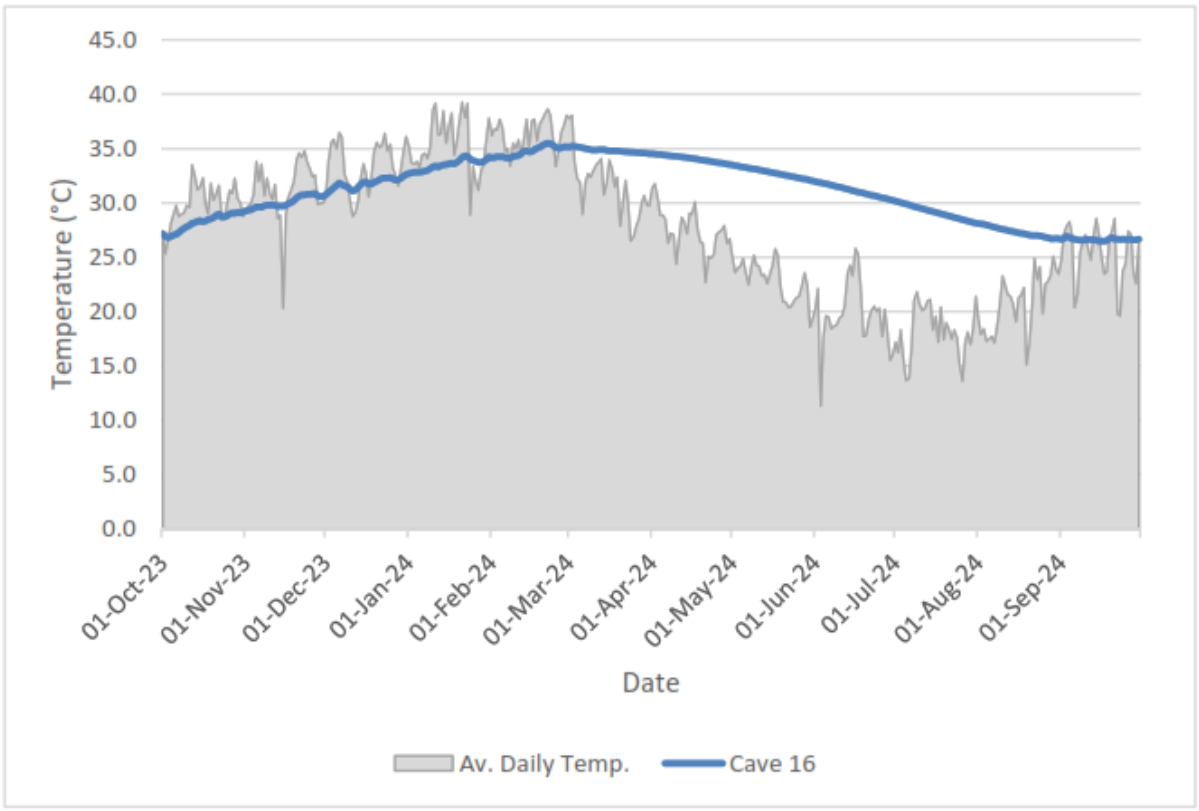


Figure 4: Cave 16 Average daily temperature vs ambient temperatures

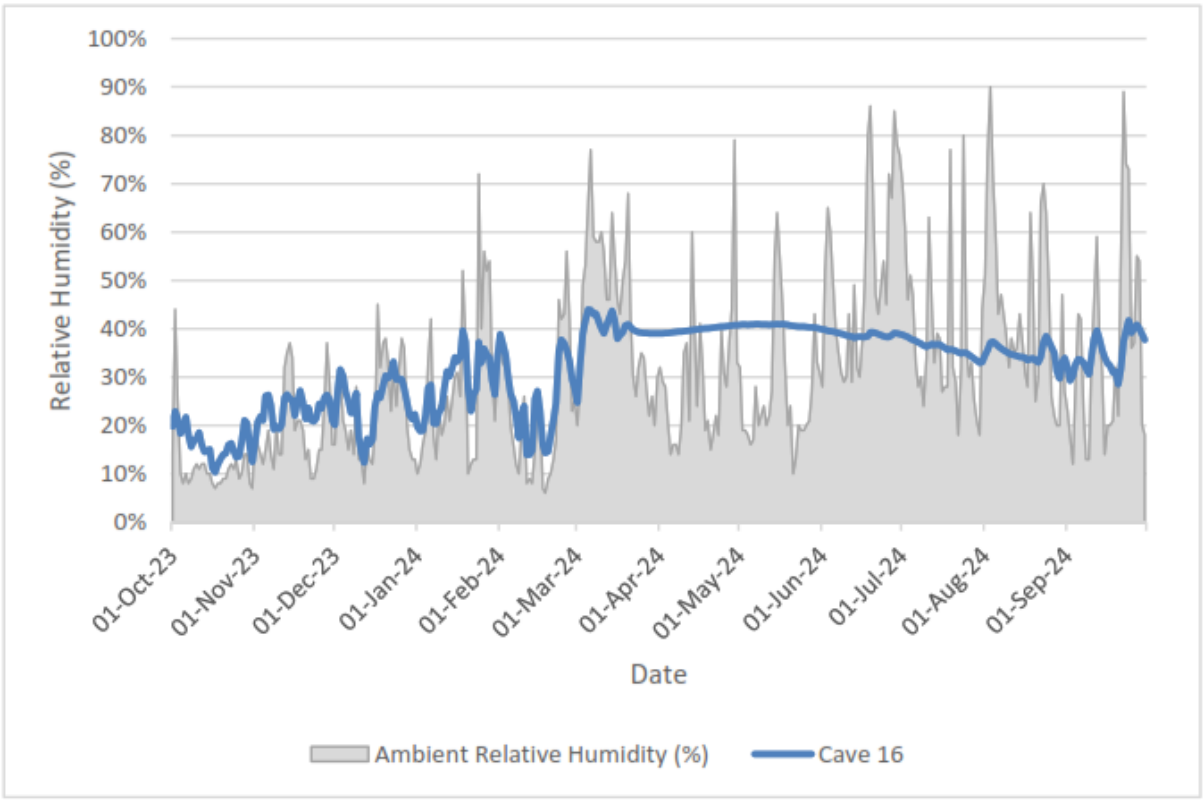


Figure 5: Cave 16 Average daily relative humidity vs ambient relative humidity

Acoustic Monitoring

Cave 16 is a category 3 roost. Acoustic monitoring showed roost utilisation to be relatively steady during the reporting period, despite mining operations occurring within 350m. Note that Cave 6, 16 and 17 are all in the same valley, with Cave 6 being closest to activity at 36W pit.

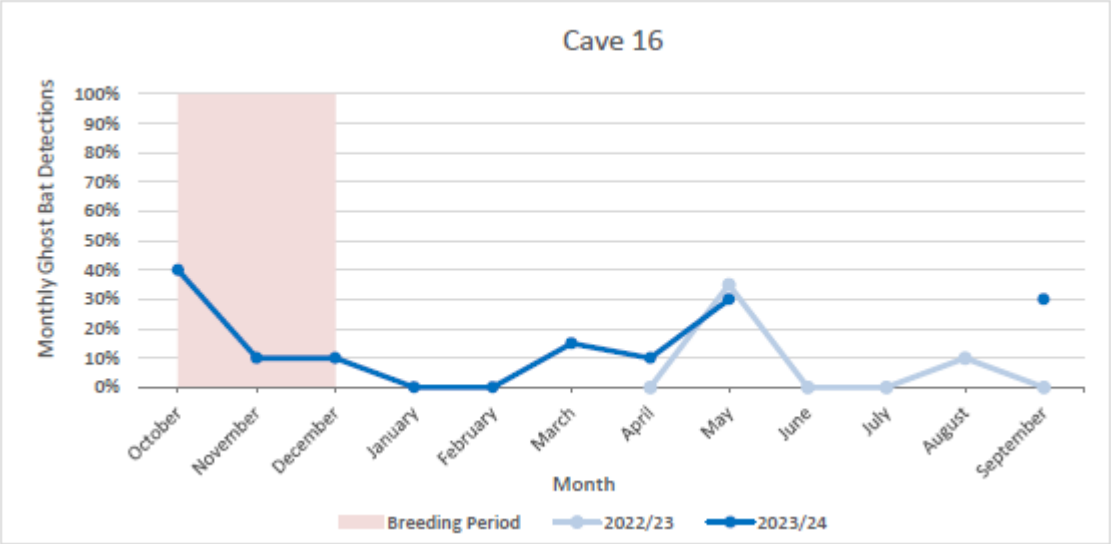


Figure 6: Cave 16 monthly ghost bat detections

Cave 17 – Category 3

Cave Structure Assessment

No blasts took place within 350m of Cave 17 during the reporting period.

Cave structure was assessed quarterly at cave 17. No evidence of structural change was observed. See appendix 1 for cave structure assessment images.

A camera on telemetry capturing daily cave structure imagery of Cave 17 (above quarterly requirement) was installed October 2024.

A datasheet on Cave 17 roost structure can be found in Appendix 12

Microclimate (Temperature & Humidity)

The temperature at Cave 17 remained relatively stable, with temperatures slightly increasing from October 2023 to May 2024, before decreasing marginally during the cooler months from June to August 2024, following similar trends in ambient temperature recorded at Paraburdoo weather station.

Relative humidity fluctuated between October 2023 and March 2024, with lower fluctuations between August and September 2024, corresponding to seasonal temperature variations and rainfall patterns during the warmer months. Between April and July 2024, relative humidity stabilises, slightly decreasing, before fluctuations begin to increase as the ambient temperature rises. Observed fluctuations in humidity do not reflect an impact to the roost as a result of mining activities and therefore a significant step change associated with the proposal has not been identified.

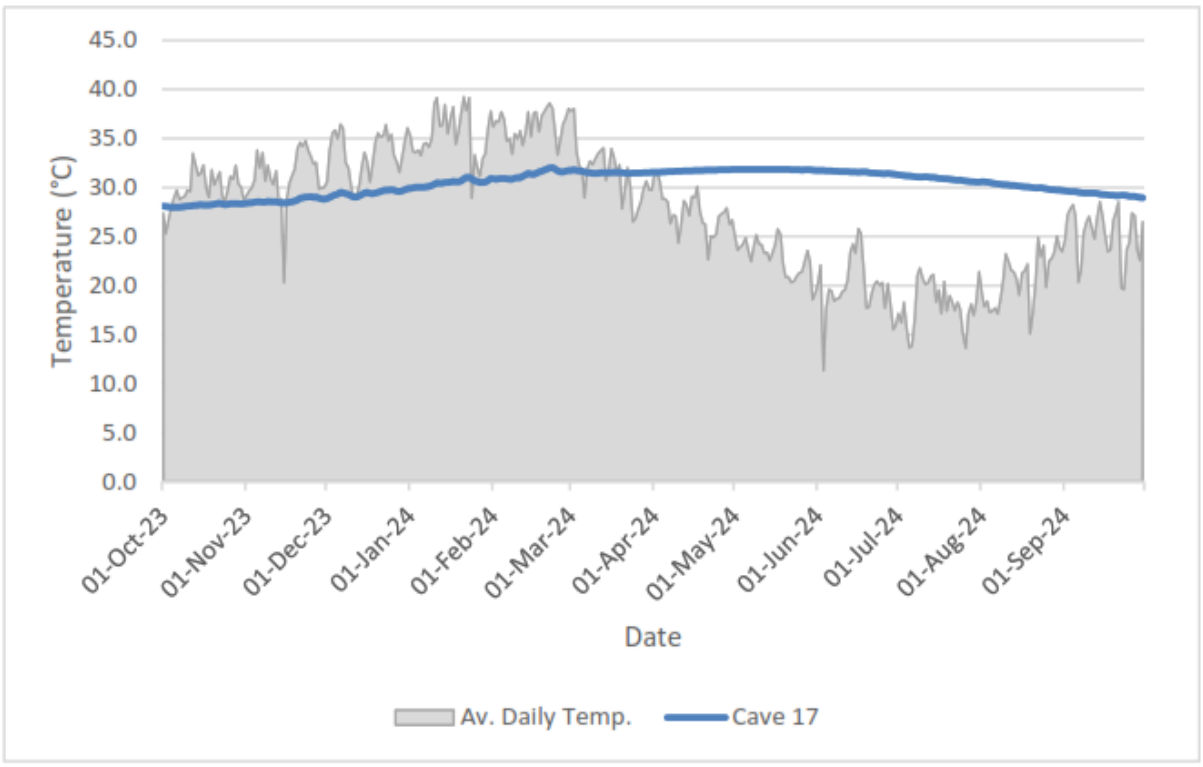


Figure 7: Cave 17 Average daily temperature vs ambient temperatures

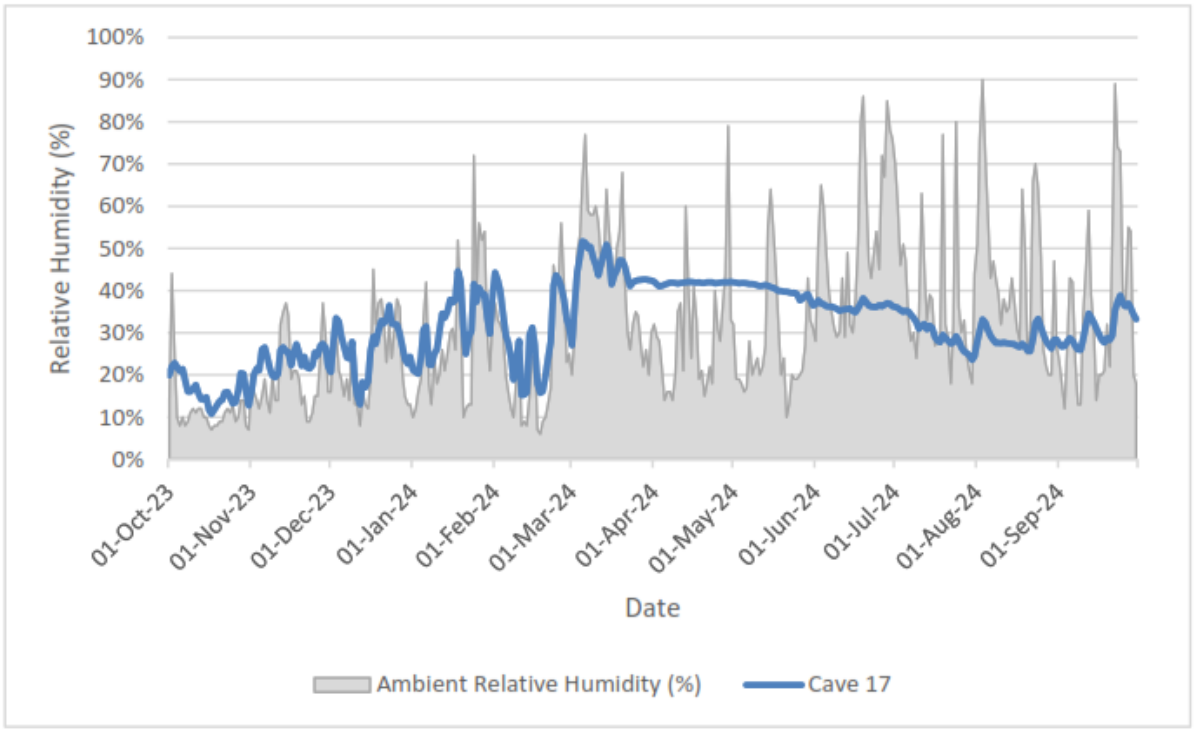


Figure 8: Cave 17 Average daily relative humidity vs ambient relative humidity

Acoustic Monitoring

Cave 17 is a category 3 roost. Acoustic monitoring showed roost utilisation to be relatively steady during the reporting period, despite mining operations occurring within 350m. Note that Cave 6, 16 and 17 are all in the same valley, with Cave 6 being closest to activity at 36W pit.

Due to corrupt SD cards in the SM4 acoustic monitor, no data was recorded between 16 March & 17 May 2024. This does not impact the ability to assess the environment criteria of continued ghost bat presence in the development envelope.

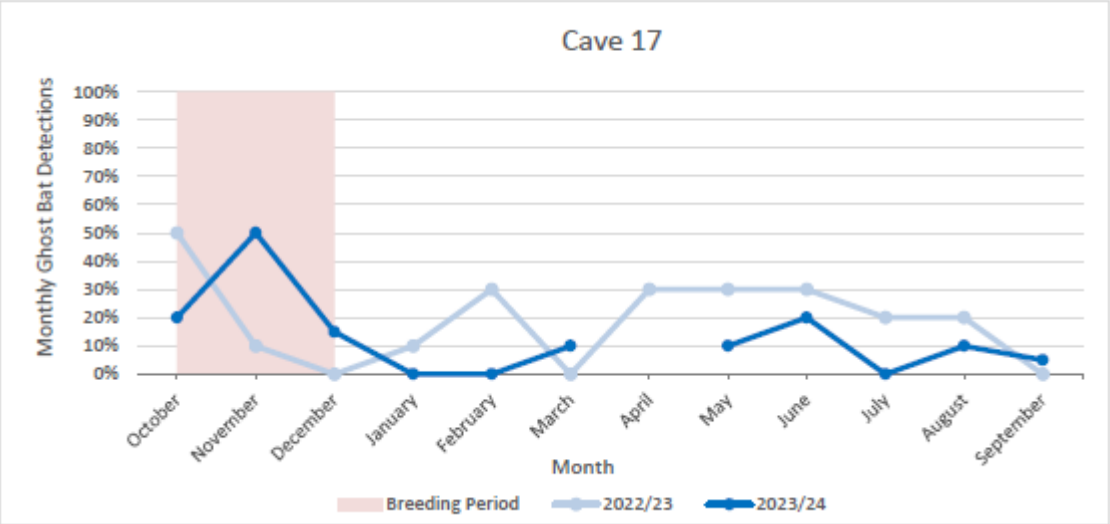


Figure 9: Cave 17 monthly ghost bat detections

Cave 18 – Category 2

Cave Structure Assessment

No blasts took place within 350m of Cave 18 during the reporting period.

Cave structure was assessed quarterly at cave 18. No evidence of structural change was observed. See appendix 1 for cave structure assessment images.

A camera on telemetry capturing daily cave structure imagery of Cave 18 (above quarterly requirement) was installed August 2024.

A datasheet on Cave 18 roost structure can be found in Appendix 2.

Microclimate (Temperature & Humidity)

The temperature at Cave 18 appears to follow the same trends as the ambient temperature, with the temperature slightly increasing during the warmer months between October 2023 and March 2024, before slightly decreasing between April and September 2024.

Relative humidity followed similar trends as the ambient relative humidity, with lower fluctuations between October 2023 and March 2024 during the wet season. Then between April and August 2024, relative humidity stabilises, slightly increasing, before fluctuations begin to increase as ambient temperatures begin to rise. Observed fluctuations in humidity do not reflect an impact to the roost as a result of mining activities and therefore a significant step change associated with the proposal has not been identified.

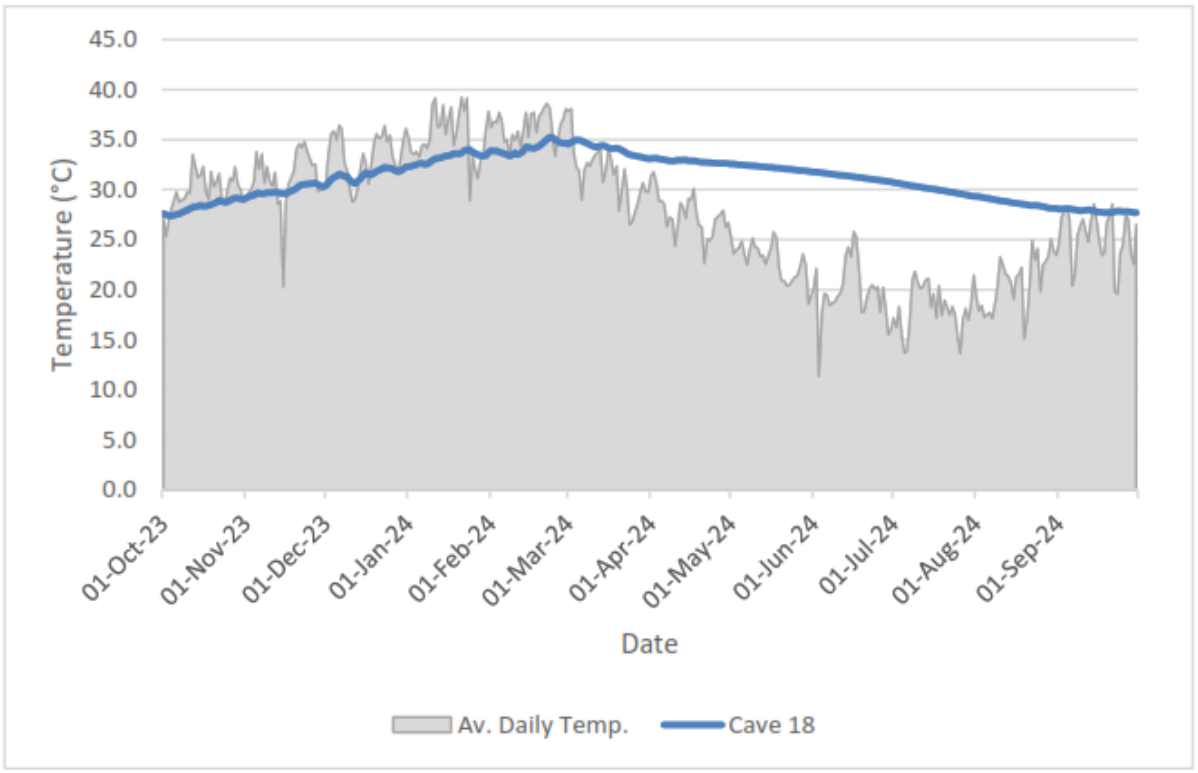


Figure 10: Cave 18 Average daily temperature vs ambient temperatures

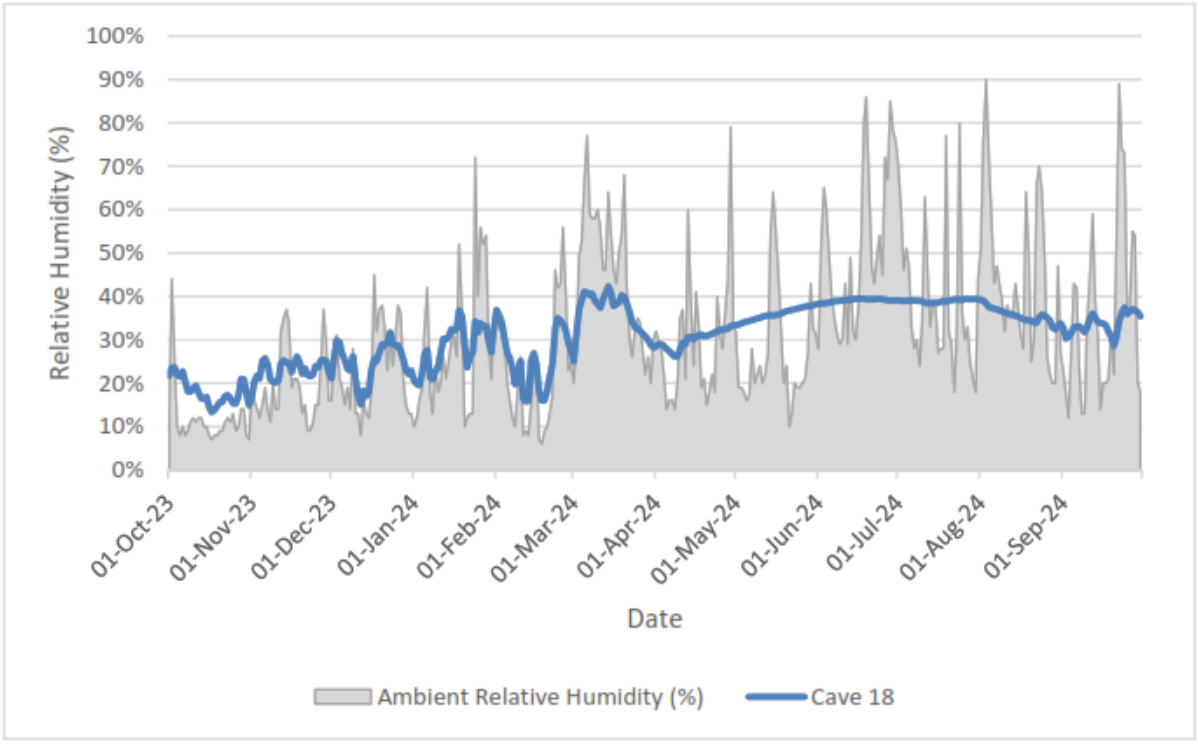


Figure 11: Cave 18 Average daily relative humidity vs ambient relative humidity

Acoustic Monitoring

Cave 18 is a category 2 roost. Acoustic monitoring showed high roost utilisation despite proximity to mining activities at 36W pit.

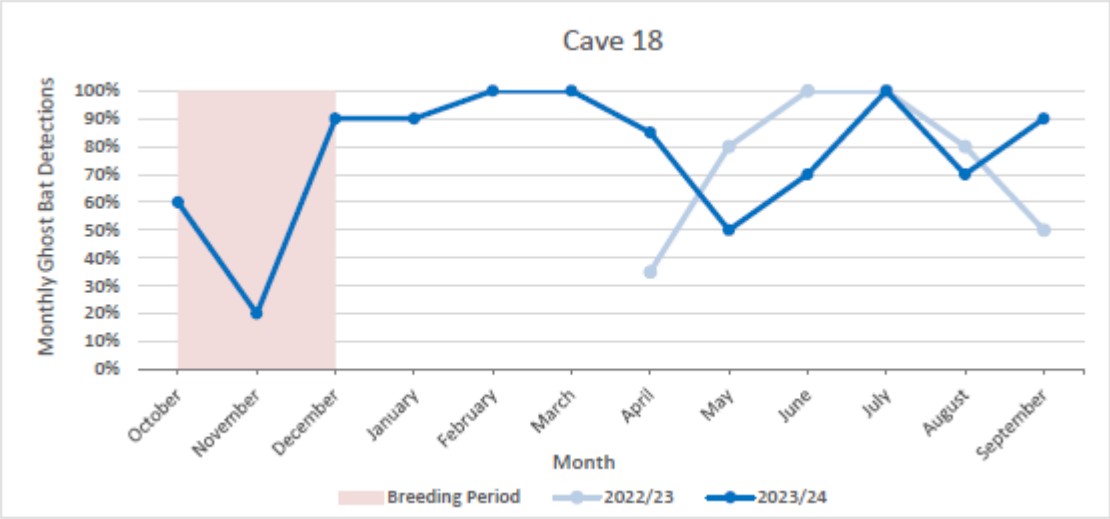


Figure 12: Cave 18 monthly ghost bat detections

Reference Roosts (Caves 2, 7, 8, 9, 10, 11, 12, 14 and 15)

Cave Structure Assessment

Cave structure was assessed quarterly at caves 11, 14 & 15 and biannually at caves 2, 7, 8, 9, 10 & 12. No evidence of structural change was observed. See appendix 1 for cave structure assessment images.

As discussed in the 2023 ACAR, structural integrity monitoring at cave 2 was not previously completed due to the roost and surrounding geotechnical stability assessment. Structural assessment of the cave was completed in H2 of the reporting period utilising remotely piloted aircraft. Cave 2 does not show any structural change to cave entry since baseline assessment which was completed 30 November 2018. Nearest blasting activities to Cave 2 since the commencement of the proposal are ~10km east of the roost. Assessment will continue to be completed utilising remotely piloted aircraft for this cave in future reporting periods.

Datasheets on reference cave roost structure can be found in Appendix 2.

Microclimate

Temperature

The temperature at the Ghost Bat reference roosts follows a similar trend recorded at the potential impact roosts. The temperature at all reference roosts slightly increased from October 2023 to February 2024, following the gradual rise in ambient temperature recorded at the Paraburdoo weather station. Cave 10 maintained a stable temperature between 31.5°C and 31.7°C from March to June 2024, regardless of ambient conditions. In contrast, the remaining reference roosts gradually decreased in temperature, mirroring ambient temperatures recorded at the Paraburdoo weather station between March and August 2024.

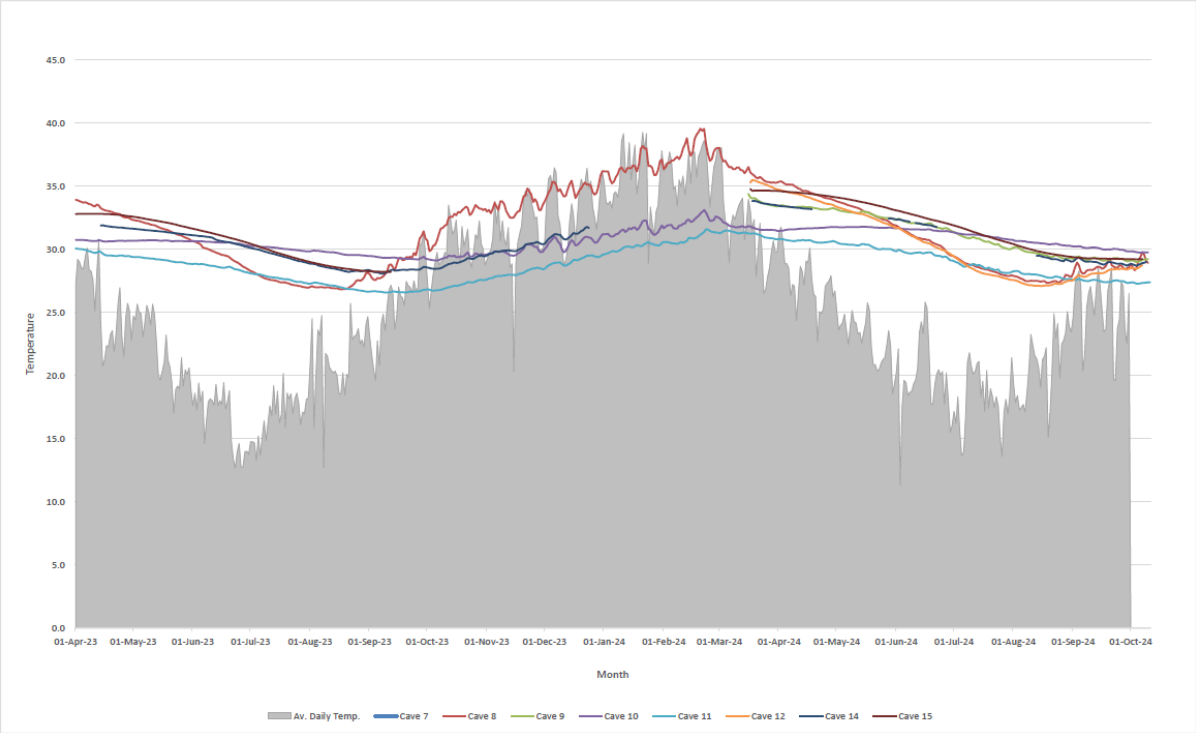


Figure 13: Average daily temperature for each Ghost Bat reference roost vs Ambient temperature

Humidity

The relative humidity at the Ghost Bat reference roosts follows a similar trend recorded at the potential impact roosts, with fluctuations between October 2023 and mid-March 2024. However, from mid March 2024, five of the eight reference roosts (Caves 8, 9, 11, 12 and 14) continued to fluctuate in humidity until September 2024, paralleling the ambient relative humidity at Paraburdoo weather station.

Cave 10 showed a gradual increase in humidity from mid-March to May 2024, maintaining approximately 70% relative humidity for most of June and July 2024. At the beginning of August, the humidity levels dipped and then aligned with the ambient humidity trend from early August. Long-term data at Cave 10 exhibits a similar trend, with higher relative humidity typically between April and July, and lower relative humidity, similar to ambient humidity, between August and March. Cave 15 maintained very high relative humidity levels, ranging between 77% and 88% between March and September 2024, similar to the data recorded in 2023 between April and September.

Regarding trends of elevated humidity during dry season at Caves 10 & 15, external zoologists have advised this is consistent with trends observed at other Ghost Bat caves in the Pilbara. This could correlate with how enclosed the cave opening is, as well as atmospheric pressure trends, with average atmospheric pressure being higher in dry season months, and lower in wet season months, encouraging circulation of air between roost chamber and exterior. It is not plausible that this would represent a step change in microclimate due to disturbance of the roost by the proposal, as this type of disturbance would likely result in a permanent switch to roost conditions aligned with ambient temperature and humidity (e.g the loss of the stable, high temperature and humidity microclimate favored by ghost bats). However the opposite is recorded at these caves. This data has been reviewed by external zoologists who were of the opinion these fluctuations followed natural trends. Rio Tinto will continue to monitor trends in humidity at these caves.

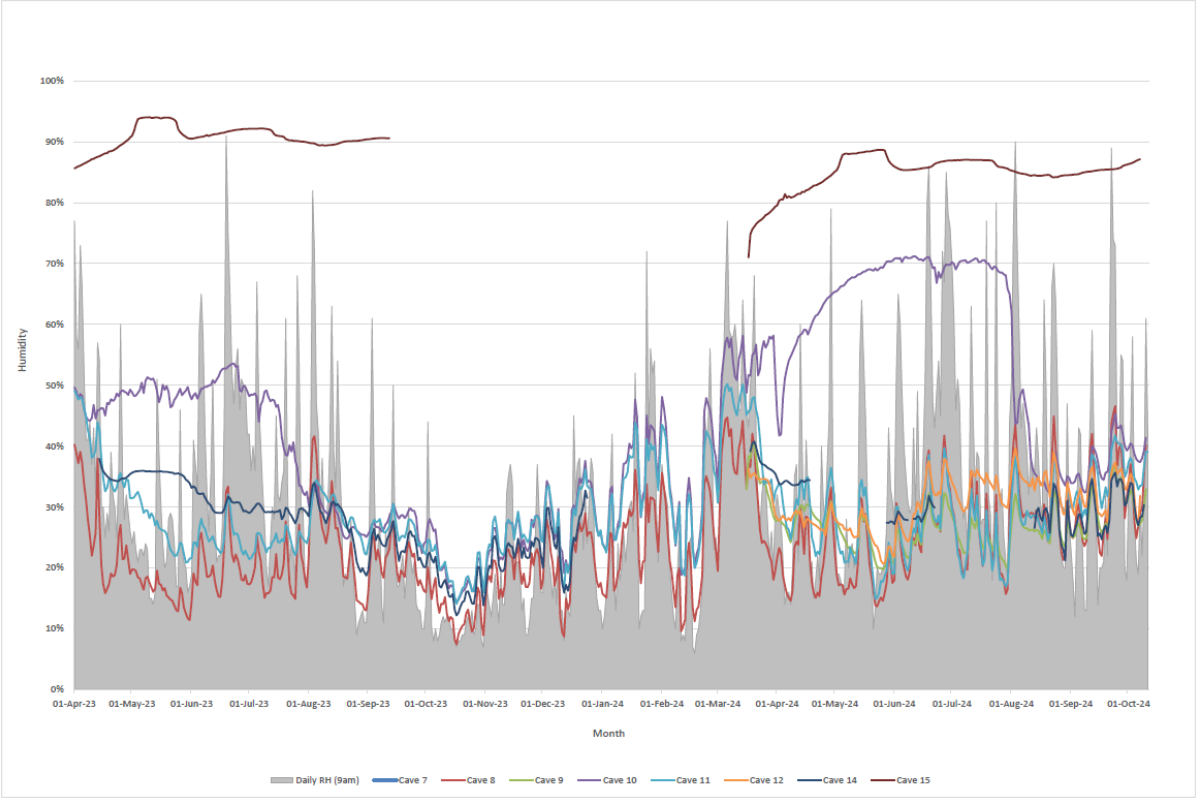


Figure 14: Average daily relative humidity for each Ghost Bat reference roost vs Ambient relative humidity

Acoustic Monitoring

Of the reference roosts, Caves 10, 11 & 15 are category 2 roosts and caves 2, 7, 8, 9, 12 & 14 are category 3 roosts. Although only required to conduct acoustic monitoring at 10 significant ghost bat roosts in the development envelope, in recognition of device reliability and the potential for remote equipment to fail at times, Rio Tinto now have monitoring equipment at 12 (all roosts except cave 2 due to geotechnical stability of cave surrounds).

Data confirms the continued presence of Ghost bats in the development envelope. In the cases of Caves 8, 9, 10 and 15 it is possible that increases in utilisation may correlate with decrease in utilisation at Cave 6.

Device failures resulted in data gaps between biannual analysis at Caves 10, 11 & 15. Details of these gaps are outlined in the monitoring compliance table (Table 3). These gaps did not compromise the ability to assess the environmental criteria of continued presence of Ghost bats in the development envelope.

Monitoring equipment was newly installed at Caves 7, 9 & 12 in March 2024 as forecast in the 2023 ACAR.

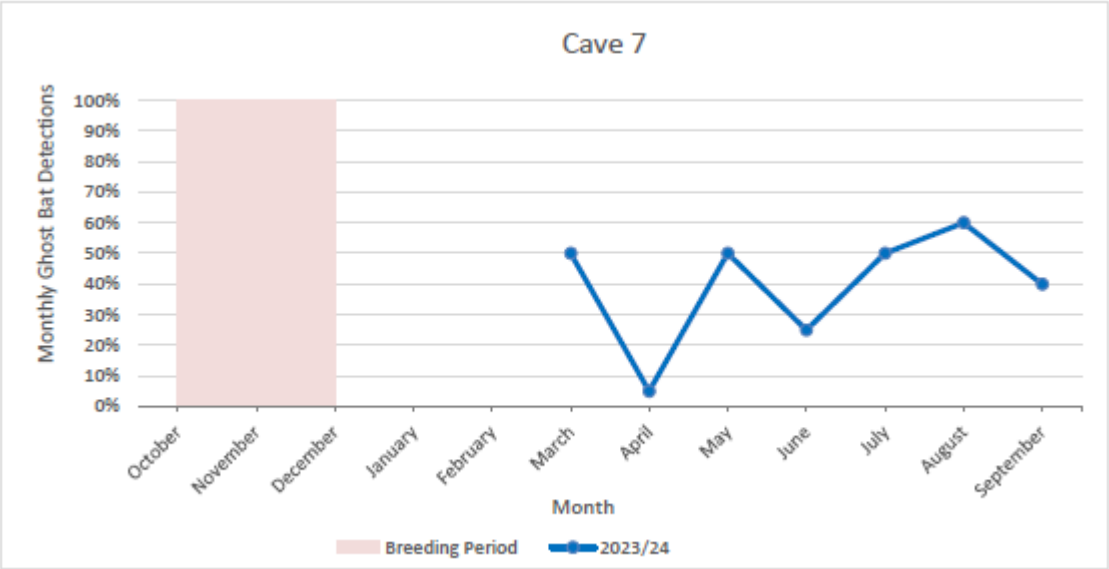


Figure 15: Cave 7 monthly ghost bat detections

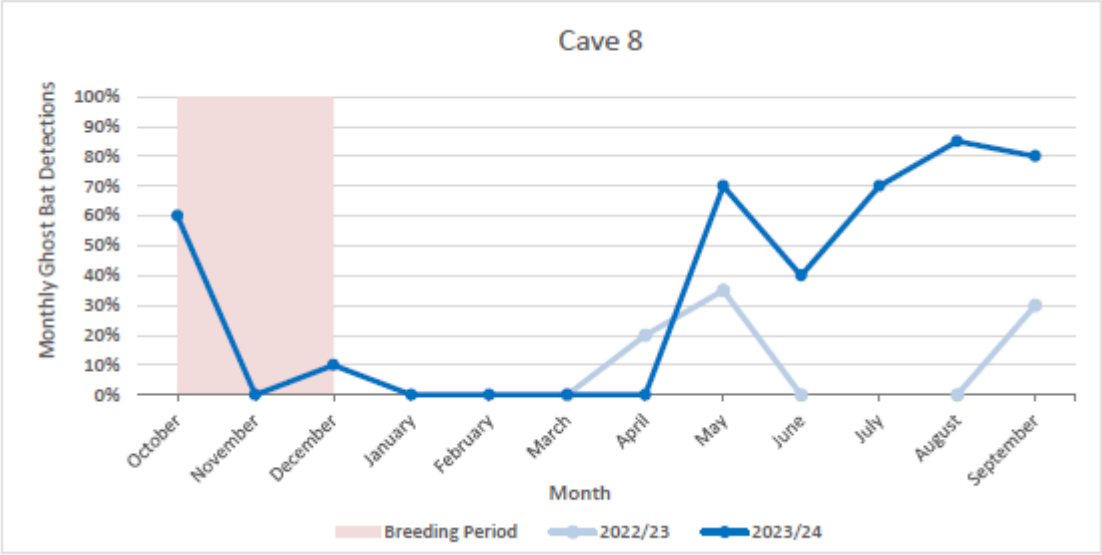


Figure 16: Cave 8 monthly ghost bat detections

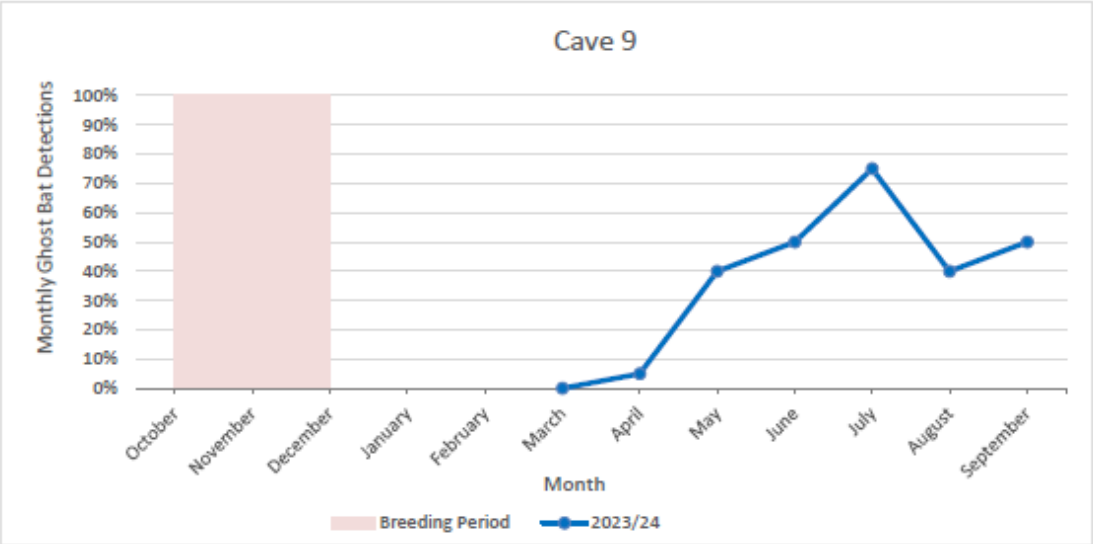


Figure 17: Cave 9 monthly ghost bat detections

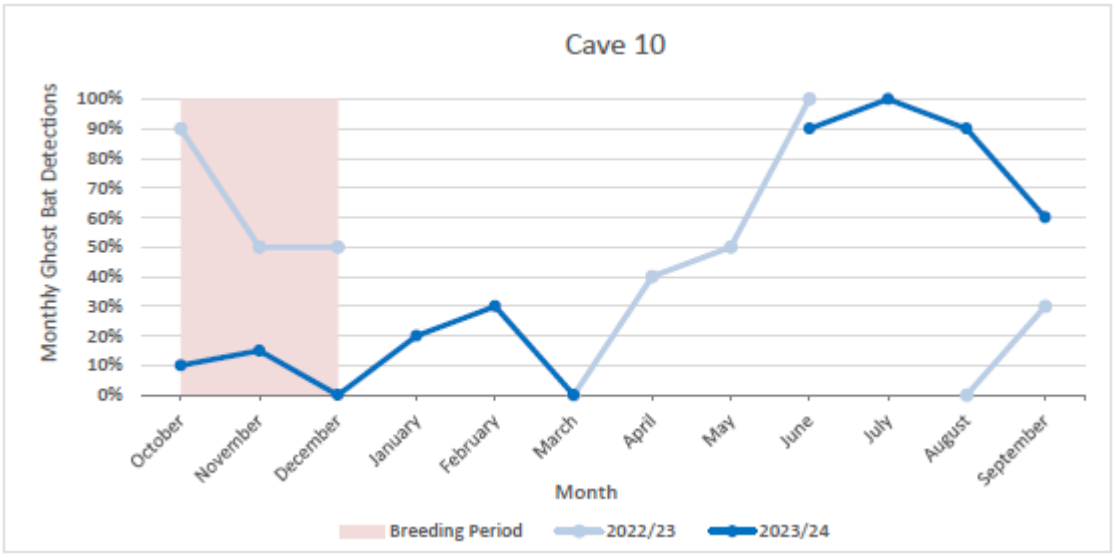


Figure 18: Cave 10 monthly ghost bat detections

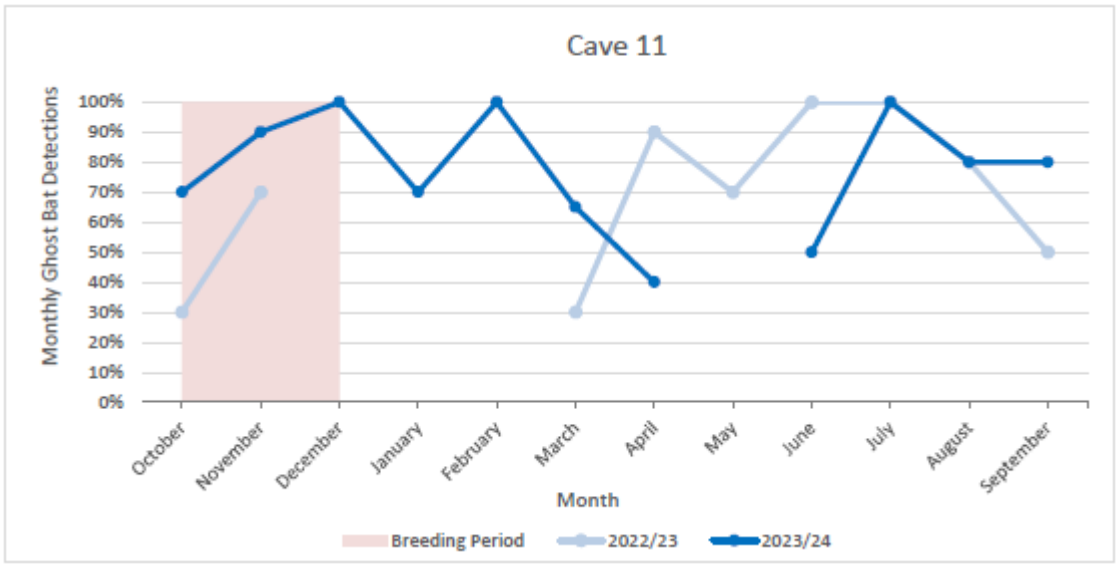


Figure 19: Cave 11 monthly ghost bat detections

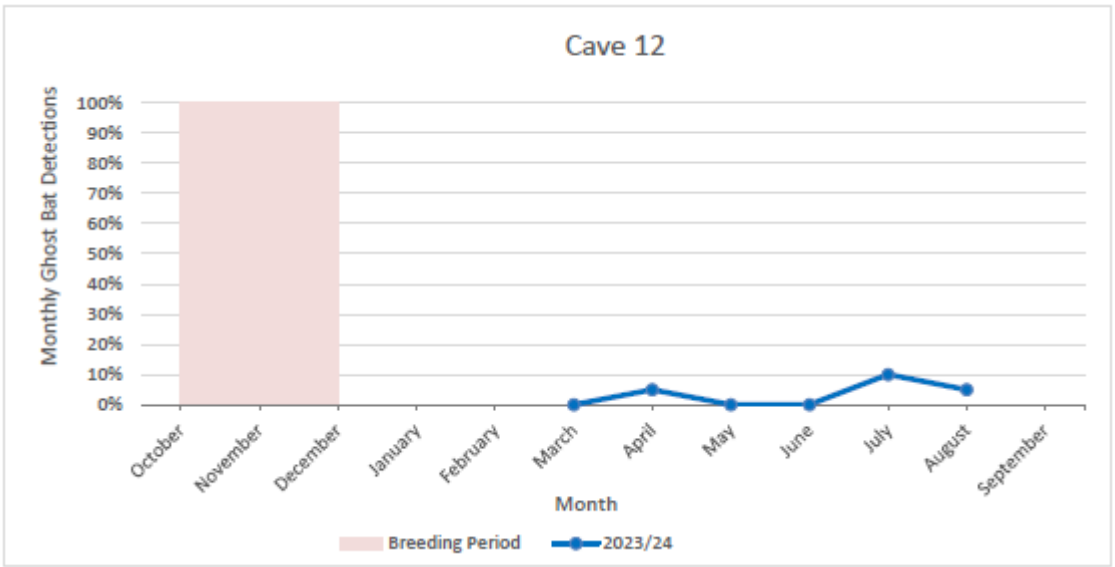


Figure 20: Cave 12 monthly ghost bat detections

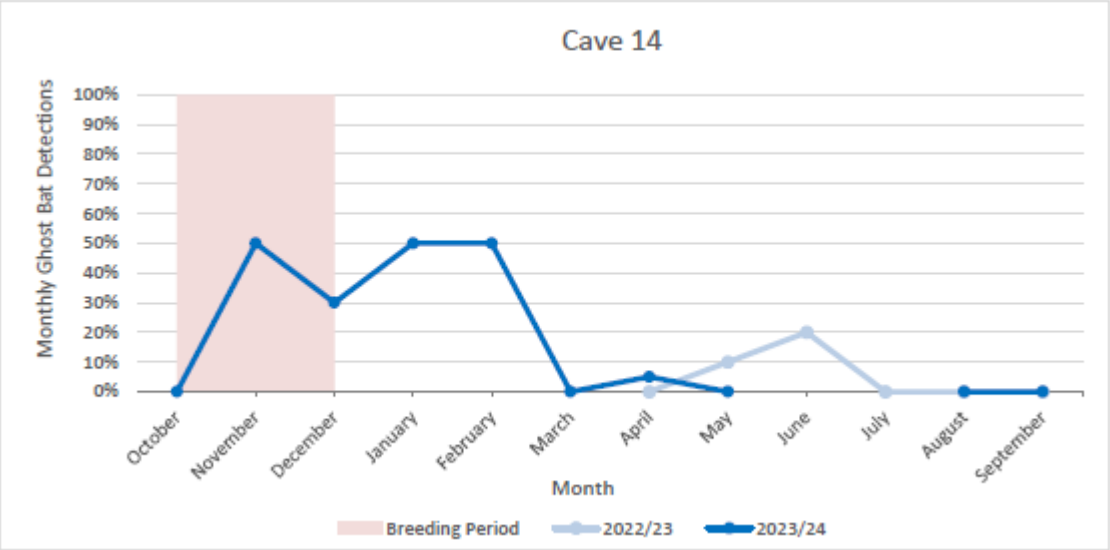


Figure 21: Cave 14 monthly ghost bat detections

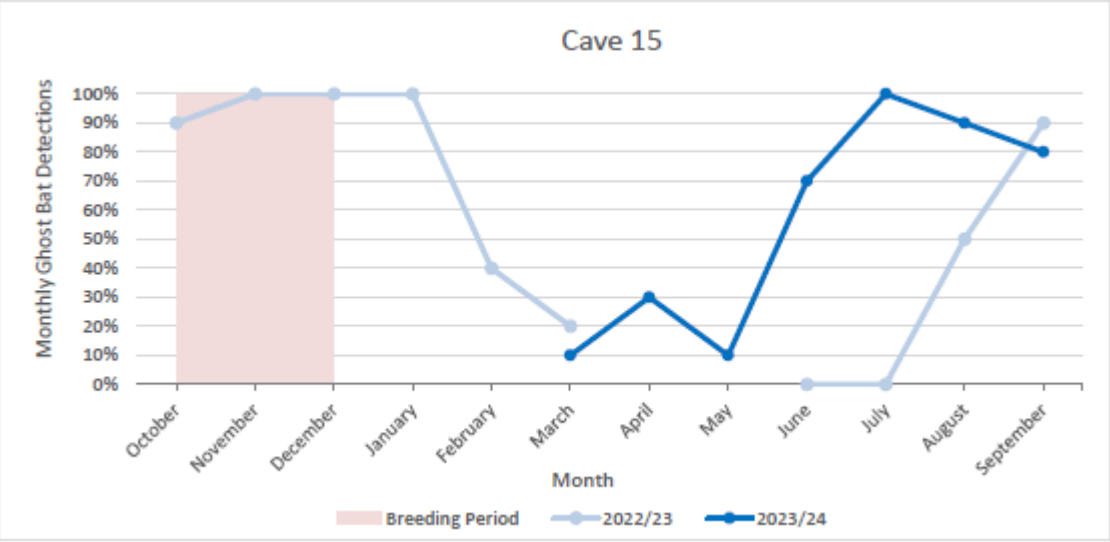


Figure 22: Cave 15 monthly ghost bat detections

Table 3: Ghost bat monitoring compliance table (October 2023 – September 2024)

			Cave Structure Assessment				**Microclimate Analysis**				**Acoustic Monitoring**			
Cave	Type	*Required Monitoring Frequency*	Q4 2023	Q1 2024	Q2 2024	Q3 2024	Q4 2023	Q1 2024	Q2 2024	Q3 2024	Q4 2023	Q1 2024	Q2 2024	Q3 2024
6	Potential Impact	*Quarterly (biannual for acoustic monitoring)*	✓	✓	✓	✓	✓#	✓*	✓	✓	✓		✓	
16	Potential Impact	*Quarterly (biannual for acoustic monitoring)*	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓#	
17	Potential Impact	*Quarterly (biannual for acoustic monitoring*	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓#	
18	Potential Impact	*Quarterly (biannual for acoustic monitoring*	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓#	
11	Reference	*Quarterly (biannual for structure assessment & acoustic monitoring)*	✓		✓		✓	✓	✓	✓	✓		✓#	
14	Reference	*Quarterly (biannual for structure assessment & acoustic monitoring)*	✓		✓		✓	✓#	✓#	✓#	✓		✓#	
15	Reference	*Quarterly (biannual for structure assessment & acoustic monitoring)*	✓		✓		✓#	✓*	✓	✓	✓#		✓	
2	Reference	*Bi-annual*	X		✓		*							
7	Reference	*Bi-annual*	✓		✓		X		X		X		✓	
8	Reference	*Bi-annual*	✓		✓		✓		✓		✓		✓	
9	Reference	*Bi-annual*	✓		✓		X		✓		X		✓	
10	Reference	*Bi-annual*	✓		✓		✓		✓		✓#		✓	
12	Reference	*Bi-annual*	✓		✓		X		✓		X		✓	

✓ - Data record complete

#✓ - Monitoring undertaken however periods of data unable to be used to assess environmental criteria due to device failure.

X – Data not recorded for period

*Not required by EMP

Regional Ghost Bat Monitoring

The EMP requires acoustic monitoring and assessment for Ghost Bats at up to four regional roosts and species tracking of individuals from Western Range to determine species range and patterns of cave usage. A regional monitoring program for Ghost Bats (and Pilbara Leaf nosed Bats) has been initiated by Rio Tinto. This includes surveys to locate new significant roost sites for Ghost Bats (and Pilbara Leaf nosed Bats). It is anticipated that this regional data will feed into the ecology knowledge of these two species, and provide contextual information such as how Ghost Bats (and Pilbara Leaf nosed Bats) use caves within the Greater Paraburdoo area and regionally. Monitoring sites identified to provide data to establish regional presence of Ghost bats include those listed in the table below.

Table 4: Ghost bat monitoring sites

Site	Cave	Category	Distance from Cave 6 (Western Range, Paraburdoo)
Turee Syncline	TSC8	Likely Cat 2 (still to be finalised)	46 km
Turee Syncline	TSC6	Likely Cat 2 (still to be finalised)	47km
Karijini N.P	East Turee Creek Cave	Likely Cat 2	98 km

Acoustic monitoring equipment is installed at these three locations, however data for the reporting period has not yet been collected. Data will be presented in the next ACAR.

GPS tracking of four Ghost Bats was conducted in 2022 by internal Rio Tinto biologists and consulting bat expert Robert Bullen. It is likely this data will be presented in a peer reviewed scientific paper in the future (expanding on the results presented in Bullen. R., , Reiffer. S. & Trainer. J. (2023) Satellite tracking Ghost bats (Macroderma gigas) in the Pilbara, Western Australia.).

4.1.2.2 Pilbara Leaf-nosed Bat Maternity Roost

The Ratty Spring PLNB roost is over 1km from the closest construction or operational activities and is considered to be a reference roost. It is not expected to be impacted from the Greater Paraburdoo proposal throughout life of the project. It is monitored due to its regional significance. It is located within a large rocky gully (protected on all sides by high rocky walls) within the Gardagarli Spring.

Disturbance reconciliation

High value Ghost Bat and Pilbara leaf-nosed bat habitat (roosts) are protected within Mining Exclusion Zones (MEZ). An annal disturbance reconciliation found no disturbance within the 250m MEZ for Ratty Spring Pilbara Leaf-nosed Bat (PLNB) maternal roost (Gardagarli [Ratty Springs]) (RSR) during the reporting period.

Table 5: Disturbance within the Ratty Springs PLNB Roost 2024

Location	Trigger (within 250m)	Threshold (roost disturbance)
Ratty Springs PLNB roost	0Ha	0Ha

Cave Structure Assessment

The nearest blasting activities during the reporting period were at 27W pit, which is over 3km to the west of the roost, meaning there was no requirement for vibration monitoring activities. Cave structure was assessed quarterly (above biannual requirement). No evidence of recent structural damage was recorded. See appendix 1 for cave structure assessment images.

Acoustic Monitoring

Acoustic Monitoring confirmed the presence of PLNB in the development envelope during the reporting period.

During the reporting period, Rio Tinto engaged Ecologist Bob Bullen (Bat Call WA) to establish the lower count limit for PLNB at RSR. This has been set at 1,105 calls per night. It is noted by Bat Call WA that typical nightly

PLNB call numbers vary greatly with monthly averages between approximately 1,000 and 15,000 per night. Further information can be found in Appendix 6 *Ratty Spring Pilbara leaf-nosed bat monitoring Lower-control-limit* Memo, which will now form an addendum to the EMP.

Total nightly PLNB call activity at the Ratty Springs maternity roost ranged from 584 (on 10 March 2024) to 20,008 (on 20 January 2024) during this monitoring period, with an average of 5,378 PLNB calls per night.

The total nightly PLNB calls at the Ratty Springs maternity roost remained above the LCL (1,105) for the majority of the monitoring period. However, the total nightly calls dropped below the LCL for five or more consecutive nights between the 7 and 11 March 2024 (five nights), and 27 March and 5 April 2024 (10 nights), resulting in an exceedance of the trigger criteria.

There was an average of 5,850 calls per night over the wet-season (November 2023 to April 2024) with call levels slightly decreasing during the dry-season (May 2024 to October 2023) with an average of 4,292 calls per night. Historically, PLNB call activity is typically lower over the wet-season before steadily increasing throughout the dry-season (Bat Call WA 2021b); however, trend appears to have occurred later than in previous monitoring periods (2019 – 2022), likely due to later onset of wet season (Figure 23).

Since 2017 the available PLNB call data indicates that the activity through to late 2024 has remained approximately stable, albeit with some year-on-year variation. Following the dry years of 2017 to 2019, the colony activity and size trends were negative. The increasing trend thereafter corresponds to the higher rainfall in the subsequent years. The impact period commenced on 13 January 2023 when construction began at Western Range. During the reporting period, the presence and activity levels of Pilbara leaf-nosed bats (PLNB) at RSR has remained at the high level in November 2023 and stable compared to historical ranges with an approximate population of 400-450 Pilbara leaf nosed bats utilising the roost. The activity peak in mid-January 2024 corresponds to increased rainfall which would result in the bats circling in the roost.

Two notable data sets were recorded between 20 to 29 February 2024 and 5 to 13 March 2024. Data shows that the call count was at or below the LCL (2000) for 5 or more consecutive nights. The February data was over a full moon and PLNb don't call as much when there is an abundance of moon light, and the March data was during a period of increased rain and unsettled weather which causes the PLNb to stay in the roost as their echolocation is compromised in the rain.

Recent acoustic data from RSR demonstrates the population at the roost are consistently above the LCL (Appendix 3) and the environmental outcome of avoiding and mitigating impacts to PLNB was achieved (Figure 25).

Noise Monitoring

Environmental criteria associated with noise monitoring was undertaken with Sound Level Meter (SLMs) from October 2023 to September 2024 at the Ratty Spring PLNB roost. Analysis of noise monitoring data was undertaken at the RSR within RTIO's Greater Paraburdoo mining operations and assessed against RTIO's EMP criteria. Data demonstrated there were zero project attributable 70 db(Z) exceedances and two non-project attributed 70 db(Z) exceedances (Table 6).

Both frequency filtered 70 db(Z) exceedances occurred on the 2nd of March from 14:00 – 16:00. Geolocation data of mining equipment showed no mining activity occurred within 1km of the roost during this period. Average wind speeds were consistently above 3 m/s which is thought to constitute the majority of audible noise.

Review of available audio data of periods when the unfiltered LZ10,1hr was greater than 70 dB(Z) were mostly dominated by extraneous noise sources such as wind and fauna. A strap used to secure a solar panel in audible in some recordings, this has since been secured. Mining related noise was audible on five of the occasions. On these five occasions, extraneous noise sources were observed to dominate noise levels at RSR, with frequency filtered noise levels being consistently 10 dB below the 70 dB(Z) limit. The resulting analysis indicated that dominant noise sources causing the LZ10,1hr noise levels to exceed the 70 dB(Z) limit, were not due to mining activities.

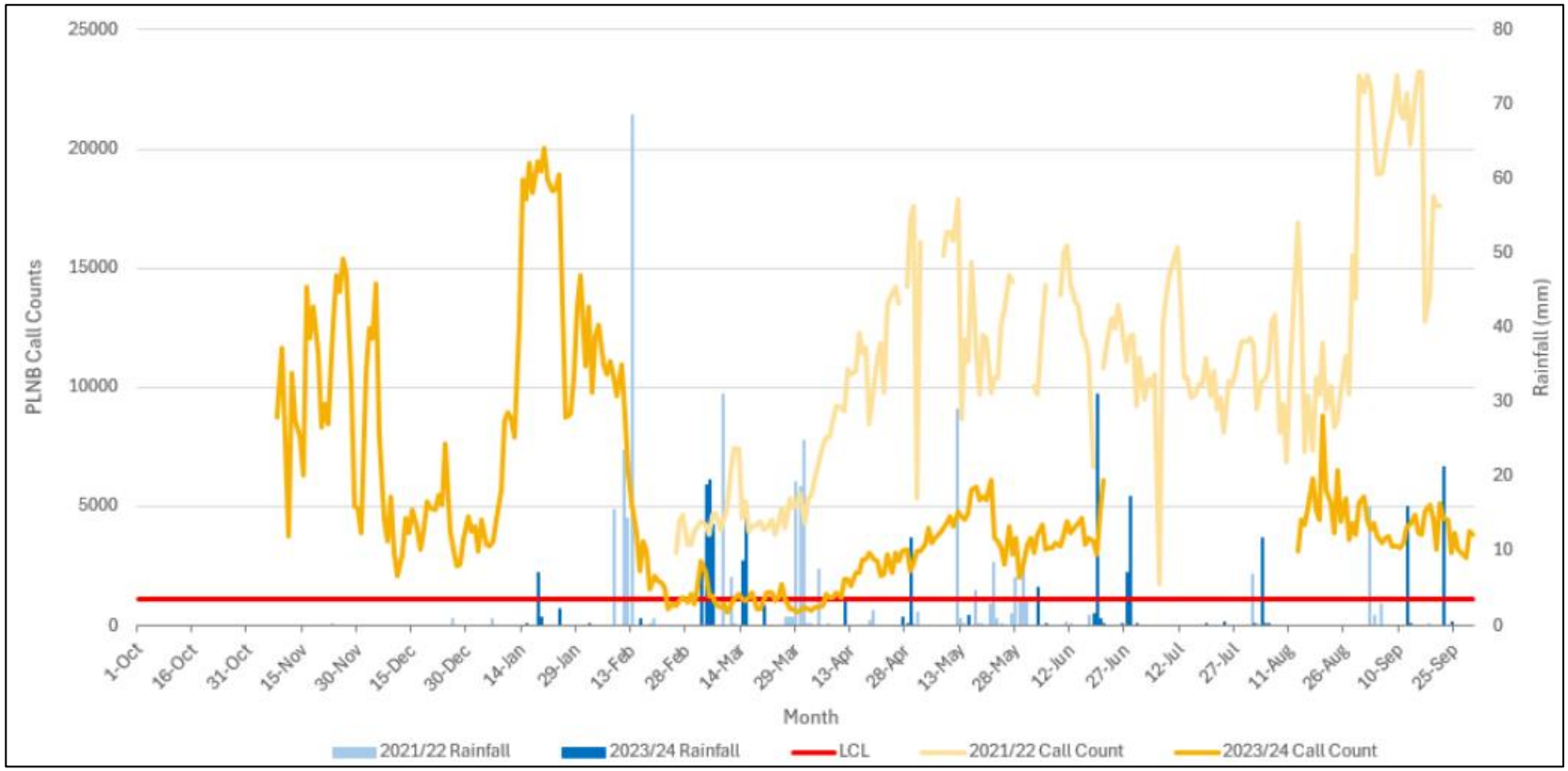

25000
20000
15000
10000
5000
0
PLNB Call Counts
80
70
60
50
40
30
20
10
0
Rainfall (mm)
1-Oct
16-Oct
31-Oct
15-Nov
30-Nov
15-Dec
30-Dec
14-Jan
29-Jan
13-Feb
28-Feb
14-Mar
29-Mar
13-Apr
28-Apr
13-May
28-May
12-Jun
27-Jun
12-Jul
27-Jul
11-Aug
26-Aug
10-Sep
25-Sep
Month
2021/22 Rainfall
2023/24 Rainfall
LCL
2021/22 Call Count
2023/24 Call Count

Figure 23: Total PLNB call activity at Ratty Springs maternity roost and daily rainfall (mm) at Paraburdoo between November 2023 and September 2024

Table 6: Gardagarli (Ratty Springs) maternity roost - Trigger / Threshold Criteria Exceedance and Assessment Table

Noise		**Call Count**			**Trigger / Threshold Criteria Exceeded?**
LZ10>70 dB(Z) over a one (1) hour period, at the Pilbara Leaf-nosed Bat maternity roost	**Attributable to proposal**	**Trigger criterion: Reducing call counts at, or below Lower Call Limit for five (5) or more consecutive nights at the Pilbara Leaf-nosed Bat maternity roost**	**Threshold Criterion: Reducing call count trend identified by the initial trigger criteria 2 remains below Lower Call Limit for 15 consecutive nights at the Pilbara Leaf-nosed Bat maternity roost**	**Exceedance cause (project attributable or not)**	
No – highest hourly during period 59.6dB(Z)	NA	Yes - 7 – 11 March 2024 (5 days)	No (5 days)	No – corresponds to period of unsettled weather	**No trigger or threshold exceeded**
No – highest hourly during period 58.6dB(Z)	NA	Yes - 27 March – 5 April (10 days)	No (10 days)	No – corresponds to full moon	**No trigger or threshold exceeded**
Yes - 2/3/24 x2 (75.6dB(Z)) 14:00 – 16:00	No – no mining activity within 1km of roost, average wind speeds consistently above 3 m/s	No - above LCL (1654 on 2/3/24 – LCL is 1105)	No - above LCL (1654 on 2/3/24 – LCL is 1105)	NA	**No trigger or threshold exceeded**
Period of no data 1/10/23 (start of period) – 7/11/23	Unable to be assessed	Period of no data 1/10/23 (start of period) – 7/11/23	Unable to be assessed	Unable to be assessed	Criteria unable to be assessed 1/10/23 – 7/11/23 (Refer section 3.1)
Period of no data 22/06/24 – 13/07/24	Unable to be assessed	Period of no data 22/06/24 – 13/07/24	Unable to be assessed	Unable to be assessed	Criteria unable to be assessed 22/06/24 – 13/07/24 (Refer section 3.1)

Although gaps in monitoring data resulted in inability to assess criteria during the abovementioned periods, data collected after 18 August 2024 verifies that the key impact and risk (as identified by the EMP) of potential abandonment of RSR as a result of the proposal has not occurred and therefore environmental criteria has been achieved.

Table 7: Gardagarli (Ratty Springs) maternity roost - Monitoring Compliance Table

			Cave Structure Assessment		Acoustic Monitoring				Noise Monitoring
Cave	**Type**	***Required Monitoring Frequency***	**H1**	**H2**	**Q4 2023**	**Q1 2024**	**Q2 2024**	**Q3 2024**	**Continuous**
RSR	Reference	*Cave structure biannual, acoustic quarterly, Noise monitoring post blast or as triggered*	✓	✓	✓#	✓	✓#	✓#	✓#

✓ - Data record complete
✓# - Monitoring undertaken however periods of data unable to be used to assess environmental criteria due to device failure.
X – Data not recorded for period

4.2 Inland waters, Riparian vegetation and Subterranean fauna

4.2.1 Environmental criteria

The below table summarises the environmental criteria associated with inland waters and terrestrial fauna required by Ministerial Statement 1195.

Table 8: Environmental criteria associated with inland waters and terrestrial fauna

Key environmental factor: Inland waters and terrestrial fauna	
Environmental outcomes, trigger and threshold criteria and management targets as per MS1195	**Reporting period 1 January – 31 December 2024**
Trigger criterion:	**Status report:**
1. Persistent groundwater fed pool surface water level fall below historically recorded natural range during wet-season or dry-season monitoring at (Gardagarli [Ratty Springs]), attributable to the Proposal	Criteria not exceeded
2. Greater proportion of overstorey indicator stands within the Gardagarli (Ratty Springs) capture zone of Pirraburdu Creek show a significant declining trend in MSAVI since baseline, and/or greater average rate of decline, in comparison to reference areas, attributable to the Proposal.	Criteria not exceeded
3. Significant decline in number and/ or change in composition of native perennial species within Gardagarli (Ratty Springs) monitoring areas since baseline, in comparison to reference areas, attributable to the Proposal.	Criteria not exceeded
4. Groundwater level changes in the riparian zone of Seven Mile Creek are greater than predicted during wet-season or dry-season monitoring, attributable to the Proposal. Specifically, water levels in any of the bores fall below respective trigger criteria water levels, attributable to the Proposal	Criteria exceeded
5. Greater proportion of overstorey indicator stands[6] within zone 1 of Seven Mile Creek shows a significant declining trend in MSAVI since baseline, and/or greater average decline, in comparison to reference areas	Criteria not exceeded
6. Persistent groundwater fed pools (Gardagarli (Ratty Springs) and Gurungu (Doggers Gorge)) surface water levels fall below historically recorded natural range during wet or dry season monitoring, attributable to the Proposal.	Criteria not exceeded
7. Persistent surface water fed gorge pools (WR01-W01, WR01-W03, WR01-W06) are dry during a wet season or dry season monitoring event, attributable to the Proposal	Criteria not exceeded
8. Non-persistent surface water fed gorge pools (ERP3 and ERP 4) are dry during a wet season monitoring event, attributable to the Proposal.	Criteria not exceeded

[5.] Lower Call Limit to be set, after collection of data over baseline phase, at 1.5 standard deviations below long-term baseline nightly call count average

[6] The proportion of stands (e.g., group of at least 20 trees) that show a negative slope in trend of MSAVI with time that is significantly (α=0.05) from the baseline trend, compared to reference areas. The criterion will be updated as knowledge develops based on empirical observations of tree health and/or improvements in methodology. MSAVI is the current proposed index, however subject to alternative index to align with advances in remote sensing.

Key environmental factor: Inland waters and terrestrial fauna	
9. Pool water quality change is greater than predicted[7] at WR01-W01, WR01-W03, WR01-W06, ERP3, ERP 4, Gardagarli (Ratty Springs) and Gurungu (Doggers Gorge) during wet-season or dry-season monitoring, attributable to the Proposal	Criteria not exceeded
Threshold criterion:	**Status report:**
1. Persistent groundwater fed pool surface water levels fall below historically recorded natural range during wet or dry season monitoring at Gardagarli (Ratty Springs), during two (2) consecutive wet season or dry season monitoring events, attributable to the Proposal	Criteria not exceeded
2. More than one monitoring site within Gardagarli (Ratty Springs) monitoring areas displays significant structural or compositional change to key species since baseline, attributable to the Proposal.	Criteria not exceeded
3. The area of decline below the MSAVI baseline 5th percentile for overstorey canopy area within zone 1 of Seven Mile creek is 10%[8] greater than reference areas, trend continues over two or more consecutive dry season monitoring events with no evidence of seasonal recovery, is outside of historical baseline variation, and attributable to the Proposal	Criteria not exceeded
4. Vegetation community within zone 1 of Seven Mile Creek displays structural or compositional change since baseline and trends attributable to the Proposal and different to reference areas.	Criteria not exceeded
5. Persistent groundwater fed pools (Gardagarli (Ratty Springs) and Gurungu (Doggers Gorge)) surface water levels fall below historically recorded natural range during wet or dry season monitoring, during two (2) consecutive wet season or dry-season monitoring events[9] attributable to the Proposal	Criteria not exceeded
6. Persistent surface water fed gorge pools (WR01-W01, WR01-W03, WR01-W06) are dry during two (2) consecutive wet season monitoring events attributable to the Proposal.	Criteria not exceeded
7. Non-persistent surface water fed gorge pools (ERP3 and ERP 4) are dry during two (2) consecutive wet season monitoring events, attributable to the Proposal.	Criteria not exceeded

[7] Baseline surface water quality data from Western Range gorges (WR01-W01, WR01-W03, WR01-W06), Eastern Range Pools (ERP3 and ERP4), Gardagarli (Ratty Springs) and Gurungu (Doggers Gorge) will continue to be collected during the baseline phase prior to commencement of substantial ground disturbing activities within the upstream catchment at each of the respective surface water fed pools. The Proponent will update the predicted pool water quality data for each relevant pool after the relevant baseline phase monitoring is complete. The predicted pool water quality data will be submitted as an attachment to the Annual Compliance Assessment Report (ACAR) in the subsequent reporting year and become an addendum to this EMP.

[8] A 10% margin above reference is considered reasonable in order to detect a decline in canopy condition that may be beyond natural variation and reflect a potential impact from dewatering. Refer to Appendix 3 for baseline values. The Proponent will update the criteria after baseline monitoring is complete, and as knowledge develops based on observations of tree health and/or improvements in monitoring methodology. Improvements to calibrations and methodology may be applied to historical data where appropriate. MSAVI is the current index used, an alternative index may be used in the future subject to advances in remote sensing. Canopy decline evident from satellite imagery will be confirmed and further investigated with ground-truthing 12 Change from baseline of i) one or more structural formation classes applied to National Vegetation Information System (NVIS) Level IV sub-formation, classes (ESCAVI 2003 and see Appendix 3), due to decreased or increased cover of native or weed species or ii) loss of species listed as dominant at baseline within any of the ground, mid or upper vegetation strata (dominant species listed in Appendix 3) across greater than 20% of quadrats representing groundwater dependent vegetation within riparian transects

[9] A period of two consecutive monitoring events (dry or wet) has been selected as suitable timeframe to assess whether condition is under threat of long-term impacts due to Proposal and to differentiate natural variation from Potential impacts from groundwater abstraction.

Key environmental factor: Inland waters and terrestrial fauna	
8. Pool water quality change is greater than predicted at WR01-W01, WR01-W03, WR01-W06, ERP3, ERP 4, Gardagarli (Ratty Springs) and Gurungu (Doggers Gorge) during two (2) consecutive wet season and dry season monitoring events attributable to the Proposal	Criteria not exceeded

4.2.2 Results, analysis and interpretation

4.2.2.1 Monitoring Methodology

4.2.2.1.1 Remote Sensing

High resolution satellite imagery (WorldView (WV)) is captured at the end of the dry season, with freely available medium (Sentinel-2) and coarse (Landsat) resolution imagery captured throughout the year. Spectral indexes are applied to the imagery to extract vegetation condition trends and generate a likelihood layer of overstorey phreatophyte vegetation. Vegetation indexes such as the Modified Soil Adjusted Index (MSAVI) is positively related to vegetation presence due to the absorption and reflectance characteristics from the red and near-infrared (NIR) bands. Vegetation that is healthy has high photosynthetic activity, absorbing energy in the red band and strongly reflecting in the NIR band, while in vegetation that is unhealthy the contrast between absorption and reflectance between bands is minimal. Further information can be found in Astron 2024.

Long-term Landsat (1986 to 2023) MSAVI values are assessed at a stand level across each monitoring zone for Seven Mile Creek and Ratty Springs trigger criterion. A stand is a 150m x 150m cell, in which each cell overlays at least 20 phreatophyte overstorey canopies. The analysis is designed to detect localised trends in MSAVI since baseline and compare the proportion of stands showing a significant declining trend to baseline and reference values.

Threshold are informed by MSAVI baseline statistics (5th percentile) within the canopy union layer, derived from WV imagery. The canopy union layer represents the baseline canopy extent of likely phreatophyte overstorey vegetation. The layer is derived from machine learning techniques, utilising training data of phreatophytes and numerous spectral indices to separate understorey and overstorey vegetation. A decrease below the MSAVI baseline 5th percentile represents a change below the lower end (one-tailed) of a normally distributed data set and may indicate that canopy health has decreased beyond patterns of natural variation. Long-term seasonal and regional trends derived from Landsat and Sentinel imagery are used to validate and distinguish project related impacts from natural seasonal variation. In addition, fire scars and rainfall data are qualitatively compared to remote sensing results.

Rainfall analysis is also completed in conjunction with remote sensing. In 2024, the total rainfall (estimated 238 mm at Paraburdoo) was below the long-term average (1890 to 2023) of 253 mm but was higher than the rainfall total in 2023 of 211 mm. Monthly rainfall was above the long-term monthly average rainfall during March 2024 (84 mm), June 2024 (63 mm) and September 2024 (39 mm). Other months also close to the long-term average included April 2024 (17 mm), August 2024 (15 mm) and October (9 mm). All remaining months received well below their long-term monthly average.

Remote sensing for Paraburdoo is captured for Gardagarli (Ratty Springs) and Seven Mile Creek and the results are presented in the following Sections 4.2.2.2 and 4.2.2.3.

4.2.2.1.2 On-ground vegetation monitoring

Monitoring of riparian vegetation was carried out across 20 established sites within six priority areas (PAs): Gardagarli (Ratty Springs) (PA1), Seven Mile Creek (PA2 and PA4), Dalarn (Howie's Hole) and Gurungu (Dogger's Gorge) (PA3), Bellary Creek (PA5), and Pirraburdu Creek (PA6). These sites include 14 potential impact sites within PA1, PA2 (Zone 1 of Seven Mile Creek in the EMP), PA3 (Gurungu), PA4, and PA6, along with six reference sites located in PA3 (Dalarn), PA4, and PA5. Data on floristic composition and vegetation condition were collected from three to five quadrats at each site, with tree health assessments conducted on 10 to 15 permanently marked Eucalyptus camaldulensis and Eucalyptus victrix trees per site.

4.2.2.2 Riparian vegetation of Gardagarli (Ratty) Springs

4.2.2.2.1 Remote sensing of riparian vegetation

Remote sensing of riparian vegetation within Gardagarli (Ratty Springs) is analysed to identify broad scale trends in riparian condition and cover by evaluating an index of vegetation health and likelihood layer of overstorey phreatophyte canopy extent. The results are used to assess the Trigger and Threshold criterion. Riparian monitoring zones, categorised as either potential impact or reference, are listed in Table 9. Baseline

monitoring in 2023 with the commencement of dewatering. Background on the data captured for remote sensing analysis is provided in Section 4.2.2.1.1.

Table 9: Environmental Management Plan riparian management zone Gardagarli (Ratty Springs), comparative reference zone and high-resolution image availability

Riparian Management Zone	Environmental Value	Comparative Reference Zone	Imagery Availability
Gardagarli (Ratty Spring)	Pirraburdu Creek/Ratty Spring	• Bellary Creek Reference • Tabletop North Reference • Tabletop South Reference • Howie's Hole	2018-2024 (WV) 1986-2024 (Landsat)

WV indicates high-resolution WorldView imagery.

MSAVI data for Gardagarli (Ratty Springs) displayed that MSAVI values across all three sensors (Landsat, Sentinel-2 and Worldview) varied depending on the period for data capture. For Landsat data (1986 to 2024) notable positive trends were evident for the potential impact zone, Ratty Springs. However, the median MSAVI for Sentinel-2 (2015 to 2024) displayed a negative trend for all potential impact zones including Ratty Springs. Worldview data (2018 to 2024) displayed an increase in the median MSAVI at the end of the dry season for Ratty Springs, indicating Ratty Springs has not experienced substantial decline since baseline compared to the reference zones. In 2024, Ratty Springs also showed a median WorldView MSAVI value that exceeded the 75th percentile of combined reference zones, with similarly high values extending back to 2018. This indicates that Ratty Springs may have higher MSAVI values higher than comparable reference zones which could be attributed to differences in hydrogeology among the impact to reference zones, such as a shallower and/or less variable groundwater level.

The EMP trigger for Ratty Springs as listed in Table 8 was not exceeded in 2024. The trigger is assessed as exceeded if by either the percentage of stands with a negative slope in MSAVI since baseline within Ratty Springs is more than the mean of the corresponding reference zones or; Ratty Springs has a greater average decline than the mean of the corresponding reference zones. Over the potential impact period (the potential impact zone) Ratty Springs had a lower percentage of stands with a negative slope (29.4%) compared with the respective reference zone averages (88.2%). Ratty Springs also had positive MSAVI changes over the baseline period (0.00132), compared with a negative MSAVI change among the comparative reference zone average (-0.00123). Thus, the proportion of overstorey indicator stands within Ratty Springs did not show a significant declining trend in MSAVI since baseline or greater average rate of decline in comparison to reference areas and was not exceeded in 2024.

4.2.2.2.2 On ground vegetation monitoring

In the 2024 reporting period, no trigger or threshold criteria were exceeded. While two sites (RSM1 and RSM2) significantly decreased in native perennial richness since baseline (2023), the extent of decline was not significantly different to the change at associated reference areas (Figure 24). There was also no significant change in species assemblage of native perennial species since baseline, compared to associated reference areas. Significant structural change since baseline occurred in only one site at Ratty Springs, and there were no losses of species that were dominant at baseline.

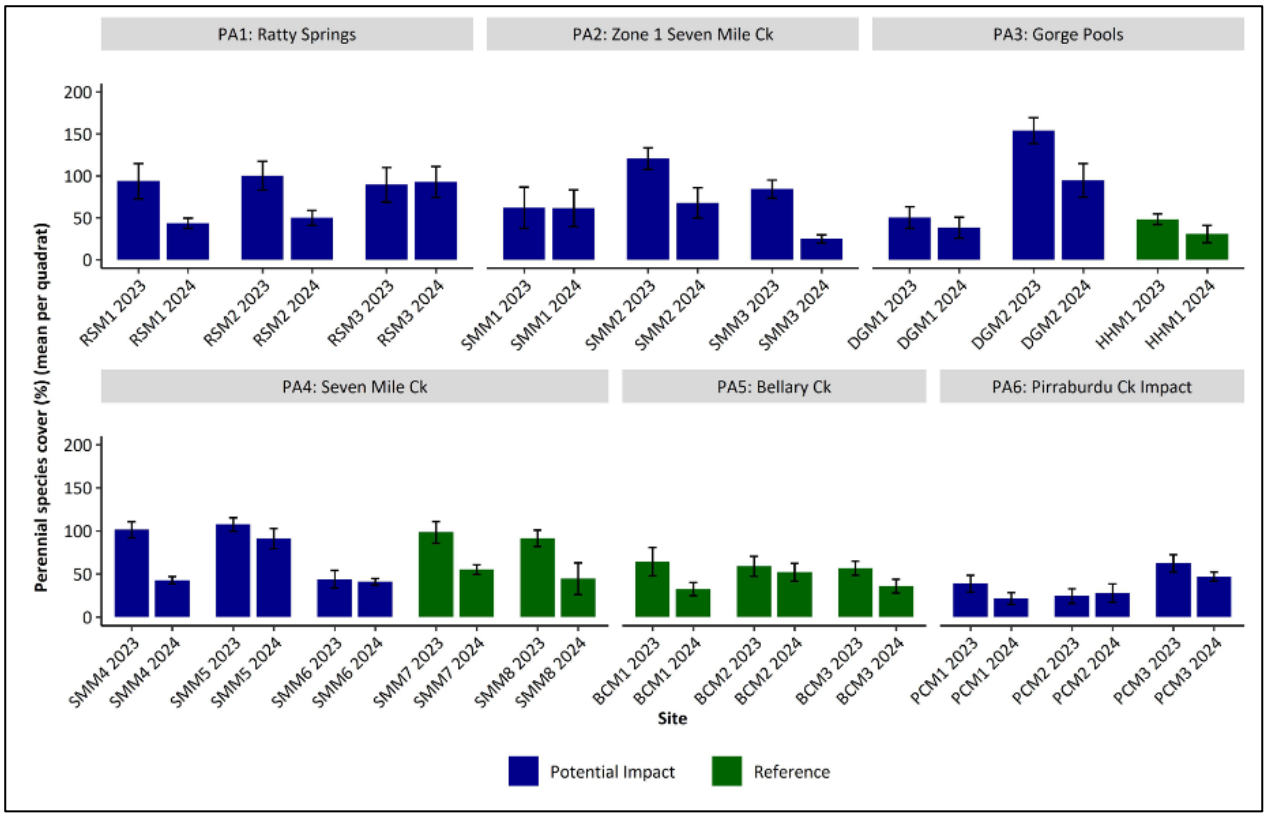


Figure 24: Cover (%) of native perennial species at each site in the reporting period (2024) and baseline (2023)

4.2.2.3 Riparian vegetation of Seven Mile Creek

4.2.2.3.1 Remote Sensing of Riparian Vegetation

Remote sensing of riparian vegetation within Seven Mile Creek is analysed to identify broad scale trends in riparian condition and cover by evaluating an index of vegetation health and likelihood layer of overstorey phreatophyte canopy extent. The results are used to assess the Trigger and Threshold. Riparian monitoring zones, categorised as either potential impact or reference, are listed in Table 8. Baseline monitoring in 2023 with the commencement of dewatering. Background on the data captured for remote sensing analysis is provided in Section 4.2.2.1.1.

Table 10: Environmental Management Plan riparian management zone for Seven Mile Creek, comparative reference zone and high-resolution image availability

Riparian Management Zone	Environmental Value	Comparative Reference Zone	Imagery Availability
Zone 1 Low Management	Seven Mile Creek	• Paraburdoo Upstream Reference North • Paraburdoo Upstream Reference South • Paraburdoo Downstream Reference • Pirraburdu Downstream Reference • Pirraburdu Upstream Reference • Bellary Creek Reference • Seven Mile Reference • Tabletop North Reference • Tabletop South Reference	2018-2024 (WV) 1986-2024 (Landsat)

WV indicates high-resolution WorldView imagery.

MSAVI data for Zone 1 Low Management displayed that MSAVI values across all three sensors (Landsat, Sentinel-2 and Worldview) varied depending on the period for data capture. For Landsat data (1986 to 2024) the potential impact area, Zone 1 Low Management had a slightly positive long-term trend. However, the median MSAVI for Sentinel-2 (2015 to 2024), Zone 1 Low Management displayed MSAVI values as negative and below the long-term median MSAVI value. There was reduced seasonality throughout all impact zones in Paraburdoo however, Zone 1 Low Managed showed a typical MSAVI seasonal oscillation similar to previous years. Worldview data (2018 to 2024) displayed the median MSAVI at the end of the dry season in 2024 to be similar or lower than 2023 values showing no significant decline since baseline.

The EMP trigger was not exceeded in 2024 for Zone 1 Low Management. The trigger for Zone 1 Low Management is assessed as exceeded if either the percentage of stands with a negative slope in MSAVI since baseline within Zone 1 Low Management is more than the mean of the corresponding reference site or; the Zone 1 Low Management has a greater average decline than the mean of the corresponding reference zones (Table 8). The remote sensing data in 2024 displayed that over the potential impact period, Zone 1 Low management had a lower percentage of stands with a negative slope (2.6%) compared with the respective reference zone averages (56.7%). Zone 1 Low Management also had positive average MSAVI changes over the baseline period (0.00163), compared with a negative change among comparative reference zone average (-0.00022). Thus, the trigger for Zone 1 Low Management was not exceeded in 2024 as the reference zone had a greater percentage of stands with negative MSAVI since baseline. Additionally, Zone 1 Low Management did not show a greater average decline corresponding to the negative change from the comparative reference sites.

The threshold criteria was not exceeded in 2024 for Zone 1 Low Management. The threshold criteria for Seven Mile Creek is assessed through two criteria that must both be met to be classified as exceeded. These include that the proportion of pixels below the 5th percentile with Zone 1 Low Management is at least 10 percentage points above the mean of the corresponding reference zones and; the trigger criteria for Zone 1 Low Management is also met for at least two consecutive annual dry season monitoring events. The remote sensing analysis from 2024 displayed that the percentage area of potential GDV canopy with a MSAVI value below the 5th percentile was 24.7% for Zone 1 Low Management. Compared to the reference zone, Zone 1 Low Management was less than 10 percentage points greater than the comparative reference zone average (28.4%). Thus, the proportion of pixels below the 5th percentile for Zone 1 Low Management was 4 percentage points below the mean of the corresponding reference zones and the trigger criteria as discussed above was not exceeded. Therefore, the threshold criteria for Zone 1 Low Management were not exceeded in 2024 as neither assessment criteria was met.

4.2.2.3.2 On ground vegetation monitoring

In the 2024 reporting period, no trigger or threshold criteria were exceeded. Structural changes were noted in 89% of quadrats since the baseline (2023), but these changes were consistent with the reference areas, and no loss of dominant species occurred. A decrease in cover of native perennial species was observed, however this was in line with reference sites (Figure 24). Total native species richness increased across a majority of sample sites at Seven Mile Creek during the reporting period (Figure 25).

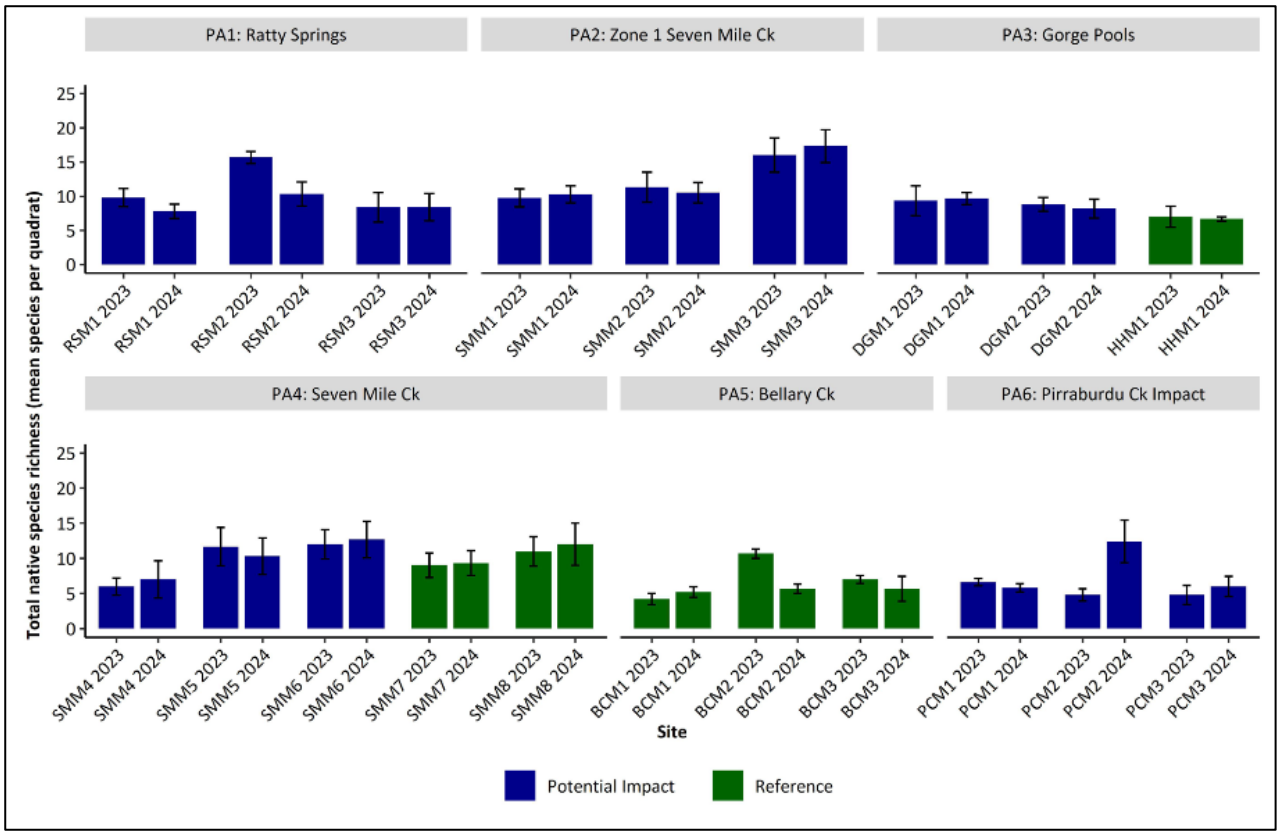


Figure 25: Species richness of all natives at each site in the reporting period (2024) and baseline (2023)

4.2.2.4 Groundwater levels in the riparian zone of Seven Mile Creek

Environment criteria for inland waters requires the monitoring of three compliance bores in Seven Mile Creek to ensure impacts to groundwater levels in the riparian zone are not greater than predicted. The three bores are MB17NLC005, MB19SMC0004, and MB19SMC0001.

MB17NLC0005

Groundwater levels remained above early response criteria throughout the reporting period, however measurements in Q4 were lower than previous years. This is likely due to a combination of climactic factors (two consecutive years of below average rainfall) and dewatering by the proposal. Progressive drawdown at this monitoring location is predicted by environmental impact modelling conducted for the EMP, as displayed in Figures 26 and 27. Observed groundwater monitoring levels are within the higher end of the modelled range forecast in the EMP, with observed figures being close to the 95th percentile forecast. Investigations into the criteria exceedance at MB19SMC0004 (described below) found that MB17NLC0005 is also screened in the deep aquifer, rather than the target shallow aquifer supporting the riparian community. A future EMP amendment may require a change to the compliance bores to align groundwater monitoring to the alluvial aquifer.

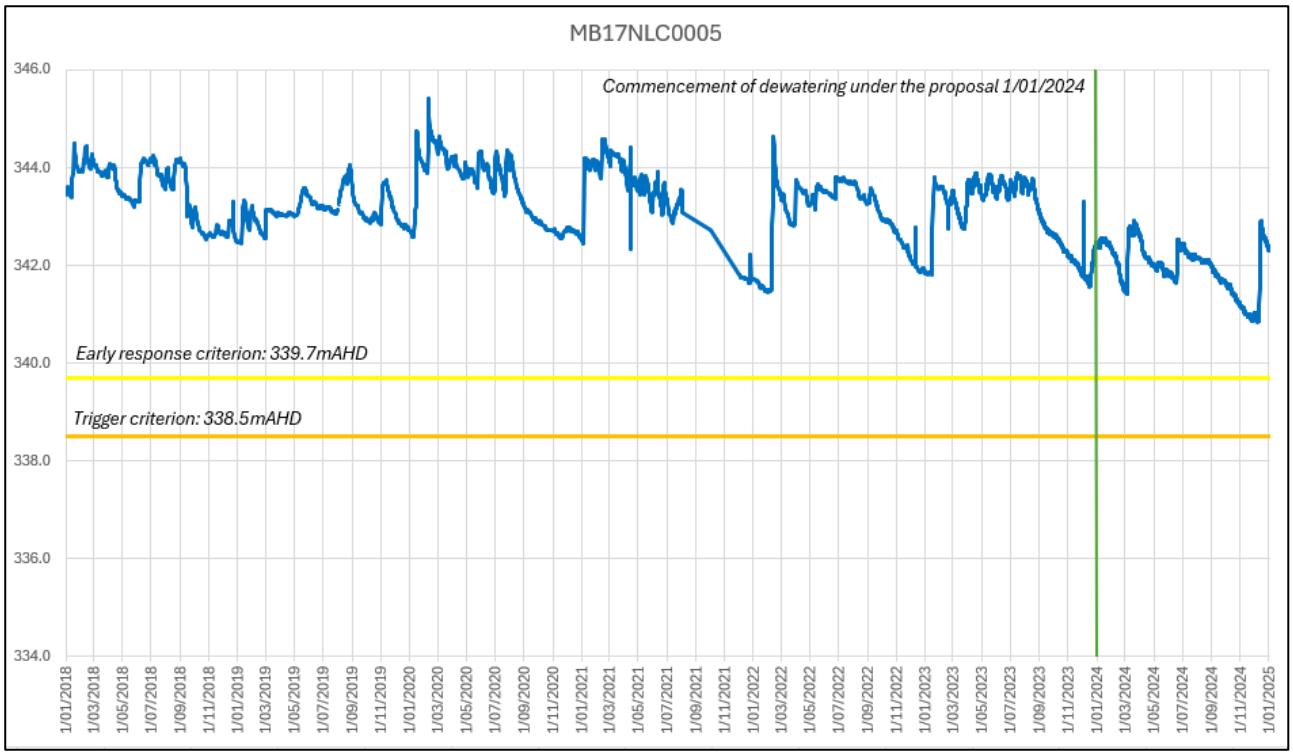


Figure 26: Groundwater level at MB17NLC0005 – 2018 to 2024

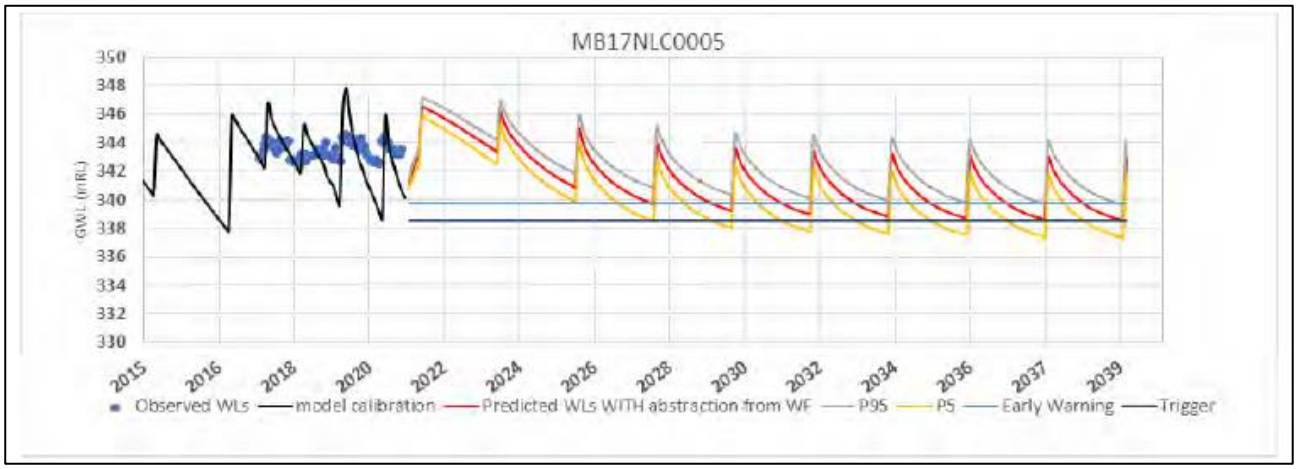


Figure 27: Predicted groundwater levels for MB17NLC0005 from EMP

MB19SMC0004

On 6 October 2024, MB19SMC0004 groundwater levels dropped to 338.52mRL exceeding the EMP early warning criteria of 339.6mRL and the trigger of 338.6mRL. An incident was lodged and investigation commenced. The investigation found that the compliance bore is monitoring the deep aquifer rather than the shallow alluvial aquifer that supports the riparian vegetation. As the compliance bore is a set of two nested bores, one screened in the shallow aquifer and another screened in the deep aquifer at the same master well (Figure 28). The incorrect bore has been embedded in the EMP by error. This error in the EMP will be rectified in a future amendment of the Environmental Management Plan. In the interim, both the shallow and deep bores at the location of MB19SMC0004 will be monitored and reported.

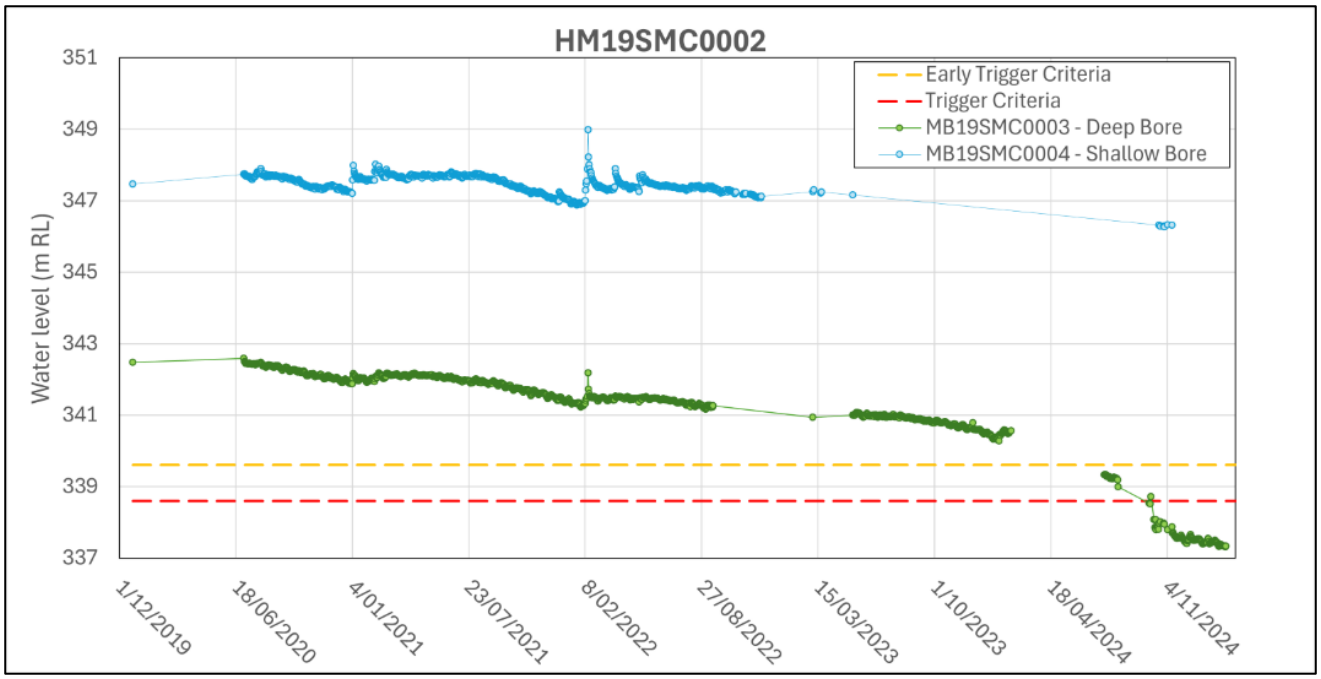


Figure 28: Deep and shallow bores at location of MB19SMC0004 & MB19SMC0003 (master well HM19SMC0002)

MB19SMC0001

No early warning criterion was exceeded during the reporting period at MB19SMC0001. Due to blockages in bore, monitoring events in Q1 and Q3 were unsuccessful. Slight drawdown at this monitoring location is predicted by environmental impact modelling conducted for the EMP, as displayed in Figures 29 and 30**.** Observed groundwater monitoring levels are within the higher end of the modelled range forecast in the EMP, with observed figures being close to the 95th percentile forecast.

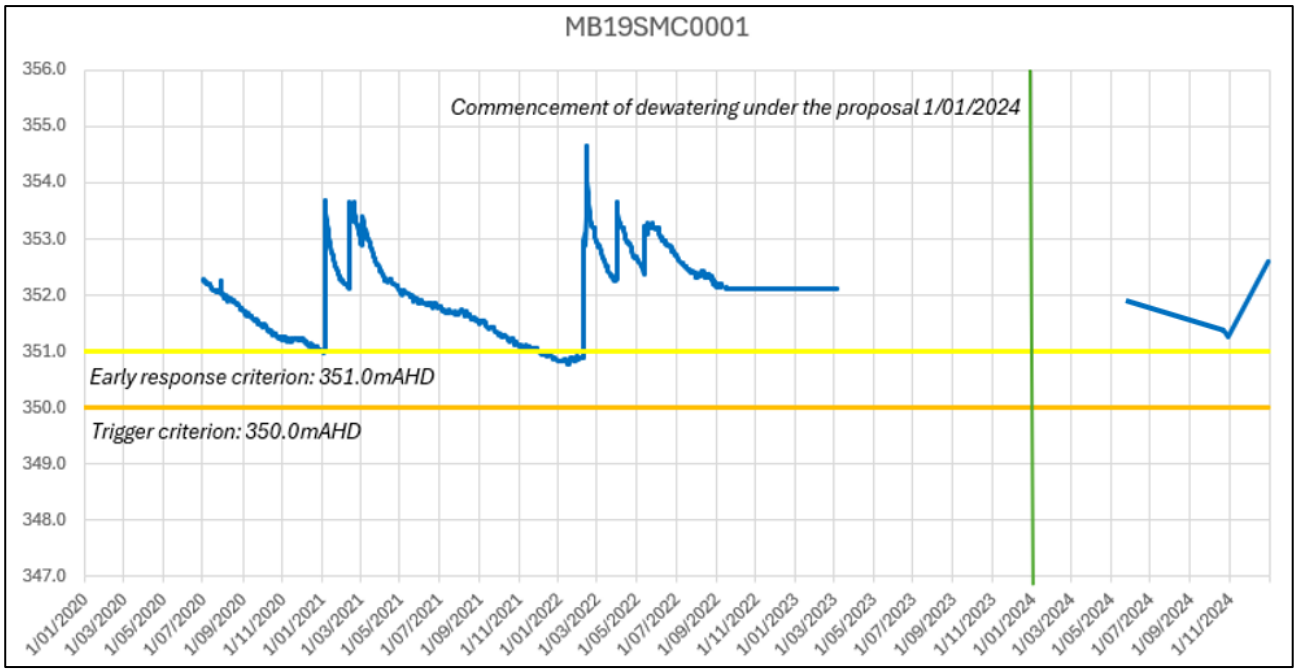


Figure 29: Groundwater level at MB19SMC0001- 2020 to 2024

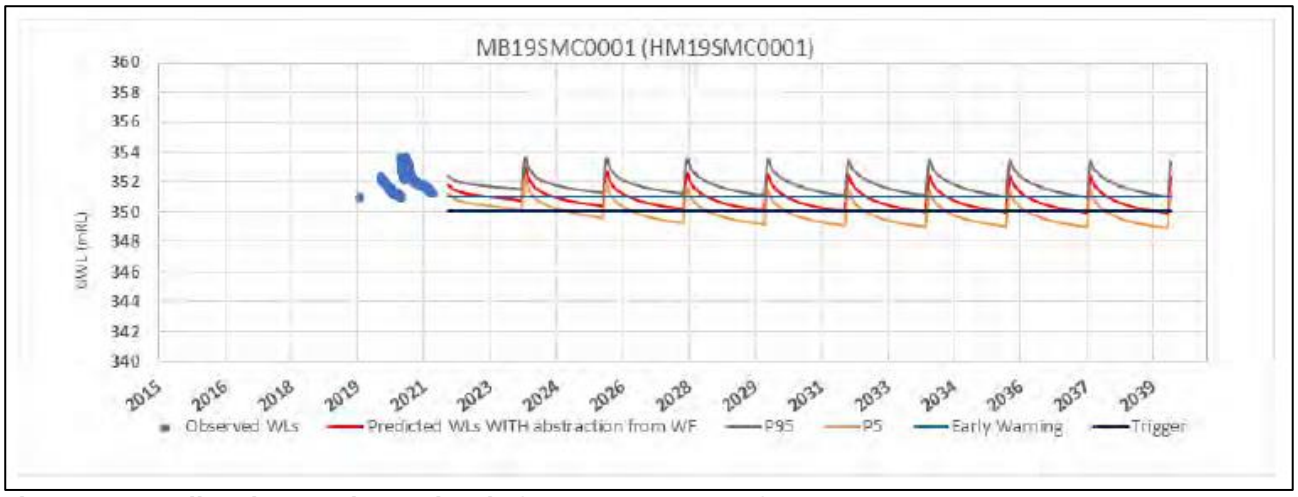


Figure 30: Predicted groundwater levels for MB19SMC0001 from EMP

4.2.2.5 Groundwater at the Seven Mile Creek Riparian Zone, north of the Development Envelope

Monitoring bores tracking groundwater levels in the riparian zone in Seven Mile Creek north of the development envelope did not show a decline in water levels outside that of natural variation (Figures 31 and 32).

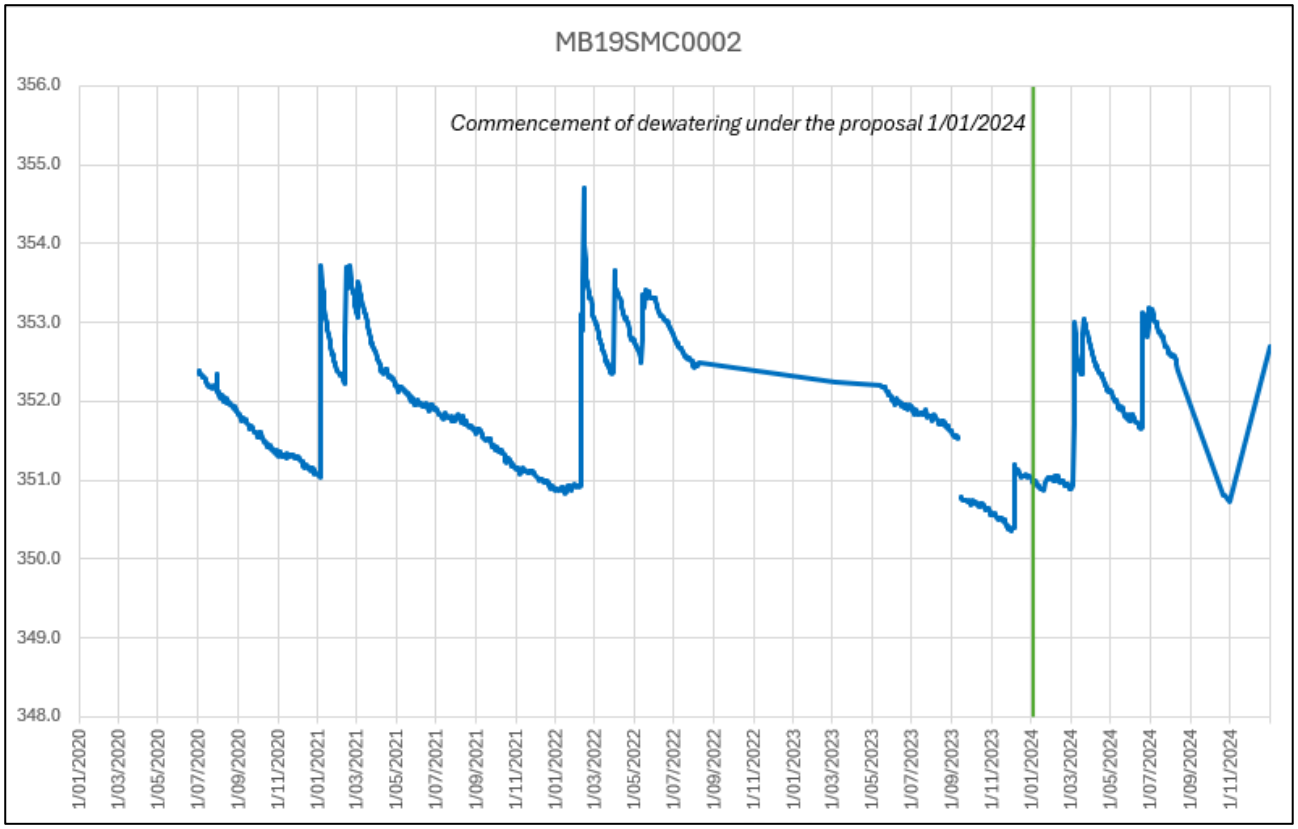


Figure 31: Groundwater levels at MB19SMC0002 – 2020 to 2024

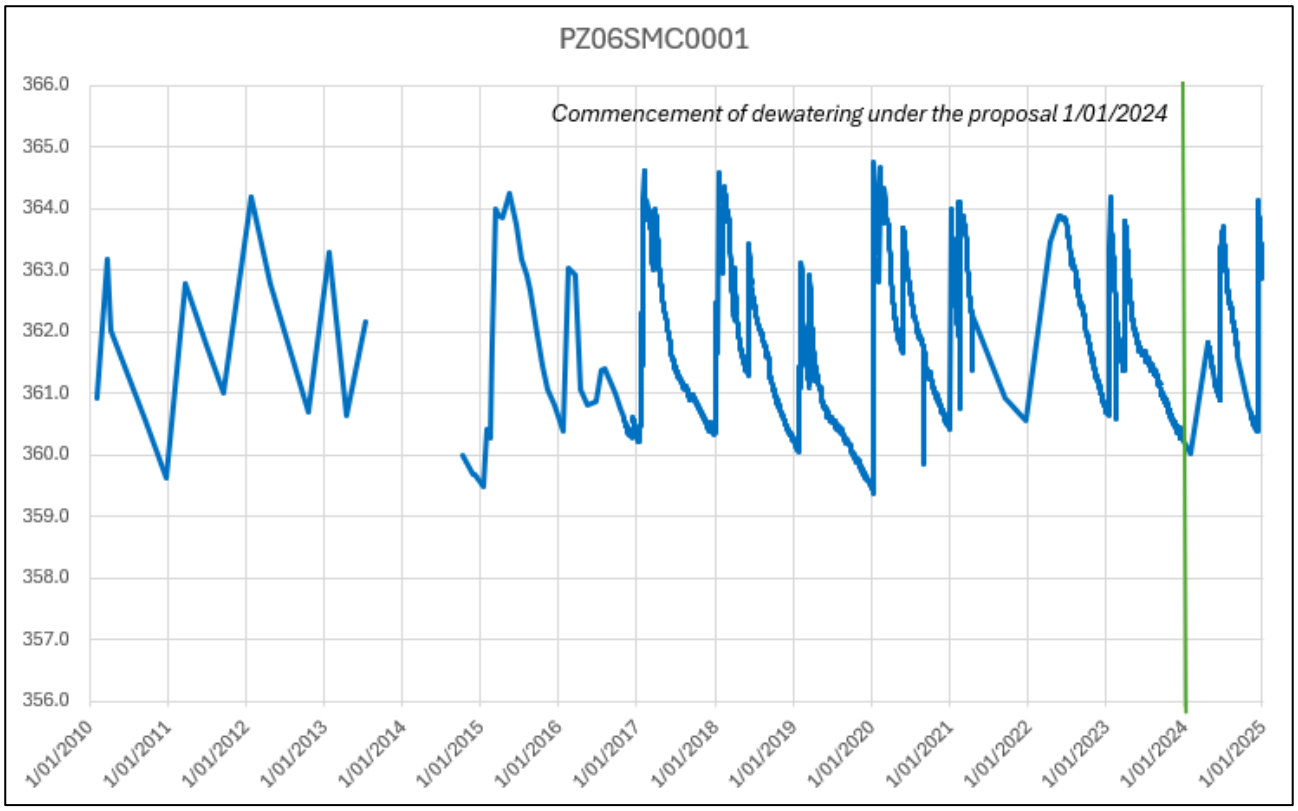


Figure 32: Groundwater levels at PZ06SMC0001 – 2010 to 2024

4.2.2.6 Water level and quality at Western Range Gorges, Eastern Range Pools, Gardagarli (Ratty Springs) & Gurungu (Doggers Gorge)

Western Range Gorges

The Western Range gorges are persistent surface water fed gorge pools. They contained water at all monitoring events during the reporting period.

As stated in the EMP, Rio Tinto will update the predicted pool water quality data for each relevant pool at the conclusion of baseline (after substantial earthworks have occurred in the upstream catchment). Earthworks has occurred upstream of the WR01-W06 catchment, meaning this pool is out of baseline phase. Baseline data is still being collected for pools WR01-W01 and WR01-W03. Water quality is being assessed against ANZECC95 guidelines while site specific trigger values are being developed. There were two exceedances to ANZECC95 guidelines during the reporting period, detailed below.

Table 11: Western Range Gorges water quality exceedances

Pool	Date	Analyte	Measured	ANZECC95
WR01-W06	8/10/2024	pH	8.12	< 6 or > 8
WR01-W06	8/10/2024	pH	8.19	< 6 or > 8

The historic maximum pH range recorded at WR01-W06 is 8.83 in February 2023 when the pool was still in baseline, meaning these measurements are not unusual for the site. pH will continue to be monitored and any exceedances to future site-specific trigger values will be reported. All water quality data for the Western Range Pools can be found in Appendix 1.

Eastern Range Pools

The Eastern Range pools are non-persistent surface water fed gorge pools. They contained water at all monitoring events during the reporting period.

As per the EMP, Rio Tinto will update the predicted pool water quality data for each relevant pool at the conclusion of baseline (after substantial earthworks have occurred in the upstream catchment of 42 East Extension (42EE) and 47 East (47E)). As earthworks upstream of the catchment are a result of previous mining approvals, the pools are considered to be in baseline period.

Gardagarli (Ratty Springs)

Gardagarli (Ratty Springs) is a persistent groundwater fed pool. Groundwater levels remained within historically recorded ranges during the reporting period. Consecutive years of below average rainfall likely contributed to lower than average groundwater levels at the end of the 2023 and 2024 dry seasons.

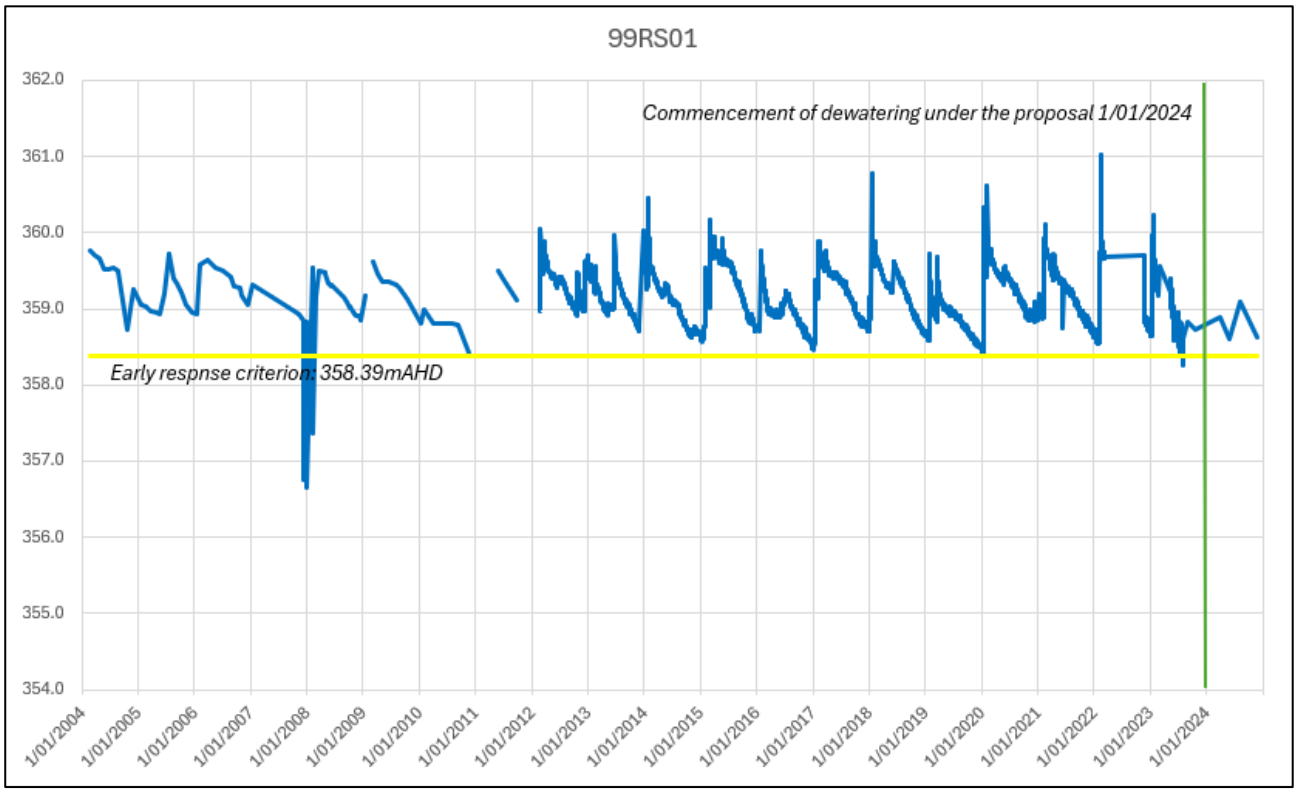


Figure 33: Groundwater levels at 99RS01 – 2004 to 2024

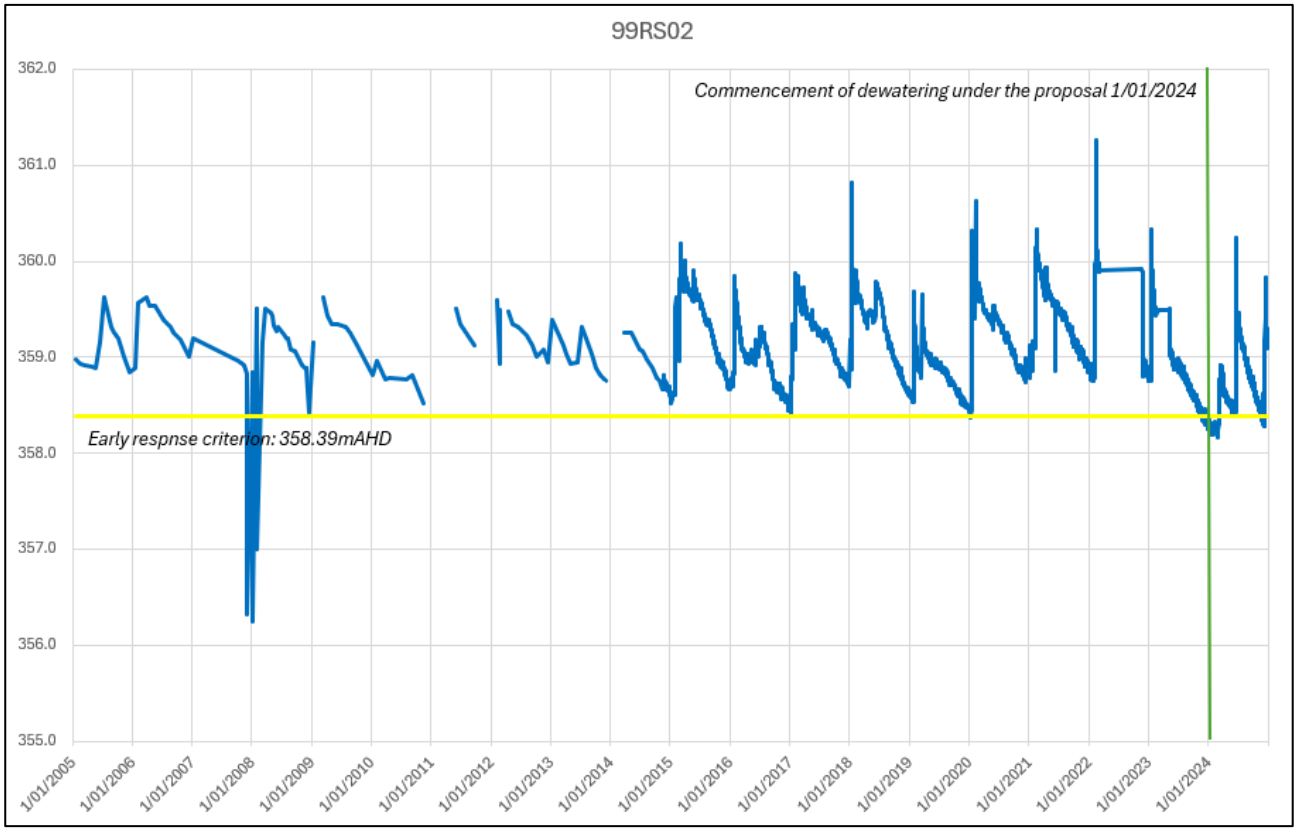


Figure 34: Groundwater levels at 99RS02 – 2005 to 2024

For the purposes of water quality, Gardagarli (Ratty Springs) is still considered to be in baseline. No substantial ground disturbing activities are planned for the vicinity of the spring or the upstream catchment. As per the EMP, RTIO will update the predicted pool water quality data for each relevant pool at the conclusion of baseline (after substantial earthworks have occurred in the upstream catchment). Predicted pool quality will also be updated for Gardagarli (Ratty Spring) at this time.

Gurungu (Doggers Gorge)

Gurungu (Doggers Gorge) is a persistent groundwater fed pool. Groundwater levels remained within historically recorded ranges during the reporting period.

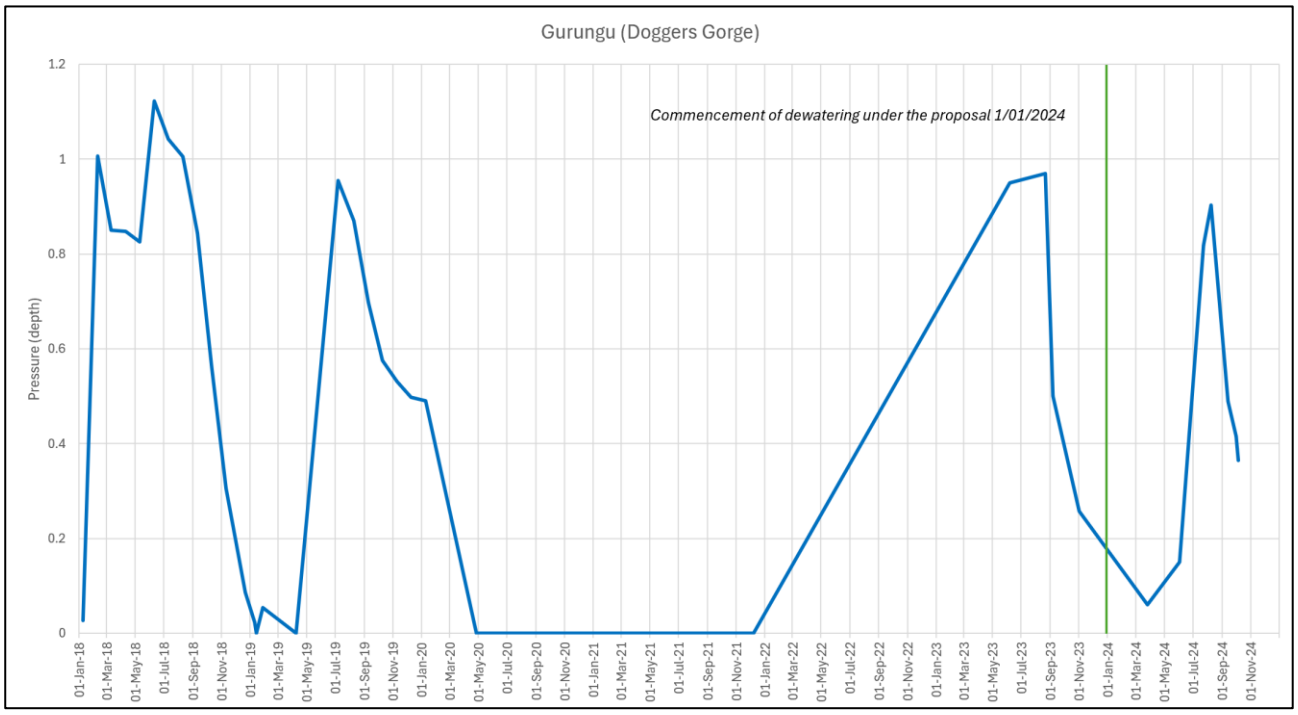


Figure 35: Groundwater levels at Gurungu (Doggers Gorge) – 2018 to 2024

For the purposes of water quality, Gurungu (Doggers Gorge) is still considered to be in baseline. No substantial ground disturbing activities are planned for the vicinity of the spring or the upstream catchment. As per the EMP, Rio Tinto will update the predicted pool water quality data for each relevant pool at the conclusion of baseline (after substantial earthworks have occurred in the upstream catchment). Predicted pool quality also be updated for Gurungu (Doggers Gorge) at this time.

4.3 Management Targets

Table 12: Environmental factors associated with threatened flora, threatened fauna and inland waters

Key environmental factors: Threatened flora, threatened fauna and inland waters	
Environmental outcomes and objectives with associated criteria as per MS1195	**Reporting period 1 January – 31 December 2024**
Management Targets	**Status report:**
1. Maintain long-term habitat connectivity between the Western Range Aluta quadrata sub-populations contained in the Western Range Aluta quadrata Mining Exclusion Zone with a nominal 200 m wide habitat corridor.	Not applicable (Habitat has not yet been disconnected)
2. Provision and maintenance of firefighting equipment in accordance with the relevant fire safety standards	Management target met.
3. Firefighting emergency response procedures are in place	Management target met.
4. No incidents of vehicles being used off designated roads outside operational areas unless in the case of emergency or for necessary activities, that result in significant impacts to high value MNES habitat.	Management target met.
5. Implementation of speed limits in areas identified as having high value for MNES fauna.	Management target met.
6. Induction material contains information relating Ghost Bat, Northern Quoll, Pilbara Leaf-nosed Bat and Pilbara Olive Python	Management target met.
7. Records of all EPBC Act listed threatened species observed are appropriately maintained	Management target met.
8. Fauna handling is undertaken in accordance with Rio Tinto's Wildlife Interaction Guidelines and the requirements of the BC Act.	Management target met.
9. No incidents of native fauna feeding, hunting or keeping of firearms or pets on site.	Management target met.
10. Access to the MEZs/MRZs (which potentially contain significant roosts or caves) is restricted to authorised personnel and there are no incidents of unauthorised access.	Management target met.
11. No use of barbed wire on site, except in the case of statutory requirements	Management target not met. See Section 3
12. Where barbed wire is used in accordance with statutory requirements, reflectors are installed	Management target not met. See Section 3
13. Compliance with equipment hygiene procedures.	Management target met.
14. Weed control is informed and targeted.	Management target met.
15. Induction material contains information relating weed management and control	Management target met.
16. Feral animal control is informed and targeted.	Management target met.
17. Feral animal control actions are implemented.	Management target met.
18. Feral animal presence is discouraged.	Management target met.
19. Induction material contains information relating feral animals.	Management target met.
20. No disturbance, other than existing and authorised clearing, in the MEZ or MRZ.	Management target met.

Key environmental factors: Threatened flora, threatened fauna and inland waters	
Environmental outcomes and objectives with associated criteria as per MS1195	**Reporting period 1 January – 31 December 2024**
Management Targets	**Status report:**
21. Implementation of blast management controls for Ghost Bat caves within 300 m of proposed pits (caves 6, 16, 17 and 18).	Management target met.
22. Implementation of blast management controls for Pilbara Leaf-nosed Bat maternal roost within 300 m of proposed blast.	Not applicable No blasting within 300m of Pilbara Leaf-nosed Bat maternal roost
23. No blasting undertaken outside of daylight hours	Management target met.
24. Lighting and dust management actions are implemented	Management target met.
25. No clearing undertaken outside of daylight hours.	Management target not met. See Section 3

4.3.1 Results, analysis and interpretation

Threatening process: Fire

Appropriate firefighting equipment is available and maintained by the Paraburdoo Emergency Response Team. Emergency Response is available 24/7 as per the Greater Paraburdoo Emergency Response Plan (our ref; RTIO-HSE-0310085). Hot work permit system is in place for any scope which has risk of source of ignition.

Threatening process: Vehicle & Machinery Movements

No incidents of vehicles being used off designated roads outside of operational areas resulting in significant impact to high value MNES habitat were reported during the period. Unsealed roads have a maximum speed limit of 60km/h which is signposted. More conservative speed limits as required by the EPBC approval in implemented in designated habitat zones.

Roads and tracks identified as crossing through high value MNES habitat have fauna warning signage.

As per the Rio Tinto Land Disturbance Work Practice (our ref; RTIO-HSE-0123835) clearing is staged in such a way which encourages fauna to safety leave the vicinity,

Threatening process: Fauna encounters/interactions

The Parabrudoo Site Essentials Induction which is completed by all personnel at commencement of working at Paraburdoo contains information on MNES fauna Northern quoll, Ghost bat, Pilbara leaf-nosed bat and Pilbara Olive python including identifying characteristics and habitat they are likely to frequent.

Threatened species observations are tracked in the site fauna register. No incidents of native fauna feeding or hunting were recorded during the reporting period. A firearm is kept on site for use in pastoral management activities and licenced and authorised personnel only.

Access to MEZ and MRZ is restricted to authorised personnel only. Signage is in place at all track entry points.

Unauthoised legacy barbed wire was identified in the development envelope (none within MEZ or MRZ). Further details on this non-compliance are outlined in Section 3.1.

Threatening process: Weeds

A total of 30 days of weed control were completed within the development envelope during the reporting period.

A weed survey covering the development envelope but targeting areas surrounding *Aluta quadrata* populations is conducted annually by external botanists. Finding from this survey are used to inform target areas for the subsequent years weed control efforts.

The Paraburdoo Site Essentials Induction which is completed by all personnel at commencement of working at Paraburdoo contains information on common weed species found at Paraburdoo, how to report them and the equipment hygiene procedure.

Threatening process: Feral Animals

A total of 8 days of feral animal control was undertaken during the reporting period. Five feral cats were caught and euthanised as a result of this work. Control efforts targets areas of high feral populations like accommodation villages and crib rooms as well as areas of high value MNES habitat. Trapping was undertaken near the Ratty Spring Pilbara leaf nosed bat maternity roost as this has been identified as particularly sensitive to feral cats, however no cats were trapped or scats identified in the area. The Paraburdoo Site Essentials Induction which is completed by all personnel at commencement of working at Paraburdoo contains information on feral pests found at Paraburdoo and which could pose a threat to the area in the future (e.g. Cane toad). Feral animal presence is discouraged on site by:

- Prohibiting feeding animals
- Prohibiting keeping pets
- Appropriate waste disposal for food scraps and other wastes as per the Rio Tinto waste management guidelines.

Threatening process: Noise & Vibration

No unauthorised disturbance took place in MEZ or MRZ during the reporting period. Blast Management controls were implemented for Ghost Bat caves within 300 m of proposed pits (caves 6, 16, 17 and 18). Blast management was not required at the Ratty Springs Pilbara leaf-nosed bat maternity roost as no blasting took place within 300 meters of the associated Mining Exclusion Zones. This is not anticipated to occur for the life of the proposal. No blasting was undertaken outside of daylight hours during the reporting period.

Threatening process: Dust & Light

MEZ and MRZ is delineated in online systems to ensure high value habitat is retained. Permanent lighting is installed only where required and has been designed to minimise light spill in to high value MNES habitat. Application of dust suppression and blast management near dust sensitive receptors were implemented. Clearing occurred outside of daylight hours on two occasions. This is further outlined in Section 3.1.

5 New environmental risks

There are no new environmental risks that have become apparent during the reporting period.

6 Declaration of accuracy

In making this declaration, I am aware that sections 490 and 491 of the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act) 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.

Signed: [redacted]

Full name:

Position

Organisation

Date:

7 Appendices

Appendix 1: Cave Structure Assessment

Cave 2 (Category 3)
Geotechnical Sensitivity: Low

<table>
<tr><td colspan="2">No image – See section 4.1.2.1</td></tr>
<tr><td>H1 (October 2023 – March 2024)</td><td>Image Taken: NA</td></tr>
<tr><td colspan="2">  </td></tr>
<tr><td>H2 (April – September 2024)</td><td>Image Taken: 27 August 2024</td></tr>
</table>

Cave 6 (Category 2)		
Criteria	**Assessment**	**Site Photograph**
Entrance Type	Cavity	
Entrance Shape	Round/oval	
Cave Position	Upper Slope	
Cave Floor Shape	Incline	
Cave Aspect	Southwest	
Cave Exposure	Sheltered	
Cave Overhang Depth	8 m	
Cave Entrance (Width x height)	1.5 x 1.5 m	
Evidence of bats	Yes – scats, observed/heard	
Cave Structure Risk Level	Low risk – no evidence of structural damage	
Notes	Monitoring equipment established	

Cave 7 (Category 3)		
Criteria	**Assessment**	**Site Photograph**
Entrance Type	Crack	
Entrance Shape	Vertical	
Cave Position	Upper Slope	
Cave Floor Shape	Incline	
Cave Aspect	Southeast	
Cave Exposure	Sheltered	
Cave Overhang Depth	1.5 m	
Cave Entrance (Width x height)	0.6 x 2.5 m	
Evidence of bats	Yes – scats, observed/heard	
Cave Structure Risk Level	Low risk – no evidence of structural damage	
Notes	Monitoring equipment established	

Cave 8 (Category 3)		
Criteria	**Assessment**	**Site Photograph**
Entrance Type	Overhang	
Entrance Shape	Horizontal	
Cave Position	Upper Slope	
Cave Floor Shape	Incline	
Cave Aspect	West	
Cave Exposure	Sheltered	
Cave Overhang Depth	12 m	
Cave Entrance (Width x height)	2.5 x 0.8 m	
Evidence of bats	Yes – scats, observed/heard	
Cave Structure Risk Level	Low risk – no evidence of structural damage	
Notes	Monitoring equipment established	

Cave 9 (Category 3)		
Criteria	**Assessment**	**Site Photograph**
Entrance Type	Cavity	
Entrance Shape	Horizontal	
Cave Position	Upper Slope	
Cave Floor Shape	Incline	
Cave Aspect	Southwest	
Cave Exposure	Sheltered	
Cave Overhang Depth	2.5 m	
Cave Entrance (Width x height)	2 x 1 m	
Evidence of bats	None	
Cave Structure Risk Level	Low risk – no evidence of structural damage	
Notes	Monitoring equipment established	

Cave 10 (Category 2)		
Criteria	**Assessment**	**Site Photograph**
Entrance Type	Overhang	
Entrance Shape	Horizontal	
Cave Position	Upper Slope	
Cave Floor Shape	Incline	
Cave Aspect	Southeast	
Cave Exposure	Sheltered	
Cave Overhang Depth	8 m	
Cave Entrance (Width x height)	1.5 x 1.5 m	
Evidence of bats	Yes – scats, observed/heard	
Cave Structure Risk Level	Low risk – no evidence of structural damage	
Notes	Monitoring equipment established	

Cave 11 (Category 2)		
Criteria	**Assessment**	**Site Photograph**
Entrance Type	Cavern	
Entrance Shape	Horizontal	
Cave Position	Upper Slope	
Cave Floor Shape	Incline	
Cave Aspect	Southwest	
Cave Exposure	Sheltered	
Cave Overhang Depth	4 m	
Cave Entrance (Width x height)	5 x 0.5 m	
Evidence of bats	Yes – scats, observed/heard	
Cave Structure Risk Level	Low risk – no evidence of structural damage	
Notes	Monitoring equipment established	

Cave 12 (Category 3)		
Criteria	**Assessment**	**Site Photograph**
Entrance Type	Cavity	
Entrance Shape	Round/oval	
Cave Position	Lower Slope	
Cave Floor Shape	Incline	
Cave Aspect	Southwest	
Cave Exposure	Sheltered	
Cave Overhang Depth	2 m	
Cave Entrance (Width x height)	1.2 x 0.8 m	
Evidence of bats	Yes – scats, observed/heard	
Cave Structure Risk Level	Low risk – no evidence of structural damage	
Notes	Monitoring equipment established	

Cave 14 (Category 3)		
Criteria	**Assessment**	**Site Photograph**
Entrance Type	Cavity	
Entrance Shape	Round/oval	
Cave Position	Upper Slope	
Cave Floor Shape	Incline	
Cave Aspect	South	
Cave Exposure	Sheltered	
Cave Overhang Depth	20 m	
Cave Entrance (Width x height)	1.5 x 2 m	
Evidence of bats	Yes – scats, observed/heard	
Cave Structure Risk Level	Low risk – no evidence of structural damage	
Notes	Monitoring equipment established	

Cave 15 (Category 2)		
Criteria	**Assessment**	**Site Photograph**
Entrance Type	Cavity	
Entrance Shape	Horizontal	
Cave Position	Lower Slope	
Cave Floor Shape	Incline	
Cave Aspect	Southeast	
Cave Exposure	Sheltered	
Cave Overhang Depth	5 m	
Cave Entrance (Width x height)	1 x 0.3 m	
Evidence of bats	Yes – scats, observed/heard	
Cave Structure Risk Level	Low risk – no evidence of structural damage	
Notes	Monitoring equipment established	

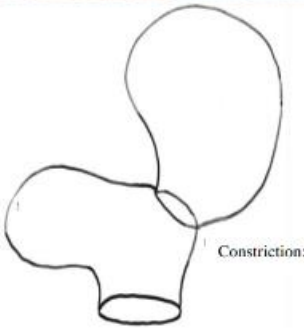
Cave 16 (Category 3)		
Criteria	**Assessment**	**Site Photograph**
Entrance Type	Cavity	
Entrance Shape	Round/oval	
Cave Position	Mid Slope	
Cave Floor Shape	Incline	
Cave Aspect	East	
Cave Exposure	Sheltered	
Cave Overhang Depth	3 m	
Cave Entrance (Width x height)	2.5 x 3 m	
Evidence of bats	Yes – scats, observed/heard	
Cave Structure Risk Level	Low risk – no evidence of structural damage	
Notes	Monitoring equipment established	

Cave 17 (Category 3)		
Criteria	**Assessment**	**Site Photograph**
Entrance Type	Cavity	
Entrance Shape	Round/oval	
Cave Position	Mid Slope	
Cave Floor Shape	Incline	
Cave Aspect	South	
Cave Exposure	Sheltered	
Cave Overhang Depth	7 m	
Cave Entrance (Width x height)	0.8 x 1 m	
Evidence of bats	Yes – scats, observed/heard	
Cave Structure Risk Level	Low risk – no evidence of structural damage	
Notes	Monitoring equipment established	

Cave 18 (Category 2)		
Criteria	**Assessment**	**Site Photograph**
Entrance Type	Cavity	
Entrance Shape	Horizontal	
Cave Position	Mid Slope	
Cave Floor Shape	Incline	
Cave Aspect	South	
Cave Exposure	Sheltered	
Cave Overhang Depth	15 m	
Cave Entrance (Width x height)	3 x 1 m	
Evidence of bats	Yes – scats, observed/heard	
Cave Structure Risk Level	Low risk – no evidence of structural damage	
Notes	Monitoring equipment established	

Ratty Springs (Category 1)		
Criteria	**Assessment**	**Site Photograph**
Entrance Type	Cavity	
Entrance Shape	Round/Oval	
Cave Position	Mid Slope	
Cave Floor Shape	Incline	
Cave Aspect	Northwest	
Cave Exposure	Sheltered	
Cave Overhang Depth	3 m	
Cave Entrance (Width x height)	1.5 m x 1 m	
Evidence of bats	Yes – scats, observed/heard, carcass	
Cave Structure Risk Level	Low risk – no evidence of structural damage	
Notes	Monitoring equipment established	

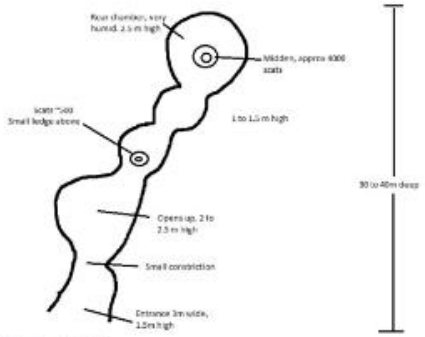
Appendix 2: Ghost bat roost structure data sheet

	MGA Zone 50 K		Description	Photograph
	Easting (mE)	Northing (mE)		
Cave 6 **Cat. 2** Regular PGb nocturnal visits detected. Regular diurnal roosting recorded.	550146	7435298	**Entrance:** open/wide (6 m wide x 1 m high) **Orientation:** South-west **Internal:** two domed caverns, left dome has soultion pipes 5-7 m in height, right dome is large cavern (15 m deep x 10 m wide x 20 m high) **Conditions** raised humidity and elevated temperature	 

	MGA Zone 50 K		Description	Photograph
	Easting (mE)	Northing (mE)		
Cave 11 **Cat. 2** Regular PGb nocturnal visits detected. Regular diurnal roosting recorded. Five bats present in May 2019.	539274	7437589	**Entrance:** narrow (4 m wide x 0.5 m high) **Orientation:** South **Internal:** pinched section that opens into a high dome on a side chamber (20 m deep x 8 m wide x 4 m high) **Conditions:** raised humidity and elevated temperature	 

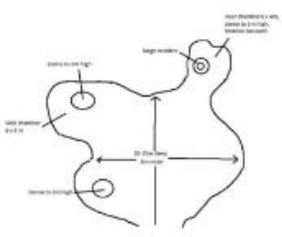
	MGA Zone 50 K		Description	Photograph
	Easting (mE)	Northing (mE)		
Cave 12 **Cat. 3** Regular PGb nocturnal visits detected	545277	7435693	**Entrance:** narrow (1 m wide x 1 m high) **Orientation:** West **Internal:** long tunnel shaped cave (18 m deep x 1 m wide x 1 m high) with a large, narrow top chamber (>15 m deep x 1 m wide x 3 m high) **Conditions:** raised humidity and elevated temperature	

	MGA Zone 50 K		Description	Photograph
	Easting (mE)	Northing (mE)		
Cave 14 **Cat. 3** Regular PGb nocturnal visits detected Occasional diurnal roosting recorded.	553868	7433695	**Entrance:** open/wide, large cathedral (12 m wide x 6 m high) **Orientation:** south **Internal:** one large rear domed cavern, left dome with multiple cracks and crevices and mini roosting spots, main dome is 5 m to 8 m in height, 25 m deep x 12 m wide	

	MGA Zone 50 K		Description	Photograph
	Easting (mE)	Northing (mE)		
Cave 15 **Cat. 2** Regular PGb nocturnal visits detected. Regular diurnal roosting recorded.	544724	7435692	**Entrance:** narrow (0.5 m wide x 0.4 m high) **Orientation:** east **Internal:** three domed caverns (potential), front dome 1.5 m high x 2 m wide x 2 m high, rear caverns dome dimensions unknown **Conditions:** Ghost Bat middens present, raised humidity and elevated temperature	  Figure by T. Moyle and S. Reiffer

	MGA Zone 50 K		Description	Photograph
	Easting (mE)	Northing (mE)		
Cave 16 **Cat. 3** Regular PGb nocturnal visits detected	550049	7435094	**Entrance:** wide (3.0 m wide x 2.5 m high) **Orientation:** east-south-east **Internal:** one long tunnel (~15 m to 20 m) leading to one high rear domed cavern	

	MGA Zone 50 K		Description	Photograph
	Easting (mE)	Northing (mE)		
Cave 17 **Cat. 3** Regular PGb nocturnal visits detected	550032	7435091	**Entrance:** narrow (0.5 m wide x 0.5 m high) **Orientation:** east-south-east **Internal:** two chambers, one left (15 m deep x 2.5 m wide x 1.5 m high) and one right (15 m deep x 2.5 m wide x 1.5 m high) **Conditions:** Raised humidity and elevated temperature	

	MGA Zone 50 K		Description	Photograph
	Easting (mE)	Northing (mE)		
Cave 18 **Cat. 2** Regular PGb nocturnal visits detected. Regular diurnal roosting recorded.	549038	7435427	**Entrance:** 3 m x 3 m **Orientation**: South **Internal**: One large chamber (8 m wide x ~12 m deep), one rear chamber (6 m x 4 m). Cave has three domes 3 m high.	 Cave 18 entrance image by S. Reiffer (RTIO)   PGB midden image by T. Moyle (Biologic); cave layout by S. Reiffer (RTIO)

Appendix 3: Ratty Spring Pilbara leaf-nosed bat monitoring lower-control-limit memo

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Phoebe Sampson
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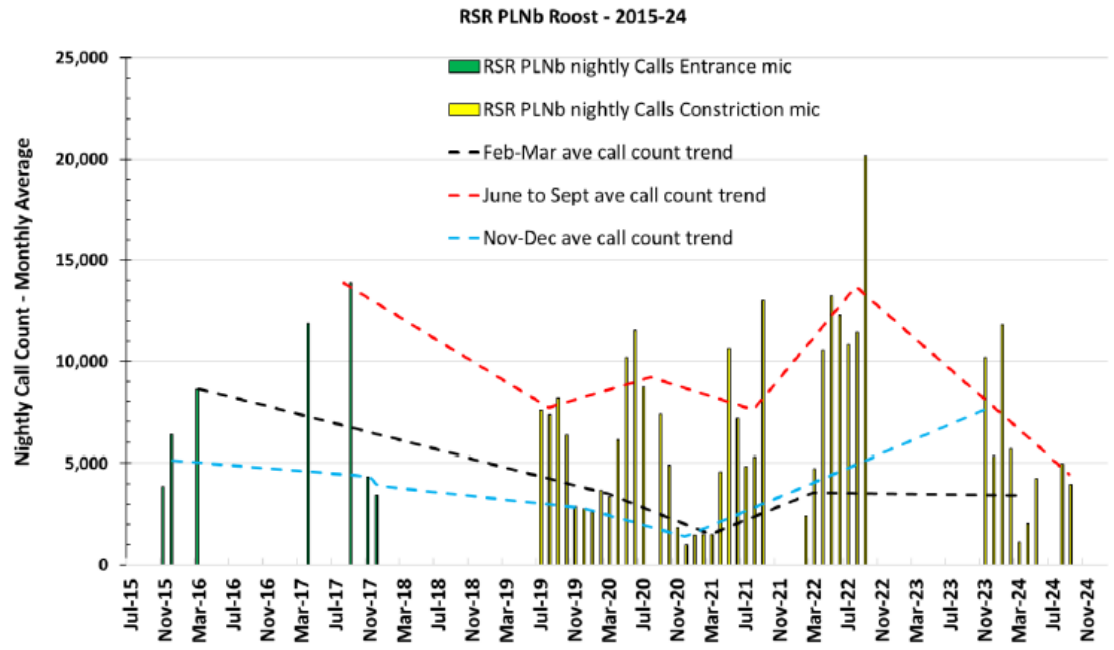
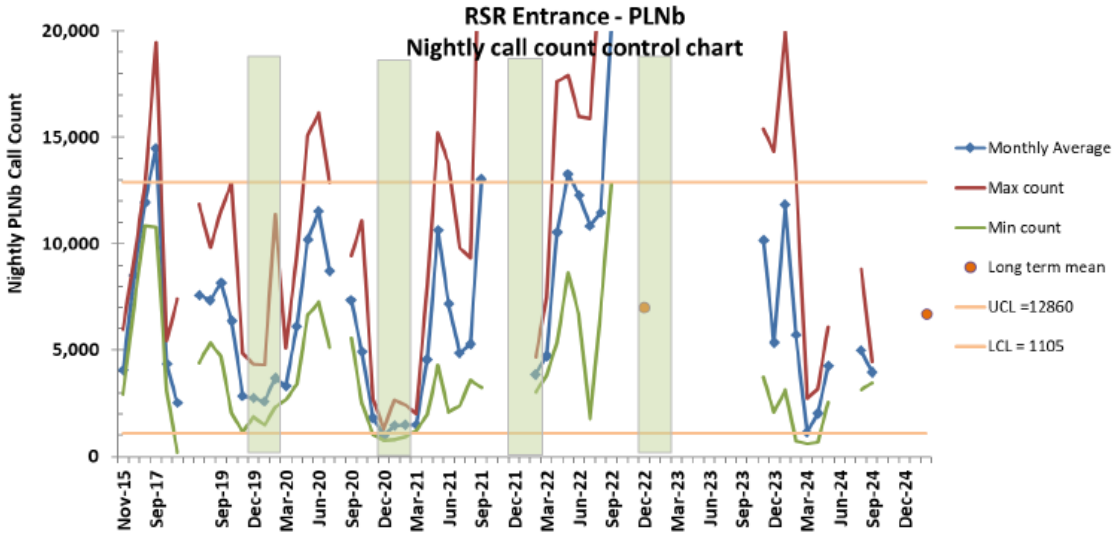
Ratty Spring Pilbara leaf-nosed bat monitoring Lower-control-limit.

In order to meet requirements outlined in Appendix 3 of the Greater Paraburdoo Environmental Management plan, this memo contains the outcome of the analysis of nightly PLNB call counts collected throughout the baseline phase, and assigns a Lower Count Level to be used with EMP trigger and threshold criteria (EMP Table 2-8)

Activity level and number of bats present at roosts monitored in the Pilbara, varies in both a seasonal and year to year manner (Bat Call, in prep). These variations show that multi-year collection of data representing the undisturbed activity at roosts must be undertaken to set realistic triggers and thresholds at roosts to be potentially disturbed during future nearby mining operations. They also show that non-anthropogenic factors (i.e., climate, fire, disease) must be recognised in any roost management plan published for a Project.

Rio Tinto has been monitoring the activity of Pilbara leaf-nosed bats (PLNb) at the Ratty Spring Roost (RSR) near Paraburdoo since 2015. Data has been available for the majority of nights between the years 2019 to 2022. These years preceded the expansion of the Paraburdoo mine operations to Western Range deposits and therefore constitute a representative baseline period of undisturbed PLNb activity at the roost. Note the existing Paraburdoo mine established in 1972 has been ongoing through this period. The baseline period ended in December 2022 and the impact period commenced January 2023 as expansion project activities commenced. Recordings from the baseline period show that the typical nightly PLNb call numbers vary greatly with monthly averages between approximately 1,000 and 15,000 per night. The baseline period average nightly call level was 6,985 (s.d. 1,959). This variation can be used to compare PLNb activity during the mines operational phase nearby the roost throughout the impact period. Given the wide variation of call counts, Lower and Upper call Limits (UCL and LCL) are recommended to be set at Ave +/- 3 s.d. which are 12,860 and 1,105 respectively.





From 2023 onwards, throughout the operating period, the Lower count limit (LCL) of 1, 105 nightly call count should therefore be implemented when assessing EMP trigger and threshold criteria.

Yours Sincerely

Robert Bullen
Managing Director and Principal Ecologist