RioTinto

Environment Protection and Biodiversity Conservation Act 1999
Annual Compliance Report

EPBC Approval: 2018/8299

Project: West Angelas Iron Ore Mine – Deposits C, D and G

Report period: 1 January – 31 December 2023

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1 Description of activities

EPBC approval number:	2018/8299
Project name:	West Angelas Iron Ore Mine – Deposits C, D and G
Approval holder:	Robe River Mining Co Pty Ltd
Approval holder's Australian Business Number:	71 008 694 246
Approved action:	To develop iron ore deposits C, D and G, and associated works and infrastructure at the existing West Angelas Iron Ore Mine, Pilbara, Western Australia.
Location of the project:	Pilbara, West Australia
Reporting period:	1 January 2023 to 31 December 2023
Report preparation date:	30 April 2024
Implementation phase(s) during reporting period:	Operational

2 Audit table

Details of compliance with each condition under EPBC approval 2018/8299 are presented in Table 1.

Table 1: EPBC Approval Conditions Compliance Table – EPBC 2018/8299 – West Angelas Iron Ore Mine – Deposits C, D and G

Condition Number	Condition	Compliance status	Evidence/Comments
1	To minimise impacts to **EPBC Act listed threatened species**, the **approval holder** must not **clear** more than 4 310 ha of vegetation within the development envelope at deposits C, D and G as shown in Attachment A, and for associated infrastructure for the development of deposits C, D and G.	Compliant	Aerial photography was collected during the reporting period to reconcile ground disturbance and the prescribed clearing limits were not exceeded. 761ha have been cleared within the development envelope at deposits C, D and G.
2	To minimise impacts to **EPBC Act listed threatened species**, the **approval holder** must comply with conditions 5-1(1), 5-1(4), 5-1(5), 5-1(6), 5-2, 5-3, 5-4, 5-5, 5-6, 5-7 and 5-8 (Environmental Management Plan) of the **Western Australia approval**.	Compliant	A Condition Environmental Management Plan (our ref: RTIO-HSE-0311343) was submitted to the Western Australian Department of Water and Environmental Regulation (DWER) on 2 December 2019 and approved on 15 April 2020 by DWER (DWER ref: DWERT4704). The 2022 Annual Compliance Assessment Report (our ref: RTIO-0990122) recorded compliance (or 'not required') with conditions 5-1(1), 5-1(4), 5-1(5), 5-1(6), 5-2, 5-3, 5-4, 5-5, 5-6, 5-7 and 5-8.
3	To minimise impacts to **EPBC Act listed threatened species** or their habitat the **approval holder** must ensure that there is: (a) no drawdown of groundwater associated with the action at the boundary of, or within, Karijini National Park and (b) no change in groundwater quality associated with the action at the boundary of, or within, Karijini National Park.	Compliant	The Groundwater EMP (our ref: RTIO-HSE-0349522) required by condition 5 was submitted on 21 February 2021 and approved by the Department of Climate Change, Energy, the Environment and Water (DCCEEW) on 19 April 2022 (our ref: RTIO-1045735) and by DWER on 14 June 2022 (DWER ref: DWERT6155) and was implemented during the reporting period. This report (our ref: RTIO-1020598) addresses compliance with environmental objectives within the GEMP. Refer to Section 3 for further details.
4	A Condition Environmental Management Plan to achieve the outcomes specified in Condition 3 must be submitted for approval by the **Minister**. The approved Condition Environmental Management Plan must be implemented. The **approval holder** must not commence dewatering activities unless the **Minister** has approved the Condition Environmental Management Plan in writing.	Compliant	The Groundwater EMP (our ref: RTIO-HSE-0349522) required by condition 5 was submitted on 21 February 2021 and approved by DCCEEW on 19 April 2022 (our ref: RTIO-1045735) and by DWER on 14 June 2022 (DWER ref: DWERT6155) and was implemented during the reporting period.

Condition Number	Condition	Compliance status	Evidence/Comments
			Dewatering activities for production commenced 20 February 2023. Reinjection into the Managed Aquifer Recharge Scheme commenced 18 May 2023.
5	The Condition Environmental Management Plan must: (a) provide an explanation of the method to be used to ensure the outcome required by condition 3(a) is met; (b) specify threshold criteria to demonstrate compliance with the environmental outcomes specified in condition 3. Exceedance of the threshold criteria represents non-compliance with these conditions; (c) specify trigger criteria that must provide an early warning that the threshold criteria identified in the Condition Environmental Management Plan may not be met; (d) specify monitoring capable of determining if trigger criteria and threshold criteria are exceeded. The approval holder must have a high degree of certainty that they will ensure the outcomes at condition 3 are met; (e) specify actions to be implemented in the event that trigger criteria have been exceeded; (f) specify threshold contingency actions to be implemented in the event that threshold criteria are exceeded, including ceasing water extraction if necessary; provide the format and timing for the reporting of monitoring results against trigger criteria and threshold criteria to demonstrate that condition 3 has been met.	Compliant	The Groundwater EMP (our ref: RTIO-HSE-0349522) required by condition 5 was submitted on 21 February 2021 and approved by DCCEEW on 19 April 2022 (our ref: RTIO-1045735) and by DWER on 14 June 2022 (DWER ref: DWERT6155). The plan was implemented during the reporting period.
6	In the event that monitoring, tests, surveys or investigations indicate exceedance of triggers or threshold criteria specified in the Condition Environmental Management Plan, the **approval holder** must: (a) report the exceedance in writing to the Department within five (5) business days of becoming aware of the exceedance; (b) commence implementing the trigger or threshold contingency actions specified in the Condition Environmental Management Plan specified at Condition 4 within 24 hours of becoming aware of the exceedance and, in respect of exceedance of threshold criteria, continue implementation of those actions until the Department has confirmed by notice in writing that the approval holder has demonstrated that the threshold contingency actions are no longer required;	Compliant	Exceedances of Trigger Criteria were identified in Quarter 1 and Quarter 2. Notifications and Investigation reports were submitted to DCCEEW within the prescribed time frames. However, a review of monitoring data and condition interpretation determined that these Trigger exceedances were wrongly reported due to incorrect water quality trigger calculations. Refer to Section 3 for further details.

Condition Number	Condition	Compliance status	Evidence/Comments
	(c) investigate to determine the cause of the trigger or threshold criteria being exceeded; (d) investigate to provide information for the **Department** to determine potential environmental harm or alteration of the environment that occurred due to threshold criteria being exceeded; and (e) provide a report to the Department within twenty-one (21) business days of the exceedance being reported as required by condition 6(a). The report must include: (i) details of trigger or threshold contingency actions implemented; (ii) the effectiveness of the trigger or threshold contingency actions implemented, against the threshold criteria; (iii) the findings of the investigations required by condition 6(c) and 6(d); (iv) measures to prevent the threshold criteria being exceeded in the future; (v) measures to prevent, mitigate and remedy the environmental harm which may have occurred; and justification of the threshold remaining, or being adjusted based on better understanding, demonstrating that outcomes will continue to be met.		
7	Groundwater management and monitoring must continue until it can be demonstrated that the outcomes specified at Condition 3 can be met without active management.	Compliant	The Groundwater EMP (our ref: RTIO-HSE-0349522) required by condition 5 was submitted on 21 February 2021 and approved by DCCEEW on 19 April 2022 (our ref: RTIO-1045735) and by DWER on 14 June 2022 (DWER ref: DWERT6155). The plan was implemented during the reporting period.
8	To compensate for the residual significant impacts of clearing Ghost Bat (*Macroderma gigas*) habitat and Pilbara Leaf-nosed Bat (*Rhinonicteris aurantia* (*Pilbara form*)) habitat, the **approval holder** must within six months of the date of this approval, submit an Offset Strategy for the **Minister's** written approval. The Offset Strategy must be consistent with the principles of the **EPBC Act Environmental Offsets Policy** and must: (a) specify the approach for providing offsets for the clearing of 507 ha of **Ghost Bat habitat** and 507 ha of **Pilbara Leaf-nosed Bat habitat**; (b) identify threats for the Ghost Bat and Pilbara Leaf-nosed Bat; (c) nominate detailed offset projects that will realise a conservation benefit for the Ghost Bat and the Pilbara Leaf-nosed Bat in	Compliant	Offset strategy was submitted to DAWE on 24 March 2020 (our ref: RTIO-HSE-0342437). A revised Impact Reconciliation Procedure (IRP) (our ref: RTIO-HSE-0354022) was submitted to DWER on 13 July 2021 to meet both Western Australian and Commonwealth offset requirements. The IRP (our ref: RTIO-HSE-0354022) was re-submitted to DWER 1 December 2021, approved by DWER 18 August 2022 (DWER ref: DWERA-001283). Impact Reconciliation Report (our ref: RTIO-0990137) for 2021-2022 was submitted to DCCEEW 28 April

Condition Number	Condition	Compliance status	Evidence/Comments
	accordance with relevant approved **conservation advice**, **recovery plans** and **threat abatement plans** and regional conservation plans; (d) if the proposed Offset Strategy includes offset(s) that are not land acquisition, specify a financial commitment to offset projects of at least $3,000 AUD (exclusive of GST) per hectare of **Ghost Bat habitat cleared** and, in addition, at least $821.00 AUD (exclusive of GST) per hectare of **Pilbara Leaf-nosed bat habitat cleared**. Payments in respect of this commitment must be adjusted in accordance with the **CPI** released in each calendar year from the date of this approval decision until the date on which any particular payment is made; (e) specify the location and nature of each proposed offset, along with detailed objectives, budget, timeframes, performance and completion criteria for evaluating conservation outcomes, monitoring and reporting requirements; (f) include a description of the potential risks to the successful implementation of each proposed offset (including but not limited to environmental, administrative, financial, and governance risks); (g) include a description of the measures that will be implemented to mitigate risks associated with each proposed offset and a description of the contingency measures that will be implemented if triggers arise or completion criteria are not met; (h) include processes to **adaptively manage** proposed offsets; and (i) include a justification for how the proposed offsets meet **the EPBC Act Environmental Offsets Policy**. The **approval holder** must implement the approved Offset Strategy. The approval holder must implement the proposed offsets under the Offset Strategy within two months of the approval of the Offset Strategy, or another time as agreed in writing by the **Department**.		2023 (our ref: RTIO-0993623). The approval holder did not receive an invoice for the EPBC component of the IRR during the reporting period.
9	Subject to condition 11, within eight months of approval of the Offset Strategy by the **Minister**, the approval holder must submit a report to the **Department** detailing the extent of **Ghost Bat habitat** and **Pilbara Leaf-nosed Bat habitat cleared,** and the total amount of offset funds that have been allocated to the offset projects committed under the Offset Strategy and detail the implementation of offset projects. Subsequent reporting periods will be biennial, Subsequent reporting periods will be biennial, addressing the previous two calendar years, with the first biennial reporting period inclusive	Compliant	Offset strategy was submitted to DAWE on 24 March 2020 (our ref: RTIO-HSE-0342437). A revised Impact Reconciliation Procedure (IRP) (our ref: RTIO-HSE-0354022) was submitted to DWER on 13 July 2021 to meet both Western Australian and Commonwealth offset requirements.

Condition Number	Condition	Compliance status	Evidence/Comments
	of the calendar year in which **commencement of the action** begins and the following calendar year. The approval holder must submit the biennial reports to the **Department** by the 30 April following the end of each biennial period.		The IRP (our ref: RTIO-HSE-0354022) was submitted to DWER 1 December 2021, approved by DWER 18 August 2022 (DWER ref: DWERA-001283). Impact Reconciliation Report (our ref: RTIO-0990137) for 2021-2022 was submitted to DCCEEW 28 April 2023 (our ref: RTIO-0993623). The approval holder did not receive an invoice for the EPBC component of the IRR during the reporting period.
10	The approval holder may apply to the **Department** for a variation to the approved Offset Strategy under condition 8 by submitting an application in writing to the **Department**. The application must include: (a) the **approval holders** contact details, including referral number and ABN/ACN (b) a draft of the proposed variation (c) a written statement that sets out the reasons why the approval holder considers that the proposed variation is required. A variation to the approved Offset Strategy must be approved by the **Department** in writing. If the varied Offset Strategy is approved by the **Department**, the varied Offset Strategy must be implemented from the date of approval of the varied Offset Strategy.	Not applicable	No variations to the Offset Strategy were required during the reporting period.
11	If a **Conservation Offset Fund** has been established by the Western Australian Government, and approved by the **Minister**, then Conditions 8, 9 and 10 may not apply (or may cease to be applied) with the agreement by the **Department** in writing. In such a case, the **approval holder** must provide funds biennially to the **Conservation Offset Fund**. The amount of funds must be based on the area of bat habitat **cleared** in the **biennial reporting period** as set out below. **Biennial reporting** periods will be based on calendar years, with the first biennial reporting period being inclusive of the calendar year in which **commencement of the action** occurs and the following calendar year. Biennial reports must be submitted to the **Department** by 30 April following the end of each biennial reporting period. The funds to be paid must be equivalent to the 2019 value of the following amounts by the application of the **CPI** in each financial year from the date of this approval decision until the date on which any particular payment is made: (a) at least $3,000 AUD (exclusive of GST) per hectare of **Ghost Bat habitat cleared** and, in addition;	Not applicable	The approval holder requested approval from DAWE on 7 June 2021 to use the Pilbara Environmental Offset Fund established by the Western Australian Government (our ref: RTIO-HSE-0353523) in relation to meeting EPBC offsets requirements. The Federal Environment Minister has not yet approved this request.

Condition Number	Condition	Compliance status	Evidence/Comments
	(b) at least $821.00 AUD (exclusive of GST) per hectare of **Pilbara Leaf-nosed bat habitat cleared**. Each payment required by this condition must comprise the total required in respect of the most recently ended **biennial reporting period** and be received by the **Conservation Offset Fund** within one month of the end of that **biennial reporting period**.		
12	Prior to making the payment required by Condition 11, the **approval holder** must submit written evidence to the **Department** of the total area, including **shapefiles**, of **Ghost Bat habitat** and **Pilbara Leaf-nosed Bat habitat cleared** during the most recently ended **biennial reporting period** and the calculation (including working out) of the amount of funding that is required to be contributed to the **Conservation Offset Fund** for that **biennial reporting period**. Within 48 hours of the payment into the Conservation Offset Fund, evidence of these payments must be provided to the **Department** in writing.	Not applicable	The approval holder requested approval from DAWE on 7 June 2021 to use the Pilbara Environmental Offset Fund established by the Western Australian Government (our ref: RTIO-HSE-0353523) in relation to meeting EPBC offsets requirements. The Federal Environment Minister has not yet approved this request. The first Impact Reconciliation Report (our ref: RTIO-0210819) was submitted on 16 September 2022. The Impact Reconciliation Report (our ref: RTIO-0990137) for 2021-2022 was submitted to DCCEEW 28 April 2023 (our ref: RTIO-0993623). The approval holder did not receive an invoice for the EPBC component of the IRR during the reporting period.
13	The approval holder must notify the **Department** in writing of the date of **commencement of the action** within 10 **business days** after the date of **commencement of the action**.	Not applicable	Notification of commencement of the action was sent on 8 October 2019 (our ref: RTIO-HSE-0336462). The action commenced on 7 October 2019.
14	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	The action commenced on 7 October 2019, within 5 years of the date of the approval.
15	The **approval holder** must maintain accurate and complete **compliance records**.	Compliant	Records associated with the conditions of this approval are maintained within the approval holder's document and data management systems.
16	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. **Note**: **Compliance records** may be subject to audit by the **Department** or an independent auditor in accordance with section 458 of the **EPBC Act**, and or used to verify compliance with the conditions. Summaries of the result of an audit may be published on the **Department**'s website or through the general media.	Not applicable	No requests received during the reporting period.

Condition Number	Condition	Compliance status	Evidence/Comments
17	The **approval holder** must: (a) submit **plans** electronically to the **Department** for approval by the **Minister**; (b) publish each **plan** on the **website** within 20 **business days** of the date the **plan** is approved by the **Minister** or of the date a revised action management plan is submitted to the **Minister**, unless otherwise agreed to in writing by the **Minister**; (c) exclude or redact **sensitive ecological data** from **plans** published on the **website** or provided to a member of the public; and keep **plans** published on the **website** until the end date of this approval.	Not applicable	There were no plans submitted or approved during the reporting period.
18	The **approval holder** must ensure that any **monitoring data** (including **sensitive ecological data**), surveys, maps, and other spatial and metadata required under a plan is prepared in accordance with the Department's *Guidelines for biological survey and mapped data* (2018) and submitted electronically to the Department in accordance with the requirements of the plan.	Not applicable	There was no requirement to submit monitoring data to the Department during the reporting period in accordance with the Groundwater EMP (our ref: RTIO-HSE-0349522).
19	Following **commencement of the action**, the approval holder must prepare a **compliance report** for each previous 12 month calendar year period. The **approval holder** must: (a) publish each **compliance report** on the **website** on or before 30 April for the previous 12 month calendar year period; notify the **Department** by email that a **compliance report** has been published on the **website** within five **business days** of the date of publication; (b) keep all **compliance reports** publicly available on the **website** until this approval expires; (c) exclude or redact **sensitive ecological data** from **compliance reports** published on the **website**; and (d) where any **sensitive ecological data** has been excluded from the version published, submit the full **compliance report** to the **Department** within 5 **business days** of publication. **Note**: **Compliance reports** may be published on the **Department**'s website.	Compliant	The 2022 Annual Compliance Report (our ref: RTIO-0989978) was published on the approval holder's website on 28 April 2023.
20	The **approval holder** must notify the **Department** in writing of any: **incident;** non-compliance with the conditions; or non-compliance with the commitments made in **plans**. The notification must be given as soon as practicable, and no later than two **business days** after becoming aware of the **incident** or non-compliance. The notification must specify:	Not applicable	No incident or non-compliance with conditions and commitments made in plans occurred during the reporting period.

Condition Number	Condition	Compliance status	Evidence/Comments
	(a) the condition which is or may be in breach; and a short description of the **incident** and/or non-compliance.		
21	The **approval holder** must provide to the **Department** the details of any **incident** or non-compliance with the conditions or commitments made in **plans** as soon as practicable and no later than 10 **business days** after becoming aware of the **incident** or non-compliance, specifying: (a) any corrective action or investigation which the **approval holder** has already taken or intends to take in the immediate future; (b) the potential impacts of the **incident** or non-compliance; and the method and timing of any remedial action that will be undertaken by the **approval holder**.	Not applicable	No incident or non-compliance with conditions and commitments made in plans occurred during the reporting period.
22	The **approval holder** must ensure that **independent audits** of compliance with the conditions are conducted as requested in writing by the **Minister**.	Not applicable	No audits requested.
23	For each **independent audit**, the **approval holder** must: (a) provide the name and qualifications of the independent auditor and the draft audit criteria to the **Department**; (b) only commence the **independent audit** once the audit criteria have been approved in writing by the **Department**; and submit an audit report to the **Department** within the timeframe specified in the approved audit criteria.	Not applicable	No audits requested.
24	The **approval holder** must publish the audit report on the **website** within 10 **business days** of receiving the **Department's** approval of the audit report and keep the audit report published on the **website** until the end date of this approval.	Not applicable	No audits requested.
25	The **approval holder** may, at any time, apply to the **Minister** for a variation to an action management plan approved by the **Minister** under condition 4 or as subsequently revised in accordance with these conditions, 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 the previous action management plan.	Not applicable	No variations required during the reporting period.
26	The **approval holder** may choose to revise an action management plan approved by the **Minister** under condition 4, or as subsequently revised in accordance with these conditions, without submitting it for approval under	Not applicable	No revisions required during the reporting period.

Condition Number	Condition	Compliance status	Evidence/Comments
	section 143A of the **EPBC Act**, if the taking of the action in accordance with the RAMP would not be likely to have a **new or increased impact**.		
27	If the **approval holder** makes the choice under condition 26 to revise an action management plan without submitting it for approval, the **approval holder** must: (a) notify the **Department** in writing that the approved action management plan has been revised and provide the **Department** with: (i) an electronic copy of the RAMP; (ii) an electronic copy of the RAMP marked up with track changes to show the differences between the approved action management plan and the RAMP; (iii) an explanation of the differences between the approved action management plan and the RAMP; (iv) the reasons the **approval holder** considers that taking the action in accordance with the RAMP would not be likely to have a **new or increased impact**; and (v) written notice of the date on which the **approval holder** will implement the RAMP (RAMP implementation date), being at least 20 **business days** after the date of providing notice of the revision of the action management plan, or a date agreed to in writing with the **Department**. subject to condition 28, implement the RAMP from the RAMP implementation date.	Not applicable	No revisions required during the reporting period.
28	The **approval holder** may revoke their choice to implement a RAMP under condition 26 at any time by giving written notice to the **Department**. If the **approval holder** revokes the choice under condition 26, the **approval holder** must implement the previous action management plan approved by the **Minister**.	Not applicable	No revisions required during the reporting period.
29	If the **Minister** gives a notice to the **approval holder** that the **Minister** is satisfied that the taking of the action in accordance with the RAMP would be likely to have a **new or increased impact**, then: (a) condition 26 does not apply, or ceases to apply, in relation to the RAMP; and the **approval holder** must implement the action management plan specified by the **Minister** in the notice.	Not applicable	No revisions required during the reporting period.

Condition Number	Condition	Compliance status	Evidence/Comments
30	At the time of giving the notice under condition 29, the **Minister** may also notify that for a specified period of time, condition 26 does not apply for one or more specified action management plans. **Note:** conditions 26, 27, 28 and 29 are not intended to limit the operation of section 143A of the **EPBC Act** which allows the approval holder to submit a revised action management plan, at any time, to the **Minister** for approval.	Not applicable	No revisions required during the reporting period.
31	Within 30 days after the **completion of the action**, the **approval holder** must notify the **Department** in writing and provide **completion data**.	Not applicable	The action has not been completed.

3 Groundwater Environmental Management Plan

Groundwater Management conditions are summarised in Table 2 and Table 10 for the Groundwater Environmental Management Plan in accordance with the 2022 Groundwater EMP (our ref: RTIO-HSE-0349522).

Table 2: Environmental Criteria associated with Karijini NP Groundwater Level

Key environmental factor: – Karijini NP Groundwater Level	
Condition 3(a) - Ensure that there is no drawdown of groundwater associated with the action at the boundary of, or within, Karijini National Park	**Reporting period 1 January – 31 December 2023**
Objective-based Provisions	
Management Targets:	**Status report:**
1. **Target 1:** Water levels in bores to the south and north of the MAR scheme in areas outside of the regional aquifer are above or equal to rolling 3 year, seasonally adjusted water levels (mbgl). 2. **Target 2:** Water levels in Zone 3 monitoring bores and modelled are above or equal to rolling 3 year, seasonally adjusted water levels (mbgl). 3. **Target 3**: Water levels in Zone 3 monitoring bores and modelled are above or equal to rolling 5 year, seasonally adjusted water levels (mbgl). 4. **Target 4:** Water levels in Zone 3 monitoring bores and modelled are above or equal to rolling 10 year, seasonally adjusted water levels (mbgl).	Management Target 1 exceeded
Outcome-based Provisions (Triggers and Thresholds)	
Early Response Indicators:	**Status report:**
1. **Early Response Indicator 1**: Injection bores non-operational outside of proposed plan for operation of the MAR scheme (more than 1 of a paired set of bores inoperable for more than 1 week). 2. **Early Response Indicator 2:** Two consecutive monitoring periods of drawdown 25 cm greater than Grey Box level for modelled mitigation scenario in Zone 2 monitoring bores.	Early Response Indicator not reached
Trigger Criteria:	**Status report:**
1. **Trigger Level 1:** Two consecutive monitoring periods of drawdown 50 cm greater than Grey Box level for modelled mitigation scenario in Zone 2 monitoring bores. 2. **Trigger Level 2:** Two consecutive monitoring periods of drawdown associated with the proposal of 10 cm or greater than the Grey Box level for modelled mitigation scenario in Zone 3 monitoring bores.	Trigger criteria not exceeded
Threshold criterion:	**Status report:**
1. **Threshold Criteria:** Two consecutive monitoring periods of drawdown associated with the proposal of 20 cm or greater than Grey Box level for modelled mitigation scenario in Zone 3 monitoring bores.	Threshold criteria not exceeded

3.1 Results, analysis and interpretation - groundwater levels, objective based provisions

Objective-based provisions have been applied to groundwater modelling within the project area and eastern Karijini NP to ensure currency and accuracy of groundwater modelling. This provides a representative and robust base to inform outcome-based provisions. Objective-based management targets and recorded water levels for the 2023 reporting period are provided in Table 4 to Table 7.

As additional data is collected the model becomes more accurate at simulating trends, which will be reflected in target adjustments.

Table 3: Boundary Bore Monitoring - Water levels (mAHD) compared to Target 1 criteria

	Seasonally adjusted Target water levels – 3 year rolling average (mAHD)				Water level (mAHD) (Representative Quarterly sample)			
Bore ID	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**
MB18WAW0003	623.10	623.1	623.08	623.02	623.34	623.52	623.38	623.08
MB19WAW0006	623.19	623.09	623.13	623.06	**623.18***	623.18	623.25	623.25
MB21WAD0013	645.20	645.16	645.16	645.16	645.20	645.26	645.23	645.21
MB23TURB0001	Not drilled			622.69	Not drilled			**622.70***

*Exceedance of Target 1 Criteria.

Target Criteria 1, 'Water Levels in boundary bores to the south and north of the MAR scheme in areas outside of the regional aquifer are above or equal to rolling 3 year, seasonally adjusted water levels (mbgl)', was exceeded for MB19WAW0006 in Q1 and MB23TURB0001 in Q4. The location of these boundary bores is depicted in Figure 2.

The exceedance of Target 1 criteria prompted completion of the management targets:

- review of modelling inputs to ensure model is accurate and current;
- review of MAR operational monitoring data; and
- review accuracy of model and representativeness of the current environment and activities.

The 3 year, seasonally adjusted rolling average Target 1 water levels are calculated based on the minimum value recorded historically throughout the quarter for each monitoring bore. Historical data utilised for these Target levels is from July 2020 for monitoring bores MB18WAW0003 and MB19WAW0006, November 2022 for MB21WAD0013 and December 2023 for MB23TURB0001.

The two monitoring bore exceedance results were minimal (i.e. 1cm below Target water level) and therefore, does not necessarily indicate that the model is inaccurate, but that the Target levels resemble the current water levels closely.

The exceedance of MB19WAW0006 is likely due to the higher water Target Level in Q1 compared to the remaining quarters throughout the 2023 reporting period. Historical data collected for MB19WAW0006 in Q1 is limited due to inaccurate data collected from loggers due to accuracy drift over time with minimal calibration occurring and therefore is not representative of the current environment. There has been an observed decrease in water levels in the Karijini National Park (NP) monitoring bore WANG14 that represents unimpacted, regional water levels. Therefore, the lack of available data for MB18WAW0006 during this declining period has resulted in the Target water level being higher than the regional water levels. See Figure 1 for the WANG14 monitoring bore historical water levels and decline over the last several reporting periods.

The exceedance for MB23TURB0001 is due to limited monitoring data available to inform the water level Target. MB23TURB0001 was drilled and monitored from 1 December 2024. Therefore, the Target Level was determined using minimal data logger readings at the same time period as the manual sample was collected for Q4.

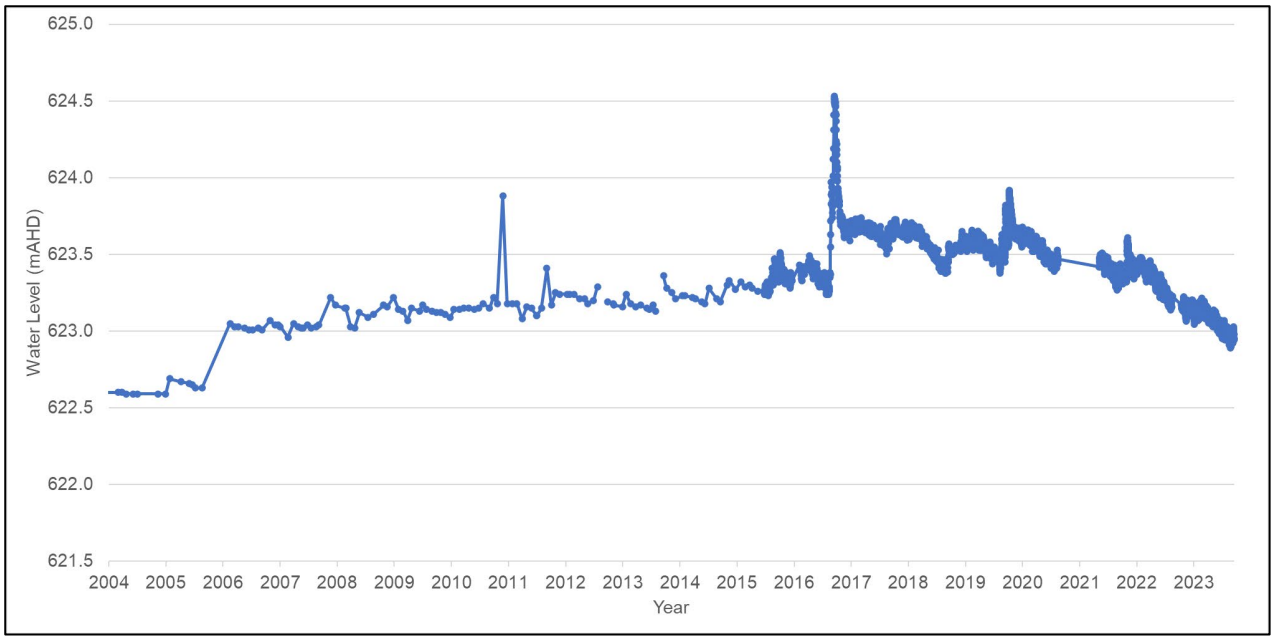

Figure 1: WANG14 water levels (mAHD) from 2004 to 2023

Table 4: Zone 3 monitoring – Quarter 1 water levels (mAHD) compared to Targets 2, 3 and 4 criteria

	Q1 Seasonally adjusted water levels – rolling averages (mAHD)			Q1 Data logger Average water level (mAHD)
Bore ID	**3 year Target 2**	**5 year Target 3**	**10 year Target 4**	
MB16WAW0005	623.44	623.44	623.37	623.53
MB16WAW0007	623.51	623.51	623.43	623.55
MB21WAD0017	623.46	623.46	623.46	623.70
MB21WAD0015	623.27	623.27	623.27	623.36
MB21WAC0001	623.35	623.35	623.35	623.42
MB22WAW0001	623.28	623.28	623.28	623.31
21WAW-M02	Not drilled			Not drilled
WAW-M01	Not drilled			Not drilled
MB17WAW0001	623.6	623.6	623.6	623.63

Table 5: Zone 3 monitoring – Quarter 2 water levels (mAHD) compared to Targets 2, 3 and 4 criteria

	Q2 Seasonally adjusted water levels – rolling averages (mAHD)			Q2 Data logger Average water level (mAHD)
Bore ID	**3 year Target 2**	**5 year Target 3**	**10 year Target 4**	
MB16WAW0005	623.47	623.47	623.39	623.54
MB16WAW0007	623.48	623.48	623.48	623.63
MB21WAD0017	623.53	623.53	623.53	623.68
MB21WAD0015	623.31	623.31	623.31	623.43
MB21WAC0001	623.14	623.14	623.14	623.45
MB22WAW0001	623.26	623.26	623.26	623.35
21WAW-M02	Not drilled			Not drilled
WAW-M01	Not drilled			Not drilled
MB17WAW0001	623.57	623.57	623.57	623.65

Table 6: Zone 3 monitoring – Quarter 3 water levels (mAHD) compared to Targets 2, 3 and 4 criteria

Bore ID	Q3 Seasonally adjusted water levels – rolling averages (mAHD)			Q3 Data logger Average water level (mAHD)
	3 year Target 2	5 year Target 3	10 year Target 4	
MB16WAW0005	623.48	623.48	623.43	623.55
MB16WAW0007	623.57	623.57	623.52	623.74
MB21WAD0017	623.5	623.5	623.5	623.70
MB21WAD0015	623.47	623.47	623.47	623.53
MB21WAC0001	623.36	623.36	623.36	623.50
MB22WAW0001	623.3	623.3	623.3	623.37
21WAW-M02	Not drilled			Not drilled
WAW-M01	Not drilled			Not drilled
MB17WAW0001	623.58	623.58	623.58	623.64

Table 7: Zone 3 monitoring – Quarter 4 water levels (mAHD) compared to Targets 2, 3 and 4 criteria

Bore ID	Q4 Seasonally adjusted water levels – rolling averages (mAHD)			Q4 Data logger Average water level (mAHD)
	3 year Target 2	5 year Target 3	10 year Target 4	
MB16WAW0005	623.44	623.44	623.37	623.48
MB16WAW0007	623.57	623.57	623.49	623.69
MB21WAD0017	623.47	623.47	623.47	623.63
MB21WAD0015	623.31	623.31	623.31	623.50
MB21WAC0001	623.13	623.13	623.13	623.46
MB22WAW0001	623.22	623.22	623.22	623.30
21WAW-M02	Not drilled			Not drilled
WAW-M01	Not drilled			Not drilled
MB17WAW0001	623.47	623.47	623.47	623.55

There were no recorded exceedances of the Target 2, 3 and 4 water levels for Zone 2 and Zone 3 monitoring bores during the reporting period. These Target water levels are calculated based on the minimum value recorded historically throughout the quarter for each monitoring bore.

3.2 Results, analysis and interpretation - groundwater levels, outcome based provisions

Outcome-based provisions in the Groundwater EMP are quantitative triggers and threshold criteria for groundwater drawdown and quality characteristics based on modelling chosen to achieve the environmental outcome of no drawdown associated with the Project at the boundary of, or within Karijini NP.

As the MAR scheme progresses, further monitoring data will be collected to update models and adapt the use of the scheme to mitigate observed impacts from drawdown associated with dewatering activities.

Outcome-based management targets and recorded water levels for the 2023 reporting period are provided in Table 8 and Table 9.

The Grey Box Model was updated each quarter for each monitoring bore using regional changes observed in boundary bores and previous quarters monitoring results. The Grey box model incorporated an observed regional water decline using boundary bores and WANG14 Karijini NP Monitoring bore (Figure 1). There were no recorded exceedances of Early Response, Trigger and Threshold criteria for water levels in Zone 2 and Zone 3 monitoring bores.

Table 8: Zone 2 water levels (mAHD) in comparison to Grey Box Model - compliance with Early Response Indicator 2 and Trigger Level 1 Criteria

Bore ID	Average water level (mAHD) (manual dips)				Modelled water level (mAHD)							
	Q1	Q2	Q3	Q4	Q1		Q2		Q3		Q4	
					Early Response 2	Trigger 1	Early Response 2	Trigger 1	Early Response 2	Trigger 1	Early Response 2	Trigger 1
MB16WAW0008	623.58	623.76	623.72	623.73	623.36	623.11	623.36	623.11	623.49	623.24	623.36	623.11
MB19WAC0007	623.29	623.32	623.33	623.29	623.06	622.81	623.06	622.81	623.00	622.75	622.92	622.67
MB21WAD0010	623.38	623.59	623.58	623.58	623.24	622.99	623.24	622.99	623.38	623.13	623.13	622.88
MB21WAD0012	623.36	623.38	623.48	623.54	623.14	622.89	623.14	622.89	623.28	623.03	623.09	622.84
WAC_M28	Not drilled				Not drilled							
WAW_M16	Not drilled				Not drilled							
WAW_M17	Not drilled				Not drilled							

Table 9: Zone 3 water levels (mAHD) in comparison to Grey Box Model - compliance with Trigger Level 2 and Threshold Criteria

Bore ID	Average water level (mAHD) (manual dips)				Modelled water level (mAHD)							
	Q1	Q2	Q3	Q4	Q1		Q2		Q3		Q4	
					Trigger 2	Threshold	Trigger 2	Threshold	Trigger 2	Threshold	Trigger 2	Threshold
MB16WAW0005	623.51	623.55	623.53	623.55	623.47	623.37	623.42	623.32	623.41	623.31	623.38	623.28
MB16WAW0007	623.54	623.69	623.67	623.65	623.53	623.43	623.47	623.37	623.59	623.49	623.41	623.31
MB21WAD0017	623.66	623.87	623.58	623.58	623.62	623.52	623.56	623.46	623.55	623.45	623.48	623.38
MB21WAD0015	623.70	623.60	623.43	623.46	623.28	623.18	623.38	623.28	623.33	623.23	623.25	623.15
MB21WAC0001	623.36	623.48	623.40	623.36	623.35	623.25	623.29	623.19	623.36	623.26	623.30	623.20
MB22WAW0001	623.33	623.68	623.35	623.34	623.23	623.13	623.24	623.14	623.20	623.10	623.15	623.05
21WAW-M02	Not drilled				Not drilled							
WAW-M01	Not drilled				Not drilled							
MB17WAW0001	623.65	623.65	623.60	623.58	623.60	623.50	623.53	623.43	623.49	623.39	623.43	623.33

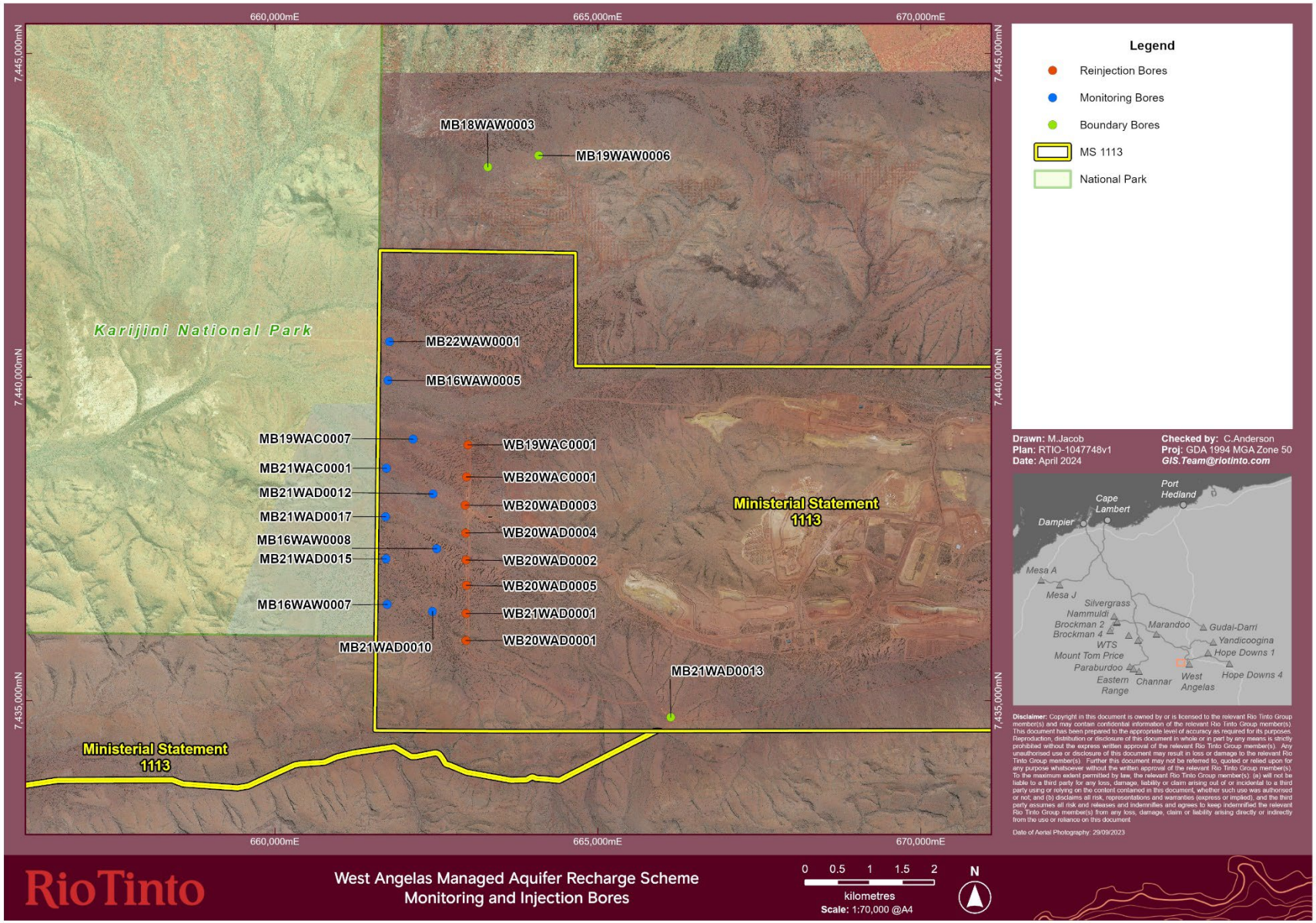

Figure 2: Location of injection, monitoring and boundary bores for the MAR Scheme

Table 10: Environmental criteria associated with Karijini NP water quality

Key environmental factor: – Karijini NP groundwater quality	
Condition 3(b) - no change in groundwater water quality associated with the action at the boundary of, or within, Karijini National Park	**Reporting period 1 January – 31 December 2023**
Early Response Indicators:	**Status report:**
1. Long term pH trend in Zone 2 monitoring bores over two consecutive monitoring periods is not consistent with trend in control bore. or 2. Proportional change in EC in Zone 2 monitoring bores is greater than 20% of proportional change in control bore EC over two consecutive monitoring periods	Early Response Indicator not reached.
Trigger Criteria Level 1:	**Status report:**
3. Long term pH in Zone 2 monitoring bores is not between 6.5 and 8 for two consecutive monitoring periods and trend is not consistent with trend in control bore and is associated with the action. or 4. Proportional change in EC in Zone 2 monitoring bores is greater than 50% of proportional change in control bore EC over two consecutive monitoring periods and is associated with the action.	Trigger criteria not exceeded.
Trigger Criteria Level 2:	**Status report:**
5. Long term pH in Zone 3 monitoring bores is not between 6.5 and 8 for two consecutive monitoring periods and trend is not consistent with trend in control bore pH. or 6. Proportional change in EC in Zone 3 monitoring bores is greater than 50% of proportional change in control bore EC over two consecutive monitoring periods.	Trigger criteria not exceeded.
Threshold criterion:	**Status report:**
7. Long term pH in Zone 3 monitoring bores is not between 6 and 8.5 for two consecutive monitoring periods and trend is not consistent with trend in control bore pH and is associated with the action. or 8. Proportional change in EC in Zone 3 monitoring bores is greater than 80% of proportional change in control bore EC over two consecutive monitoring periods and is associated with the action.	Threshold criteria not exceeded.

3.3 Results, analysis and interpretation - Groundwater quality

Table 11 outlines the Zone 2 and Zone 3 monitoring bore results for pH water quality monitoring, comparing results to Trigger and Threshold criteria. Table 12 and Table 13 summarise the proportional change in EC between consecutive monitoring periods and compares this to control bore proportional changes in EC throughout the 2023 reporting period. Raw monitoring data for water quality monitoring is presented in Appendix 1.

Table 11: Zone 2 and Zone 3 monitoring bores - compliance with pH Early Response Indicator 1, Trigger Criteria 1 and Threshold Criterion 1

Bore ID	Criteria	pH (pH units)				
		Q4 2022	Q1 2023	Q2 2023	Q3 2023	Q4 2023
Zone 2						
MB16WAW0008	Trigger: Under 6.5 or over 8 for two consecutive monitoring periods (*not consistent with control bore*)	7.25*	7.61	7.18	7.1	7.44
MB19WAC0007		8.16*	**8.21**[1]	**8.37**[1]	7.92	7.89
MB21WAD0010		7.6*	7.91	7.87	7.49	7.82
MB21WAD0012		7.09*	7.75	7.45	7.32	7.17
WAC_M28		*Not drilled*				
WAW_M16		*Not drilled*				
WAW_M17		*Not drilled*				
Zone 3						
MB16WAW0005	Threshold: Under 6 or over 8.5 for two consecutive monitoring periods (*not consistent with control bore*)	6.98*	7.33	6.92	7.03	6.89
MB16WAW0007		7.07*	7.4	7.21	7.11	7.42
MB21WAD0017		7.16*	7.73	7.34	7.36	7.66
MB21WAD0015		7.13*	7.58	7.4	7.17	7.5
MB21WAC0001		7.58	7.08	6.88	6.92	6.74
MB22WAW0001		7.83	7.76	6.89	7.12	6.89
21WAW-M02		*Not drilled*				
WAW-M01		*Not drilled*				
MB17WAW0001		6.66*	6.98	6.54	6.55	6.87
Control Bore						
MB16WAW0005		6.98*	7.33	6.92	7.03	6.89
MB16WAW0007		7.07*	7.4	7.21	7.11	7.42

* Data reported in the 2022 MS1113 compliance report (our ref: RTIO-0989978) for pH was utilising lab results rather than field pH as specified in the GEMP monitoring requirements. Updated values are provided in Table 11.
[1] Trigger exceedance reported in Q1 and Q2 for MB19WAC0007.

Exceedance of Trigger Criteria 1 occurred in Q1 and Q2 for monitoring bore MB19WAC0007 (Table 11). Communication to DCCEEW post the identification of these exceedances occurred as below:

- Notification for Q1 exceedance was sent on 12 May 2023 (our ref: RTIO-0995089)
- Exceedance Report for Q1 exceedance was sent on 6 June 2023 (our ref: RTIO-01000528)
- Notification and Exceedance Report for Q2 exceedance was sent on 14 July 2023 (our ref: RTIO-1007440)
- Investigation Report for Q1 and Q2 pH exceedances was sent on 14 December 2023 (our ref: RTIO-1031288)

However, the correction of pH values for Q4 2022 monitoring have resulted in different consecutive trends than previously understood. Therefore, the trend between the control bore and MB19WAC0007 have not been inconsistent for two consecutive monitoring periods and these trigger exceedances reported are not classed as such with new data. For the control bore MB16WAW0005, the trend in pH from Q4 2022 to Q1 2023 has changed to an increasing trend with the new correct data for Q4 2022, which aligns to the trend in monitoring

bore MB19WAC0007. Therefore, the trigger exceedance identified in Q1 and Q2 was not correct as the trend now aligns to that of the control bore for Q1 and only differed from Q1 to Q2.

Table 12: Zone 2 monitoring bores - compliance with EC Early Response Indicator 2 and Trigger Criteria 2

Bore ID	EC (µS/cm) Proportional change from previous quarter				Exceedances
	Q1	Q2	Q3	Q4	
MB16WAW0008	-9.69%	7.74%	12.21%	3.36%	No exceedances
MB19WAC0007	-27.52%	16.60%	**13.99%**	27.30%	No exceedances
MB21WAD0010	-16.50%	7.25%	9.60%	7.96%	No exceedances
MB21WAD0012	0.05%	23.31%	**-52.02%**	21.21%	No exceedances
WAC_M28	*Not drilled*				
WAW_M16	*Not drilled*				
WAW_M17	*Not drilled*				
Control Bore					
MB16WAW0005	-16.56%	16.43%	-6.48%	18.22%	
Early Response Indicator 2 (accepted ranges are indicated ± 20% of the control bore change)	3.44% to -36.56% change	36.43% to -3.57% change	13.52% to -26.48% change	38.22% to -1.78% change	
Trigger Level 1 (accepted ranges are indicated ± 50% of the control bore change)	33.44% to -66.56% change	66.43% to -33.57% change	43.52% to -56.48% change	68.22% to -31.78% change	

Note that proportional changes highlighted in **bold** represent one instance of measured change outside of the Early Response/Trigger Level ranges of change and not an exceedance of the criteria.

Table 13: Zone 3 monitoring bores - compliance with EC Threshold Criteria

Bore ID	EC (µS/cm) Proportional change from previous quarter				Exceedances
	Q1	Q2	Q3	Q4	
MB16WAW0005	-16.56%	16.43%	-6.48%	18.22%	No exceedances
MB16WAW0007	-11.13%	7.14%	5.11%	2.61%	No exceedances
MB21WAD0017	-0.87%	14.71%	-26.50%	5.35%	No exceedances
MB21WAD0015	-10.06%	0.25%	3.22%	4.20%	No exceedances
MB21WAC0001	-0.44%	1.09%	-3.25%	20.69%	No exceedances
MB22WAW0001	-0.32%	14.33%	-13.37%	22.51%	No exceedances
21WAW-M02	Not drilled	Not drilled	Not drilled	Not drilled	
WAW-M01	Not drilled	Not drilled	Not drilled	Not drilled	
MB17WAW0001	-9.72%	9.66%	-11.08%	22.75%	No exceedances
Control Bore					
MB16WAW0005	-16.56%	16.43%	-6.48%	18.22%	
Trigger Level 2 (accepted ranges are indicated ± 50% of the control bore change)	33.44% to -66.56% change	66.43% to -33.57% change	43.52% to -56.48% change	68.22% to -31.78% change	
Threshold Criteria 2 (accepted ranges are indicated ± 80% of the control bore change)	63.44% to -96.56% change	96.43% to -63.57% change	73.52% to -86.48% change	98.22% to -61.78% change	

Proportional change in EC between consecutive monitoring events for all monitoring bores and control bores has been calculated and presented in Table 12 and Table 13. Acceptable ranges for change based on Early Response, Trigger and Threshold criteria have been calculated and any monitoring bore change outside of this range will be identified as reaching that criteria level.

For all monitoring bores in Zone 2 and Zone 3, EC proportional change has been within Early Response, Trigger and Threshold exceedance levels. Trends in EC in monitoring bores are consistent with control bore MB16WAW0005. Therefore, no exceedances of EC water quality criteria were recorded during the reporting period.

Although there were no exceedances of Early Response, Trigger or Threshold criteria for EC trends in monitoring bore MB21WAD0012, there was a measured change identified over one consecutive monitoring period in Q3 2023 that did not align with changes observed in boundary bores and monitoring bores (Figure 3). There was a 50% proportional change decrease in EC in Q3 2023. However, this decline in the EC value resulted in greater alignment to the boundary bores and monitoring bores EC values and therefore is not indicative of a potential impact (Figure 3). This change was a result of increased accuracy in sampling process.

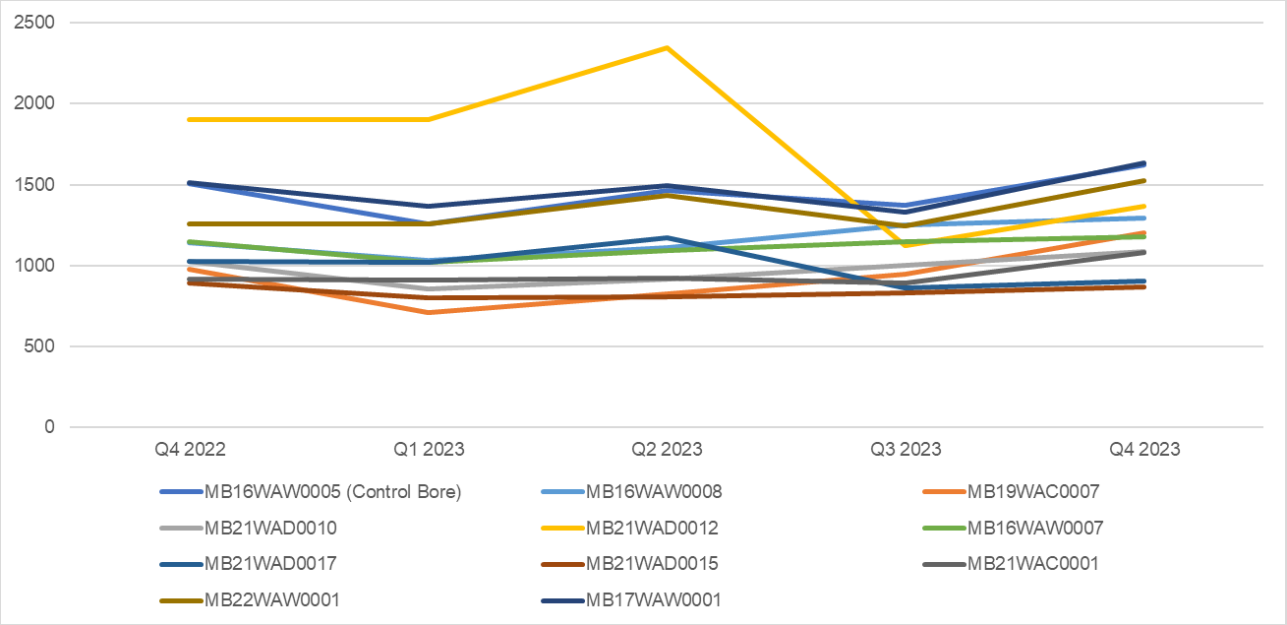

Figure 3: EC (µS/cm) field results for water quality monitoring in Zone 2 and 3 monitoring bores

4 New environmental risks

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

5 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: 

Full name:

Position

Organisatic

Date:

6 Appendices

Appendix 1: Water quality data for the managed aquifer recharge monitoring bores

Table 14: Zone 2 monitoring bores water quality quarterly results

Bore ID	Q4 2022		Q1 2023		Q2 2023		Q3 2023		Q4 2023	
	EC	pH	EC	pH	EC	pH	EC	pH	EC	pH
MB16WAW0008	1145	7.25	1034	7.61	1114	7.18	1250	7.1	1292	7.44
MB19WAC0007	981	8.16	711	8.21	829	8.37	945	7.92	1203	7.89
MB21WAD0010	1024	7.6	855	7.91	917	7.87	1005	7.49	1085	7.82
MB21WAD0012	1904	7.09	1905	7.75	2349	7.45	1127	7.32	1366	7.17
WAC_M28	Not drilled									
WAW_M16	Not drilled									
WAW_M17	Not drilled									

Table 15: Zone 3 monitoring bores water quality quarterly results

Bore ID	Q4 2022		Q1 2023		Q2 2023		Q3 2023		Q4 2023	
	EC	pH	EC	pH	EC	pH	EC	pH	EC	pH
MB16WAW0005	1510	6.98	1260	7.33	1467	6.92	1372	7.03	1622	6.89
MB16WAW0007	1150	7.07	1022	7.4	1095	7.21	1151	7.11	1181	7.42
MB21WAD0017	1029	7.16	1020	7.73	1170	7.34	860	7.36	906	7.66
MB21WAD0015	895	7.13	805	7.58	807	7.4	833	7.17	868	7.5
MB21WAC0001	918	7.58	914	7.08	924	6.88	894	6.92	1079	6.74
MB22WAW0001	1260	7.83	1256	7.76	1436	6.89	1244	7.12	1524	6.89
21WAW-M02	Not drilled									
WAW-M01	Not drilled									
MB17WAW0001	1513	6.66	1366	6.98	1498	6.54	1332	6.55	1635	6.87

Table 16: Boundary bore monitoring bore water quality quarterly results

Bore ID	Q4 2022		Q1 2023		Q2 2023		Q3 2023		Q4 2023	
	EC	pH	EC	pH	EC	pH	EC	pH	EC	pH
MB18WAW0003	1755	7.28	1673	7.66	1775	6.89	1630	7.12	1971	7.47
MB19WAW0006	1038	8.48	892	9.09	1049	8.56	984	8.38	1172	8.22
MB21WAD0013	1214	7.21	1103	7.16	1175	6.97	1228	7.16	1328	7.44
21TURB-M01	Not drilled									